# WHEATON®
# LABORATORY CATALOG

DWK LIFE SCIENCES
DURAN WHEATON KIMBLE

# DWK Life Sciences

## THE NEW NAME FOR PREMIUM LABORATORY PRODUCTS

In June 2017 the companies DURAN Group, Wheaton Industries and Kimble Chase merged to form a new global company – DWK Life Sciences.

DWK Life Sciences combines the expertise of the acclaimed product brands DURAN®, WHEATON® and KIMBLE®. As one of the world's leading manufacturers of premium lab glass, DWK Life Sciences offers its customers a complete range of high-quality laboratory glassware – from the classic disposables to reusable precision glassware. Additionally, DWK Life Sciences develops and produces a wide range of plastic labware and specialty products for life science applications as well as packaging and storage solutions for the pharmaceutical industry.

The DWK Life Sciences product portfolio comprises over 30,000 products manufactured at 11 sites in Europe, North America and Asia. Globally, more than 1,700 employees work on the development and production of innovative products and services to meet the high expectations of customers in laboratories around the world – inspired by the company slogan "Excellence in your hands".

# WHEATON®

## EXCELLENT PRODUCTS FOR RESEARCH AND INDUSTRY

Satisfied customers, scientists and trading partners around the world put their trust in WHEATON® products. The WHEATON® brand is characterized by years of experience in the development and manufacture of containers made from glass and plastic. Today, the WHEATON® portfolio not only includes innovative products for the Life Science laboratory, but also instruments, customized container solutions and closure systems for research and industry.

Our experienced product managers and sales representatives would be delighted to assist.
See DWK-LifeSciences.com for how to get in touch with your contact persons, as well as much more information about WHEATON® and DWK Life Sciences.


Find out more:
**www.DWK-LifeSciences.com**

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# The Highest Sample Integrity for Long-Term Storage

## Ampules

WHEATON® ampules are all glass containers that can be hermetically sealed to preserve sample purity and extend sample shelf life. WHEATON ampules are ideal for standards packaging, environmental and diagnostic standards, lyophilization and cryogenic storage. These ampules protect against sample contamination due to their tamper-evident seal. A Gold Band® on the stem of the ampule indicates that the ampule is pre-scored to facilitate snapping off the top of the ampule eliminating the need to file the ampule. The ampule line includes pre-scored, standard, glass Cryule® cryogenic ampules and Vacule® lyophilization ampules. DWK Life Sciences can also design a custom ampule to fit your special requirements.

## Sample Traceability Using WHEATON Cryule® Cryogenic Ampules

- Glass ampules provide the highest sample integrity for long-term storage. Since ampules are not provided pre-bar coded, DWK Life Sciences provides customization of bar codes according to customer specifications.
- A ceramic two dimensional (2D) or linear bar code can be applied to the ampule. The ceramic bar code is durable when used in extreme temperatures.
- 2D bar codes are machine readable symbols of rows of encrypted data arranged in a rectangular or square pattern that stores large amounts of data.
- Linear bar codes are black and white vertical bars located on the side of the ampule that contain various amounts of data ranging from simple number chains to large amounts of numeric and alphanumeric data sets.
- Number sequencing on bar codes is guaranteed not to duplicate.
- Once the 2D bar code is applied to the ampule, the bar code can be scanned and read using the WHEATON SingleScan™ (Cat. No. W986000) or the WHEATON PluraScan™ Bar Code Reader (Cat. No. W986010).
- Bar code identification can be simply stored in a Microsoft® Excel® file or any other data collection system.
- DWK Life Sciences can also manufacture a custom ampule and provide critical cleaning and sterilization services.

# Ampules



## Cryule® Cryogenic Ampule

- For biological sample preservation in glass
- Allows for storage at low temperatures
- Made from low extractable borosilicate glass that conforms to USP Type I and ASTM E 438 Type I, Class A requirements
- Can be used in the vapor phase of liquid nitrogen
- Special design allows for storage at low temperatures as well as rapid thawing

| Cat. No. | Size (mL) | Dia. x H (mm) | *OD at Top (mm) | Qty / Case |
|---|---|---|---|---|
| 651463 | 1.2 | 11.8 x 58 | 5 | 144 |
| W651469 | 5 | 16.5 x 98 | 8 | 293 |

* Approximate OD

## Cryule® Cryogenic Ampule, Pre-scored

- For biological sample preservation in glass
- Pre-scored to eliminate filing
- Allows for storage at low temperatures
- Made from low extractable borosilicate glass that conforms to USP Type I and ASTM E 438 Type I, Class A requirements
- Can be used in the vapor phase of liquid nitrogen
- Special design allows for storage at low temperatures as well as rapid thawing

| Cat. No. | Size (mL) | Dia. x H (mm) | *OD at Top (mm) | Qty / Case |
|---|---|---|---|---|
| 651483 | 1.2 | 11.8 x 58 | 5 | 144 |
| 651486 | 2 | 11.5 x 70 | 5 | 144 |

* Approximate OD

## Vacule® Lyophilization Ampule

- Ideal for small volume lyophilization samples
- Made from low extractable borosilicate glass that conforms to USP Type I and ASTM E 438 Type I, Class A requirements
- Heat or stopper sealed
- To stopper seal, use WHEATON Stopper W651450

| Cat. No. | Description | Dia. x H (mm) | Qty / Case |
|---|---|---|---|
| W651446 | 2mL Vacule | 12 x 86 | 567 |
| W651450 | 11mm Gray Butyl Stopper | — | 144 |

* Approximate OD at top 10mm

## Vacule® Lyophilization Ampule, Pre-scored

- Ideal for small volume lyophilization samples
- Pre-scored for easy opening
- Made from low extractable borosilicate glass that conforms to USP Type I and ASTM E 438 Type I, Class A requirements
- Heat sealed only

| Cat. No. | Size (mL) | Dia. x H (mm) | *OD at Top (mm) | Qty / Case |
|---|---|---|---|---|
| 651502 | 1 | 10 x 108 | 10 | 144 |
| W651506 | 2 | 11.8 x 122 | 11.75 | 567 |

* Approximate OD

## Clear Ampule, Pre-scored

- Pre-scored to eliminate filing
- Made from low extractable borosilicate glass that conforms to USP Type I and ASTM E 438 Type I, Class A requirements
- Stems can be pull or tip sealed

| Cat. No. | Size (mL) | Dia. x H (mm) | Qty / Case |
|---|---|---|---|
| 176772 | 1 | 10.5 x 67 | 144 |
| 176776 | 2 | 12 x 75 | 144 |
| 176779 | 5 | 16.5 x 84 | 144 |
| 176780 | 10 | 19 x 107 | 144 |
| 176782 | 20 | 22.5 x 130 | 144 |

## Amber Ampule, Pre-scored

- Pre-scored to eliminate filing
- Made from amber borosilicate glass that conforms to USP Type I requirements for light transmission to protect light-sensitive products
- Stems can be pull or tip sealed

| Cat. No. | Size (mL) | Dia. x H (mm) | Qty / Case |
|---|---|---|---|
| 176792 | 1 | 10.5 x 67 | 144 |
| 176796 | 2 | 12 x 75 | 144 |
| 176799 | 5 | 16.5 x 84 | 144 |

## Ampule, Standard

- Commonly used for packaging certified standards
- Consistent with low background counts
- Made from low potassium borosilicate glass that conforms to USP Type I and ASTM E 438 Type I, Class A requirements

| Cat. No. | Size (mL) | Dia. x H (mm) | Qty / Case |
|---|---|---|---|
| 176759 | 7 | 17 x 95 | 25 |
| 176762 | 20 | 28 x 100 | 25 |

## Ampule Snapper, Disposable

- Protects against glass splinters
- Prevents cross contamination

| Cat. No. | For Ampule Size | Qty / Case |
|---|---|---|
| 177105 | 1 and 2mL | 144 |


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# Containers for All Purposes

## Glass Bottles

The WHEATON® portfolio offers over 3,000 containers and closures from borosilicate to soda-lime glass. Each container has an assortment of caps and liners to choose from. We are able to provide small case quantities of containers as well as large bulk packs. We also offer the ability to customize your order to meet all your needs. In addition, DWK Life Sciences offers convenience bulk packs of containers with or without caps attached for high use items or facilities with centralized stockrooms. Tamper Evident Seal / HAZCOM Label provided in each case of bottles with the exception of bulk packs.

The United States Pharmacopeia classifies pharmaceutical glass containers according to their resistance to water attack, also referred to as chemical durability. Containers are classified as Type I, II, and III. Type I is the most durable glass, and Type III is the least durable glass. Test methods and specification limits for determining the chemical resistance of glass can be found in the current revision of the U. S. Pharmacopeia, section <660> Containers. Most of the glass containers offered by DWK Life Sciences are manufactured from either Type I borosilicate or Type III soda-lime glass.

Glass in the USP Type I classification are borosilicate glass with superior chemical resistance. This class of glasses represents the least reactive glass containers available. Typically, this glass can be used for most applications, including packaging for parenteral and nonparenteral products. Type I glass may be used to package acidic, neutral and alkaline products. Water for injection, un-buffered products, chemicals, sensitive products and those requiring sterilization are commonly packaged in Type I borosilicate glass. Type I glass can be subject to chemical attack under certain conditions, thus container selection must be made carefully for very low and very high pH applications.

USP Type III is a soda-lime glass with moderate chemical resistance. It is typically acceptable for packaging dry powders that will be dissolved into solutions or buffers that are insensitive to alkali. Type III glass may not be suitable for autoclaved products because the autoclaving process will accelerate the glass corrosion reaction. Dry heat sterilization processes are typically not a problem for Type III containers. Light sensitive products must be packaged in amber glass. Amber glass is formulated to absorb light in the Ultra Violet region of the electromagnetic spectrum.

# Bottles, Glass



## Dropping Bottle, All Glass

- Delivers stains or indicator solutions drop by drop
- Available in clear or amber glass
- Complete with a glass stopper
- A partial turn of the ground glass stopper seals the bottle
- Manufactured from soda-lime glass
- Not autoclavable

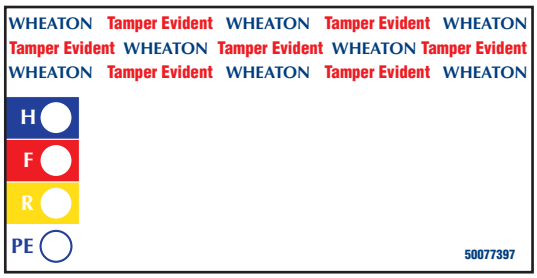
| Cat. No. | Color | Capacity (mL) | Dia. x H (mm) | Qty / Case |
|---|---|---|---|---|
| W211734 | Clear | 50 | 45 x 95 | 6 |
| W211754 | Amber | 50 | 45 x 95 | 6 |
| W211735 | Clear | 100 | 56 x 120 | 6 |
| W211755 | Amber | 100 | 56 x 120 | 6 |

## Packaging

- Packaged in convenience packs with caps attached
- Convenience bulk packs provide larger quantities with or without caps attached for high use items or facilities with centralized stockrooms

## Tamper Evident Seal / HAZCOM Label

- HAZCOM label allows for ID of content and safety notification
- Labels provided in each case of bottles with the exception of bulk packs
- Tamper Evident Seal keeps bottle sealed, protecting contents from accidental misuse




Not actual label size

# General Purpose Glass Bottles

- Bottles manufactured from soda-lime glass that conforms to USP Type III requirements
- Available in clear glass or amber glass for light sensitive samples
- Narrow mouth bottles are ideal for liquids
- Wide mouth bottles are ideal for dry and viscous samples
- Valumetric™ bottles are for measuring while you sample
- White polypropylene or black phenolic screw caps
- Screw caps are pre-attached to the containers or are available separately
- Choice of cap liners: PTFE faced foamed polyethylene liner, poly-vinyl liner, rubber liner, PTFE faced rubber, or PE cone liner
- Tamper Evident Seal / HAZCOM Label provided in each case of bottles with the exception of bulk packs

## Cap Liner Specifications

| Material | Description | Applications |
|---|---|---|
| Pulp / Poly-Vinyl | One mil poly-vinyl film bonded to one mil HDPE on a #30 white pulp paper backing. Superior to plain pulp paper because it provides an excellent moisture barrier. | General purpose: Suitable for wide range of applications. Chemical resistance: Good for mild acids, alkalis, solvents, alcohols, oils and aqueous products. Poor for active hydrocarbons and bleaches. |
| PTFE Faced Foamed Polyethylene | PTFE faced foamed polyethylene liner that offers the excellent chemical resistance of PTFE with the compressibility and sealing properties of polyethylene foam. | Typical applications: analytical lab samples, high purity chemicals, strong acids, solvents. Excellent for environmental samples, pharmaceuticals and diagnostic reagents. |
| PE Cone | Manufactured from polyethylene (LDPE). The unique cone design provides a wedge type seal that not only seals across the top but also across the inside diameter. | This liner is stress crack resistant and offers superior torque retention and excellent sealing characteristics. It is recommended that this liner be tested prior to use for leak seal. |
| Styrene-Butadiene Rubber (14B) | The 14B white rubber lining material consists of homogeneous sulfur cured styrene-butadiene rubber. FDA Status complies with 21CFR 177.26, "Rubber articles intended for repeated use." | Excellent properties of resilience, resistant to moisture vapor. Satisfactory for most moderate chemicals. Not good for oils, strong acids and hydrocarbons. Autoclavable. |
| PTFE Faced Rubber | The white rubber / 0.005" PTFE liner consists of virign PTFE bonded to the white sulfur cured styrene-butadiene rubber. Complies with the FDA 21CFR 177.1550. | Designed for the ultimate in product safety. PTFE provides totally inert inner seal and surface facing the sample or product. Autoclavable. |

## AC Round Bottle

- Clear, USP Type III soda-lime glass
- Taller & narrower than Straight Sided Jars
- Available with caps attached or bulk packs without caps

| Cat. No. | Capacity (oz) | Capacity (mL)* | Dia. x H (mm) | Cap Size | Cap Material | Cap Liner | Qty / Case |
|---|---|---|---|---|---|---|---|
| W217005 | 1 | 30 | 34 x 68 | 33-400 | Without Cap | — | 432 |
| W216995 | 1 | 30 | 34 x 68 | 33-400 | White Polypropylene | Poly-Vinyl | 48 |
| W217000 | 1 | 30 | 34 x 68 | 33-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 48 |
| W217006 | 2 | 60 | 42 x 83 | 38-400 | Without Cap | — | 288 |
| W216996 | 2 | 60 | 42 x 83 | 38-400 | White Polypropylene | Poly-Vinyl | 48 |
| W217001 | 2 | 60 | 42 x 83 | 38-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 48 |
| W217007 | 4 | 125 | 51 x 102 | 48-400 | Without Cap | — | 144 |
| W216997 | 4 | 125 | 51 x 102 | 48-400 | White Polypropylene | Poly-Vinyl | 24 |
| W217002 | 4 | 125 | 51 x 102 | 48-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 24 |
| W217008 | 8 | 250 | 62 x 127 | 58-400 | Without Cap | — | 96 |
| W216998 | 8 | 250 | 62 x 127 | 58-400 | White Polypropylene | Poly-Vinyl | 24 |
| W217003 | 8 | 250 | 62 x 127 | 58-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 24 |
| W217009 | 16 | 500 | 76 x 145 | 70-400 | Without Cap | — | 48 |
| W216999 | 16 | 500 | 76 x 145 | 70-400 | White Polypropylene | Poly-Vinyl | 24 |
| W217004 | 16 | 500 | 76 x 145 | 70-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 24 |

*Approximate capacity

## Boston Round Bottle

- Clear or amber, USP Type III soda-lime glass
- Ideal for solvent, chemical or sample storage
- Available with caps attached or bulk packs without caps

| Cat. No. | Color | Capacity (oz) | Capacity (mL)* | Dia. x H (mm) | Cap Size | Cap Material | Cap Liner | Qty / Case |
|---|---|---|---|---|---|---|---|---|
| W216830** | Clear | 1 | 30 | 31 x 79 | 20-400 | Without Cap | — | 432 |
| W216800 | Clear | 1 | 30 | 31 x 79 | 20-400 | White Polypropylene | Poly-Vinyl | 48 |
| W216824 | Clear | 1 | 30 | 31 x 79 | 20-400 | White Polypropylene | Poly-Vinyl | 432 |
| W216806 | Clear | 1 | 30 | 31 x 79 | 20-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 48 |
| W216812 | Clear | 1 | 30 | 31 x 79 | 20-400 | Black Phenolic | PE Cone | 48 |
| W216818** | Clear | 1 | 30 | 31 x 79 | 20-400 | Black Phenolic | Rubber | 48 |
| W216865** | Amber | 1 | 30 | 31 x 79 | 20-400 | Without Cap | — | 432 |
| W216836 | Amber | 1 | 30 | 31 x 79 | 20-400 | White Polypropylene | Poly-Vinyl | 48 |
| W216859 | Amber | 1 | 30 | 31 x 79 | 20-400 | White Polypropylene | Poly-Vinyl | 432 |
| W216842 | Amber | 1 | 30 | 31 x 79 | 20-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 48 |
| W216848 | Amber | 1 | 30 | 31 x 79 | 20-400 | Black Phenolic | PE Cone | 48 |
| W216854** | Amber | 1 | 30 | 31 x 79 | 20-400 | Black Phenolic | Rubber | 48 |
| W216831** | Clear | 2 | 60 | 39 x 94 | 20-400 | Without Cap | — | 288 |
| W216807 | Clear | 2 | 60 | 39 x 94 | 20-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 24 |
| W216813 | Clear | 2 | 60 | 39 x 94 | 20-400 | Black Phenolic | PE Cone | 24 |
| W216819** | Clear | 2 | 60 | 39 x 94 | 20-400 | Black Phenolic | Rubber | 24 |
| W216866** | Amber | 2 | 60 | 39 x 94 | 20-400 | Without Cap | — | 288 |
| W216837 | Amber | 2 | 60 | 39 x 94 | 20-400 | White Polypropylene | Poly-Vinyl | 24 |
| W216860 | Amber | 2 | 60 | 39 x 94 | 20-400 | White Polypropylene | Poly-Vinyl | 288 |
| W216843 | Amber | 2 | 60 | 39 x 94 | 20-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 24 |
| W216849 | Amber | 2 | 60 | 39 x 94 | 20-400 | Black Phenolic | PE Cone | 24 |
| W216854** | Amber | 2 | 60 | 39 x 94 | 20-400 | Black Phenolic | Rubber | 24 |

## Replacement Caps for AC Round Bottles

| Cat. No. | Cap Size | Qty / Pack | Qty / Case |
|---|---|---|---|
| **White Polypropylene / PTFE Faced Foamed Polyethylene Liner** | | | |
| 239236 | 33-400 | 72 | 144 |
| 239237 | 38-400 | 72 | 72 |
| 239240 | 48-400 | 72 | 72 |
| 239242 | 58-400 | 72 | 72 |
| 239244 | 70-400 | 24 | 48 |
| **White Polypropylene / Poly-Vinyl Liner** | | | |
| 239213 | 38-400 | 72 | 72 |
| 239216 | 48-400 | 72 | 72 |
| 239218 | 58-400 | 72 | 72 |
| 239220 | 70-400 | 24 | 48 |

| Cat. No. | Color | Capacity (oz) | Capacity (mL)* | Dia. x H (mm) | Cap Size | Cap Material | Cap Liner | Qty / Case |
|---|---|---|---|---|---|---|---|---|
| W216832** | Clear | 4 | 125 | 48 x 112 | 22-400 | Without Cap | — | 160 |
| W216802 | Clear | 4 | 125 | 48 x 112 | 22-400 | White Polypropylene | Poly-Vinyl | 24 |
| W216826 | Clear | 4 | 125 | 48 x 112 | 22-400 | White Polypropylene | Poly-Vinyl | 160 |
| W216808 | Clear | 4 | 125 | 48 x 112 | 22-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 24 |
| W216814 | Clear | 4 | 125 | 48 x 112 | 22-400 | Black Phenolic | PE Cone | 24 |
| W216820** | Clear | 4 | 125 | 48 x 112 | 22-400 | Black Phenolic | Rubber | 24 |
| W216867** | Amber | 4 | 125 | 48 x 112 | 22-400 | Without Cap | — | 160 |
| W216838 | Amber | 4 | 125 | 48 x 112 | 22-400 | White Polypropylene | Poly-Vinyl | 24 |
| W216861 | Amber | 4 | 125 | 48 x 112 | 22-400 | White Polypropylene | Poly-Vinyl | 160 |
| W216844 | Amber | 4 | 125 | 48 x 112 | 22-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 24 |
| W216850 | Amber | 4 | 125 | 48 x 112 | 22-400 | Black Phenolic | PE Cone | 24 |
| W216855** | Amber | 4 | 125 | 48 x 112 | 22-400 | Black Phenolic | Rubber | 24 |
| W216833** | Clear | 8 | 250 | 60 x 136 | 24-400 | Without Cap | — | 108 |
| W216803 | Clear | 8 | 250 | 60 x 136 | 24-400 | White Polypropylene | Poly-Vinyl | 12 |
| W216827 | Clear | 8 | 250 | 60 x 136 | 24-400 | White Polypropylene | Poly-Vinyl | 108 |
| W216809 | Clear | 8 | 250 | 60 x 136 | 24-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 12 |
| W216815 | Clear | 8 | 250 | 60 x 136 | 24-400 | Black Phenolic | PE Cone | 12 |
| W216821** | Clear | 8 | 250 | 60 x 136 | 24-400 | Black Phenolic | Rubber | 12 |
| W216868** | Amber | 8 | 250 | 60 x 136 | 24-400 | Without Cap | — | 108 |
| W216839 | Amber | 8 | 250 | 60 x 136 | 24-400 | White Polypropylene | Poly-Vinyl | 12 |
| W216862 | Amber | 8 | 250 | 60 x 136 | 24-400 | White Polypropylene | Poly-Vinyl | 108 |
| W216845 | Amber | 8 | 250 | 60 x 136 | 24-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 12 |
| W216851 | Amber | 8 | 250 | 60 x 136 | 24-400 | Black Phenolic | PE Cone | 12 |
| W216856** | Amber | 8 | 250 | 60 x 136 | 24-400 | Black Phenolic | Rubber | 12 |
| W216834** | Clear | 16 | 500 | 75 x 168 | 28-400 | Without Cap | — | 60 |
| W216804 | Clear | 16 | 500 | 75 x 168 | 28-400 | White Polypropylene | Poly-Vinyl | 12 |
| W216810 | Clear | 16 | 500 | 75 x 168 | 28-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 12 |
| W216828 | Clear | 16 | 500 | 75 x 168 | 28-400 | White Polypropylene | Poly-Vinyl | 60 |
| W216816 | Clear | 16 | 500 | 75 x 168 | 28-400 | Black Phenolic | PE Cone | 12 |
| W216822** | Clear | 16 | 500 | 75 x 168 | 28-400 | Black Phenolic | Rubber | 12 |
| W216869** | Amber | 16 | 500 | 75 x 168 | 28-400 | Without Cap | — | 60 |
| W216840 | Amber | 16 | 500 | 75 x 168 | 28-400 | White Polypropylene | Poly-Vinyl | 12 |
| W216846 | Amber | 16 | 500 | 75 x 168 | 28-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 12 |
| W216852 | Amber | 16 | 500 | 75 x 168 | 28-400 | Black Phenolic | PE Cone | 12 |
| W216857** | Amber | 16 | 500 | 75 x 168 | 28-400 | Black Phenolic | Rubber | 12 |
| W216835** | Clear | 32 | 1000 | 94 x 206 | 33-400 | Without Cap | — | 12 |
| W216805 | Clear | 32 | 1000 | 94 x 206 | 33-400 | White Polypropylene | Poly-Vinyl | 12 |
| W216829 | Clear | 32 | 1000 | 94 x 206 | 33-400 | White Polypropylene | Poly-Vinyl | 12 |
| W216811 | Clear | 32 | 1000 | 94 x 206 | 33-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 12 |
| W216817 | Clear | 32 | 1000 | 94 x 206 | 33-400 | Black Phenolic | PE Cone | 12 |
| W216823** | Clear | 32 | 1000 | 94 x 206 | 33-400 | Black Phenolic | Rubber | 12 |
| W216870** | Amber | 32 | 1000 | 94 x 206 | 33-400 | Without Cap | — | 30 |
| W216841 | Amber | 32 | 1000 | 94 x 206 | 33-400 | White Polypropylene | Poly-Vinyl | 12 |
| W216864 | Amber | 32 | 1000 | 94 x 206 | 33-400 | White Polypropylene | Poly-Vinyl | 30 |
| W216847 | Amber | 32 | 1000 | 94 x 206 | 33-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 12 |
| W216853 | Amber | 32 | 1000 | 94 x 206 | 33-400 | Black Phenolic | PE Cone | 12 |
| W216858** | Amber | 32 | 1000 | 94 x 206 | 33-400 | Black Phenolic | Rubber | 12 |

*Approximate capacity **Autoclavable

## Replacement Caps for Boston Round Bottles

| Cat. No. | Cap Size | Qty / Pack | Qty / Case |
|---|---|---|---|
| **Black Phenolic with Rubber Liner** | | | |
| W239298 | 20-400 | 72 | 144 |
| W239299 | 22-400 | 72 | 144 |
| W239300 | 24-400 | 72 | 144 |
| W239301 | 28-400 | 72 | 144 |
| W239302 | 33-400 | 72 | 144 |
| **Black Phenolic / PE Cone Liner** | | | |
| 239253 | 20-400 | 72 | 144 |
| 239255 | 22-400 | 72 | 144 |
| 239257 | 24-400 | 72 | 144 |
| 239259 | 28-400 | 72 | 144 |
| 239260 | 33-400 | 72 | 144 |

| Cat. No. | Cap Size | Qty / Pack | Qty / Case |
|---|---|---|---|
| **White Polypropylene / PTFE Faced Foamed Polyethylene Liner** | | | |
| 239229 | 20-400 | 72 | 144 |
| 239231 | 22-400 | 72 | 144 |
| 239233 | 24-400 | 72 | 144 |
| 239235 | 28-400 | 72 | 144 |
| 239236 | 33-400 | 72 | 144 |
| **White Polypropylene / Poly-Vinyl Liner** | | | |
| 239207 | 22-400 | 72 | 144 |
| 239209 | 24-400 | 72 | 144 |
| 239211 | 28-400 | 72 | 144 |

## French Square Bottle

- Clear USP Type III soda-lime glass
- Ideal for solvent, chemical or sample storage
- Square shape maximizes storage space
- Available with caps attached or bulk packs without caps

| Cat. No. | Color | Capacity (oz) | Capacity (mL)* | Dia. x H (mm) | Cap Size | Cap Material | Cap Liner | Qty / Case |
|---|---|---|---|---|---|---|---|---|
| W216871 | Clear | 0.5 | 15 | 27 x 66 | 20-400 | White Polypropylene | Poly-Vinyl | 48 |
| W217883 | Clear | 0.5 | 15 | 27 x 66 | 20-400 | White Polypropylene | Poly-Vinyl | 576 |
| W216877 | Clear | 0.5 | 15 | 27 x 66 | 20-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 48 |
| W216889 | Clear | 0.5 | 15 | 27 x 66 | 20-400 | Black Phenolic | PE Cone | 48 |
| W216883** | Clear | 0.5 | 15 | 27 x 66 | 20-400 | Black Phenolic | Rubber | 48 |
| W216898** | Clear | 1 | 30 | 31 x 72 | 24-400 | Without Cap | — | 280 |
| W216893 | Clear | 1 | 30 | 31 x 72 | 24-400 | White Polypropylene | Poly-Vinyl | 280 |
| W216872 | Clear | 1 | 30 | 31 x 72 | 24-400 | White Polypropylene | Poly-Vinyl | 48 |
| W216878 | Clear | 1 | 30 | 31 x 72 | 24-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 48 |
| W216890 | Clear | 1 | 30 | 31 x 72 | 24-400 | Black Phenolic | PE Cone | 48 |
| W216884** | Clear | 1 | 30 | 31 x 72 | 24-400 | Black Phenolic | Rubber | 48 |
| W216899** | Clear | 2 | 60 | 39 x 87 | 28-400 | Without Cap | — | 240 |
| W216894 | Clear | 2 | 60 | 39 x 87 | 28-400 | White Polypropylene | Poly-Vinyl | 240 |
| W216873 | Clear | 2 | 60 | 39 x 87 | 28-400 | White Polypropylene | Poly-Vinyl | 48 |
| W216879 | Clear | 2 | 60 | 39 x 87 | 28-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 48 |
| W216891 | Clear | 2 | 60 | 39 x 87 | 28-400 | Black Phenolic | PE Cone | 48 |
| W216885** | Clear | 2 | 60 | 39 x 87 | 28-400 | Black Phenolic | Rubber | 48 |
| W216900** | Clear | 4 | 125 | 45 x 111 | 33-400 | Without Cap | — | 120 |
| W216895 | Clear | 4 | 125 | 45 x 111 | 33-400 | White Polypropylene | Poly-Vinyl | 120 |
| W216874 | Clear | 4 | 125 | 45 x 111 | 33-400 | White Polypropylene | Poly-Vinyl | 24 |
| W216880 | Clear | 4 | 125 | 45 x 111 | 33-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 24 |
| W216892 | Clear | 4 | 125 | 45 x 111 | 33-400 | Black Phenolic | PE Cone | 24 |
| W216886** | Clear | 4 | 125 | 45 x 111 | 33-400 | Black Phenolic | Rubber | 24 |
| W216901** | Clear | 8 | 250 | 56 x 137 | 43-400 | Without Cap | — | 84 |
| W216896 | Clear | 8 | 250 | 56 x 137 | 43-400 | White Polypropylene | Poly-Vinyl | 84 |
| W216875 | Clear | 8 | 250 | 56 x 137 | 43-400 | White Polypropylene | Poly-Vinyl | 24 |
| W216881 | Clear | 8 | 250 | 56 x 137 | 43-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 24 |
| W216887** | Clear | 8 | 250 | 56 x 137 | 43-400 | Black Phenolic | Rubber | 24 |
| W216902** | Clear | 16 | 500 | 68 x 167 | 48-400 | Without Cap | — | 40 |
| W216897 | Clear | 16 | 500 | 68 x 167 | 48-400 | White Polypropylene | Poly-Vinyl | 40 |
| W216876 | Clear | 16 | 500 | 68 x 167 | 48-400 | White Polypropylene | Poly-Vinyl | 24 |
| W216882 | Clear | 16 | 500 | 68 x 167 | 48-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 24 |
| W216888** | Clear | 16 | 500 | 68 x 167 | 48-400 | Black Phenolic | Rubber | 24 |
| W217882** | Clear | 32 | 1000 | 85 x 207 | 58-400 | Without Cap | — | 24 |
| W217881 | Clear | 32 | 1000 | 85 x 207 | 58-400 | White Polypropylene | PE Cone | 12 |
| W217884 | Clear | 32 | 1000 | 85 x 207 | 58-400 | White Polypropylene | Poly-Vinyl | 12 |
| W217880** | Clear | 32 | 1000 | 85 x 207 | 58-400 | Black Phenolic | Rubber | 12 |

*Approximate capacity **Autoclavable

## Replacement Caps for French Square Bottles

| Cat. No. | Cap Size | Qty / Pack | Qty / Case |
|---|---|---|---|
| **Black Phenolic with Rubber Liner** | | | |
| W239298 | 20-400 | 72 | 144 |
| W239300 | 24-400 | 72 | 144 |
| W239301 | 28-400 | 72 | 144 |
| W239302 | 33-400 | 72 | 144 |
| W239304 | 43-400 | 72 | 72 |
| W239306 | 48-400 | 72 | 72 |
| W239308 | 58-400 | 72 | 72 |
| **Black Phenolic / PE Cone Liner** | | | |
| 239253 | 20-400 | 72 | 144 |
| 239257 | 24-400 | 72 | 144 |
| 239259 | 28-400 | 72 | 144 |
| 239260 | 33-400 | 72 | 144 |

| Cat. No. | Cap Size | Qty / Pack | Qty / Case |
|---|---|---|---|
| **White Polypropylene / PTFE Faced Foamed Polyethylene Liner** | | | |
| 239229 | 20-400 | 72 | 144 |
| 239233 | 24-400 | 72 | 144 |
| 239235 | 28-400 | 72 | 144 |
| 239236 | 33-400 | 72 | 144 |
| 239238 | 43-400 | 72 | 72 |
| 239240 | 48-400 | 72 | 72 |
| 239242 | 58-400 | 72 | 72 |
| **White Polypropylene with Poly-Vinyl Liner** | | | |
| 239209 | 24-400 | 72 | 144 |
| 239211 | 28-400 | 72 | 144 |
| 239214 | 43-400 | 72 | 72 |
| 239216 | 48-400 | 72 | 72 |
| 239218 | 58-400 | 72 | 72 |

## Standard Wide Mouth Bottle, Clear

- Clear, Type III soda-lime glass
- Largest bottles available
- Ideal for general, small to large volume storage
- Available with caps attached or without caps

| Cat. No. | Capacity (oz) | Capacity (mL)* | Dia. x H (mm) | Cap Size | Cap Material | Cap Liner | Qty / Case |
|---|---|---|---|---|---|---|---|
| W216934** | 4 | 125 | 52 x 84 | 48-400 | Without Cap | — | 24 |
| W216924 | 4 | 125 | 52 x 84 | 48-400 | White Polypropylene | Poly-Vinyl | 24 |
| W216929 | 4 | 125 | 52 x 84 | 48-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 24 |
| W216935** | 8 | 250 | 63 x 110 | 58-400 | Without Cap | — | 24 |
| W216925 | 8 | 250 | 63 x 110 | 58-400 | White Polypropylene | Poly-Vinyl | 24 |
| W216930 | 8 | 250 | 63 x 110 | 58-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 24 |
| W216936** | 16 | 500 | 79 x 133 | 63-400 | Without Cap | — | 24 |
| W216926 | 16 | 500 | 79 x 133 | 63-400 | White Polypropylene | Poly-Vinyl | 24 |
| W216931 | 16 | 500 | 79 x 133 | 63-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 24 |
| W217923 | 32 | 1000 | 98 x 174 | 89-400 | Without Cap | — | 12 |
| W217922 | 32 | 1000 | 98 x 174 | 89-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 12 |
| W217924 | 32 | 1000 | 98 x 174 | 89-400 | White Polypropylene | Poly-Vinyl | 12 |
| W216937** | 65 | 2000 | 122 x 213 | 83-400 | Without Cap | — | 6 |
| W216927 | 65 | 2000 | 122 x 213 | 83-400 | White Polypropylene | Poly-Vinyl | 6 |
| W216932 | 65 | 2000 | 122 x 213 | 83-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 6 |
| W216938** | 130 | 4000 | 157 x 256 | 89-400 | Without Cap | — | 4 |
| W216928 | 130 | 4000 | 157 x 256 | 89-400 | White Polypropylene | Poly-Vinyl | 4 |
| W216933 | 130 | 4000 | 157 x 256 | 89-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 4 |

*Approximate capacity **Autoclavable

## Replacement Caps for Standard Wide Mouth Bottles

| Cat. No. | Cap Size | Qty / Pack | Qty / Case |
|---|---|---|---|
| White Polypropylene / PTFE Faced Foamed Polyethylene Liner | | | |
| 239240 | 48-400 | 72 | 72 |
| 239242 | 58-400 | 72 | 72 |
| 239243 | 63-400 | 24 | 48 |
| 239246 | 89-400 | 24 | 48 |

| Cat. No. | Cap Size | Qty / Pack | Qty / Case |
|---|---|---|---|
| White Polypropylene / Poly-Vinyl Liner | | | |
| 239216 | 48-400 | 72 | 72 |
| 239218 | 58-400 | 72 | 72 |
| 239222 | 89-400 | 24 | 48 |

## Straight Sided Jar

- Clear or Amber, USP Type III soda-lime glass
- Wide mouth design is great for large solid samples
- Walls allow for complete removal of contents
- Ideal for soil sampling and environmental applications
- Available with caps attached or bulk packs without caps

| Cat. No. | Color | Capacity (oz) | Capacity (mL)* | Dia. x H (mm) | Cap Size | Cap Material | Cap Liner | Qty / Case |
|---|---|---|---|---|---|---|---|---|
| W217905 | Clear | 1 | 30 | 44 x 44 | 43-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 48 |
| W217906 | Clear | 1 | 30 | 44 x 44 | 43-400 | White Polypropylene | Poly-Vinyl | 48 |
| W216919** | Clear | 2 | 60 | 55 x 48 | 53-400 | Without Cap | — | 144 |
| W216903 | Clear | 2 | 60 | 55 x 48 | 53-400 | White Polypropylene | Poly-Vinyl | 24 |
| W216908 | Clear | 2 | 60 | 55 x 48 | 53-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 24 |
| W216914 | Clear | 2 | 60 | 55 x 48 | 53-400 | White Polypropylene | Poly-Vinyl | 144 |
| W216920** | Clear | 4 | 125 | 62 x 73 | 58-400 | Without Cap | — | 24 |
| W216904 | Clear | 4 | 125 | 62 x 73 | 58-400 | White Polypropylene | Poly-Vinyl | 24 |
| W216909 | Clear | 4 | 125 | 62 x 73 | 58-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 24 |
| W216913** | Clear | 4 | 125 | 62 x 73 | 58-400 | Black Phenolic | Rubber | 24 |
| W217907 | Amber | 4 | 125 | 62 x 73 | 58-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 24 |
| W216921** | Clear | 8 | 250 | 75 x 94 | 70-400 | Without Cap | — | 24 |
| W216905 | Clear | 8 | 250 | 75 x 94 | 70-400 | White Polypropylene | Poly-Vinyl | 12 |
| W216910 | Clear | 8 | 250 | 75 x 94 | 70-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 12 |
| W217908 | Amber | 8 | 250 | 75 x 94 | 70-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 12 |
| W216922** | Clear | 16 | 500 | 91 x 95 | 89-400 | Without Cap | — | 12 |
| W216906 | Clear | 16 | 500 | 91 x 95 | 89-400 | White Polypropylene | Poly-Vinyl | 12 |
| W216911 | Clear | 16 | 500 | 91 x 95 | 89-400 | White Polypropylene | PTFE Foamed Faced Polyethylene | 12 |
| W216923** | Clear | 32 | 1000 | 95 x 170 | 89-400 | Without Cap | — | 12 |
| W216907 | Clear | 32 | 1000 | 95 x 170 | 89-400 | White Polypropylene | Poly-Vinyl | 12 |
| W216912 | Clear | 32 | 1000 | 95 x 170 | 89-400 | White Polypropylene | PTFE Foamed Faced Polyethylene | 12 |

*Approximate capacity **Autoclavable

## Replacement Caps for Straight Sided Jars

| Cat. No. | Cap Size | Qty / Pack | Qty / Case |
|---|---|---|---|
| White Polypropylene / PTFE Faced Foamed Polyethylene Liner | | | |
| 239241 | 53-400 | 72 | 72 |
| 239242 | 58-400 | 72 | 72 |
| 239244 | 70-400 | 24 | 48 |
| 239246 | 89-400 | 24 | 48 |

| Cat. No. | Cap Size | Qty / Pack | Qty / Case |
|---|---|---|---|
| White Polypropylene / Poly-Vinyl Liner | | | |
| 239217 | 53-400 | 72 | 72 |
| 239218 | 58-400 | 72 | 72 |
| 239220 | 70-400 | 24 | 48 |
| 239222 | 89-400 | 24 | 48 |

## Testing Jars

- Made from USP Type III clear soda-lime glass
- Wide mouth ideal for solids
- Pre-attached white polypropylene caps with choice of liner

| Cat. No. | Capacity (mL) | Dia x H (mm) | Cap Liner | Qty/Case |
|---|---|---|---|---|
| W216650 | 60 | 45 x 95 | Poly-Vinyl | 6 |
| W216651 | 60 | 45 x 95 | PTFE Faced Foamed PE | 6 |

## Replacement Caps for Testing Jars

| Cat. No. | Cap Size | Qty / Pack | Qty / Case |
|---|---|---|---|
| White Polypropylene / Poly-Vinyl Liner | | | |
| 239214 | 43-400 | 72 | 72 |
| White Polypropylene / PTFE Faced Foamed Polyethylene Liner | | | |
| 239238 | 43-400 | 72 | 72 |

## Valumetric™ Graduated Bottle, Clear

- Clear, USP Type III soda-lime glass
- Easy removal of contents
- Graduated in mL and ounces
- Ideal for general storage
- Available with caps attached or bulk packs without caps

| Cat.No. | Capacity (oz) | Capacity (mL)* | Dia. x H (mm) | Cap Size | Cap Material | Cap Liner | Qty / Case |
|---|---|---|---|---|---|---|---|
| W216989** | 1 | 30 | 34 x 68 | 33-400 | Without Cap | — | 432 |
| W216966 | 1 | 30 | 34 x 68 | 33-400 | White Polypropylene | Poly-Vinyl | 48 |
| W216971 | 1 | 30 | 34 x 68 | 33-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 48 |
| W216976 | 1 | 30 | 34 x 68 | 33-400 | Black Phenolic | PE Cone | 48 |
| W216978** | 1 | 30 | 34 x 68 | 33-400 | Black Phenolic | Rubber | 48 |
| W216982 | 1 | 30 | 34 x 68 | 33-400 | White Polypropylene | Poly-Vinyl | 432 |
| W216987 | 1 | 30 | 34 x 68 | 33-400 | Black Phenolic | PE Cone | 432 |
| W216990** | 2 | 60 | 43 x 84 | 38-400 | Without Cap | — | 288 |
| W216967 | 2 | 60 | 43 x 84 | 38-400 | White Polypropylene | Poly-Vinyl | 48 |
| W216972 | 2 | 60 | 43 x 84 | 38-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 48 |
| W216977 | 2 | 60 | 43 x 84 | 38-400 | Black Phenolic | PE Cone | 48 |
| W216979** | 2 | 60 | 43 x 84 | 38-400 | Black Phenolic | Rubber | 48 |
| W216983 | 2 | 60 | 43 x 84 | 38-400 | White Polypropylene | Poly-Vinyl | 288 |
| W216988 | 2 | 60 | 43 x 84 | 38-400 | Black Phenolic | PE Cone | 288 |
| W217970 | 2 | 60 | 43 x 84 | 38-400 | Black Phenolic | Foil | 48 |
| W216991** | 4 | 125 | 52 x 103 | 48-400 | Without Cap | — | 144 |
| W216968 | 4 | 125 | 52 x 103 | 48-400 | White Polypropylene | Poly-Vinyl | 24 |
| W216973 | 4 | 125 | 52 x 103 | 48-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 24 |
| W216980** | 4 | 125 | 52 x 103 | 48-400 | Black Phenolic | Rubber | 24 |
| W216984 | 4 | 125 | 52 x 103 | 48-400 | White Polypropylene | Poly-Vinyl | 144 |
| W217971 | 4 | 125 | 52 x 103 | 48-400 | Black Phenolic | Foil | 24 |
| W216992** | 8 | 250 | 64 x 129 | 58-400 | Without Cap | — | 96 |
| W216969 | 8 | 250 | 64 x 129 | 58-400 | White Polypropylene | Poly-Vinyl | 24 |
| W216974 | 8 | 250 | 64 x 129 | 58-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 24 |
| W216981** | 8 | 250 | 64 x 129 | 58-400 | Black Phenolic | Rubber | 24 |
| W216985 | 8 | 250 | 64 x 129 | 58-400 | White Polypropylene | Poly-Vinyl | 96 |
| W217972 | 8 | 250 | 64 x 129 | 58-400 | Black Phenolic | Foil | 24 |
| W216993** | 16 | 500 | 78 x 147 | 70-400 | Without Cap | — | 48 |
| W216970 | 16 | 500 | 78 x 147 | 70-400 | White Polypropylene | Poly-Vinyl | 24 |
| W216975 | 16 | 500 | 78 x 147 | 70-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 24 |
| W216986 | 16 | 500 | 78 x 147 | 70-400 | White Polypropylene | Poly-Vinyl | 48 |
| W217973** | 16 | 500 | 78 x 147 | 70-400 | Black Phenolic | Rubber | 24 |

*Approximate capacity **Autoclavable

## Replacement Caps for Valumetric™ Graduated Bottles

| Cat. No. | Cap Size | Qty/Pack | Qty/Case |
|---|---|---|---|
| **Black Phenolic / PE Cone Liner** | | | |
| 239260 | 33-400 | 72 | 144 |
| W240541 | 38-400 | 48 | 576 |
| **Black Phenolic / Rubber Liner** | | | |
| W239302 | 33-400 | 144 | 144 |
| W239303 | 38-400 | 72 | 72 |
| W239306 | 48-400 | 72 | 72 |
| W239308 | 58-400 | 72 | 72 |

| Cat. No. | Cap Size | Qty/Pack | Qty/Case |
|---|---|---|---|
| **White Polypropylene / PTFE Faced Foamed Polyethylene Liner** | | | |
| 239236 | 33-400 | 72 | 144 |
| 239237 | 38-400 | 72 | 72 |
| 239240 | 48-400 | 72 | 72 |
| 239242 | 58-400 | 72 | 72 |
| 239244 | 70-400 | 24 | 48 |
| **White Polypropylene / Poly-Vinyl Liner** | | | |
| 239213 | 38-400 | 72 | 72 |
| 239216 | 48-400 | 72 | 72 |
| 239218 | 58-400 | 72 | 72 |
| 239220 | 70-400 | 24 | 48 |

## Wide Mouth Packer, Amber

- Amber, USP Type III soda-lime glass
- Ideal for storage of light sensitive samples or dry powders
- Easy removal of contents

| Cat. No. | Capacity (oz) | Capacity (mL)* | Dia. x H (mm) | Cap Size | Cap Material | Cap Liner | Qty / Case |
|---|---|---|---|---|---|---|---|
| W216960** | 1 | 30 | 37 x 65 | 28-400 | Without Cap | — | 432 |
| W216939 | 1 | 30 | 37 x 65 | 28-400 | White Polypropylene | Poly-Vinyl | 24 |
| W216945 | 1 | 30 | 37 x 65 | 28-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 24 |
| W216951 | 1 | 30 | 37 x 65 | 28-400 | Black Phenolic | PE Cone | 24 |
| W216954 | 1 | 30 | 37 x 65 | 28-400 | White Polypropylene | Poly-Vinyl | 432 |
| W216961** | 2 | 60 | 44 x 75 | 33-400 | Without Cap | — | 216 |
| W216940 | 2 | 60 | 44 x 75 | 33-400 | White Polypropylene | Poly-Vinyl | 24 |
| W216946 | 2 | 60 | 44 x 75 | 33-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 24 |
| W216952 | 2 | 60 | 44 x 75 | 33-400 | Black Phenolic | PE Cone | 24 |
| W216955 | 2 | 60 | 44 x 75 | 33-400 | White Polypropylene | Poly-Vinyl | 216 |
| W216962** | 4 | 125 | 54 x 95 | 38-400 | Without Cap | — | 180 |
| W216941 | 4 | 125 | 54 x 95 | 38-400 | White Polypropylene | Poly-Vinyl | 24 |
| W216947 | 4 | 125 | 54 x 95 | 38-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 24 |
| W216953 | 4 | 125 | 54 x 95 | 38-400 | Black Phenolic | PE Cone | 24 |
| W216956 | 4 | 125 | 54 x 95 | 38-400 | White Polypropylene | Poly-Vinyl | 180 |
| W216963** | 8 | 250 | 66 x 119 | 45-400 | Without Cap | — | 84 |
| W216942 | 8 | 250 | 66 x 119 | 45-400 | White Polypropylene | Poly-Vinyl | 24 |
| W216948 | 8 | 250 | 66 x 119 | 45-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 24 |
| W216957 | 8 | 250 | 66 x 119 | 45-400 | White Polypropylene | Poly-Vinyl | 84 |
| W216964** | 16 | 500 | 80 x 146 | 53-400 | Without Cap | — | 60 |
| W216943 | 16 | 500 | 80 x 146 | 53-400 | White Polypropylene | Poly-Vinyl | 12 |
| W216949 | 16 | 500 | 80 x 146 | 53-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 12 |
| W216958 | 16 | 500 | 80 x 146 | 53-400 | White Polypropylene | Poly-Vinyl | 60 |
| W216965** | 32 | 1000 | 99 x 178 | 53-400 | Without Cap | — | 36 |
| W216944 | 32 | 1000 | 99 x 178 | 53-400 | White Polypropylene | Poly-Vinyl | 12 |
| W216950 | 32 | 1000 | 99 x 178 | 53-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 12 |
| W216959 | 32 | 1000 | 99 x 178 | 53-400 | White Polypropylene | Poly-Vinyl | 36 |
| W217931 | 42 | 1250 | 108 x 192 | 70-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 6 |
| W217932 | 85 | 2500 | 142 x 241 | 70-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 12 |

*Approximate capacity **Autoclavable

## Replacement Caps for Wide Mouth Packers

| Cat. No. | Cap Size | Qty / Pack | Qty / Case |
|---|---|---|---|
| **Black Phenolic / PE Cone Liner** | | | |
| 239259 | 28-400 | 72 | 144 |
| 239260 | 33-400 | 72 | 144 |
| W240541 | 38-400 | 48 | 576 |
| **White Polypropylene / PTFE Faced Foamed Polyethylene Liner** | | | |
| 239235 | 28-400 | 72 | 144 |
| 239236 | 33-400 | 72 | 144 |
| 239237 | 38-400 | 72 | 72 |
| 239239 | 45-400 | 72 | 72 |
| 239241 | 53-400 | 72 | 72 |
| 239244 | 70-400 | 24 | 48 |

| Cat. No. | Cap Size | Qty / Pack | Qty / Case |
|---|---|---|---|
| **White Polypropylene / Poly-Vinyl Liner** | | | |
| 239211 | 28-400 | 72 | 144 |
| 239213 | 38-400 | 72 | 72 |
| 239217 | 53-400 | 72 | 72 |

## Media Lab Bottle, Graduated

- Clear borosilicate glass bottle with graduations and marking patch
- Amber borosilicate glass bottle in 125mL size only
- Pre-attached black phenolic screw caps with choice of three liners
- Hand grips on 1 Liter bottle provide easy handling

| Cat No. | Color | Capacity (mL) | Cap On* | Cap Off* | Cap Size | Cap Material/Cap Liner | Qty/Case |
|---|---|---|---|---|---|---|---|
| 219435 | Clear | 125 | 55 X 123 | 55 X 119 | 33-430 | Without Cap | 48 |
| 219845 | Amber | 125 | 55 X 123 | 55 X 119 | 33-430 | Without Cap | 48 |
| 219715 | Clear | 125 | 55 X 123 | 55 X 119 | 33-430 | Polyethylene (LDPE) Lined Phenolic Cap | 48 |
| 219855 | Amber | 125 | 55 X 123 | 55 X 119 | 33-430 | Polyethylene (LDPE) Lined Phenolic Cap | 48 |
| 219755** | Clear | 125 | 55 X 123 | 55 X 119 | 33-430 | Rubber Lined Phenolic Cap | 48 |
| 219865** | Amber | 125 | 55 X 123 | 55 X 119 | 33-430 | Rubber Lined Phenolic Cap | 48 |
| 219815** | Clear | 125 | 55 X 123 | 55 X 119 | 33-430 | PTFE Rubber Lined Phenolic Cap | 48 |
| 219875** | Amber | 125 | 55 X 123 | 55 x 119 | 33-430 | PTFE Rubber Lined Phenolic Cap | 48 |
| 219437** | Clear | 250 | 67 X 152 | 67 X 148 | 33-430 | Without Cap | 48 |
| 219717 | Clear | 250 | 67 X 152 | 67 X 148 | 33-430 | Polyethylene (LDPE) Lined Phenolic Cap | 48 |
| 219757** | Clear | 250 | 67 X 152 | 67 X 148 | 33-430 | Rubber Lined Phenolic Cap | 48 |
| 219817** | Clear | 250 | 67 X 152 | 67 X 148 | 33-430 | PTFE Rubber Lined Phenolic Cap | 48 |
| 219439** | Clear | 500 | 88 X 192 | 88 x 188 | 33-430 | Without Cap | 24 |
| 219719 | Clear | 500 | 88 X 192 | 88 x 188 | 33-430 | Polyethylene (LDPE) Lined Phenolic Cap | 24 |
| 219759** | Clear | 500 | 88 X 192 | 88 x 188 | 33-430 | Rubber Lined Phenolic Cap | 24 |
| 219819** | Clear | 500 | 88 X 192 | 88 x 188 | 33-430 | PTFE Rubber Lined Phenolic Cap | 24 |
| W219440** | Clear | 1000 | 103 X 235 | 103 X 231 | 38-430 | Without Cap | 12 |
| 219720 | Clear | 1000 | 103 X 235 | 103 X 231 | 38-430 | Polyethylene (LDPE) Lined Phenolic Cap | 24 |
| 219760** | Clear | 1000 | 103 X 235 | 103 X 231 | 38-430 | Rubber Lined Phenolic Cap | 24 |
| 219820** | Clear | 1000 | 103 X 235 | 103 X 231 | 38-430 | PTFE Rubber Lined Phenolic Cap | 24 |

* Dia x H (mm) **Autoclavable

## Media Lab Bottle, Non-Graduated

- Clear borosilicate glass bottle without graduations
- Amber borosilicate glass bottle in 125mL size only
- Pre-attached black phenolic screw caps with choice of liner
- Hand grips on 1 Liter bottle provide easy handling

| Cat No. | Color | Capacity (mL) | Cap On* | Cap Off* | Cap Size | Cap Material/Cap Liner | Qty/Case |
|---|---|---|---|---|---|---|---|
| 219415** | Clear | 125 | 55 X 123 | 55 X 119 | 33-430 | Without Cap | 48 |
| 219885** | Amber | 125 | 55 X 123 | 55 X 119 | 33-430 | Without Cap | 48 |
| 219495 | Clear | 125 | 55 X 123 | 55 X 119 | 33-430 | Polyethylene (LDPE) Lined Phenolic Cap | 48 |
| 219575** | Clear | 125 | 55 X 123 | 55 X 119 | 33-430 | Rubber Lined Phenolic Cap | 48 |
| 219417** | Clear | 250 | 67 X 152 | 67 X 148 | 33-430 | Without Cap | 48 |
| 219497 | Clear | 250 | 67 X 152 | 67 X 148 | 33-430 | Polyethylene (LDPE) Lined Phenolic Cap | 48 |
| 219577** | Clear | 250 | 67 X 152 | 67 X 148 | 33-430 | Rubber Lined Phenolic Cap | 48 |
| 219419** | Clear | 500 | 88 X 192 | 88 x 188 | 33-430 | Without Cap | 24 |
| 219499 | Clear | 500 | 88 X 192 | 88 x 188 | 33-430 | Polyethylene (LDPE) Lined Phenolic Cap | 24 |
| 219579** | Clear | 500 | 88 X 192 | 88 x 188 | 33-430 | Rubber Lined Phenolic Cap | 24 |
| W219420** | Clear | 1000 | 103 X 235 | 103 X 231 | 38-430 | Without Cap | 12 |
| W219500 | Clear | 1000 | 103 X 235 | 103 X 231 | 38-430 | Polyethylene (LDPE) Lined Phenolic Cap | 12 |
| W219580** | Clear | 1000 | 103 X 235 | 103 X 231 | 38-430 | Rubber Lined Phenolic Cap | 12 |

* Dia x H (mm) **Autoclavable

## Replacement Black Phenolic Screw Caps for Media Bottles

| Cat. No. | Cap Size | Qty / Case |
|---|---|---|
| With Polyethylene (LDPE) Liner | | |
| 240080 | 33-430 | 200 |
| 240081 | 38-430 | 200 |
| With Rubber Liner (Autoclavable) | | |
| 240280 | 33-430 | 200 |
| 240281 | 38-430 | 200 |

| Cat. No. | Cap Size | Qty / Case |
|---|---|---|
| With PTFE Faced Rubber Liner (Autoclavable) | | |
| 240480 | 33-430 | 100 |
| 240481 | 38-430 | 100 |
| Open Top Cap With Gray Chlorobutyl / 50 Septa and Flange (Autoclavable) | | |
| 240680 | 33-430 | 100 |
| 240683 | 33-430 | 1000 |

## Media Bottle, Lab 45™ Graduated Bottles

- Borosilicate glass helps prevent pH changes
- 45mm screw thread, wide mouth finish
- Graduated with writing patch
- Special pour lip facilitates easy pouring
- Bottles, caps and pour rings are autoclavable
- Manufactured from USP Type I borosilicate glass
- Cap has a built-in wedge shaped sealing ring, eliminating the need for a liner

| Cat. No. | Capacity (mL) | Description | Dia. x H (mm) | Cap Size (mm) | Cap Color | Qty / Case |
|---|---|---|---|---|---|---|
| 219917 | 250 | Bottle Only | 70 x 138 | 45 | — | 12 |
| 219927 | 250 | Attached Pour Ring and Cap | 70 x 144 | 45 | White | 12 |
| 219919 | 500 | Bottle Only | 86 x 180 | 45 | — | 12 |
| 219929 | 500 | Attached Pour Ring and Cap | 86 x 186 | 45 | White | 12 |
| 219920 | 1000 | Bottle Only | 101 X 227 | 45 | — | 12 |
| 219930 | 1000 | Attached Pour Ring and Cap | 101 x 233 | 45 | White | 12 |
| 219921 | 2000 | Bottle Only | 137 X 261 | 45 | — | 6 |
| 219931 | 2000 | Attached Pour Ring and Cap | 137 x 267 | 45 | White | 6 |

## Accessories, Lab 45™ Media Bottles

- 45mm screw caps with or without sealing ring
- For high temperature applications, use the PBT (polybutylene terephthalate) screw caps and the ETFE (ethylene tetrafluoroethylene) pour lips which can withstand temperatures up to 200°C up to 2 hours
- Autoclavable

| Cat. No. | Description | Size (mm) | Qty/Case |
|---|---|---|---|
| W240726-05 | Pink Polypropylene Cap with Sealing | 45 | 12 |
| 240726 | White Polypropylene Cap with Sealing Ring | 45 | 12 |
| 240726-03 | Red Polypropylene Cap with Sealing Ring | 45 | 12 |
| 240726-04 | Blue Polypropylene Cap with Sealing Ring | 45 | 12 |
| 240736 | White Polypropylene Cap without Sealing Ring | 45 | 12 |
| 240740 | White Polypropylene Cap with PTFE Faced Silicone Liner | 45 | 12 |
| 240746 | White Polypropylene Cap with Open Top | 45 | 12 |
| 240750 | Red PBT Cap with PTFE Faced Silicone Liner | 45 | 10 |
| 240756 | Natural Polypropylene Pour Rings | 45 | 12 |
| 240760 | Red ETFE Pour Rings | 45 | 10 |

## Tablet Square Bottles

- Made from USP Type III soda-lime glass
- Wide mouth ideal for solids
- Pre-attached white polypropylene caps with PE Cone liner

| Cat. No. | Capacity (oz) | Capacity (mL) | Dia. x H (mm) | Cap Size (mm) | Cap Liner | Qty / Case |
|---|---|---|---|---|---|---|
| W218800 | 1 | 30 | 33 x 63 | 33-400 | PE Cone | 288 |
| W218801 | 2 | 60 | 41 x 87 | 33-400 | PE Cone | 144 |

## Reagent Bottle, Narrow Mouth

- Borosilicate glass bottle and stopper
- Features no-drip pour lip
- Octagon-shaped round glass stopper fits securely to prevent contamination
- Narrow mouth ideal for liquids
- Use amber bottles to protect light-sensitive samples during storage
- Autoclavable

| Cat. No. | Color | Capacity (mL) | Dia. x H (mm) | Stopper Size | Qty / Case |
|---|---|---|---|---|---|
| W215235 | Clear | 100 | 53 x 115 | 14/23 | 6 |
| W215255 | Amber | 100 | 53 x 115 | 14/23 | 6 |
| 215237 | Clear | 250 | 72 x 145 | 19/26 | 10 |
| 215257 | Amber | 250 | 72 x 145 | 19/26 | 10 |
| 215239 | Clear | 500 | 88 x 175 | 24/29 | 10 |
| 215259 | Amber | 500 | 88 x 175 | 24/29 | 10 |
| 215240 | Clear | 1000 | 110 x 215 | 29/32 | 10 |
| 215241 | Clear | 2000 | 135 x 265 | 29/35 | 6 |
| 215243 | Clear | 5000 | 175 x 320 | 45/40 | 1 |

## Reagent Bottle, Wide Mouth

- Borosilicate glass bottle and stopper
- Features no-drip pour lip
- Ground glass stopper fits securely to prevent contamination
- Wide mouth ideal for solids and viscous liquids
- Easy to clean
- Autoclavable

| Cat. No. | Capacity (mL) | Dia. x H (mm) | Stopper Size | Qty / Case |
|---|---|---|---|---|
| W216015 | 100 | 54 x 110 | 29/22 | 6 |
| 216017 | 250 | 72 x 140 | 34/35 | 10 |
| 216019 | 500 | 89 x 175 | 45/40 | 10 |
| 216020 | 1000 | 109 x 215 | 60/46 | 10 |
| 216021 | 2000 | 135 x 260 | 60/46 | 6 |

## Reagent Bottle, Screw Cap

- Manufactured from USP Type I borosilicate glass
- Features no-drip pour lip
- Pre-attached polypropylene screw cap with PTFE liner
- Large writing patch
- Autoclavable

| Cat. No. | Size (mL) | Dia. x H (mm) | Cap Size | Qty / Case |
|---|---|---|---|---|
| 220163 | 125 | 55 x 120 | 33-430 | 6 |
| 220223 | 250 | 67 x 150 | 33-430 | 6 |
| 220283 | 500 | 88 x 190 | 33-430 | 6 |

## Large Bottles with Jug Handle

- Clear or Amber, USP Type III soda-lime glass
- Bottles have jug handle

| Cat. No. | Color | Capacity (oz) | Capacity (mL)* | Dia x H (mm) | Cap Size | Cap Material | Cap Liner | Qty/Case |
|---|---|---|---|---|---|---|---|---|
| W220994 | Clear | 64 | 2000 | 126 x 270 | 38-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 6 |
| W220991 | Clear | 64 | 2000 | 126 x 270 | 38-400 | Black Phenolic | PE Cone Cone | 6 |
| W220910 | Amber | 80 | 2365 | 141 x 315 | 38-430 | Black Phenolic | PTFE Faced Foamed Polyethylene | 6 |
| W220990 | Clear | 128 | 3840 | 169 x 295 | 38-400 | White Polypropylene | Poly-Vinyl | 4 |
| W220992 | Clear | 128 | 3840 | 169 x 295 | 38-400 | Black Phenolic | PE Cone Cone | 4 |
| W220993** | Clear | 128 | 3840 | 169 x 295 | 38-400 | Black Phenolic | Rubber | 4 |
| W220995 | Clear | 128 | 3840 | 169 x 295 | 38-400 | White Polypropylene | PTFE Faced Foamed Polyethylene | 4 |
| W220980 | Amber | 128 | 3840 | 161 x 346 | 38-430 | Black Phenolic | PTFE Faced Foamed Polyethylene | 6 |
| W220981 | Amber | 128 | 3840 | 161 x 346 | 38-430 | Black Phenolic | PE Cone Cone | 6 |
| W220982** | Amber | 128 | 3840 | 161 x 346 | 38-430 | Black Phenolic | Rubber | 6 |
| W220983 | Amber | 128 | 3840 | 161 x 346 | 38-430 | Black Phenolic | Poly-Vinyl | 6 |

*Approximate capacity**Autoclavable

## Safety Coated Bottle

- Plastisol coating for safety
- Made from clear or amber soda-lime glass that conforms to USP Type III requirements
- Available with or without caps
- 4, 8, 16 and 32oz Boston Round style
- 80oz and 4L with jug handle

| Cat No. | Color | Approx Size (oz) | Cap On*** | Cap Off*** | Cap Size | Cap Material/Cap Liner | Qty/Case |
|---|---|---|---|---|---|---|---|
| W217950 | Amber | 4 | 52 x 117 | 52 x 114 | 22-400 | Poly-Vinyl Lined White Polypropylene Cap | 24 |
| W217953 | Amber | 4 | 52 x 117 | 52 x 114 | 22-400 | PE Cone LDPE Black Phenolic Cap | 24 |
| W217956 | Amber | 4 | 52 x 117 | 52 x 114 | 22-400 | PTFE Faced Foamed PE White Polypropylene Cap | 24 |
| 220724** | Clear | 8 | 64 x 142 | 64 x 139 | 24-400 | Without Cap | 48 |
| 220924** | Amber | 8 | 64 x 142 | 64 x 139 | 24-400 | Without Cap | 48 |
| W217852 | Clear | 8 | 64 x 142 | 64 x 139 | 24-400 | Poly-Vinyl Lined White Polypropylene Cap | 12 |
| W217854 | Clear | 8 | 64 x 142 | 64 x 139 | 24-400 | PTFE Faced Foamed PE White Polypropylene Cap | 12 |
| W217954 | Amber | 8 | 64 x 142 | 64 x 139 | 24-400 | PE Cone LDPE Black Phenolic Cap | 12 |
| W217957 | Amber | 8 | 64 x 142 | 64 x 139 | 24-400 | PTFE Faced Foamed PE White Polypropylene Cap | 12 |
| 220725** | Clear | 16 | 78 x 174 | 78 x 171 | 28-400 | Without Cap | 24 |
| 220925** | Amber | 16 | 78 x 174 | 78 x 171 | 28-400 | Without Cap | 24 |
| W217851 | Clear | 16 | 78 x 174 | 78 x 171 | 28-400 | PE Cone LDPE Black Phenolic Cap | 12 |
| W217951 | Amber | 16 | 78 x 174 | 78 x 171 | 28-400 | Poly-Vinyl Lined White Polypropylene Cap | 12 |
| W217958 | Amber | 16 | 78 x 174 | 78 x 171 | 28-400 | PTFE Faced Foamed PE White Polypropylene Cap | 12 |
| 220755 | Clear | 16 | 78 x 174 | 78 x 171 | 28-400 | PE Cone LDPE Black Phenolic Cap | 24 |
| 220955 | Amber | 16 | 78 x 174 | 78 x 171 | 28-400 | PE Cone LDPE Black Phenolic Cap | 24 |
| W217855 | Clear | 16 | 78 x 174 | 78 x 171 | 28-400 | PTFE Faced Foamed PE White Polypropylene Cap | 12 |
| W217955 | Amber | 16 | 78 x 174 | 78 x 171 | 28-400 | PE Cone LDPE Black Phenolic Cap | 12 |
| 220745 | Clear | 16 | 78 x 174 | 78 x 171 | 28-400 | Polyethylene LDPE lined Black Phenolic Cap | 24 |
| 220945 | Amber | 16 | 78 x 174 | 78 x 171 | 28-400 | Polyethylene LDPE lined Black Phenolic Cap | 24 |
| 220775** | Clear | 16 | 78 x 174 | 78 x 171 | 28-400 | PTFE Rubber Lined Black Phenolic Cap | 24 |
| 220975** | Amber | 16 | 78 x 174 | 78 x 171 | 28-400 | PTFE Rubber Lined Black Phenolic Cap | 24 |
| 220735 | Clear | 16 | 78 x 174 | 78 x 171 | 28-400 | Aluminum Foil Lined Black Phenolic Cap | 24 |
| 220935 | Amber | 16 | 78 x 174 | 78 x 171 | 28-400 | Aluminum Foil Lined Black Phenolic Cap | 24 |
| 220726** | Clear | 32 | 98 x 212 | 98 x 209 | 33-400 | Without Cap | 12 |
| W217850** | Clear | 32 | 98 x 212 | 98 x 209 | 33-400 | Without Cap | 30 |
| 220926** | Amber | 32 | 98 x 212 | 98 x 209 | 33-400 | Without Cap | 12 |
| W217853 | Clear | 32 | 98 x 212 | 98 x 209 | 33-400 | Poly-Vinyl Lined White Polypropylene Cap | 12 |
| W217952 | Amber | 32 | 98 x 212 | 98 x 209 | 33-400 | Poly-Vinyl Lined White Polypropylene Cap | 12 |
| W217959 | Amber | 32 | 98 x 212 | 98 x 209 | 33-400 | PTFE Faced Foamed PE White Polypropylene Cap | 12 |
| 220756 | Clear | 32 | 98 x 212 | 98 x 209 | 33-400 | PE Cone LDPE Black Phenolic Cap | 12 |
| 220956 | Amber | 32 | 98 x 212 | 98 x 209 | 33-400 | PE Cone LDPE Black Phenolic Cap | 12 |
| 220746 | Clear | 32 | 98 x 212 | 98 x 209 | 33-400 | Polyethylene LDPE lined Black Phenolic Cap | 12 |
| 220946 | Amber | 32 | 98 x 212 | 98 x 209 | 33-400 | Polyethylene LDPE lined Black Phenolic Cap | 12 |
| 220776** | Clear | 32 | 98 x 212 | 98 x 209 | 33-400 | PTFE Rubber Lined Black Phenolic Cap | 12 |
| 220976** | Amber | 32 | 98 x 212 | 98 x 209 | 33-400 | PTFE Rubber Lined Black Phenolic Cap | 12 |
| W217856 | Clear | 32 | 98 x 212 | 98 x 209 | 33-400 | PTFE Faced Foamed PE White Polypropylene Cap | 12 |
| 220736 | Clear | 32 | 98 x 212 | 98 x 209 | 33-400 | Aluminum Foil Lined Black Phenolic Cap | 12 |
| 220936 | Amber | 32 | 98 x 212 | 98 x 209 | 33-400 | Aluminum Foil Lined Black Phenolic Cap | 12 |
| 220728** | Clear | 80* | 135 x 295 | 135 x 291 | 38-439 | Without Cap | 6 |
| 220738 | Clear | 80* | 135 x 295 | 135 x 291 | 38-439 | Aluminum Foil Lined Black Phenolic Cap | 6 |
| W220930** | Amber | 4L* | 158 x 343 | 158 x 340 | 38-439 | Without Cap | 4 |
| W220950 | Amber | 4L* | 158 x 343 | 158 x 340 | 38-439 | Polyethylene LDPE lined Black Phenolic Cap | 4 |
| W220985** | Amber | 4L* | 158 x 343 | 158 x 340 | 38-439 | PTFE Rubber Lined Black Phenolic Cap | 4 |
| W220940 | Amber | 4L* | 158 x 343 | 158 x 340 | 38-439 | Aluminum Foil Lined Black Phenolic Cap | 4 |

*Manufactured with jug handle **Autoclavable ***Dia x H (mm)

## Safety Coated Jar

- Plastisol coating for safety
- Made from clear or amber soda-lime glass that conforms to USP Type III requirements
- Wide mouth for use with solid samples
- Available with or without caps

| Cat No. | Color | Approx Size (oz) | Cap On* | Cap Off* | Cap Size | Cap Material/Cap Liner | Qty/Case |
|---|---|---|---|---|---|---|---|
| 216637** | Clear | 8 | 77 x 94 | 77 x 91 | 70-400 | Without Cap | 12 |
| 216627 | Clear | 8 | 77 x 94 | 77 x 91 | 70-400 | With Poly-Vinyl Lined Black Phenolic Cap | 12 |
| W217925 | Clear | 8 | 77 x 94 | 77 x 91 | 70-400 | PTFE Faced Foamed PE White Polypropylene Cap | 12 |
| W217960 | Amber | 8 | 69 x 125 | 69 x 122 | 45-400 | PTFE Faced Foamed PE White Polypropylene Cap | 24 |
| W217963 | Amber | 8 | 69 x 125 | 69 x 122 | 45-400 | Poly-Vinyl Lined White Polypropylene Cap | 24 |
| 216639** | Clear | 16 | 80 x 151 | 80 x 148 | 70-400 | Without Cap | 12 |
| 216629 | Clear | 16 | 80 x 151 | 80 x 148 | 70-400 | With Poly-Vinyl Lined Black Phenolic Cap | 12 |
| W217926 | Clear | 16 | 80 x 151 | 80 x 148 | 70-400 | PTFE Faced Foamed PE White Polypropylene Cap | 12 |
| W217928 | Clear | 16 | 80 x 151 | 80 x 148 | 70-400 | Poly-Vinyl Lined White Polypropylene Cap | 12 |
| W217961 | Amber | 16 | 85 x 152 | 85 x 149 | 53-400 | PTFE Faced Foamed PE White Polypropylene Cap | 12 |
| W217964 | Amber | 16 | 85 x 152 | 85 x 149 | 53-400 | Poly-Vinyl Lined White Polypropylene Cap | 12 |
| W216641** | Clear | 32 | 100 x 175 | 100 x 172 | 89-400 | Without Cap | 12 |
| W216631 | Clear | 32 | 100 x 175 | 100 x 172 | 89-400 | With Poly-Vinyl Lined Black Phenolic Cap | 12 |
| W217921 | Clear | 32 | 100 x 175 | 100 x 172 | 89-400 | Poly-Vinyl Lined White Polypropylene Cap | 12 |
| W217927 | Clear | 32 | 100 x 175 | 100 x 172 | 89-400 | PTFE Faced Foamed PE White Polypropylene Cap | 12 |
| W217962 | Amber | 32 | 103 x 183 | 103 x 180 | 53-400 | PTFE Faced Foamed PE White Polypropylene Cap | 12 |
| W217965 | Amber | 32 | 103 x 183 | 103 x 180 | 53-400 | Poly-Vinyl Lined White Polypropylene Cap | 12 |

* Dia x H (mm) **Autoclavable

## Safety Coated Lab 45™ Media / Reagent Bottle

- Plastisol coating for safety
- Made from clear borosilicate glass
- 45mm white polypropylene screw cap attached
- Pour ring eliminates drips
- Autoclavable
- Color coded caps available separately

| Cat. No. | Size (mL) | Approx Dia x H (mm) | Cap Size (mm) | Qty/Case |
|---|---|---|---|---|
| W219937 | 250 | 70 x 144 | 45 | 12 |
| 219939 | 500 | 86 x 186 | 45 | 12 |
| 219940 | 1000 | 101 x 233 | 45 | 12 |

## Screw Caps

| Cat. No. | Description | Size (mm) | Qty/Case |
|---|---|---|---|
| 240726 | White PP, w/ Wedge-Shaped Inner Sealing Ring | 45 | 12 |
| 240726-03 | Red PP, w/ Wedge-Shaped Inner Sealing Ring | 45 | 12 |
| 240726-04 | Blue PP, w/ Wedge-Shaped Inner Sealing Ring | 45 | 12 |
| W240726-05 | Pink PP, w/ Wedge-Shaped Inner Sealing Ring | 45 | 12 |

## Safety Coated Media / Lab Bottle

- Plastisol coating for safety
- USP Type I clear borosilicate glass
- Provided with graduations and writing patch
- 33-430 screw cap can be purchased separately
- Autoclavable

| Cat. No. | Size (mL) | Approx Dia x H (mm) | Cap Size | Qty/Case |
|---|---|---|---|---|
| 219455 | 125 | 55 x 119 | 33-430 | 48 |
| 219457 | 250 | 67 x 148 | 33-430 | 48 |

## Screw Caps, Black Phenolic

| Cat. No. | Cap Size | Liner | Qty/Case |
|---|---|---|---|
| 240280 | 33-430 | 14B White Rubber Liner | 200 |
| 240080 | 33-430 | Polyethylene (LDPE) Liner* | 200 |
| 240480 | 33-430 | PTFE Faced (14B) Styrene-Butadiene | 100 |

* Not autoclavable

## Safety Coated Reagent Bottle

- Plastisol coating for safety
- Clear borosilicate glass with writing patch
- 33-430 screw cap attached
- Polypropylene cap with PTFE liner
- 125 and 250mL size
- Autoclavable

| Cat. No. | Size (mL) | Approx Dia x H (mm) | Cap Size | Qty/Case |
|---|---|---|---|---|
| 221014 | 125 | 58 x 122 | 33-430 | 6 |
| 221017 | 250 | 69 x 151 | 33-430 | 6 |

## Safety Coated Solution Bottle

- Plastisol coating for safety
- Made from low extractable borosilicate glass
- Serum finish takes rubber stopper closure

| Cat. No. | Size | Approx Dia x H (mm) | Stopper Size | Qty/Case |
|---|---|---|---|---|
| 221029 | 5 gallon | 294 x 502 | 12 | 1 |

## Safety Coated Reservoir, High Capacity

- Ideal as HPLC mobile phase or filtration reservoir
- Safety coated glass bottles provide an added measure of safety
- UV protectant coating
- Manufactured from WHEATON 33 low extractable borosilicate glass that conforms to USP Type I and ASTM E 438 Type I, Class A requirements
- Supplied white polypropylene screw cap has a built-in wedge-shaped sealing ring, eliminating the need for a liner
- Autoclavable

| Cat. No. | Size (mL) | Cap Size (mm) | Dia x H (mm) | Qty/Case |
|---|---|---|---|---|
| 264710 | 2000 | 45 | 138 x 246 | 1 |
| 264711 | 5000 | 45 | 186 x 318 | 1 |

## Screw Neck Diagnostic Bottle

- Alternative to serum bottles and vials
- Can be used for lyophilization
- Fits with I-Loc™ closure or screw cap with thin flange stopper
- Superior chemical resistance
- Manufactured from WHEATON 400 borosilicate glass that conforms to USP Type I requirements
- Autoclavable

| Cat No. | Color | Capacity (mL) | Dia. x H (mm) | Cap Size | Qty / Case |
|---|---|---|---|---|---|
| 219371 | Amber | 10 | 25 x 61 | 20-400 | 480 |

## I-Loc™ Closure

- For use with Screw Neck Diagnostic Bottles
- Advantages of an aluminum seal with the convenience of a screw cap
- Polypropylene screw cap with gray bromobutyl / 50 stopper
- Autoclavable

| Cat. No. | Color | Cap Size | Qty / Case |
|---|---|---|---|
| 240676-01 | Black | 20-400 | 100 |
| 240676-02 | White | 20-400 | 100 |
| 240676-03 | Red | 20-400 | 100 |
| 240676-04 | Blue | 20-400 | 100 |
| 240676-05 | Yellow | 20-400 | 100 |

## Screw Caps for Screw Neck Diagnostic Bottles

- Polypropylene screw caps in 5 colors
- Use with 224100-203 or W224100-190 thin flange stopper
- Autoclavable

| Cat. No. | Cap Size | Cap Style | Color | Autoclavable | Qty / Case |
|---|---|---|---|---|---|
| 240706-01 | 20-400 | Solid Top | Black | Yes | 300 |
| 240706-02 | 20-400 | Solid Top | White | Yes | 300 |
| 240706-04 | 20-400 | Solid Top | Blue | Yes | 300 |
| 240706-05 | 20-400 | Solid Top | Yellow | Yes | 300 |
| 240716-01 | 20-400 | Open-Top | Black | Yes | 300 |
| 240716-02 | 20-400 | Open-Top | White | Yes | 300 |
| 240716-03 | 20-400 | Open-Top | Red | Yes | 300 |
| 240716-04 | 20-400 | Open-Top | Blue | Yes | 300 |
| 240716-05 | 20-400 | Open-Top | Yellow | Yes | 300 |

## Stopper, Thin Flange

- Use with screw caps for Screw Neck Diagnostic Bottles
- Autoclavable

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 224100-203 | 20mm 3-Leg Lyophilization Gray Chlorobutyl / 55 | 300 |
| W224100-190 | 20mm Thin Flange Snap-On Gray Chlorobutyl / 49 | 300 |

## Serum Bottle, PVC Dropper Tip

- Create a dropper bottle using a serum bottle with 20mm OD finish
- Dropper tip is made from PVC with PE cap
- Dispenses 40µL drop using distilled water
- Economical way to convert a glass serum bottle to a dropping bottle

| Cat. No. | Description | Dia. x H (mm) | Qty / Case |
|---|---|---|---|
| 224080 | PVC Dropper Tip | 23 x 44 | 100 |

## Serum Bottle

- Ideal for long and short term sample storage, lyophilization and vaccine / injectable drug containers
- Fits most lyophilization applications
- Borosilicate glass conforms to USP Type I requirements
- Clear bottles manufactured from WHEATON 400 borosilicate molded glass that conforms to USP Type I requirements
- Amber bottles manufactured from WHEATON 500 borosilicate glass that conforms to USP Type I requirements
- Shrink-wrapped partitioned modules reduce breakage

| Cat. No. | Color | Size (mL) | Mouth ID x OD (mm)* | Dia. x H (mm) | Fits Rack | Qty / Case |
|---|---|---|---|---|---|---|
| W223712 | Clear | 2 | 7 x 13 | 15.6 x 36 | 868810 | 288 |
| 223738 | Clear | 5 | 13 x 20 | 23 x 47 | 868805 | 288 |
| 223760 | Amber | 5 | 13 x 20 | 23 x 47 | 868805 | 288 |
| 223739 | Clear | 10 | 13 x 20 | 25 x 54 | 868806 | 288 |
| 223761 | Amber | 10 | 13 x 20 | 25 x 54 | 868806 | 288 |
| 223742 | Clear | 20 | 13 x 20 | 32 x 58 | — | 288 |
| 223762 | Amber | 20 | 13 x 20 | 32 x 58 | — | 288 |
| 223743 | Clear | 30 | 13 x 20 | 37 x 63 | — | 288 |
| 223763 | Amber | 30 | 13 x 20 | 37 x 63 | — | 288 |
| 223745 | Clear | 50 | 13 x 20 | 43 x 73 | — | 288 |
| 223764 | Amber | 50 | 13 x 20 | 43 x 73 | — | 288 |
| 223746 | Clear | 60 | 13 x 20 | 41 x 91 | — | 144 |
| 223747 | Clear | 100 | 13 x 20 | 52 x 95 | — | 144 |
| 223766 | Amber | 100 | 13 x 20 | 52 x 95 | — | 144 |
| 223748 | Clear | 125 | 13 x 20 | 54 x 107 | — | 144 |

*Note: Select aluminum seal and stopper size by using the mouth OD dimension of the bottle or vial

## Serum Tubing Vial

- Clear vials are manufactured from low extractable borosilicate glass that conforms to USP Type I and ASTM E 438 Type I, Class A requirements
- The amber vials are manufactured from low extractable borosilicate glass that conforms to USP Type I requirements
- Special design adds strength for freeze-drying applications
- Shrink-wrapped modules reduce particulate contamination

| Cat. No. | Color | Size (mL) | Mouth ID x OD (mm) | Dia. x H (mm) | Fits Rack | Qty / Case |
|---|---|---|---|---|---|---|
| 223683 | Clear | 2 | 7 x 13 | 15 x 32 | 868804 | 144 |
| 223693 | Amber | 2 | 7 x 13 | 15 x 32 | 868804 | 144 |
| 223684 | Clear | 3 | 7 x 13 | 17 x 38 | 868810 | 144 |
| 223685 | Clear | 5 | 13 x 20 | 22 x 40 | 868805 | 144 |
| 223695 | Amber | 5 | 13 x 20 | 22 x 40 | 868805 | 144 |
| 223686 | Clear | 10 | 13 x 20 | 24 x 50 | — | 144 |
| 223696 | Amber | 10 | 13 x 20 | 24 x 50 | — | 144 |
| 223687 | Clear | 20 | 13 x 20 | 30.5 x 58 | — | 120 |

## Serum Bottle, Graduated

- Raised graduations indicate approximate capacities in milliliters
- Accepts standard stoppers and seals
- Manufactured from WHEATON 400 borosilicate glass that conforms to USP Type I requirements

| Cat. No. | Size (mL) | Mouth ID x OD (mm) | Dia. x H (mm) | Qty / Case |
|---|---|---|---|---|
| 223950 | 250 | 15 x 30 | 60 x 158 | 35 |
| 223952 | 500 | 15 x 30 | 75 x 190 | 24 |

## Snap Cap Sample Bottle

- Pre-attached low density polyethylene snap caps
- Ideal for collecting, storing, and exhibiting samples in the lab or field
- Packaged in corrugated trays with partitions
- Manufactured from WHEATON 800 soda-lime clear glass that conforms to USP Type III requirements

| Cat. No. | Size (mL) | Dia. x H (mm) | Cap Size (mm) | Qty / Case |
|---|---|---|---|---|
| 225532 | 4 | 23 x 27 | 22 | 144 |
| 225534 | 8 | 22 x 39 | 22 | 144 |
| 225535 | 12 | 22 x 51 | 22 | 144 |
| 225536 | 16 | 30 x 40 | 30 | 144 |
| 225538 | 24 | 30 x 52 | 30 | 144 |
| 225543 | 30 | 37 x 50 | 34 | 72 |
| 225544 | 60 | 45 x 60 | 45 | 72 |
| 225546 | 120 | 50 x 95 | 45 | 72 |

## Replacement Snap Caps

| Cat. No. | Cap Size (mm) | Qty / Case |
|---|---|---|
| 242612 | 22 | 200 |
| 242615 | 30 | 200 |
| 242616 | 34 | 200 |
| 242619 | 45 | 200 |

## Tamper Evident Safety Cap

- For use with Uni-Dose® Bottles and Vials
- Caps have Pulp / PVDC / PE Liner

| Cat. No. | Description | For Mouth OD (mm) | Qty / Case |
|---|---|---|---|
| W224198 | Cap for Uni-Dose® Bottle and Vial | 28.5 | 2500 |
| W224199 | Cap with "For Oral Use" Imprint | 28.5 | 5000 |
| 224316 | Crimper | 28.5 | 1 |

## Uni-Dose® Bottle & Vial

- Available in amber glass or amber PET (Polyethylene Terephthalate)
- Mouth OD 28.5mm
- Use with WHEATON tamper evident safety cap
- Large labeling surface for easy product identification
- Manufactured from WHEATON 900 soda-lime amber glass that conforms to USP Type III requirements
- Alternative to glass and cost less to ship
- Use the 224316 Crimper to secure the tamper-evident safety caps (Cat. No. W224198 or W224199) to the bottle or vial

| Cat. No. | Size (mL) | Dia. x H (mm) | Trays/Case | Qty / Case |
|---|---|---|---|---|
| Amber Glass Bottle | | | | |
| 226732 | 15 | 32 x 42 | 5 | 500 |
| 226733 | 30 | 36 x 58 | 5 | 500 |
| Amber PET Vial | | | | |
| 226773 | 30 | 34 x 55 | — | 300 |

# An Alternative to Glass

## Plastic Bottles

Plastic containers have been developed for a variety of applications across many different industries over the years. There are many different types of polymers used in the creation of these containers to help fill the demands for the various applications. Polymers offer a variety of properties, each having different levels of importance with different users depending on the application. Some users may have flexibility within their product formula or filling process and therefore focus on economical containers while others may need containers that are stronger, autoclavable, transparent, sterilized, etc., therefore requiring more specifications. DWK Life Sciences can help with polymer selection through comprehension of the customer's product, goals, and adaptability. Several questions should be posed to gather this understanding.

Some examples include:

What is the container size and physical design: Narrow mouth vs. wide mouth, tall vs. short, etc.?

Must the package be transparent, translucent, opaque or colored for either marketing or light protection?

Are there specific shipment and storage conditions such as refrigeration, freezing, exclusion of light, etc.?

Are there governmental regulations pertaining to the product?

How is the product going to be dispensed by the user?

Have any tests been run in plastic? Was it unsuccessful and why? What type of plastics?

Many things govern polymer suitability for package use. These include:

- Permeation / Barrier
- Sorption Characteristics
- Chemical Resistance
- Stress Crack Resistance
- Rigidity / Flexibility
- Impact Resistance
- Sterilizability
- Recyclability
- Temperature Resistance

# Bottles, Plastic



## Leak Resistant Bottle

- High or low density polyethylene (HDPE/LDPE), or polypropylene (PP)
- Amber or natural color
- Available in narrow or wide mouth

- Superior double seal closure for leak resistance
- No-drip pour lip for safe and clean pouring
- Polypropylene cap attached
- See page 47 for colored screw caps

| Cat. No. | Size (oz)* | Size (mL) | Material | Color | Mouth Opening | Dia. x H (mm) | Cap Size | Qty / Pack | Qty / Case |
|---|---|---|---|---|---|---|---|---|---|
| 209041 | .1 | 4 | HDPE | Natural | Narrow | 16 x 38 | 13-425 | 12 | 72 |
| 209121 | .1 | 4 | HDPE | Amber | Narrow | 16 x 38 | 13-425 | 12 | 72 |
| 209161 | .1 | 4 | PP** | Natural | Narrow | 16 x 38 | 13-425 | 12 | 72 |
| 208923 | .3 | 8 | LDPE | Natural | Narrow | 25 x 43 | 20-410 | 12 | 72 |
| 209043 | .3 | 8 | HDPE | Natural | Narrow | 25 x 43 | 20-410 | 12 | 72 |
| 209123 | .3 | 8 | HDPE | Amber | Narrow | 25 x 43 | 20-410 | 12 | 72 |
| 209163 | .3 | 8 | PP** | Natural | Narrow | 25 x 43 | 20-410 | 12 | 72 |
| 208924 | .5 | 15 | LDPE | Natural | Narrow | 25 x 56 | 20-410 | 12 | 72 |
| 209044 | .5 | 15 | HDPE | Natural | Narrow | 25 x 56 | 20-410 | 12 | 72 |
| 209124 | .5 | 15 | HDPE | Amber | Narrow | 25 x 56 | 20-410 | 12 | 72 |
| 209164 | .5 | 15 | PP** | Natural | Narrow | 25 x 56 | 20-410 | 12 | 72 |
| 208925 | 1 | 30 | LDPE | Natural | Narrow | 32 x 69 | 20-410 | 12 | 72 |
| 209045 | 1 | 30 | HDPE | Natural | Narrow | 32 x 69 | 20-410 | 12 | 72 |
| 209125 | 1 | 30 | HDPE | Amber | Narrow | 32 x 69 | 20-410 | 12 | 72 |
| 209165 | 1 | 30 | PP** | Natural | Narrow | 32 x 69 | 20-410 | 12 | 72 |
| 209425 | 1 | 30 | LDPE | Natural | Wide | 33 x 69 | 28-410 | 12 | 72 |
| 209545 | 1 | 30 | HDPE | Natural | Wide | 33 x 69 | 28-410 | 12 | 72 |
| 209625 | 1 | 30 | HDPE | Amber | Wide | 33 x 69 | 28-410 | 12 | 72 |
| 209665 | 1 | 30 | PP** | Natural | Wide | 33 x 69 | 28-410 | 12 | 72 |
| 208926 | 2 | 60 | LDPE | Natural | Narrow | 39 x 84 | 20-410 | 12 | 72 |
| 209046 | 2 | 60 | HDPE | Natural | Narrow | 39 x 84 | 20-410 | 12 | 72 |
| 209126 | 2 | 60 | HDPE | Amber | Narrow | 39 x 84 | 20-410 | 12 | 72 |
| 209166 | 2 | 60 | PP** | Natural | Narrow | 39 x 84 | 20-410 | 12 | 72 |
| 209546 | 2 | 60 | HDPE | Natural | Wide | 39 x 88 | 28-410 | 12 | 72 |
| 209626 | 2 | 60 | HDPE | Amber | Wide | 39 x 88 | 28-410 | 12 | 72 |
| 209666 | 2 | 60 | PP** | Natural | Wide | 39 x 88 | 28-410 | 12 | 72 |
| 208927 | 4 | 125 | LDPE | Natural | Narrow | 50 x 101 | 24-410 | 12 | 72 |
| 209047 | 4 | 125 | HDPE | Natural | Narrow | 50 x 101 | 24-410 | 12 | 72 |
| 209127 | 4 | 125 | HDPE | Amber | Narrow | 50 x 101 | 24-410 | 12 | 72 |
| 209167 | 4 | 125 | PP** | Natural | Narrow | 50 x 101 | 24-410 | 12 | 72 |
| 209427 | 4 | 125 | LDPE | Natural | Wide | 51 x 98 | 38-410 | 12 | 72 |
| 209547 | 4 | 125 | HDPE | Natural | Wide | 51 x 98 | 38-410 | 12 | 72 |
| 209627 | 4 | 125 | HDPE | Amber | Wide | 51 x 98 | 38-410 | 12 | 72 |
| 209667 | 4 | 125 | PP** | Natural | Wide | 51 x 98 | 38-410 | 12 | 72 |
| 208928 | 8 | 250 | LDPE | Natural | Narrow | 61 x 129 | 24-410 | 12 | 72 |
| 209048 | 8 | 250 | HDPE | Natural | Narrow | 61 x 129 | 24-410 | 12 | 72 |
| 209128 | 8 | 250 | HDPE | Amber | Narrow | 61 x 129 | 24-410 | 12 | 72 |
| 209168 | 8 | 250 | PP** | Natural | Narrow | 61 x 129 | 24-410 | 12 | 72 |
| 209428 | 8 | 250 | LDPE | Natural | Wide | 61 x 125 | 43-410 | 12 | 72 |
| 209548 | 8 | 250 | HDPE | Natural | Wide | 61 x 125 | 43-410 | 12 | 72 |
| 209628 | 8 | 250 | HDPE | Amber | Wide | 61 x 125 | 43-410 | 12 | 72 |
| 209668 | 8 | 250 | PP** | Natural | Wide | 61 x 125 | 43-410 | 12 | 72 |
| 209049 | 16 | 500 | HDPE | Natural | Narrow | 72 x 171 | 28-410 | 12 | 48 |
| 209129 | 16 | 500 | HDPE | Amber | Narrow | 72 x 171 | 28-410 | 12 | 48 |
| 209169 | 16 | 500 | PP** | Natural | Narrow | 72 x 171 | 28-410 | 12 | 48 |
| 209549 | 16 | 500 | HDPE | Natural | Wide | 72 x 164 | 53-410 | 12 | 48 |
| 209629 | 16 | 500 | HDPE | Amber | Wide | 72 x 164 | 53-410 | 12 | 48 |
| 209669 | 16 | 500 | PP** | Natural | Wide | 72 x 164 | 53-410 | 12 | 48 |
| 209050 | 32 | 1000 | HDPE | Natural | Narrow | 91 x 210 | 38-430 | 6 | 24 |
| 209130 | 32 | 1000 | HDPE | Amber | Narrow | 91 x 210 | 38-430 | 6 | 24 |
| 209170 | 32 | 1000 | PP** | Natural | Narrow | 91 x 210 | 38-430 | 6 | 24 |
| 209550 | 32 | 1000 | HDPE | Natural | Wide | 91 x 199 | 63-415 | 12 | 48 |
| 209630 | 32 | 1000 | HDPE | Amber | Wide | 91 x 199 | 63-415 | 12 | 48 |

* Approximate capacity **Autoclavable

## Cylinder Round Bottle, HDPE, Natural & White

- High Density Polyethylene, natural and *white color
- Good chemical resistance
- Narrow mouth ideal for liquids
- Pre-attached white polypropylene screw cap with foamed polyethylene liner

| Cat. No. | Size (oz) | Size (mL)** | Dia x H (mm) | Cap Size | Qty/Pack | Qty/Case |
|---|---|---|---|---|---|---|
| 221153 | 1 | 30 | 27 x 78 | 20-410 | 12 | 72 |
| 221163* | 1 | 30 | 27 x 78 | 20-410 | 12 | 72 |
| 221154 | 2 | 60 | 35 x 98 | 20-410 | 12 | 72 |
| 221164* | 2 | 60 | 35 x 98 | 20-410 | 12 | 72 |
| W221180 | 8 | 250 | 52 x 160 | 24-410 | — | 230 |
| W221181 | 16 | 500 | 64 x 203 | 24-410 | — | 24 |
| W221182 | 16 | 500 | 64 x 203 | 24-410 | — | 180 |
| W221183 | 32 | 1000 | 81 x 243 | 28-400 | — | 77 |

*White HDPE **Approximate capacity

## Jug, HDPE

- High Density Polyethylene, natural color
- Good chemical resistance
- Narrow mouth ideal for liquids
- Pre-attached white polypropylene screw cap with polyvinyl liner

| Cat. No. | Size (oz) | Cross Section x H (mm) | Cap Size | Qty/Case |
|---|---|---|---|---|
| W222340 | 64 | 123 x 253 | 38-400 | 40 |
| W222341 | 128 | 137 x 295 | 38-400 | 4 |
| 222333 | 128 | 137 x 295 | 38-400 | 4 |

## Round Bottle, LDPE, Translucent

- Low Density Polyethylene, translucent color
- LDPE is very flexible with high impact strength
- Excellent for mild and strong buffers, good chemical resistance
- Narrow mouth ideal for liquids
- Pre-attached white polypropylene screw cap with foamed polyethylene liner

| Cat. No. | Size (mL) | Dia x H (mm) | Cap Size | Qty/Pack | Qty/Case |
|---|---|---|---|---|---|
| 221140 | 7 | 19 x 63 | 15-415 | 12 | 144 |
| 221142 | 15 | 25 x 78 | 15-415 | 12 | 144 |
| 221143 | 30 | 33 x 73 | 20-410 | 12 | 72 |
| 221144 | 60 | 39 x 88 | 20-410 | 12 | 72 |
| W221145 | 125 | 47 x 115 | 20-410 | 12 | 72 |

## Wide Mouth Blake Packer, HDPE, Natural

- High Density Polyethylene, natural color
- Good chemical resistance
- Blake design maximizes storage space
- Wide mouth ideal for solids
- Pre-attached white polypropylene screw cap with foamed polyethylene liner

| Cat. No. | Size (oz) | Size (mL)* | Dia x H (mm) | Cap Size | Qty/Case |
|---|---|---|---|---|---|
| 209683 | 4 | 120 | 52 x 43 x 99 | 38-400 | 72 |
| W218814 | 8 | 250 | 72 x 51 x 121 | 43-400 | 48 |
| 209685 | 16 | 500 | 78 x 65 x 154 | 43-400 | 48 |
| 209686 | 32 | 1000 | 98 x 81 x 197 | 53-400 | 24 |
| W218820 | 40 | 1200 | 110 x 81 x 193 | 53-400 | 6 |

*Approximate capacity

## Wide Mouth Round Packer, HDPE, Natural

- High Density Polyethylene, natural color
- Good chemical resistance
- Wide mouth ideal for solids
- Pre-attached white polypropylene screw cap with foamed polyethylene liner

| Cat. No. | Size (oz) | Size (mL)* | Dia x H (mm) | Cap Size | Qty/Case |
|---|---|---|---|---|---|
| W218821 | 1 | 30 | 38 x 59 | 28-400 | 48 |
| 209672 | 2 | 60 | 39 x 77 | 33-400 | 72 |
| 209673 | 4 | 120 | 50 x 88 | 38-400 | 72 |
| W218822 | 4 | 120 | 49 x 88 | 38-400 | 500 |
| 209674 | 8 | 250 | 68 x 105 | 53-400 | 72 |
| 209675 | 16 | 500 | 77 x 142 | 53-400 | 48 |
| 209676 | 32 | 1000 | 97 x 180 | 53-400 | 24 |
| W218823 | 65 | 2000 | 152 x 168 | 89-400 | 75 |

*Approximate capacity

## Wide Mouth Container, Polypropylene

- Durable container with good chemical resistance
- Pre-attached white polypropylene screw cap unlined or with foamed polyethylene liner
- Polypropylene container with linerless cap is autoclavable

| Cat. No. | Size (mL) | Dia x H (mm) | Cap Size | Cap Liner | Qty/Case |
|---|---|---|---|---|---|
| W209900 | 30 | 39 x 41 | 43-400 | No liner | 72 |
| W209906 | 30 | 39 x 41 | 43-400 | Polyethylene | 72 |
| W209901 | 60 | 49 x 46 | 53-400 | No liner | 48 |
| W209907 | 60 | 49 x 46 | 53-400 | Polyethylene | 48 |
| W209902 | 125 | 53 x 68 | 58-400 | No liner | 36 |
| W209908 | 125 | 53 x 68 | 58-400 | Polyethylene | 36 |
| W209903 | 250 | 84 x 64 | 89-400 | No liner | 36 |
| W209909 | 250 | 84 x 64 | 89-400 | Polyethylene | 36 |
| W209904 | 500 | 85 x 99 | 89-400 | No liner | 24 |
| W209910 | 500 | 85 x 99 | 89-400 | Polyethylene | 24 |
| W209905 | 1000 | 116 x 97 | 120-400 | No liner | 24 |
| W209911 | 1000 | 116 x 97 | 120-400 | Polyethylene | 24 |

## Wide Mouth Container, Polystyrene

- Clear polystyrene offers clarity of glass and safety of plastic
- Good resistance to inorganic chemicals
- Pre-attached white polypropylene screw cap with foamed polyethylene liner

| Cat. No. | Size (mL) | Dia x H (mm) | Cap Size | Qty/Case |
|---|---|---|---|---|
| W209912 | 30 | 39 x 41 | 43-400 | 72 |
| W209913 | 60 | 49 x 46 | 53-400 | 48 |
| W209914 | 125 | 53 x 68 | 58-400 | 36 |
| W209915 | 250 | 84 x 64 | 89-400 | 36 |
| W209916 | 500 | 85 x 99 | 89-400 | 24 |
| W209917 | 1000 | 116 x 97 | 120-400 | 24 |

## Wide Mouth Container, HDPE

- High Density Polyethylene, natural color
- Good chemical resistance
- Largest container available: 2000 to 3840mL size
- Pre-attached white polypropylene screw cap with foamed polyethylene liner

| Cat. No. | Size (mL) | Dia x H (mm) | Cap Size | Qty/Case |
|---|---|---|---|---|
| W209677 | 2000 | 155 x 173 | 89-400 | 6 |
| W209679 | 3840 | 156 x 246 | 89-400 | 4 |

## Dropping Bottle Only, Natural & White

- Bottle made of natural or white LDPE (Low Density Polyethylene)
- White LDPE bottle helps protect UV light sensitive samples
- Packaged in cases of 100, 1000

| Color | Dia. x H (mm) | Cap Size | Cat. No. 100 / Case | Cat. No. 1,000 / Case |
|---|---|---|---|---|
| **3mL** | | | | |
| White | 14 x 39 | 8-425 | W242831 | W242831-A |
| Natural | 14 x 39 | 8-425 | W242821 | W242821-A |
| **6mL** | | | | |
| White | 18 x 42 | 13-425 | W242832 | W242832-A |
| Natural | 18 x 42 | 13-425 | W242822 | W242822-A |
| **7mL** | | | | |
| White | 19 x 51 | 15-415 | W242833 | W242833-A |
| Natural | 19 x 51 | 15-415 | W242823 | W242823-A |
| **10mL** | | | | |
| White | 25 x 46 | 15-415 | W242834 | W242834-A |
| Natural | 25 x 46 | 15-415 | W242824 | W242824-A |
| **15mL** | | | | |
| White | 25 x 66 | 15-415 | W242835 | W242835-A |
| Natural | 25 x 66 | 15-415 | W242825 | W242825-A |
| **30mL** | | | | |
| White | 32 x 70 | 20-410 | W242836 | W242836-A |
| Natural | 32 x 70 | 20-410 | W242826 | W242826-A |
| **60mL** | | | | |
| White | 39 x 85 | 20-410 | W242837 | — |
| Natural | 39 x 85 | 20-410 | W242827 | — |
| **120mL** | | | | |
| White | 47 x 108 | 20-410 | W242839 | — |
| Natural | 47 x 108 | 20-410 | W242829 | — |

## Dropping Bottle, Natural, with Tip & Cap

- Tip dispenses a stream of liquid or non-controlled drop
- Bottle made of LDPE (low density polyethylene)
- Bottle is not autoclavable
- Dropper bottles, tips and caps are packaged separately

| Cat. No. | Size (mL) | Dia. x H (mm) | Cap Size | Qty / Pack | Qty / Case |
|---|---|---|---|---|---|
| 211602 | 6 | 18 x 58 | 13-425 | 12 | 144 |
| 211603 | 7 | 19 x 63 | 15-415 | 12 | 144 |
| 211604 | 15 | 25 x 78 | 15-415 | 12 | 144 |
| 211605 | 30 | 32 x 85 | 20-410 | 12 | 144 |
| 211606 | 60 | 39 x 101 | 20-410 | 12 | 144 |
| W211607 | 125 | 47 x 125 | 20-410 | 6 | 72 |

## Extended Controlled Dropper Tip

8mm 13mm 15mm 20mm

- Tip made of LDPE (low density polyethylene)
- Extended controlled dropper tip dispenses one drop at a time
- Average drop size is 44µL ±6µL
- Packaged in case of 100, 1000

| Color | Cat. No. | Cat. No. |
|---|---|---|
| **8mm Tip** | **100/Case** | **1,000/Case** |
| Natural | 242401-01 | W242401-01-A |
| Pink | 242401 | W242401-A |
| Red | 242402 | W242402-A |
| Orange | 242403 | W242403-A |
| Blue | 242404 | W242404-A |
| Gray | 242405 | W242405-A |
| Green | 242406 | W242406-A |
| Purple | 242407 | W242407-A |
| Yellow | 242408 | W242408-A |
| White | 242410 | W242410-A |
| **13mm Tip** | **100/Case** | **1,000/Case** |
| Natural | 242411-01 | W242411-01-A |
| Pink | 242411 | W242411-A |
| Red | 242412 | W242412-A |
| Orange | 242413 | W242413-A |
| Blue | 242414 | W242414-A |
| Gray | 242415 | W242415-A |
| Green | 242416 | W242416-A |
| Purple | 242417 | W242417-A |
| Yellow | 242418 | W242418-A |
| White | 242420 | W242420-A |
| **15mm Tip** | **100/Case** | **1,000/Case** |
| Natural | 242421-01 | W242421-01-A |
| Pink | 242421 | W242421-A |
| Red | 242422 | W242422-A |
| Orange | 242423 | W242423-A |
| Blue | 242424 | W242424-A |
| Gray | 242425 | W242425-A |
| Green | 242426 | W242426-A |
| Purple | 242427 | W242427-A |
| Yellow | 242428 | W242428-A |
| White | 242430 | W242430-A |
| **20mm Tip** | **100/Case** | **1,000/Case** |
| Natural | 242431-01 | W242431-01-A |
| Pink | 242431 | W242431-A |
| Red | 242432 | W242432-A |
| Orange | 242433 | W242433-A |
| Blue | 242434 | W242434-A |
| Green | 242436 | W242436-A |
| Purple | 242437 | W242437-A |
| Yellow | 242438 | W242438-A |
| White | 242440 | W242440-A |

## Dropper Tip Cap

8-425 13-425 15-415 20-410

- Screw cap made of radiation grade polypropylene
- Variety of colors
- Packaged in case of 100, 1000

| Color | Cat. No. | Cat. No. |
|---|---|---|
| **Size 8-425** | **100/Case** | **1,000/Case** |
| Natural | 242501-01 | W242501-01-A |
| Pink | 242501 | W242501-A |
| Red | 242502 | W242502-A |
| Orange | 242503 | W242503-A |
| Blue | 242504 | W242504-A |
| Gray | 242505 | W242505-A |
| Green | 242506 | W242506-A |
| Purple | 242507 | W242507-A |
| Yellow | 242508 | W242508-A |
| Brown | 242509 | W242509-A |
| White | 242510 | W242510-A |
| **Size 13-425** | **100/Case** | **1,000/Case** |
| Natural | 242531-01 | W242531-01-A |
| Pink | 242531 | W242531-A |
| Red | 242532 | W242532-A |
| Orange | 242533 | W242533-A |
| Blue | 242534 | W242534-A |
| Gray | 242535 | W242535-A |
| Green | 242536 | W242536-A |
| Purple | 242537 | W242537-A |
| Yellow | 242538 | W242538-A |
| White | 242540 | W242540-A |
| **Size 15-415** | **100/Case** | **1,000/Case** |
| Natural | 242511-01 | W242511-01-A |
| Pink | 242511 | W242511-A |
| Red | 242512 | W242512-A |
| Orange | 242513 | W242513-A |
| Blue | 242514 | W242514-A |
| Gray | 242515 | W242515-A |
| Green | 242516 | W242516-A |
| Purple | 242517 | W242517-A |
| Yellow | 242518 | W242518-A |
| Brown | 242519 | W242519-A |
| White | 242520 | W242520-A |
| **Size 20-410** | **100/Case** | **1,000/Case** |
| Natural | 242521-01 | W242521-01-A |
| Pink | 242521 | W242521-A |
| Red | 242522 | W242522-A |
| Orange | 242523 | W242523-A |
| Blue | 242524 | W242524-A |
| Gray | 242525 | W242525-A |
| Green | 242526 | W242526-A |
| Purple | 242527 | W242527-A |
| Yellow | 242528 | W242528-A |
| White | 242530 | W242530-A |

## Dropping Bottle, with Tip & Cap

- Bottle made of LDPE (Low Density Polyethylene)
- Extended controlled dropper tip dispenses one drop at a time
- Average drop size is 44µL ±6µL
- Radiation grade polypropylene screw caps and tips packaged separately
- Dropping bottles, natural tips and white caps are packaged separately

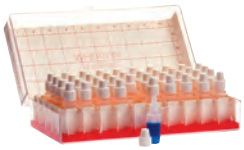
| Cat. No. | Color | Size (mL) | Dia. x H (mm) | Cap Size | Qty/Pack | Qty/Case |
|---|---|---|---|---|---|---|
| 211630 | Natural | 3 | 14 x 49 | 8-425 | 12 | 144 |
| 211620 | White | 3 | 14 x 49 | 8-425 | 12 | 144 |
| 211631 | Natural | 6 | 17 x 58 | 13-425 | 12 | 144 |
| 211621 | White | 6 | 17 x 58 | 13-425 | 12 | 144 |
| 211632 | Natural | 7 | 19 x 63 | 15-415 | 12 | 144 |
| 211622 | White | 7 | 19 x 63 | 15-415 | 12 | 144 |
| 211633 | Natural | 15 | 25 x 78 | 15-415 | 12 | 144 |
| 211623 | White | 15 | 25 x 78 | 15-415 | 12 | 144 |
| 211634 | Natural | 30 | 32 x 85 | 20-410 | 12 | 144 |
| 211624 | White | 30 | 32 x 85 | 20-410 | 12 | 144 |
| 211635 | Natural | 60 | 39 x 101 | 20-410 | 12 | 144 |
| 211625 | White | 60 | 39 x 101 | 20-410 | 12 | 144 |
| W211636 | Natural | 125 | 47 x 125 | 20-410 | 6 | 72 |
| W211626 | White | 125 | 47 x 125 | 20-410 | 6 | 72 |

## Dispensing Bottle, LDPE

- Made from low density polyethylene
- Translucent color
- Very flexible with high impact strength
- Excellent for mild and strong buffers, good chemical resistance
- Raise the spout to dispense contents and depress spout to seal bottle

| Cat. No. | Size (mL) | Dia. x H (mm) | Cap Size | Qty/Pack | Qty/Case |
|---|---|---|---|---|---|
| 211194 | 60 | 39 x 92 | 20-410 | 12 | 144 |
| 211195 | 125 | 43 x 130 | 20-410 | 12 | 72 |

## Dropping Bottle in Vial File®



- Contains 40 - 3mL LDPE (Low Density Polyethylene) bottles
- Assembled with dropper tip and cap attached to bottle
- Average drop size is 44µL ±6µL
- Packaged in a reusable plastic case
- Extended controlled dropper tip dispenses one drop at a time
- Alphanumerical indexing of contents provides quick identification and location of samples

| Cat. No. | Size (mL) | Dia. x H (mm) | Cap Size | Vials/File | Qty/Case |
|---|---|---|---|---|---|
| 211641 | 3 | 14 x 49 | 8-425 | 40 | 1 |

## Spray Bottle

- Bottle made of white LDPE (Low Density Polyethylene)
- Includes bottle, atomizer tip, dip tube and screw cap
- Screw cap made from polypropylene
- Packed in 12 shelf packs with 12 bottles each

| Cat. No. | Size (mL) | Cross Section x H (mm) | Cap Size | Qty/Case |
|---|---|---|---|---|
| 226433 | 20 | 20 x 38 x 83 | 15-415 | 144 |
| 226434 | 35 | 22 x 46 x 94 | 18-410 | 144 |
| 226436 | 60 | 27 x 53 x 108 | 18-410 | 144 |

## PET Diagnostic Bottle

- Polyethylene Terephthalate, transparent
- Ideal for reagents and buffer solutions
- Clear and amber versions available
- Pre-attached white polypropylene screw cap with foamed polyethylene liner

| Cat. No. | Color | Size (mL) | Qty / Pack | Qty / Case |
|---|---|---|---|---|
| W220000 | Clear | 5 | 20 | 100 |
| W220003 | Amber | 5 | 20 | 100 |
| W220001 | Clear | 10 | 20 | 100 |
| W220004 | Amber | 10 | 20 | 100 |
| W220002 | Clear | 20 | 20 | 100 |
| W220005 | Amber | 20 | 20 | 100 |

## Media Bottle, Sterile PET

- Lightweight
- Permanent in-mold graduations
- No-drip pour lip
- 20% headspace for additives
- Manufactured from polyethylene terephthalate tested superior for pH stability, temperature durability, cloning efficiency and cytotoxicity
- Pre-attached white polypropylene screw cap with foamed polyethylene liner, shrink-wrapped in trays

| Cat. No. | Size (mL) | Grad. (mL) | Dim. (L x W x H) | Cap Size | Qty / Case |
|---|---|---|---|---|---|
| 219975 | 125 | 25 | 53 x 53 x 99mm | 33-430 | 48 |

## PET Bottle, Transparent

- Polyethylene terephthalate, transparent
- PET offers clarity of glass with the safety of plastic
- Good alcohol and solvent barrier; not good for strong acids and bases
- Sterilizable through EtO and gamma radiation
- 120mL cylinder round style, smaller sizes have sloped shoulders
- Narrow mouth ideal for liquids
- Pre-attached white polypropylene screw cap with foamed polyethylene liner

| Cat. No. | Size (mL) | Dia. x H (mm) | Cap Size | Qty / Pack | Qty / Case |
|---|---|---|---|---|---|
| 221135 | 120 | 41 x 120 | 20-410 | 12 | 72 |

## HDPE Oblong Bottles

- High density polyethylene, natural
- Good chemical resistance
- Wide mouth ideal for solids
- With or without** cap attached

| Cat. No. | Size (oz) | Size (mL)* | L x W x H (mm) | Cap Size | Qty/Case |
|---|---|---|---|---|---|
| W218812 | 4 | 125 | 48 x 40 x 97 | 38-400 | 48 |
| W218813 | 4 | 125 | 48 x 40 x 97 | 38-400 | 500 |
| W218814 | 8 | 250 | 69 x 49 x 119 | 43-400 | 48 |
| W218815 | 8 | 250 | 69 x 49 x 119 | 43-400 | 250 |
| W218810** | 16 | 500 | 76 x 63 x 152 | 43-400 | 160 |
| W218816 | 16 | 500 | 76 x 63 x 152 | 43-400 | 24 |
| W218817 | 16 | 500 | 76 x 63 x 152 | 43-400 | 168 |
| W218811** | 32 | 1000 | 96 x 79 x 172 | 53-400 | 116 |
| W218818 | 32 | 1000 | 96 x 79 x 172 | 53-400 | 12 |
| W218819 | 32 | 1000 | 96 x 79 x 172 | 53-400 | 116 |
| W218820 | 42 | 1250 | 107 x 79 x 187 | 53-400 | 6 |

*Approximate capacity

## Serum Bottle, Polypropylene (PP)

- Used extensively for diluent solutions
- Accepts rubber stoppers and aluminum seals
- Autoclavable at 121°C for 20 minutes

| Cat. No. | Size (mL) | Mouth ID x OD (mm) | Dia. x H (mm) | Qty / Case |
|---|---|---|---|---|
| 224007 | 3 | 7 x 13 | 17 x 38 | 500 |

## Serum Bottle, HDPE

- Manufactured from high density polyethylene
- Widely used for animal health products and storage of non-medical products
- Accepts standard rubber stoppers and aluminum seals

| Cat. No. | Size (mL) | Mouth ID x OD (mm) | Dia. x H (mm) | Qty / Case |
|---|---|---|---|---|
| 224031 | 15 | 13 x 20 | 28 x 56 | 300 |
| 224033 | 30 | 13 x 20 | 32 x 67 | 200 |
| 224036 | 60 | 13 x 20 | 38 x 84 | 100 |
| 224037 | 120 | 13 x 20 | 47 x 103 | 100 |

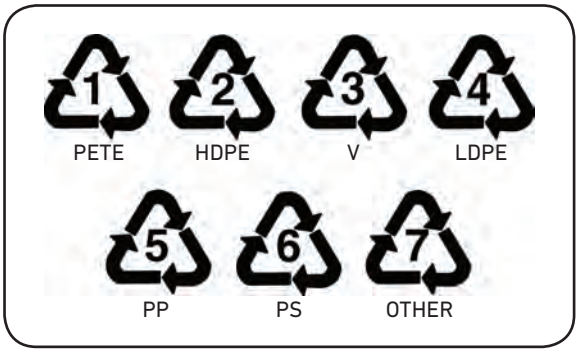
## PETG Media Bottles

- Polyethylene terephthalate glycol, transparent
- Available in range from 30mL to 2L
- Square/octagonal footprint for efficient use of storage space
- Excellent gas barrier properties, ensuring pH stability
- DNase- and RNase-Free
- Sterile, tamper-resistant seal ensures product integrity prior to use
- Comprised of resins that are free of animal-derived components
- Suitable for transport and storage, leak resistant
- Recommended temperature range +70°C to -40°C

| with PETG Tamper Evident Cap | WPBGC2000S | WPBGC1000S | WPBGC0500S | WPBGC0250S | WPBGC0125S | WPBGC0060S | WPBGC0030S |
|---|---|---|---|---|---|---|---|
| with PETG Standard Cap | WPBGC2000SB | WPBGC1000SB | WPBGC0500SB | WPBGC0250SB | WPBGC0125SB | WPBGC0060SB | WPBGC0030SB |
| Size / Volume (mL) | 2000 | 1000 | 500 | 250 | 125 | 60 | 30 |
| Closure Size | 53B | 38-430 | 38-430 | 38-430 | 38-430 | 24-415 | 20-415 |
| Units / Pack | 6 | 12 | 12 | 24 | 24 | 24 | 24 |
| Width / Diameter (mm) | 115 | 92 | 73 | 59 | 54.4 | 40 | 38 |
| Height (mm) | 266 | 213 | 172 | 139 | 103.7 | 80 | 60 |
| Height w/ Cap On (mm) | 271.2 | 218.7 | 177.7 | 144.7 | 109.4 | 83.1 | 62.1 |

## Resin Identification Codes

DWK Life Sciences follows the Society of Plastics Industry guidelines for marking plastic containers with the appropriate resin identification code numbers as shown below.




## Plastic Resins

### High Density Polyethylene (HDPE)

Flexible but more rigid than LDPE. Natural color is milky white, semi-translucent depending on density. Good impact strength and stress crack resistance. Good chemical resistance. Good vapor barrier but poor gas barrier. Sterilizable via ethylene oxide (EtO) or gamma radiation.

### Low Density Polyethylene (LDPE)

Very flexible, natural milky color, translucent with high impact strength. Excellent for mild and strong buffers, good chemical resistance. Good water vapor and alcohol barrier properties. Poor gas barrier, sterilizable with EtO or gamma radiation. Good stress crack and impact resistance.

### Polyethylene Terephthalate (PET)

Semi-rigid to rigid depending on wall thickness. Natural color - clear and transparent. Good alcohol and solvent barrier; good gas and fair moisture barrier. Good to fair chemical barrier; not good for strong acids or bases. Good moldability. Sterilizable through EtO and gamma radiation. Good stress crack and impact resistance at room temperature and above.

### Polypropylene (PP)

Rigid, solid, durable in container or cap forms. Opaque, natural grayish yellow in natural form. Excellent stress crack and impact resistance. Excellent moisture barrier, good oil and alcohol barrier, poor gas barrier properties. Good chemical resistance. Sterilizable with EtO or autoclaving.

### Polystyrene (PS)

PS is a transparent, rigid and glasslike polymer. Good resistance to inorganic chemicals. Light and heat stable, biologically inert and non-toxic. Poor impact and stress crack resistance, poor barrier properties. EtO or gamma sterilizable.

# Complete Your Package with the Right Closure

## Caps & Closures

DWK Life Sciences completes your package with the right closure. We provide a wide variety of caps, seals and stoppers to ensure a perfect fit for your container. Our WHEATON® portfolio offers closures suited for a wide range of applications. Products include: aluminum seals, Microlink® caps, rubber stoppers and screw caps.

### Aluminum Seal Styles

- Complete Tear-Off
- Open Top
- Center Disc Tear-Out
- Flip Cap
- Flip Cap Tear-Off
- Solid Top

### Screw Closures

- Black Phenolic
- Polypropylene
- Urea

### Rubber Stopper Styles

- 2-Leg Lyophilization
- 3-Leg Lyophilization
- Igloo
- Sleeve
- Straight Plug
- Snap On
- Thin Flange

### Closure Liners

- Poly-Vinyl
- Foamed Polyethylene
- Polyethylene Cone
- PTFE / Silicone
- Metal Foil / Pulp
- Styrene-Butadiene Rubber (14B)
- Low Density Polyethylene (LDPE)

# Caps & Closures



## Ultra Pure Stoppers


- Manufactured from an ultra pure bromobutyl formulation with extremely high chemical purity and low gas permeability
- Free of latex, nitrosamines and 2-MCBT (2-mercaptobenzothiazole)
- Compatible with applications such as Water for Injection (WFI) where rubber extractables can cause problems
- Complies with US, European and Japanese Pharmacopeias

## Straight Plug Stoppers

- Grey bromobutyl/47
- Low level of extractables
- Autoclavable

| Cat. No. | For Mouth ID x OD (mm) | Qty / Case |
|---|---|---|
| W224100-400 | 7 x 13 | 1000 |
| W224100-405 | 13 x 20 | 1000 |

## Lyophilization Stoppers

- Grey bromobutyl/46
- Available in 2-Leg, 3-Leg and Igloo styles
- Demonstrates a very low level of moisture adsorption
- Very low adsorption of the preservatives present in aqueous parenteral solutions
- Autoclavable

| Cat. No. | For Mouth ID x OD (mm) | Qty / Case |
|---|---|---|
| **2-Leg Lyophilization** | | |
| W224100-406 | 13 x 20 | 1000 |
| **3-Leg Lyophilization** | | |
| W224100-407 | 13 x 20 | 1000 |
| **Igloo Lyophilization** | | |
| W224100-402 | 7 x 13 | 1000 |
| W224100-408 | 13 x 20 | 1000 |

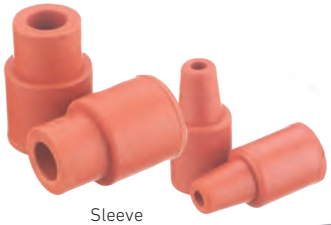
## Complete Coat Stoppers

- Grey bromobutyl/39
- Stoppers are completely coated with a fluorinated polymer
- Manufactured in a silicone-free environment
- PTFE like coating prevents reactions due to sample contact with rubber
- Autoclavable

| Cat. No. | For Mouth ID x OD (mm) | Qty / Case |
|---|---|---|
| **Straight Plug Stopper** | | |
| W224100-420 | 7 x 13 | 1000 |
| W224100-421 | 13 x 20 | 1000 |

## Rubber Stoppers


Straight Plug


Sleeve


3-Leg Lyophilization


2-Leg Lyophilization


Snap-On / Silicone

3-Leg Lyophilization Thin Flange

- Variety of styles, sizes and rubber formulations
- Manufactured from the highest quality raw materials
- Components manufactured to yield exceptional dimensional stability
- Straight plug stoppers provide maximum sealing for vials with straight-wall glass finish
- Snap-on style provides maximum sealing for vials with a blow-back glass finish
- Sleeve style stoppers feature a fold-over skirt for sealing in serum finish vials without a crimp closure
- Autoclavable

| Cat. No. | For Mouth ID x OD (mm) | Style | Stopper Material | *Durometer | Shelf Pack | Qty / Case |
|---|---|---|---|---|---|---|
| 224100-020 | 5 x 11 | Sleeve | Natural Red Rubber | 39 | 100 | 1000 |
| 224100-070 | 7 x 13 | Straight Plug | Natural Red Rubber | 40 | 100 | 1000 |
| 224100-072 | 7 x 13 | Straight Plug | Gray Chlorobutyl-Isoprene Blend / FEP Faced | 40 | 100 | 1000 |
| W224100-093 | 7 x 13 | 2-Leg Lyophilization | Gray Chlorobutyl | 50 | 100 | 1000 |
| 224100-060 | 7 x 13 | Sleeve | Natural Red Rubber | 39 | 100 | 1000 |
| 224100-080 | 7 x 13 | Snap-On | Natural Red Rubber | 40 | 100 | 1000 |
| W224100-081 | 7 x 13 | Snap-On | Gray Chlorobutyl | 55 | 100 | 1000 |
| 224100-170 | 10 x 20 | Straight Plug | Natural Red Rubber | 40 | 100 | 1000 |
| 224100-160 | 10 x 20 | Sleeve | Natural Red Rubber | 39 | 100 | 1000 |
| 224100-172 | 13 x 20 | Straight Plug | Natural Red Rubber | 45 | 100 | 1000 |
| W224100-173 | 13 x 20 | Straight Plug | Gray Chlorobutyl | 46 | 100 | 1000 |
| 224100-174 | 13 x 20 | Straight Plug | Gray Chlorobutyl-Isoprene Blend | 40 | 100 | 1000 |
| 224100-175 | 13 x 20 | Straight Plug | Gray Chlorobutyl-Isoprene Blend / FEP Faced | 40 | — | 1000 |
| 224100-177 | 13 x 20 | Straight Plug | Black FKM | 55 | — | 100 |
| 224100-178 | 13 x 20 | Straight Plug | Silicone | 55 | 100 | 1000 |
| W224100-190 | 13 x 20 | Snap-On – Thin Flange | Gray Chlorobutyl | 49 | 100 | 300 |
| 224100-192 | 13 x 20 | 2-Leg Lyophilization | Gray Chlorobutyl-Isoprene Blend | 50 | 100 | 1000 |
| W224100-193 | 13 x 20 | 2-Leg Lyophilization | Gray Chlorobutyl | 46 | 100 | 1000 |
| W224100-202 | 13 x 20 | 3-Leg Lyophilization | Gray Chlorobutyl | 46 | 100 | 1000 |
| 224100-203 | 13 x 20 | 3-Leg Lyophilization – Thin Flange | Gray Chlorobutyl | 55 | — | 300 |
| 224100-161 | 13 x 20 | Sleeve | Natural Red Rubber | 39 | 100 | 1000 |
| 224100-180 | 13 x 20 | Snap-On | Natural Red Rubber | 45s | 100 | 1000 |
| W224100-181 | 13 x 20 | Snap-On | Gray Chlorobutyl | 46 | 100 | 1000 |
| 224100-330 | 15 x 30 | Straight Plug | Natural Red Rubber | 40s | 100 | 1000 |
| 224100-331 | 15 x 30 | Straight Plug | Gray Bromobutyl | 50 | 100 | 1000 |
| 224100-320 | 15 x 30 | Sleeve | Natural Red Rubber | 39 | 100 | 1000 |
| W224100-342 | 15 x 30 | Snap-On | Gray Bromobutyl | 52 | 100 | 1000 |
| W224100-282 | 20 x 28 | 2-Leg Lyophilization | Gray Chlorobutyl | 46 | 100 | 1000 |

*Durometer is a measure of the resistance of a material to indentation. The higher the number, the greater the resistance. The Shore A scale is used for soft elastomers. The term durometer is often used to refer to the measurement, as well as the instrument itself.

## Lined Aluminum Seals

- Ideal closures for chromatography and other instrumentation applications
- Open top seal provides for filling or retrieving contents with a syringe

Open Top Lined Seal

Center Disc Tear-Out Lined Seal

| Cat. No. | For Mouth OD (mm) | Seal Type | Seal Liner | Color | Qty / Pack | Qty / Case |
|---|---|---|---|---|---|---|
| 224211-01 | 11 | Open Top | PTFE / Red Rubber | Natural | 100 | 1000 |
| 224211-05 | 11 | Open Top | PTFE / Red Rubber | Blue | 100 | 1000 |
| 224211-06 | 11 | Open Top | PTFE / Red Rubber | Red | 100 | 1000 |
| 224211-07 | 11 | Open Top | PTFE / Red Rubber | Green | 100 | 1000 |
| 224219-01 | 11 | Open Top | PTFE / Silicone | Natural | 100 | 1000 |
| 224219-05 | 11 | Open Top | PTFE / Silicone | Blue | 100 | 1000 |
| 224219-06 | 11 | Open Top | PTFE / Silicone | Red | 100 | 1000 |
| 224219-07 | 11 | Open Top | PTFE / Silicone | Green | 100 | 1000 |
| 224231-01 | 11 | Open Top | PTFE / Silicone / PTFE | Natural | 100 | 1000 |
| 224231-05 | 11 | Open Top | PTFE / Silicone / PTFE | Blue | 100 | 1000 |
| 224231-06 | 11 | Open Top | PTFE / Silicone / PTFE | Red | 100 | 1000 |
| 224231-07 | 11 | Open Top | PTFE / Silicone / PTFE | Green | 100 | 1000 |
| 224235-01 | 11 | Open Top | PTFE / Gray Butyl | Natural | 100 | 1000 |
| 224222-01 | 13 | Center Disc Tear-Out | PTFE / Red Rubber | Natural | 100 | 1000 |
| 224223-01 | 20 | Center Disc Tear-Out | PTFE / Red Rubber | Natural | 100 | 1000 |

## Aluminum Seals (Unlined)



- Wide range of styles and sizes
- Color selection includes natural, red, blue and green
- Open top seals expose stopper for sample retrieval with a syringe
- Tear-off seal removes completely allowing content to pour from bottle
- Solid top seals are excellent for long-term storage of samples
- Flip cap seals provide tamper evidence

| Cat. No. | For Mouth OD (mm) | Style | Color | Qty / Case |
|---|---|---|---|---|
| 224176-01 | 11 | Open Top | Natural | 1000 |
| 224176-05 | 11 | Open Top | Blue | 1000 |
| 224176-06 | 11 | Open Top | Red | 1000 |
| 224176-07 | 11 | Open Top | Green | 1000 |
| 224189 | 11 | Solid-Top | Natural | 1000 |
| 224177-01 | 13 | Open Top | Natural | 1000 |
| 224177-05 | 13 | Open Top | Blue | 1000 |
| 224177-06 | 13 | Open Top | Red | 1000 |
| 224182-01 | 13 | Center Disc Tear-Out | Natural | 1000 |
| 224182-05 | 13 | Center Disc Tear-Out | Blue | 1000 |
| 224182-06 | 13 | Center Disc Tear-Out | Red | 1000 |
| 224182-07 | 13 | Center Disc Tear-Out | Green | 1000 |
| 224192-01 | 13 | Complete Tear-Off | Natural | 1000 |
| 224192-05 | 13 | Complete Tear-Off | Blue | 1000 |
| 224192-06 | 13 | Complete Tear-Off | Red | 1000 |
| 224192-07 | 13 | Complete Tear-Off | Green | 1000 |
| 224202 | 13 | Flip Cap | Red | 1000 |
| W224207 | 13 | Flip Cap Tear-Off | Red | 1000 |
| 224178-01 | 20 | Open Top | Natural | 1000 |
| 224178-05 | 20 | Open Top | Blue | 1000 |
| 224178-06 | 20 | Open Top | Red | 1000 |
| 224178-07 | 20 | Open Top | Green | 1000 |
| 224183-01 | 20 | Center Disc Tear-Out | Natural | 1000 |
| 224183-05 | 20 | Center Disc Tear-Out | Blue | 1000 |
| 224183-06 | 20 | Center Disc Tear-Out | Red | 1000 |
| 224183-07 | 20 | Center Disc Tear-Out | Green | 1000 |
| 224191 | 20 | Solid-Top | Natural | 1000 |
| 224193-01 | 20 | Complete Tear-Off | Natural | 1000 |
| 224193-05 | 20 | Complete Tear-Off | Blue | 1000 |
| 224193-06 | 20 | Complete Tear-Off | Red | 1000 |
| 224193-07 | 20 | Complete Tear-Off | Green | 1000 |
| 224203 | 20 | Flip Cap | Red | 1000 |
| W224205 | 20 | Flip Cap | White | 1000 |
| 224208 | 20 | Flip Cap Tear-Off | Red | 1000 |
| 224187-01 | 30 | Center Disc Tear-Out | Natural | 1000 |
| 224197-01 | 30 | Complete Tear-Off | Natural | 1000 |

## Septa for Unlined Aluminum Seals

Silicone Septa

PTFE Faced Silicone Septa

PTFE Faced Gray Butyl Septa

| Cat. No. | For Mouth OD (mm) | Material | Qty / Case |
|---|---|---|---|
| 224172 | 13 | PTFE / Silicone | 100 |
| W224163 | 20 | Silicone | 1000 |
| W224173 | 20 | PTFE / Silicone | 100 |
| 224168* | 20 | PTFE / Gray Butyl | 100 |
| 224174 | 30 | PTFE / Silicone | 100 |

*This item is a specially molded septa with a PTFE inset. The sealing surface of butyl and PTFE effect a more positive seal than plain PTFE faced septa.

## Tamper Evident Safety Caps

- Use with WHEATON Uni-Dose® Bottles and Vials
- Three-piece Pulp / PVDC / PE lined aluminum caps have unique metal inserts
- Contents cannot be accessed without removing cap or leaving evidence of puncture or insert
- A metal tab with a rolled safety edge "perks up" to provide visual proof of tight seal
- Caps remove quickly and easily in one piece
- Catalog number W224199 is stamped inside "For Oral Use"
- Attach using WHEATON Crimper (Cat. No. 224316)

| Cat. No. | For Mouth OD (mm) | Qty / Case |
|---|---|---|
| W224198 | 28.5 | 2500 |
| W224199 (For Oral Use) | 28.5 | 5000 |

## Battery Powered Crimping Tool

- Powerful motor with a fast cycle
- Convenient controls on top of unit to adjust crimp
- Long lasting battery with Lithium Ion technology - up to 800 crimps per charge
- Advanced charging system including warning light when recharging is necessary
- Can be operated while charging
- Optional base and mounting kit

| Cat. No. | Description | Size (mm) | Qty |
|---|---|---|---|
| W225808 | Battery Powered Crimper | 8 | 1 |
| W225811 | Battery Powered Crimper | 11 | 1 |
| W225812 | Battery Powered Decapper | 11 | 1 |
| W225813 | Battery Powered Crimper | 13 | 1 |
| W225814 | Battery Powered Decapper | 13 | 1 |
| W225820 | Battery Powered Crimper | 20 | 1 |
| W225821 | Battery Powered Decapper | 20 | 1 |
| W225815 | Battery Powered Flip Cap Crimper | 13 | 1 |
| W225822 | Battery Powered Flip Cap Crimper | 20 | 1 |

## Automatic Crimping Tool Stand

| Cat. No. | Description | Qty |
|---|---|---|
| W225701 | Crimping Tool Stand | 1 |

## High Performance Crimping Tool

- Fastest and most powerful WHEATON crimping tool
- Strong enough for all steel and magentic caps
- Designed with external power source and cord (no battery)
- Uses interchangeable jaw sets
- Stores up to 9 programs for different caps and seals
- Optional base and mounting kit

| Cat. No. | Jaw(s) Included | Size (mm) | Qty |
|---|---|---|---|
| W225830-[ ] | — | — | 1 |
| W225831-[ ] | Crimper | 20 | 1 |
| W225832-[ ] | Crimper & Decapper | 20 | 1 |
| W225833-[ ] | Flip Cap Crimper & Decapper | 20 | 1 |

## High Performance Jaw Sets

| Cat. No. | Jaw Type | Size (mm) | Qty |
|---|---|---|---|
| W225741 | Crimper Jaw Set | 8 | 1 |
| W225751 | Crimper Jaw Set | 11 | 1 |
| W225752 | Decapper Jaw Set | 11 | 1 |
| W225761 | Crimper Jaw Set | 13 | 1 |
| W225762 | Decapper Jaw Set | 13 | 1 |
| W225763 | Flip Cap Crimper Jaw Set | 13 | 1 |
| W225771 | Crimper Jaw Set | 20 | 1 |
| W225772 | Decapper Jaw Set | 20 | 1 |
| W225773 | Flip Cap Crimper Jaw Set | 20 | 1 |

| | Plug Style |
|---|---|
| [A] | North American Cord, 120V |
| [B] | Japan Cord, 100V |
| [C] | Europe Cord, 230V |
| [D] | UK Cord, 230V |
| [F] | Australia / China, 240V |
| [G] | Italy / Chile, 230V |
| [J] | India Cord, 230V |

*When ordering, please reference the letter corresponding to the correct electrical cord. Refer to page 146 for plug styles.

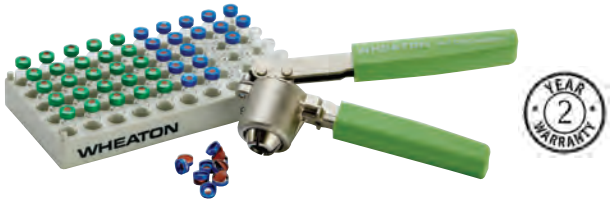
## E-Z Crimper™


- Used to attach aluminum seals to bottles and vials with a crimp / serum finish
- Cushioned ergonomic handle reduces hand fatigue
- Labeled for quick size identification
- Polished crimping jaws provide consistent sealing

| Cat. No. | Description | Qty / Case |
|---|---|---|
| W225300 | Attaches 8mm Standard Aluminum Seals | 1 |
| W225301* | Attaches 11mm Standard Aluminum Seals | 1 |
| W225302 | Attaches 13mm Standard Aluminum Seals | 1 |
| W225303 | Attaches 20mm Standard Aluminum Seals | 1 |

*The 11mm E-Z Crimper™ is supplied with a plunger insert to give the option of crimping the top of a vial creating an extra tight seal. We recommend this only for standard opening vials.

## E-Z Decapper™




- Used to remove aluminum seals from bottles and vials with crimp / serum finish
- Cushioned ergonomic handle reduces hand fatigue
- Labeled for quick size identification
- Autoclavable

| Cat. No. | Description | Qty / Case |
|---|---|---|
| W225350 | Removes 8mm Standard Aluminum Seals | 1 |
| W225351 | Removes 11mm Standard Aluminum Seals | 1 |
| W225352 | Removes 13mm Standard Aluminum Seals | 1 |
| W225353 | Removes 20mm Standard Aluminum Seals | 1 |

## Crimper / Decapper


- These crimpers are used for flip cap seals and for aluminum seals sizes 16.5, 28.5, and 30mm
- Not autoclavable

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 224322 | Crimper, attaches 13mm Flip Cap Seals | 1 |
| 224321 | Crimper, attaches 16.5mm Flip Cap Seals | 1 |
| 224323 | Crimper, attaches 20mm Flip Cap Seals | 1 |
| 224316 | Crimper, attaches 28.5mm Uni-Dose® Seals | 1 |
| 224307 | Crimper, attaches 30mm Seals | 1 |
| 224357 | Decapper, removes 30mm Seals | 1 |

## Plier Decapper


- An inexpensive and easy way to remove seals
- Made of steel with gray plastic-coated handles
- To remove a seal, simply secure the seal between the jaws, squeeze the handles and twist the seal

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 224372 | Removes 13mm Seals | 1 |
| 224373 | Removes 20mm Seals | 1 |

## Black Phenolic Screw Caps

14B Rubber Liner

- 14B Rubber lined caps feature a nontoxic white styrene-butadiene rubber liner ideal for cell culture work
- Aluminum foil faced pulp board liners can be used with organic solvents
- Use low density polyethylene (LDPE) lined caps with distilled water, analytical standards and reagents
- Open top caps with gray chlorobutyl / 50 septa are ideal for use with WHEATON media bottles
- Open top caps provide access with a syringe

| Cat. No. | Cap Size | Cap Style | Cap Material | Color | Cap Liner | Autoclavable | Qty / Pack | Qty / Case |
|---|---|---|---|---|---|---|---|---|
| 240206 | 8-425 | Solid Top | Phenolic | Black | 14B Rubber | Yes | — | 1000 |
| W240406 | 8-425 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | Yes | — | 200 |
| W240506 | 8-425 | Open Top | Phenolic | Black | Linerless | No | — | 200 |
| 240208 | 13-425 | Solid Top | Phenolic | Black | 14B Rubber | Yes | — | 200 |
| 240408 | 13-425 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | Yes | — | 200 |
| W240820 | 13-425 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | Yes | — | 250 |
| W240821 | 13-425 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | Yes | 250 | 1000 |
| 239249 | 13-425 | Solid Top | Phenolic | Black | PE Cone | No | 72 | 144 |
| W240508 | 13-425 | Open Top | Phenolic | Black | Linerless | Yes | — | 200 |
| 240463 | 15-415 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | Yes | — | 200 |
| 240209 | 15-425 | Solid Top | Phenolic | Black | 14B Rubber | Yes | — | 200 |
| 240409 | 15-425 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | Yes | — | 200 |
| W240822 | 15-425 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | Yes | — | 250 |
| W240823 | 15-425 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | Yes | 250 | 1000 |
| 239250 | 15-425 | Solid Top | Phenolic | Black | PE Cone | No | 72 | 144 |
| W240509 | 15-425 | Open Top | Phenolic | Black | Linerless | Yes | — | 200 |
| 240215 | 18-400 | Solid Top | Phenolic | Black | 14B Rubber | Yes | — | 500 |
| 240415 | 18-400 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | Yes | — | 200 |
| 239251 | 18-400 | Solid Top | Phenolic | Black | PE Cone | No | 72 | 144 |
| 239451 | 18-400 | Solid Top | Phenolic | Black | PE Cone | No | — | 6,500 |
| W240515 | 18-400 | Open Top | Phenolic | Black | Linerless | Yes | — | 200 |
| 240264 | 18-415 | Solid Top | Phenolic | Black | 14B Rubber | Yes | — | 500 |
| 240414 | 18-415 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | Yes | — | 200 |
| W239298 | 20-400 | Solid Top | Phenolic | Black | 14B Rubber | Yes | 72 | 144 |
| 240216 | 20-400 | Solid Top | Phenolic | Black | 14B Rubber | Yes | — | 500 |
| 240416 | 20-400 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | Yes | — | 100 |
| 239253 | 20-400 | Solid Top | Phenolic | Black | PE Cone | No | 72 | 144 |
| W240516 | 20-400 | Open Top | Phenolic | Black | Linerless | Yes | — | 200 |
| 239853 | 22-350 | Solid Top | Phenolic | Black | Linerless | Yes | — | 500 |
| W239299 | 22-400 | Solid Top | Phenolic | Black | 14B Rubber | Yes | 72 | 144 |
| W240824 | 22-400 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | Yes | — | 100 |
| W240825 | 22-400 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | Yes | 100 | 500 |
| 239255 | 22-400 | Solid Top | Phenolic | Black | PE Cone | No | 72 | 144 |
| W240517 | 22-400 | Open Top | Phenolic | Black | Linerless | Yes | — | 200 |

Metal Foil Liner

PE Cone Liner

| Cat. No. | Cap Size | Cap Style | Cap Material | Color | Cap Liner | Autoclavable | Qty / Pack | Qty / Case |
|---|---|---|---|---|---|---|---|---|
| W239300 | 24-400 | Solid Top | Phenolic | Black | 14B Rubber | Yes | 72 | 144 |
| 240218 | 24-400 | Solid Top | Phenolic | Black | 14B Rubber | Yes | — | 500 |
| 240418 | 24-400 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | Yes | — | 100 |
| W240827 | 24-400 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | Yes | 100 | 500 |
| W242711 | 24-400 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | Yes | — | 200 |
| 239257 | 24-400 | Solid Top | Phenolic | Black | PE Cone | No | 72 | 144 |
| W240518 | 24-400 | Open Top | Phenolic | Black | Linerless | Yes | — | 200 |
| W239301 | 28-400 | Solid Top | Phenolic | Black | 14B Rubber | Yes | 72 | 144 |
| 240419 | 28-400 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | Yes | — | 100 |
| 240119 | 28-400 | Solid Top | Phenolic | Black | PE Cone | No | — | 100 |
| 239259 | 28-400 | Solid Top | Phenolic | Black | PE Cone | No | 72 | 144 |
| 240319 | 28-400 | Solid Top | Phenolic | Black | Metal Foil / Pulp | No | — | 100 |
| W239302 | 33-400 | Solid Top | Phenolic | Black | 14B Rubber | Yes | 72 | 144 |
| 240421 | 33-400 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | Yes | — | 100 |
| 240121 | 33-400 | Solid Top | Phenolic | Black | PE Cone | No | — | 100 |
| 239260 | 33-400 | Solid Top | Phenolic | Black | PE Cone | No | 72 | 144 |
| 240321 | 33-400 | Solid Top | Phenolic | Black | Metal Foil / Pulp | No | — | 100 |
| 240280 | 33-430 | Solid Top | Phenolic | Black | 14B Rubber | Yes | — | 200 |
| 240480 | 33-430 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | Yes | — | 100 |
| 240080 | 33-430 | Solid Top | Phenolic | Black | LDPE | No | — | 200 |
| 240680 | 33-430 | Open Top | Phenolic | Black | Gray Chlorobutyl / 50 Septa | Yes | — | 100 |
| 240683 | 33-430 | Open Top | Phenolic | Black | Gray Chlorobutyl / 50 Septa | Yes | — | 1000 |
| W240540 | 33-430 | Open Top | Phenolic | Black | Linerless | Yes | — | 200 |
| 240223 | 38-400 | Solid Top | Phenolic | Black | 14B Rubber | Yes | — | 200 |
| W239303 | 38-400 | Solid Top | Phenolic | Black | 14B Rubber | Yes | — | 72 |
| 240269 | 38-415 | Solid Top | Phenolic | Black | 14B Rubber | Yes | — | 200 |
| 240281 | 38-430 | Solid Top | Phenolic | Black | 14B Rubber | Yes | — | 200 |
| 240481 | 38-430 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | Yes | — | 100 |
| 240181 | 38-430 | Solid Top | Phenolic | Black | PE Cone | No | — | 100 |
| 240381 | 38-430 | Solid Top | Phenolic | Black | Metal Foil / Pulp | No | — | 200 |
| 240081 | 38-430 | Solid Top | Phenolic | Black | LDPE | No | — | 200 |
| W240382 | 38-439 | Solid Top | Phenolic | Black | Metal Foil / Pulp | No | — | 200 |
| W239304 | 43-400 | Solid Top | Phenolic | Black | 14B Rubber | Yes | — | 72 |
| W239306 | 48-400 | Solid Top | Phenolic | Black | 14B Rubber | Yes | — | 72 |
| 240228 | 51-400 | Solid Top | Phenolic | Black | 14B Rubber | Yes | — | 100 |
| W239308 | 58-400 | Solid Top | Phenolic | Black | 14B Rubber | Yes | — | 72 |
| 240330 | 58-400 | Solid Top | Phenolic | Black | Metal Foil / Pulp | No | — | 200 |

## Polypropylene Screw Caps

- Use these caps with WHEATON or other manufacturers' glass bottles or vials
- Polyvinyl liners can be used with mild acids, alkalis, solvents and alcohols
- Foamed polyethylene (PE) liner provides chemical resistance for acids, alkalis, solvents and alcohols
- PTFE faced foamed PE liner ideal for use with high purity chemicals, strong acids and solvents
- Open top caps provide access with a syringe
- Open top caps with pre-slit liner are ideal for use in automated liquid handling equipment

| Cat. No. | Cap Size | Cap Style | Cap Material | Color | Cap Liner | Autoclavable | Qty / Pack | Qty / Case |
|---|---|---|---|---|---|---|---|---|
| 239201 | 13-425 | Solid Top | Polypropylene | White | Poly-Vinyl / Pulp | No | 72 | 144 |
| 239401 | 13-425 | Solid Top | Polypropylene | White | Poly-Vinyl / Pulp | No | — | 15,000 |
| 239273 | 13-425 | Solid Top | Polypropylene | White | Foamed PE | No | 72 | 144 |
| 239225 | 13-425 | Solid Top | Polypropylene | White | PTFE / Foamed PE | No | 72 | 144 |
| 239425 | 13-425 | Solid Top | Polypropylene | White | PTFE / Foamed PE | No | — | 19,000 |
| W240830 | 13-425 | Solid Top | Polypropylene | White | Bonded PTFE / Silicone | Yes | — | 250 |
| W240831 | 13-425 | Solid Top | Polypropylene | White | Bonded PTFE / Silicone | Yes | 250 | 1000 |
| W240840 | 13-425 | Open Top | Polypropylene | White | Bonded PTFE / Silicone | Yes | — | 250 |
| W240841 | 13-425 | Open Top | Polypropylene | White | Bonded PTFE / Silicone | Yes | 250 | 1000 |
| W242710 | 13-425 | Open Top | Polypropylene | Black | Bonded PTFE / Silicone | Yes | — | 250 |
| W240848 | 13-425 | Open Top | Polypropylene | Black | Pre-Slit Bonded PTFE / Silicone | Yes | — | 250 |
| W240849 | 13-425 | Open Top | Polypropylene | Black | Pre-Slit Bonded PTFE / Silicone | Yes | 250 | 1000 |
| 242210 | 15-415 | Solid Top | Polypropylene | White | Foamed PE | No | — | 200 |
| 239202 | 15-425 | Solid Top | Polypropylene | White | Poly-Vinyl / Pulp | No | 72 | 144 |
| 239274 | 15-425 | Solid Top | Polypropylene | White | Foamed PE | No | 72 | 144 |
| 239226 | 15-425 | Solid Top | Polypropylene | White | PTFE / Foamed PE | No | 72 | 144 |
| W240832 | 15-425 | Solid Top | Polypropylene | White | Bonded PTFE / Silicone | Yes | — | 250 |
| W240833 | 15-425 | Solid Top | Polypropylene | White | Bonded PTFE / Silicone | Yes | 250 | 1000 |
| W240842 | 15-425 | Open Top | Polypropylene | White | Bonded PTFE / Silicone | Yes | — | 250 |
| W240843 | 15-425 | Open Top | Polypropylene | White | Bonded PTFE / Silicone | Yes | 250 | 1000 |
| W240850 | 15-425 | Open Top | Polypropylene | Black | Pre-Slit Bonded PTFE / Silicone | Yes | — | 250 |
| W240851 | 15-425 | Open Top | Polypropylene | Black | Pre-Slit Bonded PTFE / Silicone | Yes | 250 | 1000 |
| 239203 | 18-400 | Solid Top | Polypropylene | White | Poly-Vinyl / Pulp | No | 72 | 144 |
| 239275 | 18-400 | Solid Top | Polypropylene | White | Foamed PE | No | 72 | 144 |
| 242212 | 18-400 | Solid Top | Polypropylene | White | Foamed PE | No | — | 200 |
| 239227 | 18-400 | Solid Top | Polypropylene | White | PTFE / Foamed PE | No | 72 | 144 |
| 242214 | 18-415 | Solid Top | Polypropylene | White | Foamed PE | No | — | 200 |
| 242216 | 20-400 | Solid Top | Polypropylene | White | Foamed PE | No | — | 200 |
| 239229 | 20-400 | Solid Top | Polypropylene | White | PTFE / Foamed PE | No | 72 | 144 |
| 242217 | 20-410 | Solid Top | Polypropylene | White | Foamed PE | No | — | 200 |
| 239207 | 22-400 | Solid Top | Polypropylene | White | Poly-Vinyl / Pulp | No | 72 | 144 |
| 242218 | 22-400 | Solid Top | Polypropylene | White | Foamed PE | No | — | 200 |
| 239231 | 22-400 | Solid Top | Polypropylene | White | PTFE / Foamed PE | No | 72 | 144 |
| W240834 | 22-400 | Solid Top | Polypropylene | White | Bonded PTFE / Silicone | Yes | — | 100 |
| W240835 | 22-400 | Solid Top | Polypropylene | White | Bonded PTFE / Silicone | Yes | 100 | 500 |
| W240844 | 22-400 | Open Top | Polypropylene | White | Bonded PTFE / Silicone | Yes | — | 100 |
| W240845 | 22-400 | Open Top | Polypropylene | White | Bonded PTFE / Silicone | Yes | 100 | 500 |
| 239209 | 24-400 | Solid Top | Polypropylene | White | Poly-Vinyl / Pulp | No | 72 | 144 |
| 239281 | 24-400 | Solid Top | Polypropylene | White | Foamed PE | No | 72 | 144 |
| 242220 | 24-400 | Solid Top | Polypropylene | White | Foamed PE | No | — | 200 |
| 240805 | 24-400 | Solid Top | Polypropylene | White | Foil / Pulp | No | — | 1000 |
| 239233 | 24-400 | Solid Top | Polypropylene | White | PTFE / Foamed PE | No | 72 | 144 |
| 239433 | 24-400 | Solid Top | Polypropylene | White | PTFE / Foamed PE | No | — | 5,500 |
| W240836 | 24-400 | Solid Top | Polypropylene | White | Bonded PTFE / Silicone | Yes | — | 100 |
| W240837 | 24-400 | Solid Top | Polypropylene | White | Bonded PTFE / Silicone | Yes | 100 | 500 |
| W240846 | 24-400 | Open Top | Polypropylene | White | Bonded PTFE / Silicone | Yes | — | 100 |

| Cat. No. | Cap Size | Cap Style | Cap Material | Color | Cap Liner | Autoclavable | Qty / Pack | Qty / Case |
|---|---|---|---|---|---|---|---|---|
| W240847 | 24-400 | Open Top | Polypropylene | White | Bonded PTFE / Silicone | Yes | 100 | 500 |
| 242222 | 24-410 | Solid Top | Polypropylene | White | Foamed PE | No | — | 200 |
| 239211 | 28-400 | Solid Top | Polypropylene | White | Poly-Vinyl / Pulp | No | 72 | 144 |
| 239283 | 28-400 | Solid Top | Polypropylene | White | Foamed PE | No | 72 | 144 |
| 242224 | 28-400 | Solid Top | Polypropylene | White | Foamed PE | No | — | 200 |
| 239235 | 28-400 | Solid Top | Polypropylene | White | PTFE / Foamed PE | No | 72 | 144 |
| 242225 | 28-410 | Solid Top | Polypropylene | White | Foamed PE | No | — | 200 |
| 239284 | 33-400 | Solid Top | Polypropylene | White | Foamed PE | No | 72 | 144 |
| 242226 | 33-400 | Solid Top | Polypropylene | White | Foamed PE | No | — | 200 |
| 239236 | 33-400 | Solid Top | Polypropylene | White | PTFE / Foamed PE | No | 72 | 144 |
| 242228 | 33-430 | Solid Top | Polypropylene | White | Foamed PE | No | — | 200 |
| 239213 | 38-400 | Solid Top | Polypropylene | White | Poly-Vinyl / Pulp | No | — | 72 |
| 239285 | 38-400 | Solid Top | Polypropylene | White | Foamed PE | No | — | 72 |
| 239237 | 38-400 | Solid Top | Polypropylene | White | PTFE / Foamed PE | No | — | 72 |
| 239214 | 43-400 | Solid Top | Polypropylene | White | Poly-Vinyl / Pulp | No | — | 72 |
| 239286 | 43-400 | Solid Top | Polypropylene | White | Foamed PE | No | — | 72 |
| 239238 | 43-400 | Solid Top | Polypropylene | White | PTFE / Foamed PE | No | — | 72 |
| 239287 | 45-400 | Solid Top | Polypropylene | White | Foamed PE | No | — | 72 |
| 239239 | 45-400 | Solid Top | Polypropylene | White | PTFE / Foamed PE | No | — | 72 |
| 239216 | 48-400 | Solid Top | Polypropylene | White | Poly-Vinyl / Pulp | No | — | 72 |
| 239288 | 48-400 | Solid Top | Polypropylene | White | Foamed PE | No | — | 72 |
| 239240 | 48-400 | Solid Top | Polypropylene | White | PTFE / Foamed PE | No | — | 72 |
| 239217 | 53-400 | Solid Top | Polypropylene | White | Poly-Vinyl / Pulp | No | — | 72 |
| 239289 | 53-400 | Solid Top | Polypropylene | White | Foamed PE | No | — | 72 |
| 239241 | 53-400 | Solid Top | Polypropylene | White | PTFE / Foamed PE | No | — | 72 |
| 239218 | 58-400 | Solid Top | Polypropylene | White | Poly-Vinyl / Pulp | No | — | 72 |
| 239290 | 58-400 | Solid Top | Polypropylene | White | Foamed PE | No | — | 72 |
| 239242 | 58-400 | Solid Top | Polypropylene | White | PTFE / Foamed PE | No | — | 72 |
| 239291 | 63-400 | Solid Top | Polypropylene | White | Foamed PE | No | 24 | 48 |
| 239243 | 63-400 | Solid Top | Polypropylene | White | PTFE / Foamed PE | No | 24 | 48 |
| 239443 | 63-400 | Solid Top | Polypropylene | White | PTFE / Foamed PE | No | — | 1,250 |
| 239220 | 70-400 | Solid Top | Polypropylene | White | Poly-Vinyl / Pulp | No | 24 | 48 |
| 239292 | 70-400 | Solid Top | Polypropylene | White | Foamed PE | No | 24 | 48 |
| 239244 | 70-400 | Solid Top | Polypropylene | White | PTFE / Foamed PE | No | 24 | 48 |
| 239222 | 89-400 | Solid Top | Polypropylene | White | Poly-Vinyl / Pulp | No | 24 | 48 |
| 239494 | 89-400 | Solid Top | Polypropylene | White | Foamed PE | No | — | 500 |
| 239246 | 89-400 | Solid Top | Polypropylene | White | PTFE / Foamed PE | No | 24 | 48 |
| 239446 | 89-400 | Solid Top | Polypropylene | White | PTFE / Foamed PE | No | — | 500 |

## Microlink® Screw Caps

- Ideal for use with biological media, volatile solvents, corrosive chemicals and sensitive compounds
- Liner is ultrasonically welded to the cap to eliminate the possibility of glue contamination and bond failure common with autoclaving
- Available in convenient Lab Pack quantities as well as larger Case Packs
- Low-compression-set silicone ideal for the storage of samples for prolonged period of time over wide temperature ranges
- PTFE or polypropylene on the exposed face of the liner imparts an inert, chemical-resistant surface
- Open top caps provide access with a syringe
- Autoclavable

| Cat. No. | Cap Size | Cap Style | Cap Material | Color | Cap Liner | Autoclavable | Qty / Case |
|---|---|---|---|---|---|---|---|
| 240250-01 | 20-400 | Solid Top | Polypropylene | White | PP / Silicone / PTFE | Yes | 48 |
| 240250 | 20-400 | Solid Top | Polypropylene | White | PP / Silicone / PTFE | Yes | 600 |
| 240251-01 | 24-400 | Solid Top | Polypropylene | White | PP / Silicone / PTFE | Yes | 48 |
| 240240-01 | 28-400 | Open Top | Polypropylene | White | PP / Silicone / PTFE | Yes | 48 |
| 240241-01 | 33-400 | Open Top | Polypropylene | White | PP / Silicone / PTFE | Yes | 24 |
| 240241 | 33-400 | Open Top | Polypropylene | White | PP / Silicone / PTFE | Yes | 240 |
| 240106 | 33-430 | Solid Top | Polypropylene | Black | PP / Silicone | Yes | 50 |
| 240112 | 33-430 | Open Top | Polypropylene | Black | PP / Silicone / PTFE | Yes | 50 |
| 240235-01 | 38-430 | Solid Top | Polypropylene | White | PP / Silicone / PP | Yes | 24 |
| 240256-01 | 38-430 | Solid Top | Polypropylene | White | PP / Silicone / PTFE | Yes | 24 |
| 240114 | 38-430 | Open Top | Polypropylene | Black | PP / Silicone / PTFE | Yes | 50 |
| 240200 | 70-400 | Solid Top | Polypropylene | White | PP / Silicone / PTFE | Yes | 12 |

## Septa for Open Top Caps, Autoclavable

| Cat. No. | For Cap Size (mm) | Material | Qty / Case |
|---|---|---|---|
| **Locking Flange Septa** | | | |
| 240563 | 33 | Chlorobutyl / 50 | 100 |
| **Plain Septa** | | | |
| W240580 | 8 | Red PTFE Faced Silicone | 100 |
| W240581A | 8 | PTFE Faced Silicone | 100 |
| W240583A | 13 | PTFE Faced Silicone | 100 |
| W240593 | 13 | PTFE Faced Butadiene | 100 |
| W240584A | 15 | PTFE Faced Silicone | 100 |
| W240594 | 15 | PTFE Faced Natural Red Rubber | 100 |
| W240585 | 18 | PTFE Faced Silicone | 100 |
| W240596 | 20 | ETFE Faced Natural Red Rubber | 100 |
| W240586A | 20 | PTFE Faced Silicone | 100 |
| W240587 | 22 | PTFE Faced Silicone | 100 |
| W240598A | 24 | PTFE Faced Semi-Translucent Silicone | 100 |
| W240588B | 24 | PTFE Faced White Silicone | 100 |
| W240599 | 24 | PTFE / Silicone / PTFE | 100 |
| W240590 | 33 | PTFE Faced Silicone | 100 |
| I052665 | 45 | PTFE Faced Silicone for Celstir® Sidearm Cap | 1 |

## Liquid Scintillation Vial Screw Caps

- Screw caps for WHEATON liquid scintillation vials
- Use as replacement caps or for vials that are provided without caps
- Choose the right size screw cap for your vial
- Select cap and liner material for your application
- Not autoclavable

| Cat. No. | Cap Size (mm) | Cap Material | Cap Liner Material | Qty / Case |
|---|---|---|---|---|
| 241009 | 15-425 | Urea | Metal Foil | 1000 |
| 240804 | 22-400 | Polypropylene | Metal Foil | 1000 |
| 241017 | 22-400 | Urea | Metal Foil | 1000 |
| 240817 | 22-400 | Urea | Polyethylene Disc | 1000 |
| 240917 | 22-400 | Urea | PE Cone | 1000 |
| 241317 | 22-400 | Polyethylene | Linerless | 1000 |
| 240805 | 24-400 | Polypropylene | Foil / Pulp | 1000 |
| 241018 | 24-400 | Urea | Metal Foil | 1000 |
| 240818 | 24-400 | Urea | Polyethylene Disc | 1000 |

## Polypropylene Screw Cap and Pour Ring

- Replacement caps for Lab 45™ media bottles
- 45mm screw thread
- Inner sealing ring
- Available with liner and center hole
- Autoclavable

Screw Cap, Polypropylene Pour Ring & Lyophilization Stopper

| Cat. No. | Color | Description | Qty / Case |
|---|---|---|---|
| 240726 | White | Cap with Inner Sealing Ring | 12 |
| 240726-03 | Red | Cap with Inner Sealing Ring | 12 |
| 240726-04 | Blue | Cap with Inner Sealing Ring | 12 |
| 240736 | White | Cap without Inner Sealing Ring | 12 |
| 240740 | White | Cap with PTFE Faced Silicone Liner | 12 |
| 240746 | White | Cap with Center Hole | 12 |
| 240756 | — | Polypropylene Pour Ring | 12 |

PBT Screw Cap

ETFE Pour Ring

## Polybutylene Terephthalate Screw Cap

- With PTFE faced silicone liner
- 45mm screw thread
- Withstands temperatures up to 200°C
- Autoclavable

| Cat. No. | Description | Cap Size | Qty / Case |
|---|---|---|---|
| 240750 | PBT Screw Cap | 45mm | 10 |
| 240760 | ETFE Pour Ring | — | 10 |

# WHEATON®
## MEDIA BOTTLES

WHEATON Media Bottles can be used for storage as well as mixing and sampling. These bottles are manufactured from WHEATON 400 borosilicate glass that conforms to USP Type I requirements and has a low alkali content to help prevent changes in pH.

> 100 – 2000mL sizes

> Available in clear or amber borosilicate glass

> Black phenolic or white polypropylene caps with 33mm or 45mm screw threads

> Variety of cap liners available

See more information on Media Bottles on page 20.

## Glass Filled PP Screw Cap

- Open top polypropylene (PP) glass-filled cap
- Provides greater heat resistance than other PP caps
- PTFE / silicone septa bonded to cap
- Ideal for EPA samples

| Cat. No. | Cap Size | Qty / Pack | Qty / Case |
|---|---|---|---|
| W224600 | 24-400 | 100 | 200 |

## I-Loc™ Closure

- For use with Screw Neck Diagnostic Bottles
- Advantages of an aluminum seal with the convenience of a screw cap
- Polypropylene screw cap with gray bromobutyl / 50 stopper
- Autoclavable

| Cat. No. | Cap Size | Color | Qty / Case |
|---|---|---|---|
| 240676-01 | 20-400 | Black | 100 |
| 240676-02 | 20-400 | White | 100 |
| 240676-03 | 20-400 | Red | 100 |
| 240676-04 | 20-400 | Blue | 100 |
| 240676-05 | 20-400 | Yellow | 100 |

## Polypropylene Screw Cap

- Unlined for use with WHEATON Glass Diagnostic Bottles
- Solid or open top screw caps
- Use with thin-flange lyophilization stoppers sold separately
- Five colors available
- Autoclavable

| Cat. No. | Cap Size | Cap Style | Color | Qty / Case |
|---|---|---|---|---|
| 240706-01 | 20-400 | Solid Top | Black | 300 |
| 240706-02 | 20-400 | Solid Top | White | 300 |
| 240706-04 | 20-400 | Solid Top | Blue | 300 |
| 240706-05 | 20-400 | Solid Top | Yellow | 300 |
| 240716-01 | 20-400 | Open-Top | Black | 300 |
| 240716-02 | 20-400 | Open-Top | White | 300 |
| 240716-03 | 20-400 | Open-Top | Red | 300 |
| 240716-04 | 20-400 | Open-Top | Blue | 300 |
| 240716-05 | 20-400 | Open-Top | Yellow | 300 |
| **Thin-Flange Lyophilization Stopper** | | | | |
| 224100-203 | 20mm | Thin-Flange | Gray | 300 |
| W224100-190 | 20mm | Snap-on Thin-Flange | Gray | 1000 |

## Polypropylene Screw Cap, Linerless

- Use these caps with WHEATON Leak Resistant Narrow Mouth Bottles
- Available in natural, white, red, blue and green

| Cat. No. | Cap Size | Color | Autoclavable | Qty / Pack | Qty / Case |
|---|---|---|---|---|---|
| 239501 | 13-425 | Natural | Yes | 12 | 72 |
| 239501-02 | 13-425 | White | Yes | 12 | 72 |
| 239501-03 | 13-425 | Red | Yes | 12 | 72 |
| 239501-06 | 13-425 | Green | Yes | 12 | 72 |
| 239506 | 20-410 | Natural | Yes | 12 | 72 |
| 239506-02 | 20-410 | White | Yes | 12 | 72 |
| 239506-03 | 20-410 | Red | Yes | 12 | 72 |
| 239506-04 | 20-410 | Blue | Yes | 12 | 72 |
| 239506-06 | 20-410 | Green | Yes | 12 | 72 |
| 239510 | 24-410 | Natural | Yes | 12 | 72 |
| 239510-02 | 24-410 | White | Yes | 12 | 72 |
| 239510-03 | 24-410 | Red | Yes | 12 | 72 |
| 239510-04 | 24-410 | Blue | Yes | 12 | 72 |
| 239510-06 | 24-410 | Green | Yes | 12 | 72 |
| 239512 | 28-410 | Natural | Yes | 12 | 48 |
| 239512-02 | 28-410 | White | Yes | 12 | 48 |
| 239512-04 | 28-410 | Blue | Yes | 12 | 48 |
| 239512-06 | 28-410 | Green | Yes | 12 | 48 |
| 239516 | 38-430 | Natural | Yes | 12 | 72 |
| 239516-02 | 38-430 | White | Yes | 12 | 72 |
| 239516-03 | 38-430 | Red | Yes | 12 | 72 |
| 239516-04 | 38-430 | Blue | Yes | 12 | 72 |

## Snap Cap

- Use these caps with WHEATON Snap Cap sample bottles
- All sizes have tabs for easy removal
- Natural low density polyethylene

| Cat. No. | Cap Size (mm) | Qty / Case |
|---|---|---|
| 242612 | 22 | 200 |
| 242615 | 30 | 200 |
| 242616 | 34 | 200 |
| 242619 | 45 | 200 |


# An Array of Tools for the Biological Sciences

## Cell Culture

DWK Life Sciences has a long history of providing laboratory to production glassware and equipment. Quality is paramount in our manufacturing and performance is principal in the design. From sample preparation to storage and adherent cell culture to suspension culture, DWK Life Sciences understands the life sciences and their importance to all of us.

## Highlights

- Industry standard tissue grinders and staining ware
- Roller culture equipment and Incubators designed to perform with production precision
- Spinner flasks and magnetic stirrers for multiple applications and scales
- Turn key bioreactor systems; autoclavable, customizable, suspension culture systems

# Cell Culture



## CELLine™ Bioreactors

Our CELLine flasks are designed to enhance small scale bio-production for antibody and protein generation. Conventional *in vivo* or *in vitro* cell culture methods can be laborious, may have low cell density and require significant purification. CELLine flasks address these three areas of limitation observed in static tissue culture flasks.

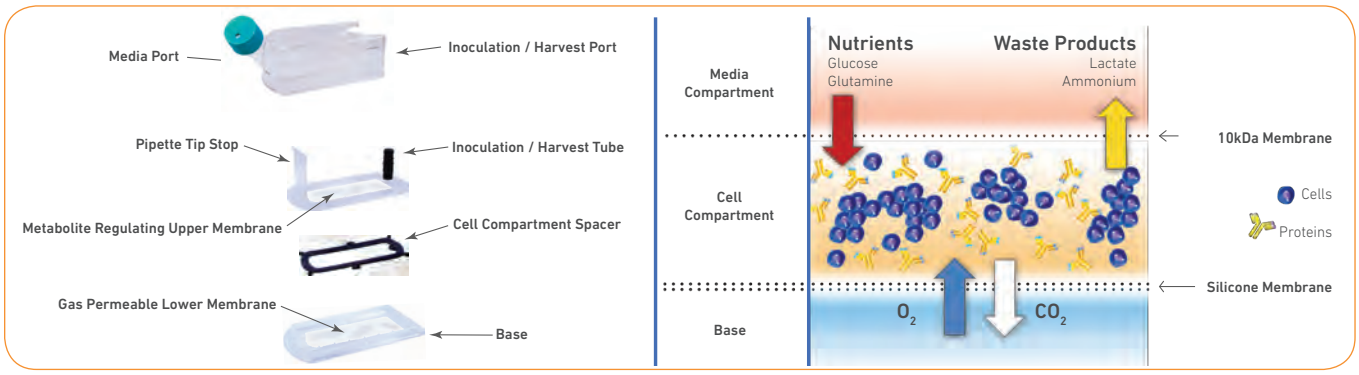
## How does the CELLine Flask Work?

**Media Compartment** – The media compartment allows for bulk storage of cell culture growth medium. This reduces the media refreshing requirement significantly as the media compartment is fifty times the size of the cell compartment.

**Metabolite Regulating Upper Membrane** – The upper dialysis membrane has a 10 kDa cut off limit. This regulates the flow of metabolites to and from the cell compartment and retains all proteins in the cell compartment.

**Cell Compartment** – The cell compartment provides the ideal area to inoculate and achieve high density cultures. The compartment concentrates cells, their products, and limits the requirement for any exogenous growth factors.

**Gas Permeable Lower Membrane** – With static cultures, gas transfer rates can be the limiting factor in high density cultures. The CELLine flask places the cells directly against the gas permeable membrane to achieve optimal levels of oxygen and carbon dioxide.




Note: Exploded view of device; unit is packaged fully assembled

| Cat. No. | Flask Type | Culture Type | Media (mL) Compartment Size | Cell (mL) Compartment Size | Qty / Case |
|---|---|---|---|---|---|
| WCL1000-1 | CELLine 1000 | Suspension | 1000 | 15 | 1 |
| WCL1000-3 | CELLine 1000 | Suspension | 1000 | 15 | 3 |
| WCL1000AD-1 | CELLine 1000-AD | Adherent | 1000 | 15 | 1 |
| WCL1000AD-3 | CELLine 1000-AD | Adherent | 1000 | 15 | 3 |
| WCL0350-1 | CELLine 350 | Suspension | 350 | 5 | 1 |
| WCL0350-5 | CELLine 350 | Suspension | 350 | 5 | 5 |

## Benefits of CELLine Flask

- Disposable and ready-to-use
- High cell density and high product concentration
- Reduces operation time
- Decreases use of consumables
- Cost-efficient, space saving, and stackable
- No additional equipment required for operation

## WHEATON Erlenmeyer Shake Flasks

WHEATON Erlenmeyer Flasks are manufactured with virgin, optically clear, non-leaching LEXAN resin that retains clarity after gamma irradiation. The flasks are certified pyrogen-, DNase- and RNase-free and are packaged particulate free and wrapped in an easy tear, sterile bag. WHEATON Flasks are ideal for all suspension cell cultures, including baculovirus, microbial and algae cultures, as well as media preparation, storage and all related applications. WHEATON Flasks fit all standard shaking incubator systems and can be placed on any platform. In addition, DWK Life Sciences offers Shaker Flask Clamps for use with our flasks.

## Benefits of WHEATON Erlenmeyer Flasks:

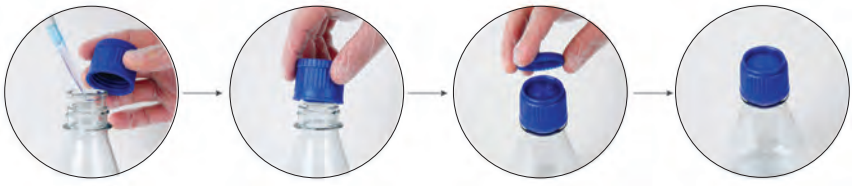
- Ideal replacement for glass and other Erlenmeyer / Shaker Flasks
- Patented DuoCAP® allows sterile air exchange or a leak resistant seal
- Minimize oxidation or pH shifts
- Perform aerobic/anaerobic culture
- Available with septum cap for pathogen containment
- Re-autoclavable, reusable
- Individually packed in easy tear bags
- Sterile to SAL $10^{-6}$
- Available with a flat or baffled base
- Baffled base flasks are ideal when increased levels of oxygenation and mixing are required

| | 125mL | 250mL | 500mL | 1L (1000mL) | 2L (2000mL) | 3L (3000mL) |
|---|---|---|---|---|---|---|
| **Flat Base** | WPFPC0125S | WPFPC0250S | WPFPC0500S | WPFPC1000S | WPFPC2000S | WPFPC3000S |
| **Baffled Base** | WPFBC0125S | WPFBC0250S | WPFBC0500S | WPFBC1000S | WPFBC2000S | WPFBC3000S |
| **Closure Size** | 38-430 | 38-430 | 38-430 | 53B | 53B | 69B |
| **Units/Pack** | 24 | 12 | 12 | 6 | 6 | 3 |

## WHEATON Shaker Clamps

WHEATON Polypropylene Shaker Flasks Clamps are carefully engineered to provide both clipping elasticity and motion resistance in one product. WHEATON Shaker Clamps feature a non-scratch design and are offered in a standard blue color accompanied by stainless steel screws and washers. The Clamps fit all industry standard shaking incubators and are autoclavable for reuse.

| Cat. No. | WPSFC2000 | WPSFC1000 | WPSFC0500 | WPSFC0250 | WPSFC0125 |
|---|---|---|---|---|---|
| Size | 2000mL | 1000mL | 500mL | 250mL | 125mL |
| Height (mm) | 89.57 | 74.5 | 63.14 | 57.63 | 51.17 |
| Diameter (mm) | 169.1 | 143.9 | 111.6 | 90.4 | 74.72 |



Add culture media and inoculum.

Place DuoCap on flask. Flask is now ready for anaerobic culture.

For aerobic culture, remove dust guard cover.

Move flask to shaker incubator.

## WHEATON Standard Roller


Refer to page 146 for plug styles.

- Smooth ramping digitally controlled rotation accurate to 0.01 RPM
- Maintenance free precision brushless motor
- Bright LCD display for easy operation
- Multiple decking and capacity configurations available for process flexibility
- See page 55 for additional options

### Specifications

| | |
|---|---|
| Capacity: | 5-88 Positions |
| Bottle Speed (110mm Bottle, other speeds available): | 0.25-8.1 RPM |
| Bottle Diameter: | 108-121mm |
| Bottle Length: | Up to 550mm |
| Accuracy: | 0.01 RPM |
| Drive: | Belt Driven |
| Motor Type: | Brushless DC |
| Rotation Direction: | Clockwise and Counter-Clockwise |
| Options: | Rotation Alarm and Battery Backup |
| Remote Communication: | Dry Contact Relay |
| Humidity: | 80% up to 31°C |
| Operating Temperature: | 10 to 40°C |
| Electrical: | 100-240 VAC, 50/60 Hz, 35W |

## WHEATON R2P™ 2.0 Roller Apparatus



- Robust touch screen interface that is easy to view from a distance
- Readily recognized icons for intuitive navigation
- Digitally controlled maintenance free motor accurate to 0.01 RPM
- Capable of remote interface and monitoring through SCADA systems
- Multiple decking and capacity configurations available for process flexibility
- See page 55 for additional options

### Specifications

| | |
|---|---|
| Capacity: | 5-88 Positions |
| Bottle Speed (110mm Bottle, other speeds available): | 0.25-8.1 RPM |
| Accuracy: | 0.01 RPM |
| Drive: | Belt Driven |
| Motor Type: | Brushless DC |
| Rotation Direction: | Clockwise, Counter-Clockwise and Rocking |
| Rotation Alarm: | Included |
| Options: | Temperature Monitoring and Battery Backup |
| Remote Communication: | Yes, Modbus® Protocol and WHEATON Protocol via Ethernet and RS422 |
| Humidity: | 80% up to 31°C |
| Operating Temperature: | 10 to 40°C |
| Electrical: | 100-240 VAC, 50/60 Hz, 35W |

## Ordering Information

DWK Life Sciences specializes in standard and customized roller apparatus units. The part numbering system below allows for the configuration of a standard system. The main components that make up a unit include the control system, the size and type of roller bottle decks and system options. There is also a table below listing the most commonly used roller apparatus. If you have any questions about custom bottle sizes, rotation speeds or standard systems do not hesitate to contact your DWK Life Sciences representative.

**Example:** W R T P F 5 11 1 - A

### Control System

**R2P 2.0**
Advanced touch screen with remote communications and alarms

**STANDARD**
Digital display

**Control System Type**
**R** - R2P 2.0
**S** - Standard

**Top Mounted**
Ideal design for rigorous cleaning and ceiling mounted connections

**Bottom Mounted**
Ideal design for easy access and floor mounted connections

**Control System Location**
**T** - Top Mounted
**B** - Bottom Mounted

### Decks

**Production** (6"/152mm)
Smaller spacing between decks to allow for more bottles per area

**Modular** (7.125"/181mm)
Larger spacing between decks to allow easier removal and replacement of bottles

**Spacing**
**P** - Production
**M** - Modular

**Fixed**
Fixed size with a single piece uprights used for production and lighter weight due to less hardware

**Removale**
Removable decks for flexible design

**Deck Type**
**F** - Fixed
**R** - Removable

### Capacity

**5**
Five placement areas per deck allows for use with an upright incubator

**8**
Eight placement areas is used for large scale production type installions

**Postions per Deck**
5
8

**01-11: Number of Decks**
Modular spaced units have a maximum of 9 decks, production spaced units have a maximum of 11 decks

**No. of Decks**
01-11

### Options

**0**
No options included

**1**
Options Included
Standard Roller options include belt break alarm and battery backup
R2P 2.0 options include temperature monitoring and alarms (2 probes) and battery backup (Belt break alarm included in base offering)

**Options**
0
1

**Plug Style**
**A** - North America - 120 VAC
**B** - Japan - 100 VAC
**C** - Continental Europe - 230 VAC
**D** - United Kingdom - 230 VAC
**F** - Australia/China - 240 VAC
**G** - Italy/Chile - 230 VAC
**J** - India - 230 VAC

Refer to page 56 for Roll-In Incubators.

## Part Numbers and Sizing Information for Most Common Systems

| Part Number | # Positions | # Decks | Width (in / cm) | Depth (in / cm) | Height (in / cm) | Weight (lb / kg) | # of Bottle Positions | Control System |
|---|---|---|---|---|---|---|---|---|
| **Bottom Drive Production Spacing** | | | | | | | | |
| WRBPR5010-A | 5 | 1 | 31 / 79 | 25 / 63 | 14 / 35 | 52 / 24 | 5 | R2P 2.0 |
| WRBPR5030-A | 5 | 3 | 31 / 79 | 25 / 63 | 26 / 65 | 85 / 39 | 15 | R2P 2.0 |
| WRBPF5110-A | 5 | 11 | 31 / 79 | 25 / 63 | 74 / 187 | 217 / 99 | 55 | R2P 2.0 |
| WRBPF8110-A | 8 | 11 | 47 / 120 | 25 / 63 | 74 / 187 | 360 / 167 | 88 | R2P 2.0 |
| **Bottom Drive Modular Spacing** | | | | | | | | |
| WRBMR5010-A | 5 | 1 | 30 / 76 | 25 / 63 | 14 /34 | 70 / 32 | 5 | R2P 2.0 |
| WSBMR5010-A | 5 | 1 | 30 / 76 | 25 / 63 | 14 /34 | 70 / 32 | 5 | Standard |
| WRBMR5030-A | 5 | 3 | 30 / 76 | 25 / 63 | 29 / 74 | 112 / 51 | 15 | R2P 2.0 |
| WSBMR5030-A | 5 | 3 | 30 / 76 | 25 / 63 | 29 / 74 | 112 / 51 | 15 | Standard |
| WRBMR5070-A | 5 | 7 | 30 / 76 | 25 / 63 | 57 / 145 | 196 / 89 | 35 | R2P 2.0 |
| WSBMR5070-A | 5 | 7 | 30 / 76 | 25 / 63 | 57 / 145 | 196 / 89 | 35 | Standard |
| WRBMR5090-A | 5 | 9 | 30 / 76 | 25 / 63 | 71 / 179 | 238 / 108 | 45 | R2P 2.0 |
| WSBMR5090-A | 5 | 9 | 30 / 76 | 25 / 63 | 71 / 179 | 238 / 108 | 45 | Standard |
| **Top Drive Production Spacing** | | | | | | | | |
| WRTPF5110-A | 5 | 11 | 31 / 79 | 25 / 63 | 75 / 190 | 250 / 113 | 52 | R2P 2.0 |
| WSTPF5110-A | 5 | 11 | 31 / 79 | 25 / 63 | 75 / 190 | 250 / 113 | 52 | Standard |
| WRTPF8110-A | 8 | 11 | 47 / 120 | 25 / 63 | 75 / 190 | 350 / 159 | 86 | R2P 2.0 |
| WSTPF8110-A | 8 | 11 | 47 / 120 | 25 / 63 | 75 / 190 | 350 / 159 | 86 | Standard |

## Roller Options Information

**Rotation Alarm (Included with R2P 2.0)** - The rotation alarm employs two magnetic sensors to ensure that all main pulleys are rotating on the unit. This is included on all R2P 2.0 Roller Apparatus.

**Battery Backup** – The battery backup protects cells during transport, processing and power outages. The unit automatically and seamlessly switches over to battery power to provide rotation for 12 – 24 hours. Bottom mounted control systems house larger, longer lasting batteries.

**Temperature Monitoring / Alarm Option (R2P 2.0 Only)** – This option includes two precision temperature probes for real time temperature monitoring and deviation alarms. The temperature is displayed on the touch screen, screen saver for quick confirmation of optimal operating conditions.

## WHEATON Field Installation Options Packages

| Cat. No. | System |
|---|---|
| W348890V2 | Standard Roller Top Drive System Options with Rotation Alarm and Battery Backup |
| W348891V2 | Standard Roller Bottom Drive System Options with Rotation Alarm and Battery Backup |
| W348892V2 | R2P 2.0 Roller Top Drive System Options with Battery Backup and Temperature Sensors (Rotation Alarm is already included with unit) |
| W348893V2 | R2P 2.0 Roller Bottom Drive System Options with Battery Backup and Temperature Sensors (Rotation Alarm is already included with unit) |

**Please contact your DWK Life Sciences representative for information regarding retrofits, modifications, custom systems and deck kits for existing systems.**

## Deck Kit

**Deck Kit For Modular Spaced Systems** – The deck kit is designed for modular systems with removable decks. These are kits designed for customer installation.

**Deck Kit For Production Spaced Systems** – The deck kit is designed for production systems with removable decks. These are kits designed for customer installation.

| Cat. No. | Description | Qty / Case |
|---|---|---|
| W348887 | 5 position deck, 7 1/8" Deck Spacing | 1 |
| W348889 | 5 position deck, 6 " Deck Spacing | 1 |

## Power Homogenizer and Overhead Stirrer


- Dual purpose unit for use with tissue grinders or impellers
- Adjustable speed ranging from 300 – 5000 RPM under load
- Adjustable connector accepts stainless steel shafts up to 0.3125" (7.9mm) in diameter
- Aluminum rod and clamp included for unit mounting
- Electrical Requirements: 120 VAC, 50/60 Hz, 50 watts
- Dimensions: 4.5" x 5" x 12" (11.5 x 13 x 30cm)
- Weight: 6lbs (2.7kg)

| Cat. No. | Description | Qty/Case |
|---|---|---|
| 903475 | Complete Unit | 1 |

## Accessories

| Cat. No. | Description | Qty/Case |
|---|---|---|
| 905275 | Swivel Blade Paddle, Stainless Steel | 1 |
| 905462 | Extension Rod, 0.25" x 6" (6.3 x 153mm), Stainless Steel | 1 |
| 905465 | Extension Rod, 0.25" x 12" (6.3 x 305mm), Stainless Steel | 1 |
| 905475 | Extension Sleeve for 0.25" (6.3mm), Stainless Steel | 1 |

## Roller Bottles

- Specifically designed for adherent cell roller culture
- Withstands repeated wet or dry sterilization cycles
- Borosilicate glass conforms to USP Type I and ASTM E 438 Type I, Class A requirements
- Available with different cap configurations

| Cat. No. | Dia x Flat Overall Length (mm) | Usable Surface Area ($cm^2$) | Surface ($cm^2$) | Approx Capacity (mL) | Qty / Case |
|---|---|---|---|---|---|
| **Roller bottle with 38mm deep skirted, black phenolic screw cap with white styrene-butadiene rubber liner (GPI 38-415)** | | | | | |
| 348252 | 110 x 240 | 550 | 680 | 1380 | 4 |
| 348253 | 110 x 285 | 700 | 840 | 1760 | 4 |
| 348256 | 110 x 480 | 1320 | 1500 | 3450 | 4 |
| 348258 | 110 x 550 | 1555 | 1680 | 4230 | 4 |
| **Roller bottle with 45mm white polypropylene screw cap with inner sealing ring and polypropylene pour ring.** | | | | | |
| 348272 | 110 x 240 | 550 | 680 | 1380 | 4 |
| 348273 | 110 x 285 | 700 | 840 | 1760 | 4 |
| **Roller bottle with 51mm black phenolic screw cap with shallow skirt and white styrene-butadiene rubber liner (GPI 51-400)** | | | | | |
| 348522 | 110 x 270 | 700 | 840 | 1760 | 4 |
| 348524 | 110 x 355 | 940 | 1070 | 2500 | 4 |
| 348528 | 110 x 535 | 1555 | 1680 | 4230 | 4 |

## Standard Incubator

- Compatible with:
  - Production-spaced R2P 2.0 and Standard rollers with up to 11 decks
  - Modular-spaced R2P 2.0 and Standard rollers with up to 9 decks
- User configurable shelving system and roller apparatus guide tracks (shelving sold separately)
- USB port and analog 4-20mA jack included for data logging temperature levels
- Designed for temperature uniformity
- Dry contact alarm port available for communicating alarm activation instances
- Large viewing window with an option for dual windows

### Specifications

Capacity: ..... 39.7 Cubic ft
Interior Dimensions (W×D×H): .34.7 x 26 x 75" (88.1 x 66.0 x 190.5 cm)
Exterior Dimensions(W×D×H): 42 x 32.4 x 88" (106.7 x 82.3 x 223.5cm)
Control:.....Microprocessor Controlled ±0.1°C
Temperature Range:.....8°C Above Ambient to 70°C
Temperature Uniformity:..... Forced Air Circulation ±0.8°C at 37°C
Electrical:.....100-240 VAC, 50/60 Hz, 12A-8A
Shelving: ..... 20 Maximum
Interior Electrical Outlet:..... 1 (Chamber Ceiling)
Net Weight:.....497 lb (225 kg)
Shipping Weight: ..... 657 lb (298.1kg)

| Cat. No. | Plug Style | Voltage | Qty |
|---|---|---|---|
| W753681 | North America | 120 VAC | 1 |
| W753681-B-E | Japan | 100 VAC | 1 |
| W753685-C-E | Continental Europe | 230 VAC | 1 |
| W753685-D-E | United Kingdom | 230 VAC | 1 |
| W753685-F-E | Australia / China | 230 VAC | 1 |
| W753685-G-E | Italy / Chile | 230 VAC | 1 |
| W753685-J-E | India | 230 VAC | 1 |

Refer to page 146 for plug styles.

## Incubator Shelves (Not Supplied with Incubators)

| Cat. No. | Description | Qty |
|---|---|---|
| 753685 | Painted Shelf for Standard | 1 |
| WI056028 | Stainless Steel Shelf for $CO_2$ | 1 |

## $CO_2$ Incubator

- Compatible with:
  - Production-spaced R2P 2.0 and Standard rollers with up to 11 decks
  - Modular-spaced R2P 2.0 and Standard rollers with up to 9 decks
- Infrared sensor technology to maintain 0 to 20% $CO_2$ concentration
- Stainless steel interior
- User configurable shelving system and roller apparatus guide tracks (shelving sold separately)
- USB port and analog 4-20mA jack included for data logging temperature and $CO_2$ levels
- Dry contact alarm port available for communicating alarm activation instances
- Designed for temperature uniformity
- Large viewing window with an option for dual windows

### Specifications

Capacity: .....39.7 Cubic ft
Interior Dimensions(W×D×H): .... 35 x 26 x 75.5" (88.9 x 66 x 191.7 cm)
Exterior Dimensions(W×D×H): .42.5 x 34.5 x 89" (108 x 87.6 x 226 cm)
Control:..... Microprocessor controlled ±0.1°C
Temperature Range:..... 8°C above Ambient to 70°C
Temperature Uniformity:.....Forced Air Circulation ±0.5°C at 37°C
Electrical:.....100-240 VAC, 50/60 Hz, 15A-10A
$CO_2$ Range:.....0-20%
$CO_2$ Sensor: ..... IR
$CO_2$ Rate: .....<5min (Recovery)
$CO_2$ Connection: ..... ¼" (6.35mm) Hose Barb
$CO_2$ Inlet pressure: ..... 15-20 psi (0.1.03-1.378 bars)
Jacket Type: .....Air
Shelving: ..... 30 Maximum
Interior Electrical Outlet:.....1 (Chamber Ceiling)
Net Weight:.....574lb (260.4kg)
Shipping Weight: .....682lb (309.4kg)

| Cat. No. | Plug Style | Voltage | Qty |
|---|---|---|---|
| WI057608 | North America | 120 VAC | 1 |
| WI057608-C-E | Continental Europe | 230 VAC | 1 |
| WI057608-D-E | United Kingdom | 230 VAC | 1 |
| WI057608-F-E | Australia / China | 230 VAC | 1 |
| WI057608-J-E | India | 230 VAC | 1 |

Refer to page 146 for plug styles.

## Micro-Stir® Magnetic Stirrer & BioStir® Magnetic Stirrers

### Micro-Stir® Magnetic Stirrer

- Ideal for low speed shear sensitive mixing
- 5-200 RPM, single and four place units
- Programmable, remote control and alarm capable

| Cat. No. | Description | Qty / Case |
|---|---|---|
| W900700- [ ] | Single Place Micro-Stir® | 1 |
| W900701- [ ] | Four Place Micro-Stir® | 1 |

Refer to page 146 for plug styles when ordering.

### BioStir® Magnetic Stirrer

- Ideal for general mixing and difficult to dissolve solutes
- 150-1200 RPM, single and four place units
- Programmable, remote control and alarm capable

| Cat. No. | Description | Qty / Case |
|---|---|---|
| W900702- [ ] | Single Place BioStir® | 1 |
| W900703- [ ] | Four Place BioStir® | 1 |

Refer to page 146 for plug styles when ordering.

**Specifications**

**Electrical:**
Operating Voltage: 100-240 VAC, 50/60 Hz
Power Consumption: 15 Watts
Pollution Degree: Class 2
**Environmental:**
Operating Temperature: 15° to 40°C
Humidity: 80% up to 31°C, 50% at 40°C
Altitude Limit: 2000m
**Operating Speed:**
Micro-Stir®: 5-200 RPM
BioStir®: 150-1200 RPM
Maximum Flask Size: 3L Flask
**Dimensions: H x W x D**
Single Place: 3.6 x 8 x 9.8" (9.2 x 20.3 x 24.9cm)
Four Place: 4 x 15.5 x 17.5" (10.2 x 39.4 x 44.5cm)
**Weight:**
Single Place: 4.5lb (1.9kg)
Four Place: 10lb (4.5kg)

## Remote Control Unit

- Ideal for sensitive procedures or difficult to reach areas
- Same interface layout as Micro-Stir® and BioStir® stirrers
- Slim communication cord; no power cord required

| Cat. No. | Description | Qty / Case |
|---|---|---|
| W900704 | Remote Control | 1 |

## Bench-Top Systems – Mini-Bottle

- Allows for serum and media bottles as well as culture tubes
- For cell cultivation or staining procedures
- Accommodates bottles 38 to 60mm in diameter and 240mm long
- Deck kits available to double or triple capacity

Shown with Additional Deck Kit

**Specifications**

Capacity: 4-12 Positions
Bottle Speed: 2-45 RPM (dependent on bottle size)
Bottle Diameter: 38-60mm
Bottle Length: Up to 240mm
Weight: 18lb (8kg)
Dimensions: W x D X H: 12.25 x 12.75 x 7.125" (32 x 32.5 x 18cm)
Humidity: 80% up to 31°C
Operating Temperature: 10 to 40°C
Electrical: 100-240 VAC, 50/60 Hz, 14W

| Cat. No. | Plug Style | Voltage | Qty / Case |
|---|---|---|---|
| W348923-A | North America | 120 VAC | 1 |
| W348923-B | Japan | 100 VAC | 1 |
| W348923-C | Continental Europe | 230 VAC | 1 |
| W348923-D | United Kingdom | 230 VAC | 1 |
| W348923-F | Australia / China | 240 VAC | 1 |
| W348923-G | Italy / Chile | 230 VAC | 1 |
| W348923-J | India | 230 VAC | 1 |

Refer to page 146 for plug styles when ordering.

## Additional Deck Kit

| Cat. No. | Description | Qty / Case |
|---|---|---|
| W348920-CH | Deck Kit for Mini Bottle Bench-Top Roller Rack | 1 |

## Bench-Top Systems – Small Bottle

- Allows for use with glass or plastic roller bottles
- For cell cultivation research and pilot applications
- Accommodates two bottles 75 to 121mm in diameter and 290 mm long
- Deck kits available to double or triple capacity

### Specifications

Capacity: ..... 2-6 Positions
Bottle Speed: ..... 0.1-3.8 RPM (110mm diameter bottle)
Bottle Diameter: ..... 75-121mm
Bottle Length: ..... Up to 290mm
Weight: ..... 18lb (8kg)
Dimensions: W x D X H..... 12.25 x 12.75 x 7.125" (32 x 32.5 x 18cm)
Humidity: ..... 80% up to 31°C
Operating Temperature: ..... 10 to 40°C
Electrical: ..... 100-240 VAC, 50/60 Hz, 14W

| Cat. No. | Plug Style | Voltage | Qty / Case |
|---|---|---|---|
| W348924-A | North America | 120 VAC | 1 |
| W348924-B | Japan | 100 VAC | 1 |
| W348924-C | Continental Europe | 230 VAC | 1 |
| W348924-D | United Kingdom | 230 VAC | 1 |
| W348924-F | Australia / China | 240 VAC | 1 |
| W348924-G | Italy / Chile | 230 VAC | 1 |
| W348924-J | India | 230 VAC | 1 |

Refer to page 146 for plug styles when ordering.

## Additional Deck Kit

| Cat. No. | Description | Qty / Case |
|---|---|---|
| W348930-CH | Deck Kit for Small Bottle Bench-Top Roller Rack | 1 |

## Staining Dish, 10-20 Slide Unit

- This 20-slide unit is the standard for manual staining procedures
- The removable glass slide rack has an open bottom to facilitate rapid immersion and drainage, reducing carryover
- The rack holds 10 single slides, 19 slides arranged alternately straight across and diagonally, or 20 slides back-to-back of standard size: 3" x 1" (75 x 25mm), 3" x 1-1/2" (75 x 38mm) and 3" x 2" (75 x 51mm) sizes
- Manufactured from soda-lime glass
- Approximate inside bottom dimensions (mm): 91 L x 71 W x 60 D

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 900200 | Complete (Dish, Cover, Rack, Handle) | 6 |
| 900201 | Dish | 3 |
| 900202 | Cover | 3 |
| 900203 | Dish and Cover | 3 |
| 900204 | Glass Slide Rack | 3 |
| 900205 | Handle | 6 |

## Staining Dish, 10-20 Slide Unit

- Designed for staining 3" x 1" (75mm x 25mm) microscope slides
- Holds 10 single slides, or 19 slides arranged alternately straight across and diagonally, or 20 slides back-to-back
- Manufactured from soda-lime glass
- Approximate inside bottom dimensions (mm): 75 L x 55 W x 35 D

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 900170 | Staining Dish, with Cover | 6 |

## Staining Dish, 16-40 Slide Unit

- These mix-and-match components offer greater flexibility in meeting your requirements
- This staining dish accommodates 16, 20 and 30 slide racks
- It holds slides sizes 3" x 1" (75mm x 25mm), 3" x 1-1/2" (75mm x 38mm), and 3" x 2" (75mm x 51mm)
- Manufactured from soda-lime glass
- Approximate inside bottom dimensions (mm): 121 L x 90 W x 66 D

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 900303 | Dish and Cover | 6 |
| 900301 | Dish | 3 |
| 900302 | Cover | 3 |
| 900234 | 30-Slide Rack Stainless Steel with Hinged Handle | 3 |
| 900254 | 16-32 Slide Rack, Glass | 3 |
| 900304 | 20-40 Slide Rack, Glass | 3 |

## Staining Dish, 50-Slide Unit

- This slotted rack holds 50 microscope slides, sizes 3" x 1" (75mm x 25mm), 3" x 1-1/2" (75mm x 38mm), and 3" x 2" (75mm x 51mm)
- The rack is made of non-tarnishable stainless steel that is resistant to staining solutions
- The handle is permanently attached, but hinged to permit closure of the dish and easy insertion and removal of the microscope slides
- Manufactured from soda-lime glass
- Approximate inside bottom dimensions (mm): 185 L x 88 W x 78 D

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 900400 | Complete (Dish, Cover, and Rack) | 6 |
| 900401 | Dish | 3 |
| 900402 | Cover | 3 |
| 900403 | Dish and Cover | 3 |
| 900404 | 50-Slide Stainless Steel Rack, with Handle Attached | 3 |

## Staining Dish, 8-16 Slide Unit

- It holds 8 individual 3" x 1" (75mm x 25mm) slides or, if necessary, 16 slides back-to-back
- Includes glass lid
- This Hellendahl-type dish can be used for staining or as a TLC developing chamber
- Manufactured from soda-lime glass
- Approximate inside bottom dimensions (mm): 76 L x 25 W x 75 D

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 900630 | Staining Dish | 6 |

## Columbia Jar for Cover Slips

- These staining jars hold up to 4 cover slips 17-23mm wide, and up to 30mm long
- Longer cover slips can be accommodated if the cap is removed
- The jar includes a 43-400 white polypropylene screw cap with a PTFE coated polyethylene liner
- Manufactured from soda-lime glass
- In addition to staining applications, Columbia Jars can be used for cleaning cover slips, as well as coating them with materials such as poly-lysine or silane

| Cat. No. | Description | Qty / Case |
|---|---|---|
| W900180 | Columbia Jar & Cap | 1 |
| W900180-6 | Columbia Jar & Cap | 6 |

## Coplin Staining Jar, 5-10 Slide Unit

- This unit holds ten 3" x 1" (75mm x 25mm) slides, back-to-back that extend above the opening so you can manipulate them without using forceps
- Polypropylene screw cap
- The screw cap is made of linerless white polypropylene to reduce solvent evaporation and spills during storage
- Cap is not intended for use with slides in jar
- The unit has a rectangular base and holds approximately 55mL
- Manufactured from soda-lime glass
- Approximate inside bottom dimensions (mm): 26 L x 26 W x 70 D

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 900520 | Coplin Jar with PP Screw Cap | 6 |
| 900522 | Replacement Cap, 58-400 | 6 |

## Coplin Staining Jar, 5-10 Slide Unit, with Screw Cap

- It holds five single 3" x 1" (75mm x 25mm) slides vertically, or 10 slides back-to-back
- This unit is used for staining slides, or as a developing chamber for thin-layer chromatography
- The screw cap is made of linerless white polypropylene to reduce solvent evaporation
- The unit has a rectangular base and holds approximately 60mL
- Manufactured from soda-lime glass
- Approximate inside bottom dimensions (mm): 26 L x 26 W x 90 D

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 900570 | Complete | 6 |
| 900522 | Replacement Cap, 58-400 | 6 |

## Coplin Staining Jar, 5-10 Slide Unit

- It holds five single 3" x 1" (75mm x 25mm) slides vertically, or 10 slides back to back, and holds approximately 65mL
- This popular staining jar has heavy glass walls and a broad base for increased stability
- Manufactured from soda-lime glass
- Approximate inside bottom dimensions (mm): 28 L x 26 W x 92 D

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 900470 | Coplin Jar with Glass Cover | 6 |

## Coplin Staining Jar, 5-10 Slide Unit

- The chamber is designed with an extra tall lid to accept 5 single 25mm x 75mm and 25mm x 100mm slides or 10 slides back-to-back
- Extra tall lid accommodates 100mm slides
- Manufactured from soda-lime glass
- Approximate inside bottom dimensions (mm): 28 L x 26 W x 92 D

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 276840 | Staining Jar with Lid | 6 |

## Staining Jar, 8-10 Slide Unit

- The jar holds 8 single 3" x 1" (75mm x 25mm) slides vertically or 16 slides back-to-back
- This jar's wide top is designed for convenience in transferring slides, making it especially suitable for staining slides that are inscribed on one end
- Manufactured from soda-lime glass
- Approximate inside bottom dimensions (mm): 47 L x 26 W x 85 D

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 900620 | Staining Jar with Cover | 6 |

## Slide Grip

- Polypropylene grip allows for easy and safe transfer of five slides to other containers for staining
- Fits into WHEATON Coplin staining jars (900570, 900470, 276840)

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 900575 | Slide Grip | 2 |

## Boerner Micro Test Slide

- Ideal for Boerner-Jones-Lukens microflocculation test
- This slide is used for procedures involving 0.01 to 0.15mL of fluid
- The slide has 10 cells in two rows of five each
- Each cell is 2.5mm deep and is designed to produce flattened drops of uniform depth
- Manufactured from soda-lime glass

| Cat. No. | Description | Dimensions L x W (mm) | Qty / Case |
|---|---|---|---|
| 798550 | Boerner Micro Test Slide | 109 x 58 | 12 |

## Mounting Media / Balsam Bottle

- This bottle, manufactured from soda-lime glass, is ideal for applying mounting media
- It comes with a glass applicator rod and a glass cap, which is ground to the shoulder of the bottle to form a seal

| Cat. No. | Size (mL) | Dia. x H (mm) | Qty / Case |
|---|---|---|---|
| 208890 | 100 | 75 x 100 | 6 |

## Alcohol Burner

- Glass cap is used to reduce evaporation of alcohol when not in use
- This burner, manufactured from soda-lime glass, is designed for use with isopropyl or denatured ethyl alcohol
- Its low-heat flame is well suited for microscopy purposes
- The unit is supplied with a ground glass cap
- The reservoir holds 100mL of alcohol

| Cat. No. | Description | Dia. x H (mm) | Qty / Case |
|---|---|---|---|
| 237070 | Alcohol Burner | 75 x 100 | 6 |
| **Replacement Parts** | | | |
| 237071 | Wick, 0.25" Dia x 6" L | — | 25 |
| 237072 | Cork Stopper Assembly | — | 10 |

## Dounce Tissue Grinder

- Retains high percentage of cell nuclei and mitochondria in soft tissues or from cell cultures
- Made from WHEATON 33 low extractable borosilicate glass
- Mortar has large reservoir and pouring lip making decanting easy
- Pestle ball encircled in liquid avoids heat build-up by reducing friction
- Contains both loose and tight pestles
- Loose pestle clearance range: 0.089-0.14mm
- Tight pestle clearance range: 0.025-0.076mm
- Unit can be autoclaved / sterilized to prevent cross contamination between samples

| Cat. No. | Size (mL) | Mortar, OD x Length* | Overall Length* | Qty / Case |
|---|---|---|---|---|
| 357538 | 1 | 11 x 48 | 125 | 2 |
| 357542 | 7 | 13 x 82 | 175 | 2 |
| 357544 | 15 | 22 x 94 | 210 | 2 |
| 357546 | 40 | 32 x 140 | 285 | 2 |

* measurement in mm

## Tenbroeck Tissue Grinder

- Ideal for grinding liver, intestine and heart tissue
- Hollow pestle can be packed with ice and mortar contains expanded reservoir and pouring lip for easy decanting
- Made from WHEATON 33 low extractable borosilicate glass
- Components are interchangeably ground eliminating need to keep parts matched during cleaning
- Unit can be autoclaved / sterilized to prevent cross contamination between samples
- Pestle clearance range: 0.09 – 0.16mm

| Cat. No. | Size (mL) | Mortar, OD x Length* | Overall Length* | Qty / Case |
|---|---|---|---|---|
| 357421 | 1 | 11 x 48 | 140 | 2 |
| 357422 | 2 | 11 x 50 | 140 | 2 |
| 357424 | 7 | 16 x 82 | 190 | 2 |
| 357426 | 15 | 22 x 94 | 250 | 2 |
| 357428 | 40 | 32 x 140 | 320 | 2 |

* measurement in mm

## Dounce Dura-Grind™ Tissue Grinder

- Precision machined from number 316 stainless steel provides a rugged alternative to glass Dounce tissue grinders
- Single pestle and mortar are supplied as a matched set to exacting tolerance of 0.013mm
- Smooth pestle action requires less effort than glass tissue grinders
- Mortar has a flat bottom allowing it to stand upright
- Unit cannot be autoclaved / sterilized

| Cat. No. | Size (mL) | Mortar, OD x Length* | Overall Length* | Qty / Case |
|---|---|---|---|---|
| 357572 | 7 | 35 x 114 | 171 | 1 |
| 357574 | 15 | 35 x 114 | 171 | 1 |
| 357576 | 40 | 44 x 114 | 171 | 1 |

* measurement in mm

## Potter-Elvehjem Tissue Grinder

- PTFE pestle tip with 6.3mm diameter stainless steel rod can be used with power homogenization for soft tissue such as brain or liver
- Mortar made from WHEATON 33 low extractable borosilicate glass
- Components are interchangeable eliminating need to keep parts matched during cleaning
- Unit can be autoclaved / sterilized to prevent cross contamination between samples
- For added safety during power homogenization use safety coated tissue grinders
- Pestle clearance range: 0.1 – 0.15mm

| Cat. No. | Size (mL) | Mortar, OD x Length* | Overall Length* | Qty / Case |
|---|---|---|---|---|
| 358029 | 2 | 11 x 45 | 203 | 2 |
| 358034 | 5 | 13 x 66 | 219 | 2 |
| 358039 | 10 | 16 x 74 | 219 | 2 |
| 358044 | 15 | 19 x 84 | 219 | 2 |
| 358049 | 30 | 24 x 118 | 266 | 2 |
| 358054 | 55 | 30 x 130 | 266 | 2 |
| **Replacement Parts** | | | | |
| 358028 | 2mL Mortar | | | 2 |
| 358033 | 5mL Mortar | | | 2 |
| 358038 | 10mL Mortar | | | 2 |
| 358043 | 15mL Mortar | | | 2 |
| 358048 | 30mL Mortar | | | 2 |
| 358053 | 55mL Mortar | | | 2 |
| 358026 | 2mL Pestle | | | 2 |
| 358031 | 5mL Pestle | | | 2 |
| 358036 | 10mL Pestle | | | 2 |
| 358041 | 15mL Pestle | | | 2 |
| 358046 | 30mL Pestle | | | 2 |
| 358051 | 55mL Pestle | | | 2 |

* measurement in mm

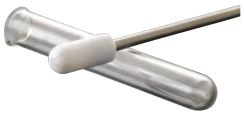
## Potter-Elvehjem Safe-Grind® Tissue Grinder

- Exterior plastic coated glass mortar provides greater safety during power homogenization
- PTFE pestle tip with 6.3mm diameter stainless steel rod can be used with power homogenization for soft tissue such as brain or liver
- Mortar made from WHEATON 33 low extractable borosilicate glass
- Components are interchangeable eliminating need to keep parts matched during cleaning
- Unit can be autoclaved / sterilized to prevent cross contamination between samples
- Pestle clearance range: 0.1 – 0.15mm

| Cat. No. | Size (mL) | Mortar, OD x Length* | Overall Length* | Qty / Case |
|---|---|---|---|---|
| 358003 | 2 | 11 x 45 | 203 | 2 |
| 358005 | 5 | 13 x 66 | 219 | 2 |
| 358007 | 10 | 16 x 74 | 219 | 2 |
| 358009 | 15 | 19 x 84 | 219 | 2 |
| 358011 | 30 | 24 x 118 | 266 | 2 |
| 358013 | 55 | 30 x 130 | 266 | 2 |
| **Replacement Parts** | | | | |
| 358004 | 2mL Mortar | | | 2 |
| 358006 | 5mL Mortar | | | 2 |
| 358008 | 10mL Mortar | | | 2 |
| 358010 | 15mL Mortar | | | 2 |
| 358012 | 30mL Mortar | | | 2 |
| 358014 | 55mL Mortar | | | 2 |

* measurement in mm

## Potter-Elvehjem Tissue Grinder with Radial Serrations



- Serrated PTFE pestle tip design to disperse homogenate into the mortar cylinder more efficiently
- 6.3mm diameter stainless steel rod with PTFE pestle can be used with power homogenization for soft tissue such as brain or liver
- Mortar made from WHEATON 33 low extractable borosilicate glass
- Components are interchangeable eliminating need to keep parts matched during cleaning
- Unit can be autoclaved / sterilized to prevent cross contamination between samples
- Pestle clearance range: 0.1 – 0.15mm

| Cat. No. | Size (mL) | Mortar, OD x Length* | Overall Length* | Qty / Case |
|---|---|---|---|---|
| 357969 | 2 | 11 x 45 | 203 | 2 |
| 357974 | 5 | 13 x 66 | 219 | 2 |
| 357979 | 10 | 16 x 74 | 219 | 2 |
| 357984 | 15 | 19 x 84 | 219 | 2 |
| 357989 | 30 | 24 x 118 | 266 | 2 |
| 357994 | 55 | 30 x 130 | 266 | 2 |
| **Replacement Parts** | | | | |
| 358028 | 2mL Mortar | | | 2 |
| 358033 | 5mL Mortar | | | 2 |
| 358038 | 10mL Mortar | | | 2 |
| 358043 | 15mL Mortar | | | 2 |
| 358048 | 30mL Mortar | | | 2 |
| 358053 | 55mL Mortar | | | 2 |
| 357966 | 2mL Serrated Pestle | | | 2 |
| 357971 | 5mL Serrated Pestle | | | 2 |
| 357976 | 10mL Serrated Pestle | | | 2 |
| 357981 | 15mL Serrated Pestle | | | 2 |
| 357986 | 30mL Serrated Pestle | | | 2 |
| 357991 | 55mL Serrated Pestle | | | 2 |

* measurement in mm

## Potter-Elvehjem Micro Tissue Grinder

- Micro size for extremely precise work when delicate hand operation is required
- Made from WHEATON 33 low extractable borosilicate glass
- Reservoir and pouring lip provide easy decanting of micro sample
- Unit can be autoclaved / sterilized to prevent cross contamination between samples
- Pestle clearance range: 0.1 – 0.15mm

| Cat. No. | Size (mL) | Mortar, OD x Length* | Overall Length* | Qty / Case |
|---|---|---|---|---|
| 357844 | 0.1 | 4 x 65 | 110 | 2 |
| **Replacement Parts** | | | | |
| 357841 | 0.1mL Pestle | | | 2 |
| 357843 | 0.1mL Mortar | | | 2 |

* measurement in mm

## Tapered Tissue Grinder

- Tapered ground glass surface on mortar and pestle homogenizes connective tissue including heart, muscle, lung, skin and plant tissue
- Grinding efficiency is improved and less time is required as compared to the Tenbroeck and Potter-Elvehjem designs
- Made from WHEATON 33 low extractable borosilicate glass
- Components are interchangeably ground eliminating need to keep parts matched during cleaning
- Unit can be autoclaved / sterilized to prevent cross contamination between samples
- Pestle clearance range: 0.1 – 0.15mm

| Cat. No. | Size (mL) | Mortar, OD x Length* | Overall Length* | Qty / Case |
|---|---|---|---|---|
| 358103 | 1 | 11 x 49 | 130 | 1 |
| 358107 | 3 | 11 x 86 | 220 | 1 |
| 358111 | 5 | 13 x 93 | 220 | 1 |
| 358115 | 15 | 18 x 114 | 240 | 1 |
| **Replacement Parts** | | | | |
| 358102 | 1mL Mortar | | | 2 |
| 358106 | 3mL Mortar | | | 2 |
| 358110 | 5mL Mortar | | | 2 |
| 358114 | 15mL Mortar | | | 2 |
| 358101 | 1mL Pestle | | | 2 |
| 358105 | 3mL Pestle | | | 2 |
| 358109 | 5mL Pestle | | | 2 |
| 358113 | 15mL Pestle | | | 2 |

* measurement in mm

## Tapered Tissue Grinder with Steel Rod

- Tapered PTFE pestle tip with 6.3mm diameter stainless steel rod can be used with power homogenization for soft tissue such as brain or liver
- Mortar made from WHEATON 33 low extractable borosilicate glass
- Components are interchangeable eliminating need to keep parts matched during cleaning
- Unit can be autoclaved / sterilized to prevent cross contamination between samples

| Cat. No. | Size (mL) | Mortar, OD x Length* | Overall Length* | Qty / Case |
|---|---|---|---|---|
| 358133 | 1 | 11 x 49 | 130 | 1 |
| 358137 | 3 | 11 x 86 | 220 | 1 |
| 358141 | 5 | 13 x 93 | 220 | 1 |
| 358145 | 15 | 18 x 114 | 240 | 1 |
| **Replacement Parts** | | | | |
| 358132 | 1mL Mortar | | | 2 |
| 358136 | 3mL Mortar | | | 2 |
| 358140 | 5mL Mortar | | | 2 |
| 358144 | 15mL Mortar | | | 2 |
| 358131 | 1mL Pestle | | | 2 |
| 358135 | 3mL Pestle | | | 2 |
| 358139 | 5mL Pestle | | | 2 |
| 358143 | 15mL Pestle | | | 2 |

* measurement in mm

## Micro Tissue Grinder Kit

- Made from WHEATON 33 low extractable borosilicate glass
- Complete kit includes 7 micro tissue grinders
- Packaged in polyethylene case with foam inserts.
- Replacement parts available separately
- Autoclavable Tissue Grinders

| Cat. No. | Description | Qty / Kit | Qty / Case |
|---|---|---|---|
| 358204 | Complete Kit | 1 | 1 |
| Replacement Parts | | | |
| 357421 | 1mL Tenbroeck Tissue Grinder | 1 | 2 |
| 357535 | 0.5mL Tissue Grinder, G.P.I. 13-425 cap | 1 | 2 |
| 357538 | 1mL Dounce Tissue Grinder | 1 | 2 |
| 357844 | 0.1mL Tissue Grinder | 1 | 2 |
| 357848 | 0.2mL Tissue Grinder | 1 | 2 |
| 358029 | 2mL Potter-Elvehjem Tissue Grinder | 1 | 2 |
| 358133 | 1mL Tapered Tissue Grinder | 1 | 1 |

## Disposable Micro Tissue Grinder

- Disposable to eliminate cross contamination and useful for radioactive samples
- Small grinder area allows for high sample recovery
- Made from WHEATON 33 low extractable borosilicate glass

| Cat. No. | Size (mL) | ID x Length* | Overall Length* | Qty / Case |
|---|---|---|---|---|
| 357860 | 0.75 | 8 x 44 | 88 | 25 |

* measurement in mm

## Micro Tissue Grinder with PTFE Spacer

- PTFE spacer aligns the pestle and reduces aerosoling of the product
- Includes a finely ground glass pestle and tube
- Made from WHEATON 33 low extractable borosilicate glass
- Autoclavable

| Cat. No. | Size (mL) | Mortar, OD x Length* | Overall Length* | Qty / Case |
|---|---|---|---|---|
| 357848 | 0.2 | 7 x 33 | 115 | 2 |

* measurement in mm

## Micro Tissue Grinder with Cap

- With PTFE Pestle and Screw Cap
- 13-425 open top screw cap and PTFE faced silicone rubber liner
- Made from WHEATON 33 low extractable borosilicate glass
- Autoclavable
- Pestle clearance range: 0.002-0.006" (0.05-0.15mm)

| Cat. No. | Size (mL) | Mortar, OD x Length* | Overall Length* | Qty / Case |
|---|---|---|---|---|
| 357535 | 0.5 | 13 x 37 | 115 | 2 |
| Replacement Parts | | | | |
| 357537 | | Pestle | | 2 |

* measurement in mm

## Culture Tube with Screw Cap

- Culture tube for use with slant, shake and drum roller cultures
- Autoclavable and reusable
- Round-bottom design with screw on cap
- Manufactured from borosilicate glass that conforms to USP Type I and ASTM E 438 Type I, Class B requirements

| Cat. No. | Capacity (mL) | Dia. x H (mm) | Cap Size | Qty / Case |
|---|---|---|---|---|
| With White 14B Rubber Lined Cap | | | | |
| 358606 | 11 | 16 x 100 | 15-415 | 144 |
| 358607 | 14 | 16 x 125 | 15-415 | 144 |
| 358610 | 27 | 20 x 150 | 18-415 | 144 |
| With PTFE Faced 14B Rubber Lined Caps | | | | |
| 358646 | 11 | 16 x 100 | 15-415 | 144 |
| 358647 | 14 | 16 x 125 | 15-415 | 144 |
| 358650 | 27 | 20 x 150 | 18-415 | 144 |

## Hybridization Bottle

- Nucleic acid and protein blotting procedures
- Designed to fit most hybridization ovens and membranes
- Bottles, seals and caps resistant to hybridization reagents
- Heavy 3.2mm sidewall construction for added safety
- Borosilicate glass conforms to USP Type I requirements

| Cat. No. | Size ID x L (mm) | Cap Size (mm) | Qty |
|---|---|---|---|
| 805000 | 35 x 75 | 45 | 1 |
| 805001 | 35 x 100 | 45 | 1 |
| 805003 | 35 x 150 | 45 | 1 |
| 805007 | 35 x 300 | 45 | 1 |
| 805011 | 70 x 300 | 70-400 | 1 |

## Safety Coated Hybridization Bottle

- Slip resistant plastisol coating reduces breakage hazards
- Nucleic acid and protein blotting procedures
- Designed to fit most hybridization ovens and membranes
- Bottles, seals and caps resistant to hybridization reagents
- Borosilicate glass conforms to USP Type I requirements

| Cat. No. | Size ID x L (mm) | Cap Size (mm) | Qty |
|---|---|---|---|
| 805020 | 35 x 75 | 45 | 1 |
| 805021 | 35 x 100 | 45 | 1 |
| 805023 | 35 x 150 | 45 | 1 |
| 805027 | 35 x 300 | 45 | 1 |
| 805031 | 70 x 300 | 70-400 | 1 |

## Hybridization Bottle Storage Rack

- Works with 35mm ID hybridization bottles
- Ideal for transporation and storage
- Acrylic construction holds up to 6 bottles

| Cat. No. | Description | Qty |
|---|---|---|
| 805015 | Acrylic Storage Rack | 1 |

## Erlenmeyer Flask

- Ideal for media storage, water storage or buffer preparation
- Autoclavable with screw cap
- Constructed of borosilicate glass that conforms to USP Type I and ASTM E 438 Type I, Class A requirements
- Cap supplied with silicone rubber liner

| Cat. No. | Capacity (mL) | Cap Size | Qty |
|---|---|---|---|
| 635165 | 1000 | 38-430 | 1 |
| 635134 | 25 | 20-400 | 1 |

## Nephelo Culture Flask

- For use with turbidity meter or nephelometer
- Scratch and striation free side tube
- Available with or without cleanout port
- Autoclavable borosilicate glass that conforms to USP Type I and ASTM E 438 Type I, Class A requirements
- 38-430 top cap and 20-415 sidearm cap have white styrene butadiene rubber liner

| Cat. No. | Capacity (mL) | Vol. (mL) | Sidearm Size (mm) | Cleanout Port | Qty |
|---|---|---|---|---|---|
| 351454 | 300 | 200 | 14 x 140 | Yes | 1 |
| 351456 | 300 | 200 | 19 x 140 | Yes | 1 |
| 351054 | 500 | 350 | 14 x 130 | No | 1 |
| 351486 | 500 | 250 | 19 x 140 | Yes | 1 |
| 351514 | 1000 | 600 | 14 x 140 | Yes | 1 |

## Trypsinizing Flask

- For forming cell suspensions through trypsin digestion of connective proteins
- Fluted design improves homogenization
- Autoclavable with screw cap
- Constructed of borosilicate glass that conforms to USP Type I and ASTM E 438 Type I, Class A requirements
- Caps have white styrene butadiene rubber liner

| Cat. No. | Capacity (mL) | Cap Size (mm) | Flask Size | Graduated | Qty |
|---|---|---|---|---|---|
| 355392 | 35 | 24-430 | 50 | No | 1 |
| 355442 | 35 | 24-430 | 50 | Yes | 1 |
| 355394 | 150 | 38-430 | 250 | No | 1 |
| 355444 | 150 | 38-430 | 250 | Yes | 1 |
| 355395 | 300 | 38-430 | 500 | No | 1 |
| 355445 | 300 | 38-430 | 500 | Yes | 1 |
| 355397 | 700 | 51-400 | 1000 | No | 1 |

## Trypsinizing Flask with Pourout

- For forming cell suspensions through trypsin digestion of connective proteins
- Fluted design improves homogenization
- Autoclavable with screw cap and pourout for easy decanting
- Constructed of borosilicate glass that conforms to USP Type I and ASTM E 438 Type I, Class A requirements
- 20-415 sidearm cap and top cap have white styrene butadiene rubber liner

| Cat. No. | Capacity (mL) | Cap Size(mm) | Flask Size | Graduated | Qty |
|---|---|---|---|---|---|
| 355752 | 35 | 24-430 | 50 | No | 1 |
| 355753 | 75 | 33-430 | 125 | No | 1 |
| 355803 | 75 | 33-430 | 125 | Yes | 1 |
| 355754 | 150 | 38-430 | 250 | No | 1 |
| 355804 | 150 | 38-430 | 250 | Yes | 1 |
| 355755 | 300 | 38-430 | 500 | No | 1 |
| 355757 | 700 | 51-400 | 1000 | No | 1 |
| 355807 | 700 | 51-400 | 1000 | Yes | 1 |

## Shake Flask

Three baffle flask

Four baffle flask

- For use with orbital or reciprocating shakers
- Baffles improve aeration and mixing for microbial and bacterial cultures
- Break resistant lip for use with stopper, cotton plug or film cover
- Pinched neck design to reduce splashing on flasks with 4 baffles
- Autoclavable borosilicate glass that conforms to USP Type I and ASTM E 438 Type I, Class A requirements

| Cat. No. | Capacity (mL) | Qty |
|---|---|---|
| **With Three Baffles** | | |
| 353255 | 50 | 1 |
| 353257 | 125 | 1 |
| 353259 | 250 | 1 |
| 353262 | 500 | 1 |
| 353264 | 1000 | 1 |
| 353266 | 2000 | 1 |
| **With Four Baffles** | | |
| 354235 | 50 | 1 |
| 354237 | 125 | 1 |
| 354239 | 250 | 1 |
| 354242 | 500 | 1 |
| 354244 | 1000 | 1 |

## Double Sidearm Celstir® Spinner Flask

- For suspension cell culture with a magnetic stirrer
- Adjustable paddle impeller and sterile design as stirrer shaft does not protrude through cap
- 1:1 headspace ratio for ideal gas exchange
- Bottom dimple to reduce cell aggregation (dimple on 125mL and larger flasks)
- Autoclavable borosilicate glass that conforms to USP Type I and ASTM E 438 Type I, Class A requirements

| Cat. No. | Volume (mL) | Dia. x H (mm) | Cap Size, Top | Sidearm Size | Qty |
|---|---|---|---|---|---|
| 356873 | 25 | 38 x 122 | 38-430 | 15-415 | 1 |
| 356875 | 50 | 38 x 141 | 38-430 | 15-415 | 1 |
| 356876 | 125 | 65 x 155 | 51-400 | 33-430 | 1 |
| 356879 | 250 | 85 x 175 | 51-400 | 33-430 | 1 |
| 356882 | 500 | 110 x 190 | 100-400 | 45mm | 1 |
| 356884 | 1000 | 130 x 250 | 100-400 | 45mm | 1 |
| 356887 | 3000 | 178 x 341 | 100-400 | 45mm | 1 |
| 356889 | 6000 | 258 x 404 | 100-400 | 45mm | 1 |
| 356890 | 8000 | 293 x 445 | 100-400 | 45mm | 1 |

## Jacketed Double Sidearm Celstir® Spinner Flask

- For suspension cell culture with a magnetic stirrer
- 360° water jacket for precise temperature control
- Inlet and outlet hose barb connections for 0.25" (6.35mm) ID tubing
- Autoclavable borosilicate glass that conforms to USP Type I and ASTM E 438 Type I, Class A requirements

| Cat. No. | Volume (mL) | Dia. x H (mm) | Cap Size, Top | Sidearm Size | Qty |
|---|---|---|---|---|---|
| 356943 | 25 | 54 x 134 | 38-430 | 15-415 | 1 |
| 356945 | 50 | 54 x 147 | 38-430 | 15-415 | 1 |
| 356946 | 125 | 80 x 162 | 51-400 | 33-430 | 1 |
| 356949 | 250 | 100 x 182 | 51-400 | 33-430 | 1 |
| 356952 | 500 | 130 x 195 | 100-400 | 45mm | 1 |
| 356954 | 1000 | 150 x 260 | 100-400 | 45mm | 1 |

## Magna Flex™ Microcarrier Spinner Flask

- Designed for microcarrier cultures with a magnetic stirrer
- Gentle stirring action provided by a bulb-shaped glass impeller
- 1:1 headspace ratio for ideal gas exchange
- Autoclavable borosilicate glass that conforms to USP Type I and ASTM E 438 Type I, Class A requirements

| Cat. No. | Volume (mL) | Dia. x H (mm) | Cap Size, Top | Sidearm Size | Qty |
|---|---|---|---|---|---|
| 356830 | 125 | 65 x 155 | 51-400 | 33-430 | 1 |
| 356831 | 250 | 85 x 175 | 51-400 | 33-430 | 1 |
| 356832 | 500 | 110 x 190 | 100-400 | 45mm | 1 |
| 356834 | 1000 | 130 x 250 | 100-400 | 45mm | 1 |
| 356837 | 3000 | 178 x 341 | 100-400 | 45mm | 1 |
| 356839 | 6000 | 258 x 404 | 100-400 | 45mm | 1 |

## Replacement Parts

### Stainless Steel Shaft Assembly Kit

| Cat. No. | For Flask Size (mL) | Qty |
|---|---|---|
| 356874 | 25 | 1 |
| 356877 | 50 | 1 |
| 356878 | 125 | 1 |
| 356880 | 250 | 1 |
| 356883 | 500 | 1 |
| 356885 | 1000 | 1 |
| 356886 | 3000 | 1 |
| 356888 | 6000 | 1 |
| 356891 | 8000 | 1 |

### Replacement Impellers

| Cat. No. | For Flask Size (mL) | Qty |
|---|---|---|
| **Celstir®** | | |
| 356893 | 25 | 1 |
| 356895 | 50 | 1 |
| 356896 | 125 | 1 |
| 356899 | 250 | 1 |
| 356902 | 500 | 1 |
| 356904 | 1000 | 1 |
| 356907 | 3000 | 1 |
| 356909 | 6000 | 1 |
| 356910 | 8000 | 1 |
| **Magna-Flex™** | | |
| 356841 | 125 | 1 |
| 356842 | 250 | 1 |
| 356843 | 500 | 1 |
| 356844 | 1000 | 1 |
| 356847 | 3000 | 1 |
| 356848 | 6000 | 1 |
| 356849 | 8000 | 1 |

### Replacement Flasks

| Cat. No. | For Flask Size (mL) | Qty |
|---|---|---|
| **Celstir® Only** | | |
| 356913 | 25 – Celstir® Flask Only | 1 |
| 356915 | 50 – Celstir® Flask Only | 1 |
| 356930 | 8000 – Celstir® Flask Only | 1 |
| **Celstir® & Magna-Flex™** | | |
| 356916 | 125 – Celstir® / Magna Flex™ Flask Only | 1 |
| 356919 | 250 – Celstir® / Magna Flex™ Flask Only | 1 |
| 356922 | 500 – Celstir® / Magna Flex™ Flask Only | 1 |
| 356924 | 1000 – Celstir® / Magna Flex™ Flask Only | 1 |
| 356927 | 3000 – Celstir® / Magna Flex™ Flask Only | 1 |
| 356929 | 6000 – Celstir® / Magna Flex™ Flask Only | 1 |
| **Jacketed Celstir® Flask** | | |
| 356963 | 25 – Jacketed Celstir® Flask Only | 1 |
| 356965 | 50 – Jacketed Celstir® Flask Only | 1 |
| 356966 | 125 – Jacketed Celstir® Flask Only | 1 |
| 356969 | 250 – Jacketed Celstir® Flask Only | 1 |
| 356972 | 500 – Jacketed Celstir® Flask Only | 1 |
| 356974 | 1000 – Jacketed Celstir® Flask Only | 1 |

### Replacement Sidearm Caps

| Cat. No. | Cap Size | Cap Material | Liner | Qty / Case |
|---|---|---|---|---|
| W356870 | 15-415 | Black Phenolic | PTFE / 14B Rubber | 2 |
| W356871 | 33-430 | Black Phenolic | PTFE / 14B Rubber | 2 |
| W356872* | 45mm | White PBT | PTFE / Silicone | 2 |

*Autoclavable


WHEATON
APPROXIMATE VOLUME
500 ML
400
300
200
100

# Proven Products for Organic Chemistry & Environmental Analysis

## Chemistry Glassware

This section consists of analytical apparatus that are commonly used in organic chemistry and the examination of environmental samples. The majority of the glassware in this section is fabricated with either our exclusive Clear-Seal™ joints or the WHEATON Connection® screw thread finish ends.

The smooth, unground Clear-Seal™ joints seal without grease, reducing the possibility of seizing. Clear-Seal™ joints are manufactured to American Standard Taper dimensions and can be used interchangeably with ground joints. However, when Clear-Seal™ joints are used exclusively, there is little chance of freezing and no chance of contamination or mess associated with other sealing methods.

The WHEATON Connection® basic design links two exterior-threaded glass components. The connection eliminates grease and the contamination that is commonly associated with ground joints. Also eliminated are clamps, hooks and springs. Durable polypropylene caps, high temperature phenolic caps, and PTFE faced silicone rings ensure a tight, inert seal. Lab safety is increased by completely preventing frozen joints.

# Chemistry Glassware



## Clamps, Standard Taper

- Color-coded clamps hold standard taper joints securely under moderate pressure
- Molded from polyoxymethylene (POM), an acetal resin
- Will not scratch glass and can withstand temperatures up to 150°C
- Resistant to bases and weak acids
- Not resistant to halogen gases and concentrated acids

| Cat. No | Standard Taper Joint Size | Color | Qty / Case |
|---|---|---|---|
| 297746 | 14 | Yellow | 12 |
| 297749 | 19 | Blue | 12 |
| 297752 | 24 | Green | 12 |
| 297755 | 29 | Red | 12 |
| 297757 | Assorted | Assorted | 24 |

## The WHEATON Connection® Screw Thread Connector

- Safely joins two exterior threaded glass components without hooks, springs or clamps
- Screw cap configuration creates a grease-free, vacuum-tight seal
- Inert contact surface
- Easy to assemble
- Connection can be used under moderate pressure to generate a gas or deliver a reagent under an inert atmosphere
- Available with white polypropylene or black phenolic caps
- Phenolic connectors have a working temperature of up to 180°C
- Autoclavable

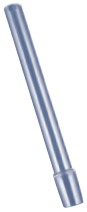
| Cat. No. | Screw Thread Size | Qty / Case |
|---|---|---|
| **With White Polypropylene Cap** | | |
| 125478 | 13-425 and 13-425 | 6 |
| 125480 | 13-425 and 20-400 | 6 |
| 125482 | 13-425 and 24-400 | 6 |
| 125486 | 20-400 and 20-400 | 6 |
| 125488 | 20-400 and 24-400 | 6 |
| 125504 | 24-400 and 24-400 | 6 |
| **With Black Phenolic Cap** | | |
| 125492 | 13-425 and 13-425 | 6 |
| 125494 | 13-425 and 20-400 | 6 |
| W125495 | 13-425 and 22-400 | 6 |
| 125496 | 13-425 and 24-400 | 6 |
| 125497 | 20-400 and 20-400 | 6 |
| 125499 | 20-400 and 24-400 | 6 |
| 125500 | 24-400 and 24-400 | 6 |

## Clear-Seal™ Connecting Adapter

- Enable interfacing between standard semi-micro glassware and micro systems
- Feature a Clear-Seal™ inner joint on one end and a screw thread for the WHEATON Connection® on the other end
- 13-425 thread size comes with a screw cap and an "O" ring to seal thermometers, gas inlet tubes, etc
- Manufactured from WHEATON 33 low extractable borosilicate glass that conforms to ASTM E 438 Type I, Class A requirements

| Cat. No. | Screw Thread Size | Standard Taper Joint | Qty / Case |
|---|---|---|---|
| 139479 | 13-425 | 19/22 | 1 |

## Clear-Seal™ Grease-Free Inner Joints



- Joints are formed from a unique wall tubing that is heavier than standard wall tubing for extra strength
- Manufactured from WHEATON 33 low extractable borosilicate glass that conforms to ASTM E 438 Type I, Class A requirements

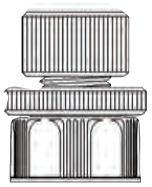
| Cat. No. | Standard Taper Joint | OD (mm) | Qty / Case |
|---|---|---|---|
| 757769 | 19/22 | 17 | 6 |
| 757773 | 24/40 | 21 | 6 |

## Clear-Seal™ Grease-Free Outer Joints

- Joints are formed from a unique wall tubing that is heavier than standard wall tubing for extra strength
- Manufactured from WHEATON 33 low extractable borosilicate glass that conforms to ASTM E 438 Type I, Class A requirements

| Cat. No. | Standard Taper Joint | OD (mm) | Qty / Case |
|---|---|---|---|
| 758966 | 14/20 | 18 | 6 |
| 758969 | 19/22 | 22 | 6 |
| 758973 | 24/40 | 28 | 6 |

## Thermometer Adapter



- Adapter has an "O" ring that holds a thermometer or gas inlet tube securely
- A grease-free WHEATON Connection® on one end provides an inert connection with external-threaded glass components
- Adapter can also be used with gas inlet tubing and will accommodate any tube with an OD of 5 to 7mm

| Cat. No. | Screw Thread Size | Qty |
|---|---|---|
| 165996 | 20-400 | 1 |

## Arsine Generator

- Used for arsenic analysis using silver diethyldithiocarbamate (SDDC) colorimetric method described in the 21st Edition (2005) of Standard Methods for the Examination of Water and Wastewater, Method 3500-As B
- Design eliminates the ball and socket joint connecting the scrubber and absorber components
- Assembled apparatus is freestanding and easy to use
- Manufactured from WHEATON 33 low extractable borosilicate glass that conforms to ASTM E 438 Type I, Class A requirements

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 180030 | Arsine Generator, Complete | 1 |
| **Component Parts** | | |
| 180034 | Scrubber Absorber Tube | 1 |
| 635965 | Reaction Flask, 200mL, 24/40 Joint | 1 |
| W357331 | Short Disposable Pasteur Pipettes (150mm long) | 1000 |
| 297746 | Clamp, Acetal Resin, Size 14, Yellow | 12 |
| 297752 | Clamp, Acetal Resin, Size 24, Green | 12 |
| 970440 | Drying Tube, 14/20 Joint | 1 |

## Arsine Generator, Clear-Seal™ Joint

With Standard Taper 24/40 Clear-Seal™ Joint

- Engineered for arsine analysis using the silver diethyldithiocarbamate (SDDC) colorimetric method
- Meets ASTM / USP and EPA specifications
- Arsine absorber (Cat. No. 180021) has a socket joint
- Scrubber tube (Cat. No. 180022) has a standard taper 24/40 Clear-Seal™ joint and a spherical 12/2 ball joint held together by a size 12 stainless steel ball joint clamp
- Manufactured from WHEATON 33 low extractable borosilicate glass that conforms to ASTM E 438 Type I, Class A requirements
- Reference: "Standard Test Method for Arsenic in Water," ASTM D2972

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 180020 | Arsine Generator, Complete | 1 |
| **Component Parts** | | |
| 180021 | Arsine Absorber Joint | 1 |
| 180022 | Arsine Scrubber Tube 24/40, 12/2 Joint | 1 |
| 635926 | Erlenmeyer Flask, 125mL, 24/40 | 1 |
| 297784-12 | Clamp, Size 12/2, Stainless Steel | 1 |

## Arsine Generator, Modified

With One-Piece Scrubber / Absorber Unit

- Modified version of catalog number 180020 for arsine analysis
- Eliminates the cumbersome ball and socket joint connecting the scrubber and absorber tubes which conforms to ASTM / USP and EPA specifications
- The freestanding system has a standard taper 24/40 Clear-Seal™ joint
- Manufactured from WHEATON 33 low extractable borosilicate glass that conforms to ASTM E 438 Type I, Class A requirements
- Reference: "Standard Test Method for Arsenic in Water," ASTM D2972

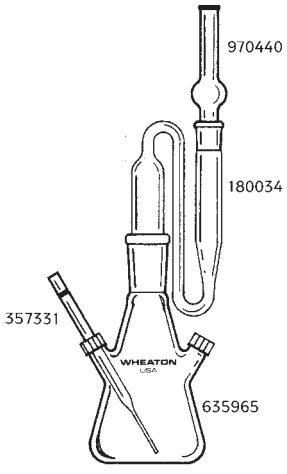
| Cat. No. | Description | Qty / Case |
|---|---|---|
| 180023 | Arsine Generator, Modified, Complete | 1 |
| **Component Parts** | | |
| 180024 | Scrubber Absorber Tube | 1 |
| 635926 | Erlenmeyer Flask, 125mL, 24/40 | 1 |

## Cyanide Distillation Kit

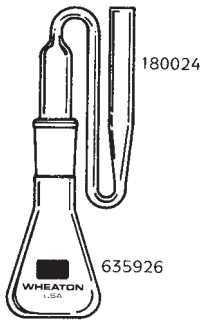
With Clear-Seal™ Joints

- Ideal for removing interfering substances in quantitative analysis for cyanide
- The sample is reacted with $H_2SO_4$ and $MgCl_2$, which converts any cyanide to HCN
- HCN distills over and is absorbed in a NaOH solution, which is then analyzed for CN
- Manufactured from WHEATON 33 low extractable borosilicate glass that conforms to ASTM E 438 Type I, Class A requirements
- Utilizes standard taper Clear-Seal™ joints
- Reference: "Standard Test Method for Cyanides in Water," ASTM D2036

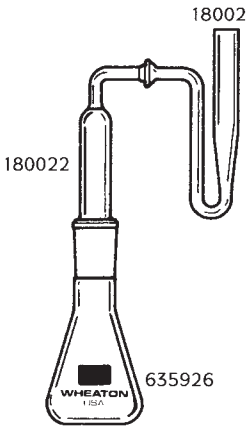
| Cat. No. | Description | Qty / Case |
|---|---|---|
| 377160 | Cyanide Distillation Kit, Complete | 1 |
| **Component Parts** | | |
| 377161 | Absorber Tube, 19/38 | 1 |
| 377162 | Absorber Top, 19/38 | 1 |
| 377163 | Cold Finger, 29/42 | 1 |
| 377164 | Cold Finger Jacket, 29/42 | 1 |
| 377165 | Flask, 1000mL, 19/38 | 1 |
| 377166 | Inlet Tube, 19/38 | 1 |



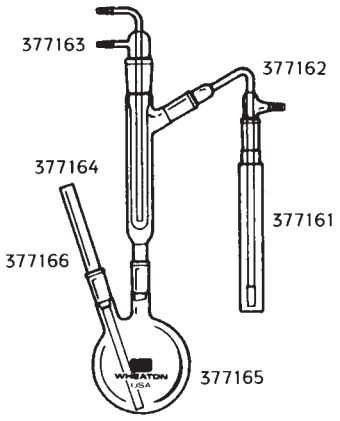

Arsine Generator




Arsine Generator, Modified




Arsine Generator, Clear Seal™ Joint




Cyanide Distillation Kit

## Diazomethane Generator

With Standard Taper Clear-Seal™ Grease-Free Joints

- Used to generate diazomethane and other gases for gas chromatography, mass spectroscopy and NMR studies using one millimole of Methylnitronitrosoguanidine (MNNG)
- Features Clear-Seal™ grease-free joints that have never been ground and does not require an "O" ring
- Includes a plastic standard taper joint clamp, a 13-425 screw cap with cut-out top and a PTFE faced rubber liner
- Manufactured from WHEATON 33 low extractable borosilicate glass that conforms to ASTM E 438 Type I, Class A requirements
- Note: Please use a safety shield and efficient fume hood when generating diazomethane or similar gases

| Cat. No. | Description | Approx Height (mm) | Qty / Case |
|---|---|---|---|
| 281135 | Diazomethane Generator, Complete | 190 | 1 |
| W240593 | 13mm PTFE Faced Butadiene Septa | — | 100 |

## Diazomethane Generator

- Used to generate diazomethane and other gases for gas chromatography, mass spectroscopy and NMR studies using one millimole of Methylnitronitrosoguanidine (MNNG)
- Includes an "O" ring clamp, a 13-425 screw cap with a cut-out top and a PTFE faced rubber liner
- Manufactured from WHEATON 33 low extractable borosilicate glass that conforms to ASTM E 438 Type I, Class A requirements
- Note: Please use a safety shield and efficient fume hood when generating diazomethane or similar gases

| Cat. No. | Description | Approx Height (mm) | Qty / Case |
|---|---|---|---|
| 281155 | Diazomethane Generator, Complete | 200 | 1 |
| 281158 | "O" ring for Cat. No. 281155 | | 12 |
| W240593 | 13mm PTFE Faced Butadiene Septa | | 100 |

## Evaporative Concentrator, Kuderna-Danish

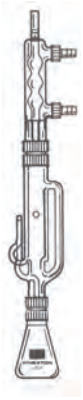
With Clear-Seal™ Joints


- Designed for the concentration of trace amounts of analyte in an organic solvent prior to analysis
- Smooth Clear-Seal™ joints eliminate the need for grease, reducing the possibility of contaminating the sample
- Complete unit consists of 270mm three-ball Snyder column, 500mL flask and 10mL receiving vessel
- Manufactured from WHEATON 33 low extractable borosilicate glass that conforms to ASTM E 438 Type I, Class A requirements

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 297883 | Kuderna-Danish Concentrator, Complete | 1 |
| **Component Parts** | | |
| 384353 | Snyder Column, 270mm, Three-Ball, with 24/40 Clear-Seal™ Joints | 1 |
| 297825 | 500mL Flask, with 24/40 Top and 19/22 Bottom Clear-Seal™ Joints | 1 |
| 297800 | 10mL Receiving Vessel, with 19/22 Clear-Seal Joint (Graduated 0-1 x 0.1mL; 2-10 x 0.5mL) | 1 |

## Micro Soxhlet Extraction Apparatus

With the WHEATON Connection®

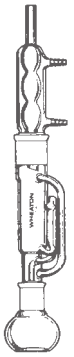


- Used for continuous extraction of analytes from a solid into an organic solvent
- WHEATON Connection® eliminates the need for hooks, springs and clamps common to standard ground joint designs
- As the flask containing the solvent is heated, vapors rise in the larger outside tube, enter the water-cooled condenser, and liquate
- When the liquid level in the extractor reaches the top of the bent tube, siphoning action returns the extract-enriched solvent to the flask
- Wetted parts are manufactured from either WHEATON 33 low extractable borosilicate glass that conforms to ASTM E 438 Type I, Class A requirements or PTFE

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 415500 | Micro Soxhlet Extractor, Complete | 1 |
| **Component Parts** | | |
| 415501 | 85mm Condenser, 24-400 Screw Thread on Bottom and 13-425 Screw Thread on Side | 1 |
| 415502 | Extractor, 24-400 Screw Thread on Top and 20-400 Screw Thread on Bottom | 1 |
| 125486 | WHEATON Connection® 20-400 to 20-400 | 6 |
| 125504 | WHEATON Connection® 24-400 to 24-400 | 6 |
| 635134 | 25mL Erlenmeyer Flask, 20-400 Screw Thread | 1 |
| 962515 | Hose Connector, 13-425 | 6 |
| W416788 | Extraction Thimble, Glass 15 x 60mm, 170-220µm Porosity | 1 |

## Soxhlet Extraction Apparatus

With Standard Taper Ground Joints



- Used for continuous extraction of analytes from a solid into an organic solvent
- As the flask containing the solvent is heated, vapors rise in the larger outside tube, enter the water-cooled condenser and liquate
- When the liquid level in the extractor reaches the top of the bent tube, siphoning action returns the extract-enriched solvent to the flask
- Wetted parts are manufactured from WHEATON 33 low extractable borosilicate glass that conforms to ASTM E 438 Type I, Class A requirements

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 416000 | 125mL Soxhlet Extractor, Complete | 1 |
| 416005 | 250mL Soxhlet Extractor, Complete | 1 |
| 416010 | 500mL Soxhlet Extractor, Complete | 1 |
| **Component Parts** | | |
| 415000 | 190mm Extractor with 24/40 bottom inner joint and 34/45 top outer joint | 1 |
| 415005 | 205mm Extractor with 24/40 bottom inner joint and 45/50 top outer joint | 1 |
| 415010 | 250mm Extractor with 24/40 bottom inner joint and 55/50 top outer joint | 1 |
| 334003 | Allihn Reflux Condenser, 34/45 | 1 |
| 334014 | Allihn Reflux Condenser, 45/50 | 1 |
| 334025 | Allihn Reflux Condenser, 55/50 | 1 |
| 428126 | Flat-Bottom Flask, 125mL, 24/40 | 1 |
| 428146 | Flat-Bottom Flask, 250mL, 24/40 | 1 |
| 428164 | Flat-Bottom Flask, 500mL, 24/40 | 1 |

## Desiccators

- Vacuum desiccators come with desiccator jar, cover and stopcock with PTFE spindle; aluminum plate sold separately
- Place your sample inside the desiccator and apply vacuum to the side arm of the stopcock
- Simply turn the blue knob on top of the stopcock clockwise to close the desiccator
- Once equilibrated, the cover will easily slide off
- Due to the heavy wall thickness and the reduced thermal shock resistance under pressure, the desiccators must never be heated on only one side and never exposed to an open flame.
- Lubricate the ground glass flange with silicone-based vacuum grease before sealing
- A 6mm (1/4") vacuum hose (not included) is used to connect the desiccator to vacuum or gas

## Vacuum Desiccators

- Manufactured from rugged, heavy 33 extraction borosilicate glass
- Remove stopcock and cover during storage
- Silicone-based vacuum grease required for sealing
- Designed for use under full vacuum
- Do not expose desiccators to abrupt pressure changes
- Check desiccators for scratches, cracks, and nicks before use; do not use if damage is found

| Cat. No. | Opening Size (mm) | Plate Size (mm) | Qty / Case |
|---|---|---|---|
| 24 782 5703 | 150 | 140 | 1 |
| 24 782 6605 | 250 | 235 | 1 |

| Cat. No. | Description | Qty / Case |
|---|---|---|
| **Component Parts for 150mm Vacuum Desiccator** | | |
| 24 770 5703 | Base | 1 |
| 24 420 5704 | Cover | 1 |
| 24 799 0401 | Stopcock with PTFE spindle | 1 |
| 29 080 5705 | Aluminum Plate | 1 |
| **Component Parts for 250mm Vacuum Desiccator** | | |
| 24 770 6605 | Base | 1 |
| 24 420 6606 | Cover | 1 |
| 24 799 0401 | Stopcock with PTFE spindle | 1 |
| 29 080 6607 | Aluminum Plate | 1 |

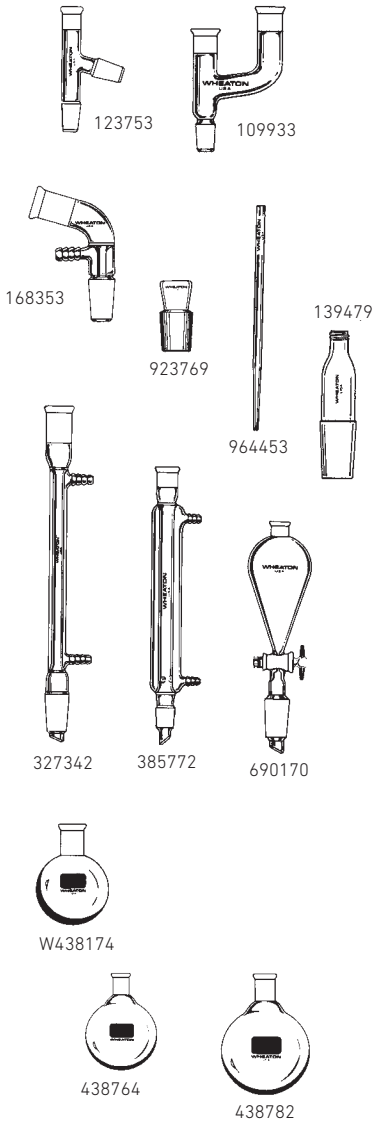
*Item 24 782 5703 shown.*

## WHEATON Micro Kit® for Organic and Environmental Chemistry

With Standard Taper 19/22 Clear-Seal™ Joints

- Apparatus for a wide range of organic chemistry experiments at a lower price than purchasing the components separately
- WHEATON standard taper Clear-Seal™ grease-free joints provide smooth, unground surfaces, which seal without grease and reduce seizing and contamination from grease
- Clear-Seal™ joints can replace ground units in any application and provide other important advantages over ground joints:
  - Superior in vacuum and radioactive applications
  - Smooth surfaces resist contamination
  - Cleaning is simple and thorough
  - Interchangeable with ground joints
  - All chemical changes and thermometer scales remain visible through the joints
  - Clear-Seal™ joints have never been weakened by grinding and are formed from special wall tubing that is heavier than standard wall for extra strength
  - Manufactured from WHEATON 33 low extractable borosilicate glass that conforms to ASTM E 438 Type I, Class A requirements
  - Clear-Seal™ joints are produced to American Standard Taper dimensions and can be used interchangeably with any standard taper ground joints
- Enjoy Clear-Seal™ joints exclusively or couple them with ground joints and get maximum results
- WHEATON Micro Kit® catalog number 773900 is packed in a high-density polyethylene case with a foam insert to protect components against breakage

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 773900 | Complete Kit | — |
| **Component and Replacement Parts** | | |
| 109933 | Claisen Adapter | 1 |
| 123753 | Connecting Adapter | 1 |
| 139479 | Thermometer Adapter with "O" ring, 13-425 Cap | 1 |
| 168353 | Vacuum Distilling Adapter | 1 |
| 327342 | West Condenser, 200mm | 1 |
| 385772 | Distilling Column, 200mm | 1 |
| W438174 | Round-Bottom Flask, 100mL | 1 |
| 438764 | Round-Bottom Flask, 250mL | 1 |
| 438782 | Round-Bottom Flask, 500mL | 1 |
| 690170 | Separatory Funnel with PTFE Stopcock, 125mL | 1 |
| 923769 | PTFE Stopper | 1 |
| 964453 | Bleed Tube | 12 |

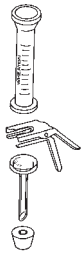



WHEATON
USA
40/35
1000 ml

## 25mm Filtration Assemblies with No. 5 Stopper Connections

- Designed to handle small volumes of liquids for analysis of particulate or microbiological contamination
- Glass components are manufactured from WHEATON 33 low extractable borosilicate glass that conforms to ASTM E 438 Type I, Class A requirements
- Flasks have a #2 hose connection for 1/4" (6mm) I.D. tubing

### With Fritted Glass Support



- Recommended for general filtration
- Includes a coarse porosity (40-60µm) fritted glass support base, 15mL graduated funnel, anodized aluminum clamp, and a No. 5 silicone stopper

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 419325 | Complete Unit | 1 |
| **Component Parts** | | |
| 419330 | Glass Funnel, 25mm, 15mL | 1 |
| 419334 | Aluminum Clamp, 25mm | 1 |
| 419332 | Fritted Glass Support Base, 25mm | 1 |
| 419336 | Silicone Stopper, No. 5 | 6 |
| **Accessories** | | |
| 419331 | Glass Funnel, 25mm, 50mL | 1 |
| 635229 | Filter Flask, 125mL, Graduated, No. 5 Stopper Joint | 1 |

### With Stainless Steel Support

- Designed for filtering viscous or proteinaceous solutions or to produce ultraclean filtrate
- Includes a 316 stainless steel support with 120 mesh screen, PTFE support screen gasket, glass support base, 15mL graduated funnel, anodized aluminum clamp and a No. 5 silicone stopper

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 419327 | Complete Unit | 1 |
| **Component Parts** | | |
| 419330 | Glass Funnel, 25mm, 15mL | 1 |
| 419334 | Aluminum Clamp, 25mm | 1 |
| 419337 | Stainless Steel Support Screen, 25mm | 1 |
| 419338 | Support Screen Gasket, 25mm, PTFE | 6 |
| 419333 | Glass Base, 25mm, for S.S. Support | 1 |
| 419336 | Silicone Stopper, No. 5 | 6 |
| **Accessories** | | |
| 419331 | Glass Funnel, 25mm, 50mL | 1 |
| 635229 | Filter Flask, 125mL, Graduated, No. 5 Stopper Joint | 1 |

## 47mm Filtration Assemblies with No. 8 Stopper Connections

- Designed to handle up to 1000mL of liquid for analysis of particulate or microbiological contamination
- Glass components manufactured from WHEATON 33 low extractable borosilicate glass that conforms to ASTM E 438 Type I, Class A requirements
- Flasks have a #2 hose connection for 1/4" (6mm) I.D. tubing

### With Fritted Glass Support

- Recommended for general filtration
- Includes a coarse porosity (40-60µm) fritted glass support base, 300mL graduated funnel, anodized aluminum clamp, and a No. 8 silicone stopper

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 419347 | Complete Unit | 1 |
| **Component Parts** | | |
| 419350 | Glass Funnel, 47mm, 300mL | 1 |
| 419354 | Aluminum Clamp, 47mm | 1 |
| 419352 | Fritted Support Base, 47mm | 1 |
| 419356 | Silicone Stopper, No. 8 | 6 |
| **Accessories** | | |
| 419410 | Glass Funnel, 47mm, 100mL | 1 |
| 419415 | Glass Funnel, 47mm, 500mL | 1 |
| 419420 | Glass Funnel, 47mm, 1000mL | 1 |
| 635232 | Filter Flask, 1L, Graduated, No. 8 Stopper Joint | 1 |
| 635233 | Filter Flask, 2L, Graduated, No. 8 Stopper Joint | 1 |
| 635245 | Filter Flask, 1L, Safety Coated, No. 8 Stopper Joint | 1 |

### With PTFE Faced Support Base & Funnel

- Recommended for autoclaving with the filter in place
- PTFE coating prevents the filter from adhering to the ground glass surfaces
- Includes a PTFE faced, coarse porosity (40-60µm) fritted glass support base, a PTFE faced 300mL graduated funnel, an anodized aluminum clamp, and a No. 8 silicone stopper

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 419370 | Complete Unit | 1 |
| **Component Parts** | | |
| 419374 | Glass Funnel, PTFE Faced, 47mm, 300mL | 1 |
| 419354 | Aluminum Clamp, 47mm | 1 |
| 419372 | Fritted Glass Support Base, PTFE faced, 47mm | 1 |
| 419356 | Silicone Stopper, No. 8 | 6 |
| **Accessories** | | |
| 635232 | Filter Flask, 1L, Graduated, No. 8 Stopper Joint | 1 |
| 635233 | Filter Flask, 2L, Graduated, No. 8 Stopper Joint | 1 |
| 635245 | Filter Flask, 1L, Safety Coated, No. 8 Stopper Joint | 1 |

## With Stainless Steel Support

- Designed for filtering viscous or proteinaceous solutions or to produce ultraclean filtrate
- Includes a 316 stainless steel support with 120 mesh screen, PTFE support screen gasket, support base, 300mL graduated funnel, anodized clamp and a No. 8 silicone stopper

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 419360 | Complete Unit | 1 |
| **Component Parts** | | |
| 419350 | Glass Funnel, 47mm, 300mL | 1 |
| 419354 | Aluminum Clamp, 47mm | 1 |
| 419364 | Stainless Steel Support Screen, 47mm | 1 |
| 419366 | Support Screen Gasket, 47mm | 6 |
| 419362 | Glass Base, 47mm, for Stainless Steel Support | 1 |
| 419356 | Silicone Stopper, No. 8 | 6 |
| **Accessories** | | |
| 419410 | Glass Funnel, 47mm, 100mL | 1 |
| 419415 | Glass Funnel, 47mm, 500mL | 1 |
| 419420 | Glass Funnel, 47mm, 1000mL | 1 |
| 635232 | Filter Flask, 1L, Graduated, No. 8 Stopper Joint | 1 |
| 635233 | Filter Flask, 2L, Graduated, No. 8 Stopper Joint | 1 |
| 635245 | Filter Flask, 1L, Safety Coated, No. 8 Stopper Joint | 1 |

## With Stainless Steel Support

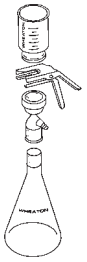
- Designed to filter viscous or proteinaceous solutions or produce an ultra clean filtrate
- Includes a 316 stainless steel support with 120 mesh screen, PTFE support screen gasket, glass support base, 300mL graduated funnel, anodized aluminum clamp and 1L filter flask

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 419390 | Complete Unit | 1 |
| **Component Parts** | | |
| 419350 | Glass Funnel, 47mm, 300mL | 1 |
| 419354 | Aluminum Clamp, 47mm | 1 |
| 419364 | Stainless Steel Support Screen, 47mm | 1 |
| 419366 | Support Screen Gasket, 47mm | 6 |
| 419392 | Glass Base, 47mm, with 40/35 Outer Joint, for Stainless Steel Support | 1 |
| 635525 | Filter Flask, 1L, with 40/35 Inner Joint | 1 |
| **Accessories** | | |
| 419410 | Glass Funnel, 47mm, 100mL | 1 |
| 419350 | Glass Funnel, 47mm, 300mL | 1 |
| 419415 | Glass Funnel, 47mm, 500mL | 1 |
| 419420 | Glass Funnel, 47mm, 1000mL | 1 |
| 635527 | Filter Flask, 1L, with 40/35 Inner Joint, Safety Coated | 1 |

## 47mm Filtration Assembly with Standard Taper 40/35 Joint Connection

- Recommended for routine filtration of organic solvents, corrosive liquids and the removal of particulates from HPLC solvents
- Ground glass connection eliminates phthalate contamination that can occur from silicone or neoprene stoppers
- Drip tip on the support bases extends below the hose connection preventing filtrate from entering the vacuum line
- Units have a #2 hose connection for 1/4" (6mm) I.D. flexible tubing
- Glass components manufactured from WHEATON 33 low extractable borosilicate glass that conforms to USP Type I and ASTM E 438 Type I, Class A requirements

## With Fritted Glass Support



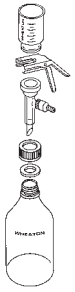
- Recommended for general filtration
- Includes a coarse porosity (40-60µm) fritted glass support base, graduated funnel, anodized aluminum clamp and 1L filter flask

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 419380 | Complete Assembly with 300mL Funnel, 1L Flask | 1 |
| 419385-47 | Complete Assembly with 500mL Funnel, 2L Flask | 1 |
| **Component Parts** | | |
| 419350 | Glass Funnel, 47mm, 300mL | 1 |
| 419415 | Glass Funnel, 47mm, 500mL | 1 |
| 419354 | Aluminum Clamp, 47mm | 1 |
| 419382 | Fritted Glass Support Base, 47mm, with 40/35 Outer Joint | 1 |
| 635525 | Filter Flask, 1L, with 40/35 Inner Joint | 1 |
| 635526 | Filter Flask, 2L, with 40/35 Inner Joint | 1 |
| **Accessories** | | |
| 419410 | Glass Funnel, 47mm, 100mL | 1 |
| 419420 | Glass Funnel, 47mm, 1000mL | 1 |
| 635527 | Filter Flask, 1L, with 40/35 Inner Joint, Safety Coated | 1 |

## 47mm Filtration Assembly with GL45 Thread Connection

- Designed to collect the filtrate directly into a standard laboratory bottle
- Connection to the bottle is made with a polybutylene terephthalate (PBT) cap and a PTFE-faced silicone sealing ring
- Glass components are manufactured from WHEATON 33 low extractable borosilicate glass that conforms to ASTM E 438 Type I, Class A requirements

### With Fritted Glass Support



- Recommended for general filtration
- Includes a coarse porosity (40-60 µm) fritted glass support base, 300mL graduated funnel, anodized aluminum clamp, and a 1L reservoir

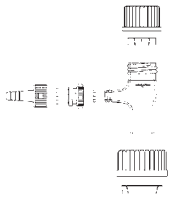
| Cat. No. | Description | Qty / Case |
|---|---|---|
| 419520-47 | Complete Unit | 1 |
| **Component Parts** | | |
| 419350 | Glass Funnel, 47mm, 300mL | 1 |
| 419354 | Aluminum Clamp, 47mm | 1 |
| 419502 | Filtration Base, 47mm with Vacuum Fitting | 1 |
| 419501 | Quick Disconnect Adapter | 12 |
| 240755 | PBT Cap, 45mm, with 39mm Opening | 10 |
| 240780 | PTFE / Silicone Sealing Ring, for 45mm cap, 26mm I.D. | 10 |

### With Stainless Steel Support

- Designed to filter viscous or proteinaceous solutions or produce an ultra clean filtrate
- The assembly comes complete with a 316 stainless steel support with 120 mesh screen, PTFE support screen gasket, glass support base, 300mL graduated funnel, anodized aluminum clamp and 1L reservoir

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 419530-47 | Complete Unit | 1 |
| **Component Parts** | | |
| 419350 | Glass Funnel, 47mm, 300mL | 1 |
| 419354 | Aluminum Clamp, 47mm | 1 |
| 419364 | Stainless Steel Support Screen, 47mm | 1 |
| 419366 | Support Screen Gasket, 47mm | 6 |
| 419501 | Quick Disconnect Adapter | 12 |
| 240755 | PBT Cap, 45mm, with 39mm Opening | 10 |
| 240780 | PTFE / Silicone Sealing Ring, for 45mm Cap, 26mm I.D. | 10 |
| WF034590 | Filtration Base for Stainless Steel Support 47mm with Vacuum Fitting | 1 |

## Filtration Adapter Assembly



- Filtration adapter assembly makes it easier to connect standard 47 and 90mm filtration assemblies with stopper connections to a standard laboratory bottle with a GL45 thread
- Replaces the stopper to make the connection to the bottle
- A GL32 PBT cap with a PTFE faced silicone sealing ring makes the connection to the filtration assembly
- A GL45 PBT cap with PTFE faced silicone sealing ring then makes the connection to the bottle
- Includes a PBT hose connection for use with 1/4" (6mm) I.D. flexible tubing

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 419505 | Complete Unit | 1 |
| **Component Parts** | | |
| 240754 | PBT Cap, GL32, with 19mm Opening | 10 |
| 419506 | Glass Adapter Only | 1 |
| 419501 | Quick Disconnect Adapter | 12 |
| 240755 | PBT Cap, GL45, with 39mm Opening | 10 |
| 240780 | PTFE / Silicone Sealing Ring, for 45mm Cap, 26mm I.D. | 10 |

## 90mm Filtration Assemblies

- Recommended for large sample volumes, liquids with a heavy particulate load and viscous liquids when a high flow rate is required
- Can provide filtration rates up to four times faster than 47mm assemblies due to its larger filter area
- Feature a unique screw collar design for connecting the funnel to the support base providing a more even seal of membrane filter compared to the traditional aluminum clamp
- Glass components are manufactured from WHEATON 33 low extractable borosilicate glass that conforms to ASTM E 438 Type I, Class A requirements
- Flasks have a #2 hose connection for 1/4" (6mm) I.D. tubing

### With No. 8 Stopper Connections

- Recommended for routine filtration of aqueous solutions
- No. 8 silicone stopper makes the connection to a standard 1 liter Erlenmeyer-style filtration flask
- Includes a 1L funnel with screw collar, glass support base, filter support (either fritted glass, stainless steel or PTFE) and a No. 8 silicone stopper

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 419450 | Complete Unit with Stainless Steel Support | 1 |
| 419451 | Complete Unit with PTFE Support | 1 |
| 419452 | Complete Unit with Removable Glass Frit | 1 |
| **Component Parts** | | |
| 419470 | Glass Funnel, 90mm, 1L, with Screw Collar | 1 |
| WF030089 | Glass Frit, 90mm | 1 |
| 419471 | Stainless Steel Support, 90mm | 1 |
| 265422 | PTFE Frit, 90mm | 1 |
| 419455 | Support Base, 90mm | 1 |
| 419356 | Silicone Stopper, No. 8 | 6 |
| **Accessories** | | |
| 635232 | Filter Flask, 1L, Graduated, No. 8 Stopper Joint | 1 |
| 635245 | Filter Flask, 1L, Safety Coated, No. 8 Stopper Joint | 1 |

## With Standard Taper 40/35 Joint Connection

- Recommended for routine filtration of organic solvents, corrosive liquids and the removal of particulates from HPLC solvents
- Ground glass connection eliminates phthalate contamination that can occur from silicone or neoprene stoppers
- Drip tip on the support bases extends below the hose connection preventing filtrate from entering the vacuum line
- A filtration flask with a standard taper 40/35 inner joint is required (listed below).

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 419460 | 90mm Filter Assembly with Stainless Steel Support | 1 |
| 419461 | 90mm Filter Assembly with PTFE Support | 1 |
| 419462 | 90mm Filter Assembly with Removable Glass Frit | 1 |
| **Component Parts** | | |
| 419470 | Glass Funnel, 90mm, 1L, with Screw Collar | 1 |
| WF030089 | Glass Frit, 90mm | 1 |
| 419471 | Stainless Steel Support, 90mm | 1 |
| 265422 | PTFE Frit, 90mm | 1 |
| 419465 | Support Base, 90mm | 1 |
| **Accessories** | | |
| 635525 | Filter Flask, 1L, with 40/35 Inner Joint | 1 |
| 635526 | Filter Flask, 2L, with 40/35 Inner Joint | 1 |
| 635527 | Filter Flask, 1L, Safety Coated, with 40/35 Inner Joint | 1 |

## Filter Flasks

- Erlenmeyer-style flasks feature heavy-wall glass to provide the mechanical strength needed for vacuum filtration
- Side arms are #2 hose connections that accept standard 1/4" (6mm) I.D. flexible tubing for connection to a vacuum source
- Manufactured from WHEATON 33 low extractable borosilicate glass that conforms to ASTM E 438 Type I, Class A requirements
- Connect a second flask between the filtering flask and the vacuum source to prevent entry of the filtrate into the vacuum source

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 635229 | Filter Flask, 125mL, Graduated, No. 5 Stopper Joint | 1 |
| 635232 | Filter Flask, 1L, Graduated, No. 8 Stopper Joint | 1 |
| 635233 | Filter Flask, 2L, Graduated, No. 8 Stopper Joint | 1 |

## Filter Flask, Safety Coated

- Filter flask is coated on the outside with WHEATON's plastisol safety coating
- Autoclavable (121°C, 15 psi, 15 minutes)
- Flask has a #2 hose connection that accepts 1/4" (6mm) I.D. flexible tubing for connection to a vacuum source

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 635245 | Filter Flask, 1L, Safety Coated, No. 8 Stopper Joint | 1 |

# Quality, Value and Reliability for Your Autosampler

## Chromatography

WHEATON® Chromatography Vials and accessories are designed for trouble-free operation in most autosamplers. Products include 12 x 32 autosampler vials, headspace vials and shell vials.

12 x 32 autosampler vials are offered in crimp, snap / crimp and screw cap finishes for use in both GC and HPLC applications. Closures are available in variety of colors and septa materials to ensure chemical compatibility with your sample. For micro sampling, DWK Life Sciences has a selection of limited volume inserts.

Headspace vials feature rounded shoulders and bottoms, allowing for even heating and safer operation at high temperatures. Pressure release seals protect the user and equipment by incorporating bridges and scorelines in the aluminum seal. This design allows the internal pressure to be released when 3.0±0.5 bar has been exceeded.

WHEATON® Shell Vials are offered in clear glass, amber glass or polypropylene. Shell vials and snap plug caps can be purchased separately or together as Convenience Packs.

# Chromatography



## ABC Vial™ 12 x 32mm

(Available in Convenience Packs)

W225151 W225153 W225150 W225152

- 40% larger opening improves sample accessibility while reducing autosampler needle damage
- Manufactured from clear and amber Type I borosilicate glass
- Available with or without writing patch

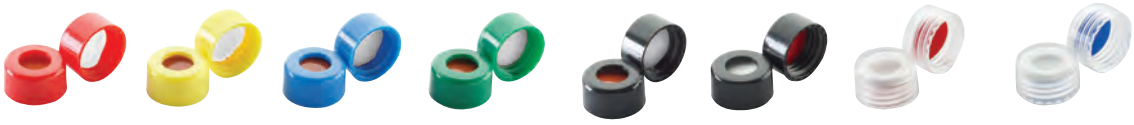
| Cat. No. | Size (mL) | Description | Qty / Case |
|---|---|---|---|
| W225150 | 1.8 | Clear | 1000 |
| W225151 | 1.8 | Clear with Writing Patch | 1000 |
| W225152 | 1.8 | Amber | 1000 |
| W225153 | 1.8 | Amber with Writing Patch | 1000 |

225255 225265 225257 225350-631

- Limited volume inserts available separately
- Vials are packaged 100 per shelf pack and 10 packs per case
- 9mm screw thread
- Use with WHEATON ABC Screw Caps

| Cat. No. | Size (mL) | Description | Qty / Case |
|---|---|---|---|
| **Limited Volume Inserts (Pictured with vial)** | | | |
| 225255 | 0.10 | Glass Insert with Top Spring | 200 |
| 225265 | 0.25 | Glass Insert with Bottom Spring | 100 |
| 225257 | 0.25 | Polypropylene Insert w/ Bottom Spring | 100 |
| 225350-631 | 0.35 | Glass Flat Bottom Insert | 1000 |

## ABC Screw Caps



W225330-0103 W225330-0105 W225330-0104 W225330-0107 W225330-0101 W225332-0201 W225338-08 W225334A-04

- Manufactured from polypropylene
- 100/pack with 10 packs/case
- Screw caps are available in natural, black, red, blue, yellow or green polypropylene.

| Cat. No. | Description | Shelf Pack | Qty / Case |
|---|---|---|---|
| **With White PTFE / Red Silicone Liners** | | | |
| W225330-01 | Natural PP ABC Cap | 100 | 1000 |
| W225330-0101 | Black PP ABC Cap | 100 | 1000 |
| W225330-0103 | Red PP ABC Cap | 100 | 1000 |
| W225330-0104 | Blue PP ABC Cap | 100 | 1000 |
| W225330-0105 | Yellow PP ABC Cap | 100 | 1000 |
| W225330-0107 | Green PP ABC Cap | 100 | 1000 |
| **With Red PTFE / White Silicone Liners** | | | |
| W225332-02 | Natural PP ABC Cap | 100 | 1000 |
| W225332-0201 | Black PP ABC Cap | 100 | 1000 |
| W225332-0203 | Red PP ABC Cap | 100 | 1000 |
| W225332-0204 | Blue PP ABC Cap | 100 | 1000 |
| W225332-0205 | Yellow PP ABC Cap | 100 | 1000 |
| W225332-0207 | Green PP ABC Cap | 100 | 1000 |

| Cat. No. | Description | Shelf Pack | Qty / Case |
|---|---|---|---|
| **With Red PTFE / White Silicone Liners with Slit** | | | |
| W225338-08 | Natural PP ABC Cap | 100 | 1000 |
| W225338-0801 | Black PP ABC Cap | 100 | 1000 |
| W225338-0804 | Blue PP ABC Cap | 100 | 1000 |
| **With Red PTFE / White Silicone / Red PTFE Liners** | | | |
| W225333-03 | Natural PP ABC Cap | 100 | 1000 |
| W225333-0301 | Black PP ABC Cap | 100 | 1000 |
| **With Blue PTFE / White Silicone Liners** | | | |
| W225334A-04 | Natural PP ABC Cap | 100 | 1000 |
| W225334A-0401 | Black PP ABC Cap | 100 | 1000 |
| **With Red PTFE Liners** | | | |
| W225336-06 | Natural PP ABC Cap | 100 | 1000 |
| W225336-0601 | Black PP ABC Cap | 100 | 1000 |

## ABC Vial™ Convenience Packs (12 x 32mm Screw top with 9mm ABC Screw Cap)

| Cat. No. | Vial | Cap Color | Liner | Qty / Case | Vial Cat. No. | Cap Cat. No. |
|---|---|---|---|---|---|---|
| W225154-01 | Clear | Natural | White PTFE / Red Silicone | 100 | W225150 | W225330-01 |
| W225154-0101 | Clear | Black | White PTFE / Red Silicone | 100 | W225150 | W225330-0101 |
| W225154-0103 | Clear | Red | White PTFE / Red Silicone | 100 | W225150 | W225330-0103 |
| W225154-0104 | Clear | Blue | White PTFE / Red Silicone | 100 | W225150 | W225330-0104 |
| W225154-0105 | Clear | Yellow | White PTFE / Red Silicone | 100 | W225150 | W225330-0105 |
| W225154-0107 | Clear | Green | White PTFE / Red Silicone | 100 | W225150 | W225330-0107 |
| W225150-02 | Clear | Natural | Red PTFE / White Silicone | 100 | W225150 | W225332-02 |
| W225150-0201 | Clear | Black | Red PTFE / White Silicone | 100 | W225150 | W225332-0201 |
| W225150-0204 | Clear | Blue | Red PTFE / White Silicone | 100 | W225150 | W225332-0204 |
| W225150-0205 | Clear | Yellow | Red PTFE / White Silicone | 100 | W225150 | W225332-0205 |
| W225150-0207 | Clear | Green | Red PTFE / White Silicone | 100 | W225150 | W225332-0207 |
| W225150-03 | Clear | Natural | Red PTFE / White Silicone / Red PTFE | 100 | W225150 | W225333-03 |

## ABC Vial™ Convenience Packs (12 x 32mm Screw top with 9mm ABC Screw Cap)

| Cat. No. | Vial | Cap Color | Liner | Qty / Case | Vial Cat. No. | Cap Cat. No. |
|---|---|---|---|---|---|---|
| W225150-0301 | Clear | Black | Red PTFE / White Silicone / Red PTFE | 100 | W225150 | W225333-0301 |
| W225154-04 | Clear | Natural | Blue PTFE / White Silicone | 100 | W225150 | W225334A-04 |
| W225154-0401 | Clear | Black | Blue PTFE / White Silicone | 100 | W225150 | W225334A-0401 |
| W225150-08 | Clear | Natural | Red PTFE / White Silicone with Slit | 100 | W225150 | W225338-08 |
| W225150-0801 | Clear | Black | Red PTFE / White Silicone with Slit | 100 | W225150 | W225338-0801 |
| W225150-06 | Clear | Natural | Red PTFE | 100 | W225150 | W225336-06 |
| W225150-0601 | Clear | Black | Red PTFE | 100 | W225150 | W225336-0601 |
| W225150-0804 | Clear | Blue | Red PTFE / White Silicone with Slit | 100 | W225150 | W225338-0804 |
| | | | | | | |
| W225155-01 | Clear with Patch | Natural | White PTFE / Red Silicone | 100 | W225151 | W225330-01 |
| W225155-0101 | Clear with Patch | Black | White PTFE / Red Silicone | 100 | W225151 | W225330-0101 |
| W225155-0103 | Clear with Patch | Red | White PTFE / Red Silicone | 100 | W225151 | W225330-0103 |
| W225155-0104 | Clear with Patch | Blue | White PTFE / Red Silicone | 100 | W225151 | W225330-0104 |
| W225155-0105 | Clear with Patch | Yellow | White PTFE / Red Silicone | 100 | W225151 | W225330-0105 |
| W225155-0107 | Clear with Patch | Green | White PTFE / Red Silicone | 100 | W225151 | W225330-0107 |
| W225151-02 | Clear with Patch | Natural | Red PTFE / White Silicone | 100 | W225151 | W225332-02 |
| W225151-0201 | Clear with Patch | Black | Red PTFE / White Silicone | 100 | W225151 | W225332-0201 |
| W225151-0204 | Clear with Patch | Blue | Red PTFE / White Silicone | 100 | W225151 | W225332-0204 |
| W225151-0205 | Clear with Patch | Yellow | Red PTFE / White Silicone | 100 | W225151 | W225332-0205 |
| W225151-0207 | Clear with Patch | Green | Red PTFE / White Silicone | 100 | W225151 | W225332-0207 |
| W225151-03 | Clear with Patch | Natural | Red PTFE / White Silicone / Red PTFE | 100 | W225151 | W225333-03 |
| W225151-0301 | Clear with Patch | Black | Red PTFE / White Silicone / Red PTFE | 100 | W225151 | W225333-0301 |
| W225151-04 | Clear with Patch | Natural | Blue PTFE / White Silicone | 100 | W225151 | W225334A-04 |
| W225151-0401 | Clear with Patch | Black | Blue PTFE / White Silicone | 100 | W225151 | W225334A-0401 |
| W225151-08 | Clear with Patch | Natural | Red PTFE / White Silicone with Slit | 100 | W225151 | W225338-08 |
| W225151-0801 | Clear with Patch | Black | Red PTFE / White Silicone with Slit | 100 | W225151 | W225338-0801 |
| W225151-06 | Clear with Patch | Natural | Red PTFE | 100 | W225151 | W225336-06 |
| W225151-0601 | Clear with Patch | Black | Red PTFE | 100 | W225151 | W225336-0601 |
| W225151-0804 | Clear with Patch | Blue | Red PTFE / White Silicone with Slit | 100 | W225151 | W225338-0804 |
| | | | | | | |
| W225156-01 | Amber | Natural | White PTFE / Red Silicone | 100 | W225152 | W225330-01 |
| W225156-0101 | Amber | Black | White PTFE / Red Silicone | 100 | W225152 | W225330-0101 |
| W225156-0103 | Amber | Red | White PTFE / Red Silicone | 100 | W225152 | W225330-0103 |
| W225156-0104 | Amber | Blue | White PTFE / Red Silicone | 100 | W225152 | W225330-0104 |
| W225156-0105 | Amber | Yellow | White PTFE / Red Silicone | 100 | W225152 | W225330-0105 |
| W225156-0107 | Amber | Green | White PTFE / Red Silicone | 100 | W225152 | W225330-0107 |
| W225152-02 | Amber | Natural | Red PTFE / White Silicone | 100 | W225152 | W225332-02 |
| W225152-0201 | Amber | Black | Red PTFE / White Silicone | 100 | W225152 | W225332-0201 |
| W225152-0204 | Amber | Blue | Red PTFE / White Silicone | 100 | W225152 | W225332-0204 |
| W225152-0205 | Amber | Yellow | Red PTFE / White Silicone | 100 | W225152 | W225332-0205 |
| W225152-0207 | Amber | Green | Red PTFE / White Silicone | 100 | W225152 | W225332-0207 |
| W225152-03 | Amber | Natural | Red PTFE / White Silicone / Red PTFE | 100 | W225152 | W225333-03 |
| W225152-0301 | Amber | Black | Red PTFE / White Silicone / Red PTFE | 100 | W225152 | W225333-0301 |
| W225152-0804 | Amber | Blue | Red PTFE / White Silicone with Slit | 100 | W225152 | W225338-0804 |
| W225156-04 | Amber | Natural | Blue PTFE / White Silicone | 100 | W225152 | W225334A-04 |
| W225156-0401 | Amber | Black | Blue PTFE / White Silicone | 100 | W225152 | W225334A-0401 |
| W225152-08 | Amber | Natural | Red PTFE / White Silicone with Slit | 100 | W225152 | W225338-08 |
| W225152-0801 | Amber | Black | Red PTFE / White Silicone with Slit | 100 | W225152 | W225338-0801 |
| W225152-06 | Amber | Natural | Red PTFE | 100 | W225152 | W225336-06 |
| W225152-0601 | Amber | Black | Red PTFE | 100 | W225152 | W225336-0601 |
| | | | | | | |
| W225157-01 | Amber with Patch | Natural | White PTFE / Red Silicone | 100 | W225153 | W225330-01 |
| W225157-0101 | Amber with Patch | Black | White PTFE / Red Silicone | 100 | W225153 | W225330-0101 |
| W225157-0103 | Amber with Patch | Red | White PTFE / Red Silicone | 100 | W225153 | W225330-0103 |
| W225157-0104 | Amber with Patch | Blue | White PTFE / Red Silicone | 100 | W225153 | W225330-0104 |
| W225157-0105 | Amber with Patch | Yellow | White PTFE / Red Silicone | 100 | W225153 | W225330-0105 |
| W225157-0107 | Amber with Patch | Green | White PTFE / Red Silicone | 100 | W225153 | W225330-0107 |
| W225153-02 | Amber with Patch | Natural | Red PTFE / White Silicone | 100 | W225153 | W225332-02 |
| W225153-0201 | Amber with Patch | Black | Red PTFE / White Silicone | 100 | W225153 | W225332-0201 |
| W225153-0204 | Amber with Patch | Blue | Red PTFE / White Silicone | 100 | W225153 | W225332-0204 |
| W225153-0205 | Amber with Patch | Yellow | Red PTFE / White Silicone | 100 | W225153 | W225332-0205 |
| W225153-0207 | Amber with Patch | Green | Red PTFE / White Silicone | 100 | W225153 | W225332-0207 |
| W225153-03 | Amber with Patch | Natural | Red PTFE / White Silicone / Red PTFE | 100 | W225153 | W225333-03 |
| W225153-0301 | Amber with Patch | Black | Red PTFE / White Silicone / Red PTFE | 100 | W225153 | W225333-0301 |
| W225153-0804 | Amber with Patch | Blue | Red PTFE / White Silicone with Slit | 100 | W225153 | W225338-0804 |
| W225157-04 | Amber with Patch | Natural | Blue PTFE / White Silicone | 100 | W225153 | W225334A-04 |
| W225157-0401 | Amber with Patch | Black | Blue PTFE / White Silicone | 100 | W225153 | W225334A-0401 |
| W225153-08 | Amber with Patch | Natural | Red PTFE / White Silicone with Slit | 100 | W225153 | W225338-08 |
| W225153-0801 | Amber with Patch | Black | Red PTFE / White Silicone with Slit | 100 | W225153 | W225338-0801 |
| W225153-06 | Amber with Patch | Natural | Red PTFE | 100 | W225153 | W225336-06 |
| W225153-0601 | Amber with Patch | Black | Red PTFE | 100 | W225153 | W225336-0601 |

## LVI™ Vial 12 x 32mm

(Available in Convenience Packs)

- Borosilicate glass vial with 300µL glass limited volume insert
- Insert is fused to vial to prevent needle damage
- Writing patch on all vials
- Purchase vials and caps separately or together in convenience packs
- Use with WHEATON ABC Screw Caps

**ABC Screw Caps** (See page 81)

| Cat. No | Size (mL) | Description | Qty / Case |
|---|---|---|---|
| 9mm ABC Screw Cap Vial | | | |
| 225326 | 0.3 | Clear with Writing Patch | 100 |
| 225328 | 0.3 | Amber with Writing Patch | 100 |

## WHEATON LVI™ Vial Convenience Packs (12x32mm Screw Top with 9mm ABC Screw Cap)

| Cat. No. | Vial | Cap Color | Liner | Qty / Case | Vial Cat. No. | Cap Cat. No. |
|---|---|---|---|---|---|---|
| W225327-01 | Clear with Patch | Natural | White PTFE / Red Silicone | 100 | 225326 | W225330-01 |
| W225327-0101 | Clear with Patch | Black | White PTFE / Red Silicone | 100 | 225326 | W225330-0101 |
| W225327-0103 | Clear with Patch | Red | White PTFE / Red Silicone | 100 | 225326 | W225330-0103 |
| W225327-0104 | Clear with Patch | Blue | White PTFE / Red Silicone | 100 | 225326 | W225330-0104 |
| W225327-0105 | Clear with Patch | Yellow | White PTFE / Red Silicone | 100 | 225326 | W225330-0105 |
| W225327-0107 | Clear with Patch | Green | White PTFE / Red Silicone | 100 | 225326 | W225330-0107 |
| W225326-02 | Clear with Patch | Natural | Red PTFE / White Silicone | 100 | 225326 | W225332-02 |
| W225326-0201 | Clear with Patch | Black | Red PTFE / White Silicone | 100 | 225326 | W225332-0201 |
| W225326-0204 | Clear with Patch | Blue | Red PTFE / White Silicone | 100 | 225326 | W225332-0204 |
| W225326-0205 | Clear with Patch | Yellow | Red PTFE / White Silicone | 100 | 225326 | W225332-0205 |
| W225326-0207 | Clear with Patch | Green | Red PTFE / White Silicone | 100 | 225326 | W225332-0207 |
| W225326-03 | Clear with Patch | Natural | Red PTFE / White Silicone / Red PTFE | 100 | 225326 | W225333-03 |
| W225326-0301 | Clear with Patch | Black | Red PTFE / White Silicone / Red PTFE | 100 | 225326 | W225333-0301 |
| W225326-04 | Clear with Patch | Natural | Blue PTFE / White Silicone | 100 | 225326 | W225334A-04 |
| W225326-0401 | Clear with Patch | Black | Blue PTFE / White Silicone | 100 | 225326 | W225334A-0401 |
| W225326-08 | Clear with Patch | Natural | Red PTFE / White Silicone with Slit | 100 | 225326 | W225338-08 |
| W225326-0801 | Clear with Patch | Black | Red PTFE / White Silicone with Slit | 100 | 225326 | W225338-0801 |
| W225326-06 | Clear with Patch | Natural | Red PTFE | 100 | 225326 | W225336-06 |
| W225326-0601 | Clear with Patch | Black | Red PTFE | 100 | 225326 | W225336-0601 |
| | | | | | | |
| W225329-01 | Amber with Patch | Natural | White PTFE / Red Silicone | 100 | 225328 | W225330-01 |
| W225329-0101 | Amber with Patch | Black | White PTFE / Red Silicone | 100 | 225328 | W225330-0101 |
| W225329-0103 | Amber with Patch | Red | White PTFE / Red Silicone | 100 | 225328 | W225330-0103 |
| W225329-0104 | Amber with Patch | Blue | White PTFE / Red Silicone | 100 | 225328 | W225330-0104 |
| W225329-0105 | Amber with Patch | Yellow | White PTFE / Red Silicone | 100 | 225328 | W225330-0105 |
| W225329-0107 | Amber with Patch | Green | White PTFE / Red Silicone | 100 | 225328 | W225330-0107 |
| W225328-02 | Amber with Patch | Natural | Red PTFE / White Silicone | 100 | 225328 | W225332-02 |
| W225328-0201 | Amber with Patch | Black | Red PTFE / White Silicone | 100 | 225328 | W225332-0201 |
| W225328-0204 | Amber with Patch | Blue | Red PTFE / White Silicone | 100 | 225328 | W225332-0204 |
| W225328-0205 | Amber with Patch | Yellow | Red PTFE / White Silicone | 100 | 225328 | W225332-0205 |
| W225328-0207 | Amber with Patch | Green | Red PTFE / White Silicone | 100 | 225328 | W225332-0207 |
| W225328-03 | Amber with Patch | Natural | Red PTFE / White Silicone / Red PTFE | 100 | 225328 | W225333-03 |
| W225328-0301 | Amber with Patch | Black | Red PTFE / White Silicone / Red PTFE | 100 | 225328 | W225333-0301 |
| W225328-04 | Amber with Patch | Natural | Blue PTFE / White Silicone | 100 | 225328 | W225334A-04 |
| W225328-0401 | Amber with Patch | Black | Blue PTFE / White Silicone | 100 | 225328 | W225334A-0401 |
| W225328-08 | Amber with Patch | Natural | Red PTFE / White Silicone with Slit | 100 | 225328 | W225338-08 |
| W225328-0801 | Amber with Patch | Black | Red PTFE / White Silicone with Slit | 100 | 225328 | W225338-0801 |
| W225328-06 | Amber with Patch | Natural | Red PTFE | 100 | 225328 | W225336-06 |
| W225328-0601 | Amber with Patch | Black | Red PTFE | 100 | 225328 | W225336-0601 |

## Standard Opening Vial 12 x 32mm

W225910 W225900 225260 225350-531 242245

- Manufactured from clear and amber Type I borosilicate glass
- Limited volume inserts available separately
- Screw cap and septa available separately
- Purchase vials and caps separately or together in convenience packs

| Cat. No. | Size (mL) | Description | Cap Size | Qty / Case |
|---|---|---|---|---|
| **Standard Opening Vials** | | | | |
| W225900 | 1.8 | Clear Vial | 8-425 | 1000 |
| W225910 | 1.8 | Amber Vial | 8-425 | 1000 |
| **Limited Volume Inserts (Pictured with Vial)** | | | | |
| 225260 | 0.10 | Glass Insert with Bottom Spring | | 100 |
| 225350-531 | 0.25 | Glass Flat Bottom Insert | | 1000 |

| Cat. No. | Size | Description | Qty / Case |
|---|---|---|---|
| **Preassembled Open Top Caps and Septa** | | | |
| 240602 | 8-425 | Black Polypropylene Cap with PTFE / Silicone Liner | 100 |
| 242245 | 8-425 | Natural Polypropylene cap with 10 mil Septa | 1000 |
| **Open Top Caps** | | | |
| W240506 | 8-425 | Black Phenolic Cap | 200 |
| **Septa for Open Top Caps** | | | |
| W240580 | 8mm | Red PTFE Faced Silicone | 100 |
| W240581A | 8mm | PTFE Faced Silicone | 100 |
| **Convenience Packs** | | | |
| 225170 | 1.8mL | Clear Vial with Unassembled Cap and PTFE / Silicone Septa | 240 |
| 224950 | 1.8mL | Clear Vial in Vial File® with Pre-assembled Cap and PTFE / Silicone Septa | 60 |

## 12 x 32mm Polypropylene Vial with Insert

W225181 225185 W225186 W225237

- Economical alternative to glass
- Manufactured from chemical resistant polypropylene
- Vials are packaged 100 per shelf pack and 10 packs per case
- Conical interior ensures maximum retrieval of contents without the hassle of using removable inserts

| Cat. No | Insert Size | Closure Style | Closure Size | Qty / Case |
|---|---|---|---|---|
| W225181 | 300µL | ABC Screw Thread Finish | 9mm | 1000 |
| 225185 | 300µL | Screw Thread Finish | 8-425 | 1000 |
| W225186 | 500µL | Screw Thread Finish | 10-425 | 1000 |
| W225237 | 750µL | Screw Thread Finish | 10-425 | 1000 |

## 12 x 32mm Glass / Plastic Vial with 0.1mL Insert

225195 225205

- Thermoplastic polymer outer shell provides safety from breakage
- Type I borosilicate glass insert for contact with sample
- 100µL glass insert volume
- Conical interior ensures maximum retrival of contents without the hassle of using removable inserts

| Cat. No | Closure Style | Closure Size | Qty / Case |
|---|---|---|---|
| **Clear Vial** | | | |
| 225195 | Screw Top Finish | 8-425 | 100 |
| **Amber Vial** | | | |
| 225205 | Screw Top Finish | 8-425 | 100 |

## E-Z Vial® with Step 12 x 32mm

224629 224627 224628 224626 225258 225259

- Innovative design of the vial and limited volume insert enables the insert to be precisely centered inside the vial
- Manufactured from clear and amber Type I borosilicate glass
- Limited volume inserts with step available separately
- Purchase vials and caps separately

| Cat. No. | Size (mL) | Description | Cap Size | Qty / Case |
|---|---|---|---|---|
| **E-Z Vials with Step** | | | | |
| 224626 | 1.8 | Clear | 10-425 | 1000 |
| 224627 | 1.8 | Clear with Writing Patch | 10-425 | 1000 |
| 224628 | 1.8 | Amber | 10-425 | 1000 |
| 224629 | 1.8 | Amber with Writing Patch | 10-425 | 1000 |
| **Limited Volume Inserts (Pictured with Vial)** | | | | |
| 225258 | 0.25 | Glass Insert for Vial with Step | | 100 |
| 225259 | 0.25 | Polypropylene Insert for Vial with Step | | 100 |

## Screw Top Vial 15 x 45mm

224795 224794-01 224795-01 225268

- Manufactured from clear and amber Type I borosilicate glass
- Limited volume inserts available separately
- Purchase vials and caps separately

| Cat. No. | Size (mL) | Description | Cap Size | Qty / Case |
|---|---|---|---|---|
| **15 x 45mm Screw Top Vials** | | | | |
| 224794-01 | 4 | Clear with Writing Patch | 13-425 | 1000 |
| 224795 | 4 | Amber | 13-425 | 1000 |
| 224795-01 | 4 | Amber with Writing Patch | 13-425 | 1000 |
| **Limited Volume Inserts (Pictured with Vial)** | | | | |
| 225268 | 0.30 | Glass Insert with Bottom Spring | | 100 |

## Caps for Screw Thread Vials

242760 242766 242768 242247

- Pre-assembled black polypropylene (PP) screw cap with septa

| Cat. No. | Size (mm) | Description | Qty / Case |
|---|---|---|---|
| **Preassembled Open Top Caps and Septa** | | | |
| 242760 | 10-425 | Black PP Cap with ETFE Red Rubber | 100 |
| 242761 | 10-425 | Black PP Cap with PTFE / Silicone / PTFE | 100 |
| 242762 | 10-425 | Black PP Cap with PTFE / Silicone | 100 |
| 242766 | 10-425 | Natural PP cap with 10 mil Septa | 1000 |
| 242768 | 13-425 | Black PP Cap with PTFE / Silicone Liner | 100 |
| 242247 | 13-425 | Natural PP cap with 10 mil Septa | 1000 |
| **Solid Top Caps** | | | |
| 242765 | 10-425 | Black PP Unlined Cap | 1000 |

## WHEATON® VIAL RACKS

WHEATON Vial Racks are offered in a variety of sizes. These racks are manufactured from polypropylene for durability and can be easily cleaned in an automatic washer or autoclaved. WHEATON racks are sturdy and can be stacked, even when the vials are in place.

> Manufactured from polypropylene
> Easy to clean and autoclavable
> Size of the rack depends on vial OD
> Alpha numeric indexing


See more information on Vial Racks on page 168.

## E-Z Vial® 12 x 32mm Crimp Top
(Available in Convenience Packs)

225174 225173 225175 225172

- 40% larger opening improves sample accessibility while reducing autosampler needle damage
- Manufactured from Type I borosilicate glass
- Purchase vials and caps separately or together in convenience packs
- Available with or without writing patch

| Cat. No. | Size (mL) | Description | Qty / Case |
|---|---|---|---|
| **E-Z Vial** | | | |
| 225175 | 1.8 | Clear | 1000 |
| 225174 | 1.8 | Clear w/ Writing patch | 1000 |
| 225172 | 1.8 | Amber | 1000 |
| 225173 | 1.8 | Amber w/ Writing patch | 1000 |

## Standard Opening Crimp Vial 12 x 32mm

223692 223682 223692-01 223682-01

- Original design used in most autosamplers
- Manufactured from Type I borosilicate glass
- Available with or without writing patch
- Limited volume inserts available separately

| Cat. No. | Size (mL) | Description | Qty / Case |
|---|---|---|---|
| **Standard Crimp Vial** | | | |
| 223682 | 1.5 | Clear | 1000 |
| 223682-01 | 1.5 | Clear, with Writing Patch | 1000 |
| 223692 | 1.5 | Amber | 1000 |
| 223692-01 | 1.5 | Amber, with Writing Patch | 1000 |

## Limited Volume Inserts
(For E-Z Vials® with Wide Opening)

225350-631 225265 225255 225257

| Cat. No. | Size (mL) | Description | Qty / Case |
|---|---|---|---|
| **Limited Volume Inserts (Pictured with Vial)** | | | |
| 225255 | 0.10 | Glass Insert with Top Spring | 200 |
| 225265 | 0.25 | Glass Insert with Bottom Spring | 100 |
| 225257 | 0.25 | Polypropylene Insert w/ Bottom Spring | 100 |
| 225350-631 | 0.35 | Glass Flat Bottom Insert | 1000 |

## Limited Volume Inserts
(For Standard Opening Vials)

225350-531 225260

| Cat. No. | Size (mL) | Description | Qty / Case |
|---|---|---|---|
| **Limited Volume Insert (Pictured with Vial)** | | | |
| 225260 | 0.10 | Glass Insert with Bottom Spring | 100 |
| 225350-531 | 0.25 | Glass Flat Bottom Insert | 1000 |

## E-Z Seals™ 11mm Aluminum

- For use with 12 x 32mm crimp top vials
- Large target diameter
- Seals available in 4 colors
- Choice of liner

| Cat. No. | Description | Shelf Pack | Qty / Case |
|---|---|---|---|
| **With Natural PTFE / Red Silicone** | | | |
| 224211-01 | Natural Aluminum | 100 | 1000 |
| 224211-05 | Blue Aluminum | 100 | 1000 |
| 224211-06 | Red Aluminum | 100 | 1000 |
| 224211-07 | Green Aluminum | 100 | 1000 |
| **With Natural PTFE / Natural Silicone Liner** | | | |
| 224219-01 | Natural Aluminum | 100 | 1000 |
| 224219-05 | Blue Aluminum | 100 | 1000 |
| 224219-06 | Red Aluminum | 100 | 1000 |
| 224219-07 | Green Aluminum | 100 | 1000 |
| **With Red PTFE / Natural Silicone / Red PTFE Liner** | | | |
| 224231-01 | Natural Aluminum | 100 | 1000 |
| 224231-05 | Blue Aluminum | 100 | 1000 |
| 224231-06 | Red Aluminum | 100 | 1000 |
| 224231-07 | Green Aluminum | 100 | 1000 |
| **With PTFE / Gray Butyl Liner** | | | |
| 224235-01 | Natural Aluminum | 100 | 1000 |

## E-Z Vial® 12 x 32mm Crimp Top Convenience Packs (12 x 32mm Crimp Top Vial with 11mm E-Z Seal™)

| Cat. No. | Vial | Seal Color | Septum | Qty / Case | Vial Cat. No. | Seal Cat. No. |
|---|---|---|---|---|---|---|
| W225175-01 | Clear | Natural | PTFE / Red Rubber | 100 | 225175 | 224211-01 |
| W225175-0103 | Clear | Red | PTFE / Red Rubber | 100 | 225175 | 224211-05 |
| W225175-0104 | Clear | Blue | PTFE / Red Rubber | 100 | 225175 | 224211-06 |
| W225175-0107 | Clear | Green | PTFE / Red Rubber | 100 | 225175 | 224211-07 |
| W225175-02 | Clear | Natural | PTFE / Silicone | 100 | 225175 | 224219-01 |
| W225175-0203 | Clear | Red | PTFE / Silicone | 100 | 225175 | 224219-05 |
| W225175-0204 | Clear | Blue | PTFE / Silicone | 100 | 225175 | 224219-06 |
| W225175-0207 | Clear | Green | PTFE / Silicone | 100 | 225175 | 224219-07 |
| W225175-0303 | Clear | Red | PTFE / Silicone / PTFE | 100 | 225175 | 224231-05 |
| W225175-0304 | Clear | Blue | PTFE / Silicone / PTFE | 100 | 225175 | 224231-06 |
| W225174-01 | Clear with Patch | Natural | PTFE / Red Rubber | 100 | 225174 | 224211-01 |
| W225174-0103 | Clear with Patch | Red | PTFE / Red Rubber | 100 | 225174 | 224211-05 |
| W225174-0104 | Clear with Patch | Blue | PTFE / Red Rubber | 100 | 225174 | 224211-06 |
| W225174-0107 | Clear with Patch | Green | PTFE / Red Rubber | 100 | 225174 | 224211-07 |
| W225174-02 | Clear with Patch | Natural | PTFE / Silicone | 100 | 225174 | 224219-01 |
| W225174-0203 | Clear with Patch | Red | PTFE / Silicone | 100 | 225174 | 224219-05 |
| W225174-0204 | Clear with Patch | Blue | PTFE / Silicone | 100 | 225174 | 224219-06 |
| W225174-0207 | Clear with Patch | Green | PTFE / Silicone | 100 | 225174 | 224219-07 |
| W225174-0303 | Clear with Patch | Red | PTFE / Silicone / PTFE | 100 | 225174 | 224231-05 |
| W225174-0304 | Clear with Patch | Blue | PTFE / Silicone / PTFE | 100 | 225174 | 224231-06 |
| W225172-01 | Amber | Natural | PTFE / Red Rubber | 100 | 225172 | 224211-01 |
| W225172-0103 | Amber | Red | PTFE / Red Rubber | 100 | 225172 | 224211-05 |
| W225172-0104 | Amber | Blue | PTFE / Red Rubber | 100 | 225172 | 224211-06 |
| W225172-0107 | Amber | Green | PTFE / Red Rubber | 100 | 225172 | 224211-07 |
| W225172-02 | Amber | Natural | PTFE / Silicone | 100 | 225172 | 224219-01 |
| W225172-0203 | Amber | Red | PTFE / Silicone | 100 | 225172 | 224219-05 |
| W225172-0204 | Amber | Blue | PTFE / Silicone | 100 | 225172 | 224219-06 |
| W225172-0207 | Amber | Green | PTFE / Silicone | 100 | 225172 | 224219-07 |
| W225172-0303 | Amber | Red | PTFE / Silicone / PTFE | 100 | 225172 | 224231-05 |
| W225172-0304 | Amber | Blue | PTFE / Silicone / PTFE | 100 | 225172 | 224231-06 |
| W225173-01 | Amber with Patch | Natural | PTFE / Red Rubber | 100 | 225173 | 224211-01 |
| W225173-0103 | Amber with Patch | Red | PTFE / Red Rubber | 100 | 225173 | 224211-05 |
| W225173-0104 | Amber with Patch | Blue | PTFE / Red Rubber | 100 | 225173 | 224211-06 |
| W225173-0107 | Amber with Patch | Green | PTFE / Red Rubber | 100 | 225173 | 224211-07 |
| W225173-02 | Amber with Patch | Natural | PTFE / Silicone | 100 | 225173 | 224219-01 |
| W225173-0203 | Amber with Patch | Red | PTFE / Silicone | 100 | 225173 | 224219-05 |
| W225173-0204 | Amber with Patch | Blue | PTFE / Silicone | 100 | 225173 | 224219-06 |
| W225173-0207 | Amber with Patch | Green | PTFE / Silicone | 100 | 225173 | 224219-07 |
| W225173-0303 | Amber with Patch | Red | PTFE / Silicone / PTFE | 100 | 225173 | 224231-05 |
| W225173-0304 | Amber with Patch | Blue | PTFE / Silicone / PTFE | 100 | 225173 | 224231-06 |

## LVI™ Vials 12 x 32mm Crimp Top

225221-01

225220-01

- Borosilicate glass vial with 300µL glass limited volume insert
- Limited Volume Insert is fused to vial which prevents needle damage
- Writing patch on all vials
- Purchase vials and caps separately or together in convenience packs

| Cat. No. | Size (mL) | Description | Qty / Case |
|---|---|---|---|
| **LVI Vial** | | | |
| 225220-01 | 0.3 | Clear with Writing Patch | 100 |
| 225221-01 | 0.3 | Amber with Writing Patch | 100 |

**E-Z Seals™ 11mm Aluminum** (See page 86)

## LVI™ Vials 12 x 32mm Crimp Top Convenience Packs

- 12 x 32mm LVI™ Vial & 11mm Aluminum E-Z Seal™
- Choose clear or amber glass vial
- Writing patch on all vials

| Cat. No. | Vial | Seal Color | Septum | Qty / Case | Vial Cat. No. | Seal Cat. No. |
|---|---|---|---|---|---|---|
| W225223-01 | Clear with Patch | Natural | PTFE / Red Rubber | 100 | 225220-01 | 224211-01 |
| W225225-01 | Amber with Patch | Natural | PTFE / Red Rubber | 100 | 225221-01 | 224211-01 |

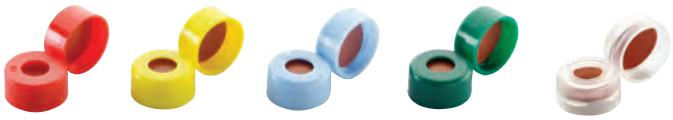
## E-Z Vial® with Snap Ring 12 x 32mm
(Available in Convenience Packs)

225179 225179-02 225179-01 225179-03

- Snap ring vials eliminate the need for crimping and decapping tools
- Vials accept snap cap or 11mm aluminum seal
- 40% larger opening improves sample accessibility while reducing auto sampler needle damage
- Clear or amber Type I borosilicate glass

| Cat. No. | Size (mL) | Description | Qty / Case |
|---|---|---|---|
| **E-Z Vial with Snap Ring** | | | |
| 225179 | 1.8 | Clear | 1000 |
| 225179-01 | 1.8 | Clear with Writing Patch | 1000 |
| 225179-02 | 1.8 | Amber | 1000 |
| 225179-03 | 1.8 | Amber with Writing Patch | 1000 |

## 11mm Snap Caps



242772-04 242772-05 242772-01 242772-02 242786

- Eliminate the need for crimping and decapping tools
- Fits the WHEATON E-Z Vials® with Snap Ring top
- Manufactured from polyethylene
- Choose from 5 colored caps and a variety of septa

| Cat. No. | Description | Shelf Pack | Qty / Case |
|---|---|---|---|
| **With PTFE / Red Rubber Septa** | | | |
| 242786 | Natural Cap | 100 | 1000 |
| **With PTFE / Silicone Septa** | | | |
| 242775 | Natural Cap with Cross Slit | 100 | 1000 |
| 242776 | Natural Cap | 100 | 1000 |
| 242776-01 | Blue Cap | 100 | 1000 |
| 242776-02 | Green Cap | 100 | 1000 |
| 242776-04 | Red Cap | 100 | 1000 |
| 242776-05 | Yellow Cap | 100 | 1000 |
| **With Red PTFE / Silicone / Red PTFE Septa** | | | |
| 242772 | Natural Cap | 100 | 1000 |
| 242772-01 | Blue Cap | 100 | 1000 |
| 242772-02 | Green Cap | 100 | 1000 |
| 242772-04 | Red Cap | 100 | 1000 |
| 242772-05 | Yellow Cap | 100 | 1000 |
| 242772-06 | Natural Cap with Star Slit | 100 | 1000 |
| **With PTFE Septa** | | | |
| 242782 | Natural Cap | 100 | 1000 |

## Limited Volume Inserts
(For Snap Ring Vials)

225255 225265 225257 225350-631

- Available with or without writing patch
- Glass and polypropylene limited volume inserts
- Purchase vials and snap caps separately or together in convenience packs
- Packaged in shrink-wrapped trays of 100 for convenience and cleanliness

| Cat. No. | Size (mL) | Description | Qty / Case |
|---|---|---|---|
| **Limited Volume Inserts (Pictured with Vial)** | | | |
| 225255 | 0.10 | Glass Insert with Top Spring | 200 |
| 225265 | 0.25 | Glass Insert with Bottom Spring | 100 |
| 225257 | 0.25 | Polypropylene Insert w/ Bottom Spring | 100 |
| 225350-631 | 0.35 | Glass Flat Bottom Insert | 1000 |

## 12 x 32mm Polypropylene Vial with Insert

225180 W225187 225235

- Economical alternative to glass
- Manufactured from chemical resistant polypropylene
- Vials are packaged 100 per shelf pack and 10 packs per case
- Conical interior ensures maximum retrieval of contents without the hassle of removable inserts

| Cat. No. | Insert Size | Closure Style | Closure Size | Qty / Case |
|---|---|---|---|---|
| 225180 | 300µL | Snap / Crimp Finish | 11mm | 1000 |
| W225187 | 500µL | Snap / Crimp Finish | 11mm | 1000 |
| 225235 | 750µL | Snap / Crimp Finish | 11mm | 1000 |

## 12 x 32mm Glass / Plastic Vial with 0.1mL Insert

225190 225200

- Thermoplastic polymer outer shell provides safety from breakage
- Type I borosilicate glass insert for contact with sample
- 100µL glass insert volume
- Conical interior ensures maximum retrieval of contents without the hassle of removable inserts

| Cat. No | Closure Style | Color | Closure Size | Qty / Case |
|---|---|---|---|---|
| 225190 | Snap / Crimp Finish | Clear | 11mm | 100 |
| 225200 | Snap / Crimp Finish | Amber | 11mm | 100 |

## E-Z Vial® with Snap Ring Convenience packs (12 x 32mm Snap Top with 11mm Snap Cap)

| Cat. No. | Vial | Cap Color | Septum | Qty / Case | Vial Cat. No. | Cap Cat. No. |
|---|---|---|---|---|---|---|
| W224620-01 | Clear | Natural | PTFE / Red Rubber | 100 | 225179 | 242786 |
| W224620-02 | Clear | Natural | PTFE / Silicone | 100 | 225179 | 242776 |
| W224620-0203 | Clear | Red | PTFE / Silicone | 100 | 225179 | 242776-04 |
| W224620-0204 | Clear | Blue | PTFE / Silicone | 100 | 225179 | 242776-01 |
| W224620-0205 | Clear | Yellow | PTFE / Silicone | 100 | 225179 | 242776-05 |
| W224620-0207 | Clear | Green | PTFE / Silicone | 100 | 225179 | 242776-02 |
| W224620-03 | Clear | Natural | PTFE / Silicone / PTFE | 100 | 225179 | 242772 |
| W224620-0303 | Clear | Red | PTFE / Silicone / PTFE | 100 | 225179 | 242772-04 |
| W224620-0304 | Clear | Blue | PTFE / Silicone / PTFE | 100 | 225179 | 242772-01 |
| W224620-0305 | Clear | Yellow | PTFE / Silicone / PTFE | 100 | 225179 | 242772-05 |
| W224620-0307 | Clear | Green | PTFE / Silicone / PTFE | 100 | 225179 | 242772-02 |
| W224621-01 | Clear with Patch | Natural | PTFE / Red Rubber | 100 | 225179-01 | 242786 |
| W224621-02 | Clear with Patch | Natural | PTFE / Silicone | 100 | 225179-01 | 242776 |
| W224621-0203 | Clear with Patch | Red | PTFE / Silicone | 100 | 225179-01 | 242776-04 |
| W224621-0204 | Clear with Patch | Blue | PTFE / Silicone | 100 | 225179-01 | 242776-01 |
| W224621-0205 | Clear with Patch | Yellow | PTFE / Silicone | 100 | 225179-01 | 242776-05 |
| W224621-0207 | Clear with Patch | Green | PTFE / Silicone | 100 | 225179-01 | 242776-02 |
| W224621-03 | Clear with Patch | Natural | PTFE / Silicone / PTFE | 100 | 225179-01 | 242772 |
| W224621-0303 | Clear with Patch | Red | PTFE / Silicone / PTFE | 100 | 225179-01 | 242772-04 |
| W224621-0304 | Clear with Patch | Blue | PTFE / Silicone / PTFE | 100 | 225179-01 | 242772-01 |
| W224621-0305 | Clear with Patch | Yellow | PTFE / Silicone / PTFE | 100 | 225179-01 | 242772-05 |
| W224621-0307 | Clear with Patch | Green | PTFE / Silicone / PTFE | 100 | 225179-01 | 242772-02 |
| W224622-01 | Amber | Natural | PTFE / Red Rubber | 100 | 225179-02 | 242786 |
| W224622-02 | Amber | Natural | PTFE / Silicone | 100 | 225179-02 | 242776 |
| W224622-0203 | Amber | Red | PTFE / Silicone | 100 | 225179-02 | 242776-04 |
| W224622-0204 | Amber | Blue | PTFE / Silicone | 100 | 225179-02 | 242776-01 |
| W224622-0205 | Amber | Yellow | PTFE / Silicone | 100 | 225179-02 | 242776-05 |
| W224622-0207 | Amber | Green | PTFE / Silicone | 100 | 225179-02 | 242776-02 |
| W224622-03 | Amber | Natural | PTFE / Silicone / PTFE | 100 | 225179-02 | 242772 |
| W224622-0303 | Amber | Red | PTFE / Silicone / PTFE | 100 | 225179-02 | 242772-04 |
| W224622-0304 | Amber | Blue | PTFE / Silicone / PTFE | 100 | 225179-02 | 242772-01 |
| W224622-0305 | Amber | Yellow | PTFE / Silicone / PTFE | 100 | 225179-02 | 242772-05 |
| W224622-0307 | Amber | Green | PTFE / Silicone / PTFE | 100 | 225179-02 | 242772-02 |
| W224623-01 | Amber with Patch | Natural | PTFE / Red Rubber | 100 | 225179-03 | 242786 |
| W224623-02 | Amber with Patch | Natural | PTFE / Silicone | 100 | 225179-03 | 242776 |
| W224623-0203 | Amber with Patch | Red | PTFE / Silicone | 100 | 225179-03 | 242776-04 |
| W224623-0204 | Amber with Patch | Blue | PTFE / Silicone | 100 | 225179-03 | 242776-01 |
| W224623-0205 | Amber with Patch | Yellow | PTFE / Silicone | 100 | 225179-03 | 242776-05 |
| W224623-0207 | Amber with Patch | Green | PTFE / Silicone | 100 | 225179-03 | 242776-02 |
| W224623-03 | Amber with Patch | Natural | PTFE / Silicone / PTFE | 100 | 225179-03 | 242772 |
| W224623-0303 | Amber with Patch | Red | PTFE / Silicone / PTFE | 100 | 225179-03 | 242772-04 |
| W224623-0304 | Amber with Patch | Blue | PTFE / Silicone / PTFE | 100 | 225179-03 | 242772-01 |
| W224623-0305 | Amber with Patch | Yellow | PTFE / Silicone / PTFE | 100 | 225179-03 | 242772-05 |
| W224623-0307 | Amber with Patch | Green | PTFE / Silicone / PTFE | 100 | 225179-03 | 242772-02 |

## Shell Vial 8 x 40mm
(Available in Convenience Packs)

W225243 225242 225241 W225251

- Can be used in Waters WISP™ 96-position autosampler
- Choice of borosilicate glass or polypropylene
- 0.15 or 0.20mL limited volume insert
- Snap plug closures available in 5 colors
- Purchase vials and caps separately or together in convenience packs
- Polyethylene snap plug caps feature a starburst top for easier needle penetration

| Cat. No. | Size (mL) | Description | Qty / Case |
|---|---|---|---|
| **8 x 40mm Shell Vial** | | | |
| W225243 | 1 | Glass Shell Vial, Clear | 1000 |
| 225241 | 1 | Polypropylene Shell Vial | 1000 |
| 225242 | 0.7 | Polypropylene Limited Volume Shell Vial | 1000 |
| **Limited Volume Insert (Pictured with Vial)** | | | |
| W225251 | 0.15 | Glass Insert with Bottom Spring | 100 |
| **Convenience Pack** | | | |
| W225244 | 1 | Glass Shell Vial with 8mm Snap Plug Cap (Cat. No. 242800) | 1000 |

## Snap Plug Caps (For 8 x 40mm Shell Vials)

242806 242802 242808 242804 242800

| Cat. No. | Size (mm) | Description | Qty / Case |
|---|---|---|---|
| 242800 | 8 | Natural | 1000 |
| 242802 | 8 | Red | 1000 |
| 242804 | 8 | Blue | 1000 |
| 242806 | 8 | Green | 1000 |
| 242808 | 8 | Yellow | 1000 |

## Shell Vial 12 x 32mm
(Available in Convenience Packs)

225120 225124 225121 242810

- Choice of borosilicate glass or polypropylene
- Snap plug closure available in natural polyethylene
- Purchase vials and caps separately or together in convenience packs
- Polyethylene snap plug caps feature a starburst top for easier needle penetration

| Cat. No. | Size (mL) | Description | Qty / Case |
|---|---|---|---|
| **12 x 32 Shell Vial** | | | |
| 225120 | 2 | Glass Shell Vial, Clear | 1000 |
| 225121 | 2 | Glass Shell Vial, Amber | 1000 |
| 225124 | 2 | Polypropylene Shell Vial | 1000 |
| **Snap Plug Cap** | | | |
| 242810 | 12mm | Natural | 1000 |
| **Convenience Pack** | | | |
| W225122 | 2 | Glass Shell Vial, Clear w/ Plug Cap | 1000 |
| W225123 | 2 | Glass Shell Vial, Amber w/ Plug Cap | 1000 |
| W225125 | 2 | Polypropylene Shell Vial w/ Plug Cap | 1000 |

## Shell Vial 15 x 45mm

225126 225129 225127 225130 242815

- Choice of borosilicate glass or polypropylene
- Snap plug closure available in low density polyethylene
- Purchase vials and snap plug caps separately
- Polyethylene snap plug caps feature a starburst top for easier needle penetration

| Cat. No. | Size (mL) | Description | Qty / Case |
|---|---|---|---|
| **15 x 45mm Shell Vial** | | | |
| 225126 | 4 | Glass Shell Vial, Clear | 1000 |
| 225127 | 4 | Glass Shell Vial, Amber | 1000 |
| 225129 | 4 | Polypropylene Shell Vial | 1000 |
| 225130 | 3 | Polypropylene Limited Volume Shell Vial | 1000 |
| **15mm Snap Plug Cap** | | | |
| 242815 | — | Natural | 1000 |

## Headspace Vials, Crimp Top

Rounded Bottom

Flat Bottom

- Manufactured from clear Type I borosilicate glass
- Accept 20mm aluminum seals
- Variety of aluminum seal styles and septa materials available
- Purchase vials separately or together with seals in convenience packs

| Cat. No. | Size (mL) | Dia. x H (mm) | Qty / Case |
|---|---|---|---|
| **Rounded Bottom, Beveled Finish** | | | |
| 225277 | 6 | 22 x 38 | 100 |
| 225278 | 10 | 23 x 46 | 100 |
| 225280 | 20 | 23 x 75 | 100 |
| **Rounded Bottom, Standard Finish, Long Neck** | | | |
| W225279 | 20 | 23 x 75.5 | 100 |
| **Flat Bottom, Beveled Finish** | | | |
| W225281 | 6 | 22 x 38 | 100 |
| W225282 | 10 | 23 x 46 | 100 |
| W225283 | 20 | 23 x 75 | 100 |

## Headspace Crimp Seals

Standard

Pressure Release

Magnetic

- Pressure release seals feature score lines that allow for internal pressure release when 3.0 ± 0.5 bar has been exceeded

| Cat. No. | Size (mm) | Seal Color | Description | Qty / Case |
|---|---|---|---|---|
| **Standard** | | | | |
| W224221 | 20 | Natural | PTFE / Silicone Septa | 100 |
| W224224 | 20 | Natural | PTFE / Butyl Septa | 100 |
| W224225 | 20 | Natural | PTFE / Gray Butyl Molded Septa | 100 |
| **Pressure Release** | | | | |
| W224215 | 20 | Natural | PTFE / Silicone Septa | 100 |
| W224216 | 20 | Natural | PTFE / Gray Butyl Molded Septa | 100 |
| W224217 | 20 | Natural | Aluminum Faced Silicone Septa | 100 |
| **Magnetic** | | | | |
| W224223 | 20 | Gold | PTFE / Silicone Septa | 100 |

## Aluminum Seal and Septa Components

224178-01

224183-01

W224100-181

W224173

224168

| Cat. No. | Size (mm) | Description | Qty / Case |
|---|---|---|---|
| 224178-01 | 20 | Open Top, Unlined Aluminum Seal | 1000 |
| 224183-01 | 20 | Center Disc Tear-Out, Unlined Aluminum Seal | 1000 |
| W224100-181 | 20 | Gray Butyl Stopper | 1000 |
| W224173 | 20 | PTFE / Silicone Septa | 100 |
| 224168 | 20 | PTFE / Gray Butyl Molded Septa | 100 |

## Headspace Vials, Screw Thread

W225284

W225285

W225286

W225287

- Manufactured from clear Type I borosilicate glass
- Screw thread finish eliminates the need for crimping tools
- Accepts 18mm screw thread closures with septa

| Cat. No. | Size (mL) | Dia. x H. (mm) | Qty / Case |
|---|---|---|---|
| **Clear** | | | |
| W225284 | 10 | 23 x 46 | 100 |
| W225286 | 20 | 23 x 75.5 | 100 |
| **Amber** | | | |
| W225285 | 10 | 23 x 46 | 100 |
| W225287 | 20 | 23 x 75.5 | 100 |

## Screw Thread Headspace Closures

W224218

W224219

W224220

- Magnetic screw caps allow for use in magnetic transport autosamplers

| Cat. No. | Size (mm) | Description | Qty / Case |
|---|---|---|---|
| W224218 | 18 | White PTFE / Transparent Blue Silicone Septa | 100 |
| W224219 | 18 | PTFE / Butyl Septa | 100 |
| W224220 | 18 | Red PTFE / White Silicone Septa | 100 |

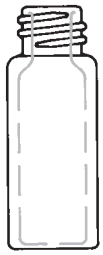
## Convenience Packs

- Each convenience pack includes 100 rounded bottom, beveled finish vials and 100 20mm pressure release crimp seals
- Pressure release seals release pressure when 3.0±0.5 bar has been exceeded
- Seals are natural colored

| Cat. No. | Vial Size (mL) | Description | Qty / Case |
|---|---|---|---|
| W225278-01 | 10 | PTFE / Silicone Septa | 100 |
| W225278-02 | 10 | PTFE / Gray Butyl Molded Septa | 100 |
| W225278-03 | 10 | Aluminum Faced Silicone Septa | 100 |
| W225280-01 | 20 | PTFE / Silicone Septa | 100 |
| W225280-02 | 20 | PTFE / Gray Butyl Molded Septa | 100 |
| W225280-03 | 20 | Aluminum Faced Silicone Septa | 100 |

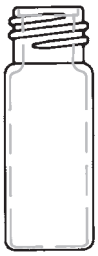
## Screw Cap Vials

12 x 32mm

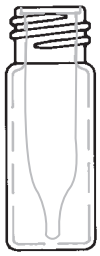


W225900 (Clear)
W225910 (Amber)

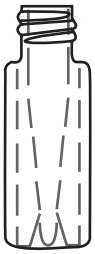
W225150 (Clear)
W225151 (Clear)
W225152 (Amber)
W225153 (Amber)



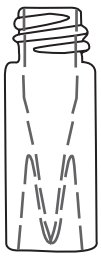
224626 (Clear)
224627 (Clear)
224628 (Amber)
224629 (Amber)



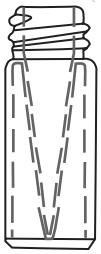
225326 (Clear)
225328 (Amber)



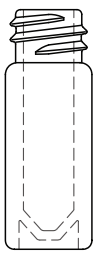
225185 (Clear)



W225186 (Clear)



W225181 (Clear)

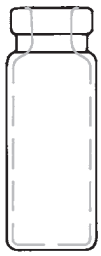


W225237 (Clear)

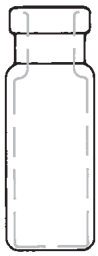
225195 (Clear)
225205 (Amber)

## Crimp Top Vials

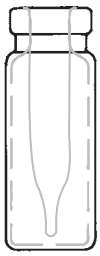
12 x 32mm



223682 (Clear)
223682-01 (Clear)
223692 (Amber)
223692-01 (Amber)



225172 (Amber)
225173 (Amber)
225174 (Clear)
225175 (Clear)

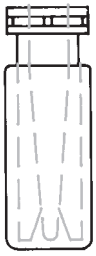


225220-01 (Clear)
225221-01 (Amber)

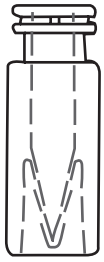
## Snap Ring Vials

12 x 32mm

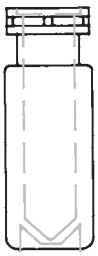
225179 (Clear)
225179-01 (Clear)
225179-02
(Amber)
225179-03
(Amber)



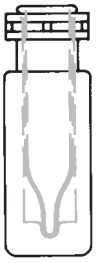
225180 (Clear)



W225187 (Clear)



225235 (Clear)



225190 (Clear)
225200 (Amber)

## Limited Volume Inserts

225350-631
Flat Bottom
Wide Open-
ing

225350-531
Flat Bottom
Standard
Opening

225255
Top Spring
Wide Open-
ing

225258
225259
With
Step

225260
Bottom Spring
Standard
Opening

225265
Bottom
Spring
Wide Open-
ing

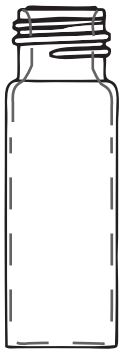
225257
Bottom
Spring
Wide Open-
ing

W225251
Bottom
Spring

225268
Bottom
Spring

## Screw Cap Vials

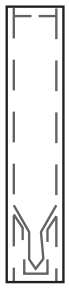
15 x 45mm



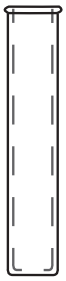
224794-01 (Clear)
224795 (Amber)
224795-01 (Amber)

## Shell Vials

8 x 40mm

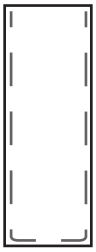


225242 (Clear)



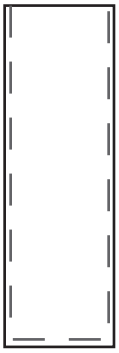
W225243 (Clear)
225241 (Clear)

12 x 32mm



225120 (Clear)
225121 (Amber)
225124 (Clear)

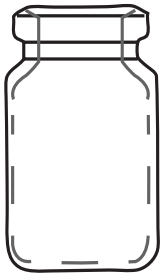
15 x 45mm



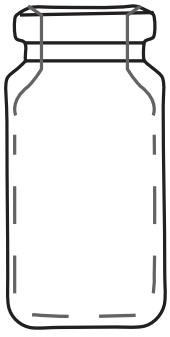
225126 (Clear)
225127 (Amber)
225129 (Clear)

225130 (Clear)

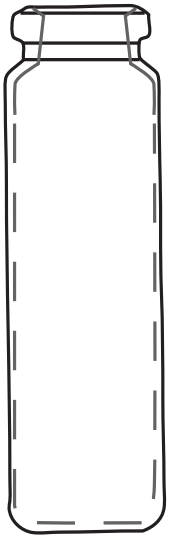
## Headspace Vials



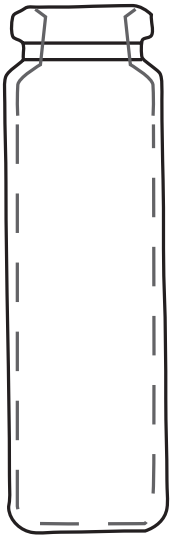
225277 (Clear)



225278 (Clear)



225280 (Clear)



985688 (Clear)

### Color Codes:

RED - Glass Vials BLUE - Plastic Vials GREEN - Glass / Plastic Vials

WHEATON Chromatography Vials and inserts are shown at exact size. The catalog numbers are color coded by vial material.

| Vial Size (mm) | 8 x 40 | 12 x 32 | 12 x 32 | 12 x 32 | 12 x 32 | 12 x 32 | 12 x 32 | 15 x 45 | 15 x 45 |
|---|---|---|---|---|---|---|---|---|---|
| Vial Type | Shell Vial | Shell Vial | Crimp Finish | Snap / Crimp | ABC 9mm Screw Thread | 8-425 Screw Thread | 10-425 Screw Thread | 13-425 Screw Thread | Shell Vial |
| **Mfr. & Model** | | | | | | | | | |
| **Agilent GC** | | | | | | | | | |
| CTC Combi PAL / GC PAL | — | — | • | • | • | — | — | — | — |
| 7890A | — | — | • | • | • | — | — | — | — |
| 7673 / 7683 | — | — | • | • | • | — | — | — | — |
| 7670A / 7671A | — | — | • | • | • | — | — | — | — |
| 6820 / 6850 / 6890N | — | — | • | • | • | — | • | • | — |
| 5975C | — | — | • | • | • | — | — | — | — |
| 5890 / 7985A / 6890 | — | — | • | • | • | — | — | — | — |
| **Agilent LC** | | | | | | | | | |
| 1200 Series | — | — | • | • | • | — | — | — | — |
| 1100 Series Prep | — | — | • | • | • | — | — | — | — |
| 1100 Series Standard | — | — | • | • | • | — | — | — | — |
| 1050 | — | — | • | • | • | • | — | — | — |
| 1090 | — | — | • | • | • | — | — | — | — |
| **Alcott Chrom** | | | | | | | | | |
| 719D | — | — | • | • | • | • | • | — | — |
| 718AL | — | — | • | • | • | • | • | — | — |
| 728 | — | — | — | — | — | — | — | — | — |
| **Alltech Associates** | | | | | | | | | |
| 580 | — | — | • | • | • | • | • | | — |
| 570 | — | — | • | • | • | • | • | • | — |
| **Amersham Pharmacia Biotech (Division of Applied Biosystems Group)** | | | | | | | | | |
| 2157-010 | — | — | • | • | — | • | — | — | — |
| 2457-020 | — | — | — | — | — | — | — | — | — |
| **Beckman Coulter** | | | | | | | | | |
| 501 / 502 / 507 | — | — | — | — | — | • | • | — | — |
| 504 | — | — | — | — | — | — | — | • | — |
| 508 | — | — | — | — | — | — | — | • | — |
| **Bruker / Daltronics** | | | | | | | | | |
| LC 51 | — | — | — | — | — | — | — | • | • |
| **CE Instruments (Division of Thermo Fisher Scientific)** | | | | | | | | | |
| 42 Place Tray | — | — | • | • | — | — | — | • | • |
| 60 Place Tray | — | — | — | — | — | — | — | — | — |
| AS105 Tray | — | — | • | • | — | — | — | — | — |
| AS 200 Tray | — | — | — | — | — | — | — | — | — |
| **Dani** | | | | | | | | | |
| ALS 86.80 | — | — | • | • | • | • | — | — | — |
| ALS 39.80 | — | — | • | • | • | • | — | — | — |
| **Dionex / Gynkotek** | | | | | | | | | |
| Gina | — | — | • | • | — | • | — | — | — |
| ALI-100 | — | — | — | • | • | • | — | — | — |
| AS 509 | — | — | — | • | • | • | — | — | — |
| **Dynatech / Precision** | | | | | | | | | |
| WPS-3000 | — | — | • | • | • | • | — | — | — |
| 42 Place Tray | — | — | • | • | • | • | — | — | — |
| 60 Place Tray | — | — | — | — | — | — | — | — | — |
| LC2000 | — | — | — | — | • | — | — | — | — |
| 231 XL, 232 XL | — | — | • | • | • | • | — | — | — |
| **ESA / LC Packing** | | | | | | | | | |
| Model 542 | — | — | • | • | • | • | — | — | — |
| Midas | — | — | • | • | • | • | — | — | — |
| **Gilson** | | | | | | | | | |
| 233 Sample Changer | — | — | — | — | — | — | — | — | — |
| 231 XL / 232XL / 233XL | — | — | • | • | • | • | — | — | — |
| GX-271 / 281 | — | — | • | • | • | • | — | — | — |
| Aspec XL | — | — | • | • | • | • | — | — | — |
| **Hitachi** | | | | | | | | | |
| L2200 | — | — | • | • | • | • | — | — | — |
| L7250 | — | — | • | • | • | • | • | • | — |
| L8800 | — | — | — | • | • | — | — | — | — |
| L7200 | • | | — | — | • | • | — | • | • |
| AS-2000 | — | — | • | • | • | • | — | — | — |
| AS-4000 | — | — | • | • | • | • | — | — | — |

| Vial Size (mm) | 8 x 40 | 12 x 32 | 12 x 32 | 12 x 32 | 12 x 32 | 12 x 32 | 12 x 32 | 15 x 45 | 15 x 45 |
|---|---|---|---|---|---|---|---|---|---|
| Vial Type | Shell Vial | Shell Vial | Crimp Finish | Snap / Crimp | ABC 9mm Screw Thread | 8-425 Screw Thread | 10-425 Screw Thread | 13-425 Screw Thread | Shell Vial |
| **Mfr. & Model** | | | | | | | | | |
| **Jasco** | | | | | | | | | |
| AS-2050 / 2055/2057 | — | — | • | • | • | • | — | — | — |
| AS-2059 | — | — | • | • | • | • | — | — | — |
| AS-1555 / 1555-10 | — | — | • | • | • | • | — | — | — |
| AS-1559 | — | — | • | • | • | • | — | — | — |
| 851-AS, AS-900 | — | — | • | • | • | • | — | — | — |
| LC 800 / 900 Series | — | — | — | — | — | • | — | — | — |
| **Leap Technologies** | | | | | | | | | |
| CTC DI PAL | — | — | • | • | • | • | — | — | — |
| CTC Combi PAL | — | — | • | • | • | • | — | — | — |
| CTC A200E | — | — | • | • | • | • | — | — | — |
| CTC HTS PAL | — | — | • | • | • | • | — | • | — |
| CTC HTS Twin PAL | — | — | • | • | • | • | — | — | — |
| CTC HTC PAL | — | — | • | • | • | • | — | — | — |
| CTC LC mini PAL | — | — | • | • | • | • | — | — | — |
| CTC A2000S | — | — | • | • | • | • | — | — | — |
| A200LC | — | — | • | • | — | — | — | — | — |
| **Perkin Elmer** | | | | | | | | | |
| Claris 500, 600 | — | — | • | • | • | • | — | — | — |
| Autosystem | — | — | • | • | • | • | — | — | — |
| Autosystem XL | — | — | • | • | • | • | — | — | — |
| Series 200 | — | — | • | • | • | • | — | — | — |
| Integral 4000 | — | — | • | — | — | — | — | — | — |
| ISS 100, ISS 200 | — | — | • | • | • | — | — | — | — |
| LC 600 42 Place Tray | — | — | • | • | • | — | — | — | — |
| **Phillips / Pye UNICAM** | | | | | | | | | |
| 4710 | — | — | • | • | — | • | — | — | — |
| 4700LC-GC / S4/S8 | — | — | — | — | — | — | — | — | — |
| 4247 | — | — | • | • | — | • | — | — | — |
| C-XP | — | — | — | — | — | — | — | • | • |
| **Shimadzu GC** | | | | | | | | | |
| AOC-20i / AOC-20s | — | — | — | — | — | • | • | • | • |
| AOC-8B | — | — | — | — | — | • | — | — | — |
| AOC-5000 | • | — | — | — | — | • | — | — | — |
| AOC-14 / AOC-17 | — | — | — | — | — | • | — | • | • |
| **Shimadzu HPLC** | | | | | | | | | |
| SIL-HTa / SIL-HTc | • | — | — | • | • | • | • | • | — |
| SIL-10ADVP | • | — | — | • | • | • | • | • | — |
| SIL-10A / SIL-10Ai / SIL-10Ap | • | — | — | • | • | • | • | • | — |
| SIL-6B / SIL-9A / SIL-8A | — | — | — | — | — | • | — | — | — |
| SIL-10AD | — | — | — | • | • | • | • | — | — |
| Promis | • | — | • | • | • | • | — | — | — |
| **Spark Holland** | | | | | | | | | |
| Reliance | — | — | • | • | • | • | — | — | — |
| Midas | — | — | • | • | • | • | — | — | — |
| Marathon | • | — | • | • | • | • | — | — | — |
| Triathon | • | — | • | • | — | • | — | — | — |
| **Thermo Scientific (Division of Thermo Fisher Scientific)** | | | | | | | | | |
| AS1000 / AS3000 / AS3500 | — | — | • | • | — | • | — | — | — |
| TriPlus AS / HS / DUO | — | — | • | • | — | • | — | — | — |
| Surveyer Plus / Plus Lite | — | — | • | • | — | • | — | — | — |
| Accela | — | — | • | • | — | • | — | — | — |
| 8875 / 8880 | — | — | • | • | — | • | — | — | — |
| **Varian GC** | | | | | | | | | |
| CP-8400 / CP-8410 | — | — | • | • | • | • | — | — | — |
| 8200CX | — | — | — | — | • | — | — | — | — |
| Ultra GC / MS | — | — | — | — | • | — | — | — | — |
| 8100 / 8200 | — | — | • | • | • | • | • | — | — |
| **Varian LC** | | | | | | | | | |
| 9100 / 9090 / 9095 | — | — | • | • | — | • | — | — | — |
| ProStar 400 / 410 | — | — | — | • | • | — | — | — | — |
| ProStar 420 / 430 | — | — | — | • | • | — | — | — | — |
| Marathon | • | — | • | • | • | • | — | — | — |
| **Waters LC** | | | | | | | | | |
| Acquity | — | — | — | • | • | • | • | — | — |
| Alliance | • | — | — | • | • | • | — | • | • |
| Breeze | • | — | — | • | • | • | — | • | — |
| 717 Plus | • | — | — | • | • | • | — | • | • |
| 2700 Sample Manager | — | — | — | • | • | — | — | — | — |
| 710 / 712 / 715 | — | — | • | — | — | — | — | • | • |


# Quality Products for Environmental Sampling & Analysis

## Environmental

Within the WHEATON® range, DWK Life Sciences offers a complete line of products for environmental sample collection, preparation and analysis according to the Environmental Protection Agency (EPA) methods. Products include BOD bottles, samplers, coliwasas and analytical apparatus.

WHEATON® BOD Bottles are ideal for incubating diluted samples of sewage, sewage effluents, polluted waters and industrial wastes to determine the amount of oxygen required during the stabilization of the decomposable organic matter by aerobic biochemical action.

Sampling devices, including samplers and coliwasas, are available for use with liquids, solids, sludges, soil and water. These products are designed for industrial and QC applications, environmental compliance, hazardous / toxic materials evaluation and site evaluation / remediation work.

# Environmental



## BOD Bottles

- Ideal for incubating diluted samples of sewage, sewage effluents, polluted waters and industrial wastes to determine the amount of oxygen required during the stabilization of the decomposable organic matter by aerobic biochemical action
- We recommend the 300mL capacity bottles for the five-day BOD test as referenced in Standard Methods for the Examination of Water and Wastewater, 21st Edition, 5210B, 2005
- Specially designed bottle shoulder radius that sweeps all air from inside the bottle during filling
- The interchangeable stoppers have a tapered bottom that prevents air entrapment
- The bottles have a flared mouth to form a water seal around the stopper that prevents air from being drawn into the bottle during incubation
- Stopper joint is compatible with the probes of the leading meters for BOD and dissolved oxygen
- Large, permanently screened-on writing patch on all bottles
- Manufactured from USP Type I borosilicate glass


| Cat. No. | Cap (mL) | Number Sequence | Barcoding | Dia. x H (mm) | Stopper | Qty / Case |
|---|---|---|---|---|---|---|
| 227494-00G | 60mL | Un-numbered | No | 43 x 115 | Glass Pennyhead | 36 |
| 227494-00 | 60mL | Un-numbered | No | 43 x 115 | Glass Robotic | 36 |
| 227494-01G | 60mL | 01-36 | No | 43 x 115 | Glass Pennyhead | 36 |
| 227494-01 | 60mL | 01-36 | No | 43 x 115 | Glass Robotic | 36 |
| 227494-02G | 60mL | 37-72 | No | 43 x 115 | Glass Pennyhead | 36 |
| 227494-02 | 60mL | 37-72 | No | 43 x 115 | Glass Robotic | 36 |
| 227494-03G | 60mL | 73-108 | No | 43 x 115 | Glass Pennyhead | 36 |
| 227494-03 | 60mL | 73-108 | No | 43 x 115 | Glass Robotic | 36 |
| 227494-99G* | 60mL | Specials | No | 43 x 115 | Glass Pennyhead | 36 |
| 227494-99* | 60mL | Specials | No | 43 x 115 | Glass Robotic | 36 |
| 227498 | 300mL | Un-numbered | No | 69 x 143 | Without Stopper | 24 |
| 227497-00G | 300mL | Un-numbered | No | 69 x 165 | Glass Pennyhead | 24 |
| 227497-00 | 300mL | Un-numbered | No | 69 x 165 | Glass Robotic | 24 |
| 227497-01G | 300mL | 01-24 | Yes | 69 x 165 | Glass Pennyhead | 24 |
| 227497-01 | 300mL | 01-24 | Yes | 69 x 165 | Glass Robotic | 24 |
| 227497-02G | 300mL | 25-48 | Yes | 69 x 165 | Glass Pennyhead | 24 |
| 227497-02 | 300mL | 25-48 | Yes | 69 x 165 | Glass Robotic | 24 |
| 227497-03G | 300mL | 49-72 | Yes | 69 x 165 | Glass Pennyhead | 24 |
| 227497-03 | 300mL | 49-72 | Yes | 69 x 165 | Glass Robotic | 24 |
| 227497-04G | 300mL | 73-96 | Yes | 69 x 165 | Glass Pennyhead | 24 |
| 227497-04 | 300mL | 73-96 | Yes | 69 x 165 | Glass Robotic | 24 |
| 227497-05G | 300mL | 97-120 | Yes | 69 x 165 | Glass Pennyhead | 24 |
| 227497-05 | 300mL | 97-120 | Yes | 69 x 165 | Glass Robotic | 24 |
| 227497-06G | 300mL | 121-144 | Yes | 69 x 165 | Glass Pennyhead | 24 |
| 227497-06 | 300mL | 121-144 | Yes | 69 x 165 | Glass Robotic | 24 |
| 227497-07G | 300mL | 145-168 | Yes | 69 x 165 | Glass Pennyhead | 24 |
| 227497-07 | 300mL | 145-168 | Yes | 69 x 165 | Glass Robotic | 24 |
| 227497-08G | 300mL | 169-192 | Yes | 69 x 165 | Glass Pennyhead | 24 |
| 227497-08 | 300mL | 169-192 | Yes | 69 x 165 | Glass Robotic | 24 |
| 227497-09G | 300mL | 193-216 | Yes | 69 x 165 | Glass Pennyhead | 24 |
| 227497-09 | 300mL | 193-216 | Yes | 69 x 165 | Glass Robotic | 24 |
| 227497-10G | 300mL | 217-240 | Yes | 69 x 165 | Glass Pennyhead | 24 |
| 227497-10 | 300mL | 217-240 | Yes | 69 x 165 | Glass Robotic | 24 |
| 227497-11G | 300mL | 241-264 | Yes | 69 x 165 | Glass Pennyhead | 24 |
| 227497-11 | 300mL | 241-264 | Yes | 69 x 165 | Glass Robotic | 24 |
| 227497-12G | 300mL | 265-228 | Yes | 69 x 165 | Glass Pennyhead | 24 |
| 227497-12 | 300mL | 265-228 | Yes | 69 x 165 | Glass Robotic | 24 |
| 227497-13G | 300mL | 289-312 | Yes | 69 x 165 | Glass Pennyhead | 24 |
| 227497-13 | 300mL | 289-312 | Yes | 69 x 165 | Glass Robotic | 24 |
| 227497-14G | 300mL | 313-336 | Yes | 69 x 165 | Glass Pennyhead | 24 |
| 227497-14 | 300mL | 313-336 | Yes | 69 x 165 | Glass Robotic | 24 |
| 227497-15G | 300mL | 337-360 | Yes | 69 x 165 | Glass Pennyhead | 24 |
| 227497-15 | 300mL | 337-360 | Yes | 69 x 165 | Glass Robotic | 24 |
| 227497-16G | 300mL | 361-384 | Yes | 69 x 165 | Glass Pennyhead | 24 |
| 227497-16 | 300mL | 361-384 | Yes | 69 x 165 | Glass Robotic | 24 |
| 227497-17G | 300mL | 385-408 | Yes | 69 x 165 | Glass Pennyhead | 24 |
| 227497-17 | 300mL | 385-408 | Yes | 69 x 165 | Glass Robotic | 24 |
| 227497-18G | 300mL | 409-432 | Yes | 69 x 165 | Glass Pennyhead | 24 |
| 227497-18 | 300mL | 409-432 | Yes | 69 x 165 | Glass Robotic | 24 |

* For specials contact DWK Life Sciences Customer Service

## Replacement Stoppers

- For 60mL and 300mL BOD Bottles

227670 227672

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 227670 | Robotic Stopper, Glass | 12 |
| 227672 | Pennyhead Stopper, Glass | 12 |

## BOD Bottle, Black, 300mL

- Ideal for light sensitive samples
- Coated with black PVC plastic to block all visible light up to 800nm to inhibit the production of oxygen by algae
- Recommended for use in marine photosynthesis projects when comparing oxygen in a light and a dark bottle
- Supplied with a glass robotic stopper and an opaque black cap
- Manufactured from USP Type I borosilicate glass

| Cat. No. | Dia. x H (mm) | Qty / Case |
|---|---|---|
| 227667 | 73 x 167 | 20 |

*For replacement stoppers use Cat. No. 227670

## BOD Bottle, 2L

- Recommended for long-term BOD and ultimate BOD analysis
- Manufactured from WHEATON 33 low extractable borosilicate glass that conforms to USP Type I and also ASTM E 438 Type I Class A requirements and comes complete with a glass robotic stopper

| Cat. No. | Dia. x H (mm) | Qty / Case |
|---|---|---|
| 227580 | 128 x 272 | 1 |

*For replacement stoppers use Cat. No. 227670

## BOD Bottle Aerator

- 40-60µm porosity glass frit
- For use with 300mL bottle
- EPA Method 245.1 Manual Cold Vapor Technique
- Used in determining inorganic forms of mercury and organic mercurials in drinking, surface and saline waters, as well as domestic and industrial waste
- Manufactured from WHEATON 200 low extractable borosilicate glass that conforms to USP Type I and also ASTM E 438 Type I, Class A requirements

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 227700 | BOD Aerator | 1 |

## BOD Bottle Cap

- Polyethylene cap prevents evaporation of the water seal during the five-day BOD incubation period
- Includes foam insert to exert pressure on the bottle stopper to hold it securely

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 227723 | BOD Bottle Cap | 50 |

## BOD Bottle Rack

- Conveniently and safely transports BOD bottles
- Racks are stackable
- Not autoclavable

| Cat. No. | For Bottle Size | Holds | L x W x H (in)* | Max Bottle Dia. | Qty / Case |
|---|---|---|---|---|---|
| W227729 | 60mL | 20 Bottles | 13 x 10 x 7 in | 49mm | 1 |
| W227731 | 300mL | 12 Bottles | 13 x 10 x 7 in | 76mm | 1 |

*33.03 x 25.4 x 17.78cm

## BOD Stopper Leash

- Rubber leash prevents loss of stoppers
- Leash has 10mm diameter holes at each end to expand to fit securely around both the stoppers and the bottle necks

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 776580 | Stopper Leash | 25 |

## Bomb Sampler

- Ideal for sub-surface liquid sampling
- 500mL capacity
- These units are constructed of corrosion resistant Type 304 stainless steel
- A weighted plunger with a FKM "O" ring seals the reservoir chamber at the bottom
- Use a cable to lower sampler to desired depth
- Pull second cable to operate the sampling valve and release to reseal the chamber
- Cables not included
- Recommended for use with a cable that can support 50 pounds or more and is made from stainless or PTFE coated stainless steel

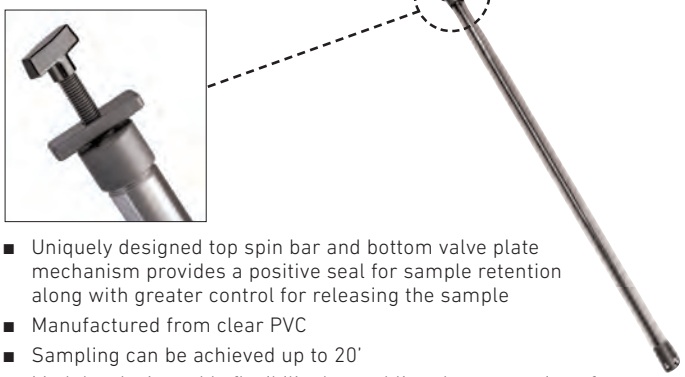
| Cat. No. | Capacity (mL) | Dia x Length | Qty / Case |
|---|---|---|---|
| 885200 | 500 | 2.75 x 10" (7 x 25.4cm) | 1 |

## Drum Thieves

- Drum thieves are ideal for quick and easy sample retrieval
- To use, simply insert one end of the drum thief into a drum and hold a finger over the opening on the other end to trap liquid in the tube
- Carefully remove the drum thief and empty the contents into a testing container
- Disposable
- Open ended
- These soda-lime glass units are 43" long and can be easily broken for quick disposal

| Cat. No. | Approx. Capacity (mL) | Dia (mm) | Qty / Case |
|---|---|---|---|
| 885300 | 25 | 7.5 | 100 |
| 885302 | 75 | 12 | 24 |
| 885303 | 150 | 18 | 24 |

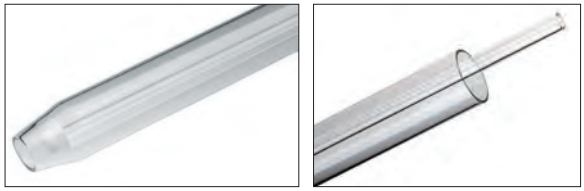
## Coliwasa, Reusable



- Uniquely designed top spin bar and bottom valve plate mechanism provides a positive seal for sample retention along with greater control for releasing the sample
- Manufactured from clear PVC
- Sampling can be achieved up to 20'
- Modular design adds flexibility by enabling the connection of several sections to form a longer sampling unit up to 20' (610cm)
- Provided with a 48" long cleaning brush
- Dimensions (ID x OD): 1 3/8" x 1 5/8" (3.5 x 4.12cm)

| Cat. No. | Description | Approx. Volume (mL) | Qty / Case |
|---|---|---|---|
| **Coliwasa Unit** | | | |
| 885250 | 4' (122cm) Coliwasa Unit | 760 | 1 |
| 885252 | 6' (183cm) Coliwasa Unit | 1100 | 1 |
| **Extension and Connector** | | | |
| 885253 | 4' (122cm) Extension and Connector | 760 | 1 |
| **Replacement Parts** | | | |
| 885258 | Bottom Plate and SS Nut | — | 1 |

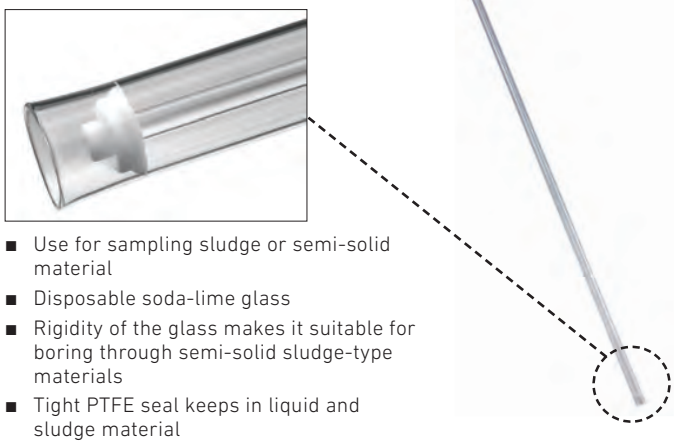
## Coliwasa Sampler, Glass



- Used to collect composite liquid samples from top to bottom in drums, tanks and reservoirs
- Easy to use
- Disposable or reusable units available
- Liquid-tight PTFE seal eliminates sample leakage
- PTFE seal design permits sampling to within 1/2" of drum bottom
- After a sample has been collected, lower and press lightly on the inner tube, which positively seats the PTFE seal, locking the sample column into place
- Unit has a tapered bottom with an approximate diameter opening of 1/2", (1.3cm) and a sample capacity of 200mL
- Prescored samplers make disposal easier
- Dimensions: Diameter 7/8" x Length 42", (2.25cm x 106.5cm)

| Cat. No. | Description | Material | Qty / Case |
|---|---|---|---|
| **Disposable Unit** | | | |
| 885220 | Pre-scored | Soda-Lime Glass | 12 |
| **Reusable Unit** | | | |
| 885230 | Unscored | Borosilicate Glass | 12 |
| 885231 | Pre-scored | Borosilicate Glass | 12 |
| **Replacement Seals** | | | |
| 885232 | Replacement Seals | PTFE | 10 |

## Coliwasa, Trumpet



- Use for sampling sludge or semi-solid material
- Disposable soda-lime glass
- Rigidity of the glass makes it suitable for boring through semi-solid sludge-type materials
- Tight PTFE seal keeps in liquid and sludge material
- Outer tube is 40" (101.6cm) long

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 885235 | 200mL Capacity | 1 |

## E-Z Sampler®

- Ideal for sampling unknowns from open-top drums and tanks
- Manufactured from chemically resistant polypropylene
- The E-Z Sampler® has a 39" (100cm) head/shaft assembly and is supplied with a 125mL borosilicate glass bottle with a PTFE lined cap
- Filling ports are located above the bottle to ensure that it is completely filled to reduce the possibility of air entrapment
- Bottle has a 33-430 screw thread finish

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 885020 | Complete Unit with Bottle | 1 |
| 885025 | 125mL Bottle, with Cap | 12 |
| 240480 | Replacement Cap | 100 |

## Sub Surface Grab Sampler® I

- Ideal for sampling from spillways, docks and other sub surfaces
- No need to physically enter the sample area
- Eliminates surface contamination
- Helps meet EPA requirements for water and wastewater sampling
- Lightweight construction
- Constructed of 72" x 3/4" (183 x 2cm) square aluminum tubing with a golden anodine finish
- Provided with a 1000mL narrow-mouth borosilicate glass sample bottle with a PTFE-lined cap and clamps for large and small bottles

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 990250 | Sub Surface Grab Sampler® I | 1 |
| 990477 | Replacement Sample Bottle, 1000mL, 38-430 | 1 |
| 240481 | Black Phenolic Replacement Cap | 100 |

## Sub Surface Grab Sampler® II

- Excellent for accessing fluid flow in deep manholes and hard to reach sub-surface sampling areas
- Helps meet EPA requirements for water and waste water sampling
- Available in lengths up to 18' (5.5m)
- Each sampler consists of an inert polypropylene head with stainless steel fittings and an aluminum pole assembly with a golden alodine finish
- Provided with a 1000mL narrow-mouth borosilicate glass sample bottle with a PTFE-lined cap
- To use it, screw a sample bottle into the head and lower to the desired depth
- Pull the cable at the top of the handle which will lift a spring-loaded plunger from the bottle opening, allowing liquid to enter through four 5/8" diameter holes
- Release the cable when the bottle is full to reset the plunger

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 990350 | 6' (183cm) Sub Surface Grab Sampler® II | 1 |
| 990400 | 12' (366cm) Sub Surface Grab Sampler® II | 1 |
| 990450 | 18' (549cm) Sub Surface Grab Sampler® II | 1 |
| 990477 | Replacement Sample Bottle | 1 |
| 240481 | Black Phenolic Replacement Cap | 100 |

## Sample Bottle, Narrow Mouth

- For use with Sub Surface Grab Sampler® I & II
- 1000mL narrow mouth borosilicate glass bottle
- 38-430 screw cap with PTFE liner
- Autoclavable
- The bottle has a hand grip for easy handling

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 990477 | 1000mL Bottle with Cap | 1 |

## Sample Bottle, Wide Mouth

- For use with Sub Surface Grab Sampler® III
- 1000mL wide mouth borosilicate glass bottle
- 70-400 screw cap with PTFE liner
- Autoclavable
- These wide mouth sample bottles can be repeatedly autoclaved and come with PTFE-lined caps

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 990476 | 1000mL Bottle with Cap | 1 |

# WHEATON®
## CHEMISTRY GLASSWARE

The WHEATON portfolio offers a vast selection of analytical apparatus used in the examination of environmental samples including Arsine Generators, Cyanide Distillation Kits, Kuderna-Danish Concentrators and Soxhlet Extraction Apparatus. WHEATON glassware is designed with convenience in mind with features such as Clear-Seal™ joints and the WHEATON Connection® screw thread finish ends.

> Manufactured from WHEATON 33 low extractable borosilicate glass that conforms to USP Type I and ASTM E 438 Type I, Class A requirements

> Meet ASTM / USP and EPA specifications

> Clear-Seal™ Joints seal without grease, reducing the possibility of seizing

> The WHEATON Connection® safely joins two exterior-threaded glass components without hooks, springs or clamps

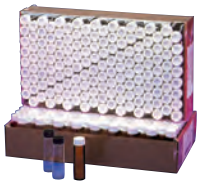
See more information on Chemistry Glassware on page 72.

## Weighing Dishes

- Made from aluminum
- Ideal for milligram weighing
- Use with liquids or solids
- Smooth surface ensures complete transfer
- Use of balance-type forceps enables easy grasping

| Cat. No. | Dia. x H (mm) | Qty / Case |
|---|---|---|
| 370790 | 11 x 6 | 1000 |
| 370792 | 20 x 8 | 1000 |

## EPA Vial, 40mL



- Ideal for use in water sampling according to EPA 40 CFR 136, "Guidelines for Establishing Test Procedures for the Analysis of Pollutants"
- Clear vials manufactured from WHEATON 33 low extractable borosilicate glass that conforms to USP Type I and ASTM E438 Type I, Class A requirements
- Amber vials manufactured from WHEATON 320 amber glass that conforms to USP Type I requirements for light transmission to protect light-sensitive products
- Caps attached to vials
- Vials packaged in convenient trays for ease of use

| Cat. No. | Size (mL) | Size (dr) | *Dia. x H (mm) | Cap Size | Qty / Case |
|---|---|---|---|---|---|
| **Clear Vial with Open Top Black Phenolic PTFE Faced Silicone Lined Cap** | | | | | |
| 225310 | 40 | 10 | 28 x 98 | 24-400 | 72 |
| **Amber Vial with Open Top White Polypropylene PTFE Faced Silicone Lined Cap** | | | | | |
| 225315 | 40 | 10 | 28 x 98 | 24-400 | 72 |

*Measurement taken with cap attached.

## Replacement 24-400 Screw Caps & Septa

| Cat. No. | Description | Qty / Case |
|---|---|---|
| W240518 | Black Phenolic Open Top Screw Cap w/o Septa | 200 |
| W224600 | White Glass-Filled Open Top Polypropylene Cap with Bonded 5 mils PTFE / 120 mils Silicone Septa | 200 |

## Vials for Environmental Analysis

| Cat. No. | Size (mL) | Size (dr) | Dia. x H (mm)* | Cap Size | Qty / Case |
|---|---|---|---|---|---|
| **Clear Vial with Open Top White Polypropylene PTFE Faced Silicone Lined Cap** (Septa of 5 mils of PTFE facing 120 mils of silicone is bonded to cap.) | | | | | |
| W224609 | 20 | 5 | 28 x 60 | 24-400 | 72 |
| W224610 | 25 | 6.25 | 28 x 73 | 24-400 | 72 |
| **Amber Vial with Open Top White Polypropylene PTFE Faced Silicone Lined Cap** (Septa of 5 mils of PTFE facing 120 mils of silicone is bonded to cap.) | | | | | |
| W224612 | 20 | 5 | 28 x 60 | 24-400 | 72 |
| W224614 | 40 | 10 | 28 x 98 | 24-400 | 72 |

*Cap on

## Imhoff Cone, Plastic

- Designed for volumetric determination of settleable solids
- Cone is externally graduated from the plug up to 1000mL
- Imhoff Cone is manufactured from an acrylic copolymer and includes a rubber plug and polypropylene cap
- Remove the leak-resistant screw cap and plug to clean
- Reference: Standard Methods for the Examination of Water and Wastewater, 21st Edition (2005), Method 2540 F
- 3 and 4-place Imhoff Cone Racks are sold separately and are constructed of epoxy-coated, heavy-gauge steel to provide long life

| Cat. No. | Description | Size (mL) | Top Dia x Length (mm) | Qty / Case |
|---|---|---|---|---|
| W990800 | Imhoff Cone | 1000 | 108 x 451 | 4 |
| **Imhoff Cone Racks** | | | | |
| 990760 | 3-Place Rack | — | — | 1 |
| 990760-4 | 4-Place Rack | — | — | 1 |

## Drum Opener

- Can be used with hazardous materials
- Cast from lightweight, durable aluminum alloy and features a quarter-turn opening action
- Opens all 3/4" and 3" closures

| Cat. No. | Qty / Case |
|---|---|
| 885295 | 1 |

## Scoop, Stainless Steel

- Manufactured from 18/8 stainless steel
- Ideal for sampling powders, slurries, soils, etc.
- Dimensions: Overall length is 9-1/2" (24cm); the bowl's dimensions are 5 1/2" x 3" x 1 1/8" (14 x 7.6 x 2.9cm) 4oz

| Cat. No. | Qty / Case |
|---|---|
| 885540 | 4 |

## Oil Sample Bottle, Clear

- Clear, Type III soda-lime glass
- Bottles come with cork inserted

| Cat. No. | Capacity (oz) | Capacity (mL)* | Dia. x H (mm) | Qty / Case |
|---|---|---|---|---|
| W216994 | 4 | 125 | 37 x 163 | 144 |

*Approximate capacity


# A World of Pipetting Expertise with Socorex

## Liquid Handling

Welcome to Socorex® – a world of expertise in precision liquid handling. WHEATON is the exclusive agent in the U.S. for Socorex products used in the research or scientific laboratory for over 20 years. Socorex, founded in the late 1940s by two young watchmakers, manufactures a wide variety of high precision instruments used for reliably measuring, dosing, transferring, dispensing and injecting liquids in a large number of laboratory applications.

Millions of Acura® and Calibra® pipettes and other famous Socorex instruments are in use throughout the world. Socorex, which is based in Lausanne, Switzerland, is a well-known and trusted brand internationally. Its U.S. presence is growing every year as laboratory personnel demand the most precise, ergonomic and easy to use liquid handling instruments.

What new instruments are included in this offering? Socorex has recently expanded its state of the art micropipettes. The extra sharp Acura *manual* XS, mainly intended for research laboratories, represents a significant advance in metrology. Also a new generation of microprocessor controlled Acura electro pipettes is included. The new electro has more features to make pipetting easier than ever.

Each precision instrument bears its own serial number and passes strict performance control attested by an individual QC certificate. These instruments are designed to operate under national and international standards such as ISO8655, ISO 12025, GLP, GMP and NCCLS.

The well-trained DWK Life Sciences Technical Service Team provides superior technical support on all of the Socorex products. DWK Life Sciences offers a U.S. based repair and calibration service. More information on this service can be found on page 127. Warranty coverage is three years on all manual pipettes, two years on electronic pipettes, dispensers and repeaters and one year on electro and manual pipette controllers and laboratory syringes.

The following pages will guide you through a wide selection of innovative, ergonomic and safe instruments, engineered and designed with excellence in mind for the most demanding scientists. If you would like to try one of these instruments, please contact DWK Life Sciences Customer Service to locate the nearest sales representative.

For more information on WHEATON Pipettes & Bottle Top Dispensers, contact your DWK Life Sciences Sales Representative or Customer Service at 800-225-1437.

# Liquid Handling

## Pipettes



## Dispensers




## Your Electronic Choice

The Acura® *electro* pipettes are the latest upgrade of a successful line that makes electronic pipetting more versatile, simpler and safer than ever.

The Acura *electro* pipettes offer a unique cost-saving advantage. Once the pipette initial package is purchased, subsequent purchases consist of the appropriate volumetric module or pipette alone. The initial package contains the charging stand that holds up to three pipettes or battery packs.

The microprocessor controlled pipette features intuitive software, eliminating any complicated programming steps. There are six working modes that are easy to access and many volumes to select from. If you are looking for unsurpassed metrological performance and stability, choose the Acura *electro* pipettes.


Product Advantages:

- Optimal ergonomics, lightweight
- Easy, intuitive, self-teaching program
- Large display, reversible for right or left reading
- Swift-interchange battery pack
- Fast charge, long working autonomy
- Adjustable tip ejector* fitting most tips
- Pipetting cycle counter
- 27 interchangeable volumetric modules - all fitting same control unit
- Two-year warranty

*Socorex patented

# Acura® *electro* 926 XS / 936 / 956 Electrontic Pipettes

## Micropipettes

- Reduced shaft length and conical end improve driveability
- Easy access to microtubes and microplates
- Optional longer volumetric modules
- Simple conversion by user at any time
- Unsurpassed metrological performance and stability

## Macropipettes

- Interchangeable nozzle protection filter
- Adapters for Pasteur pipette and straw tips
- Outstanding accuracy and precision

## Multichannel

- Large selection of 8 and 12-channel models
- Lightweight and perfect hand fitting
- Sequential tip ejection
- Also fits any single channel volumetric module

## Ordering Information

Initial package includes pipette, charging stand and accessories. Additional pipettes (alone) supplied with individual QC certificate, pipette tips samples and operating instructions.

| Cat. No. Initial Package | Cat. No. Pipette Alone | Volume | Division | Inaccuracy (E%) Min. vol. | Inaccuracy (E%) Mid. Vol. | Inaccuracy (E%) Max. Vol. | Imprecision (CV%) Min. Vol. | Imprecision (CV%) Mid. Vol. | Imprecision (CV%) Max. Vol. | Tip Style |
|---|---|---|---|---|---|---|---|---|---|---|
| Micropipettes Acura® *electro* 926XS | | | | | | | | | | |
| W870902-A | W870902 | 0.1 - 2µL | 0.01µL | <± 2.5 %[1)] | <± 1.2 % | <± 0.9 % | < 2.5 %[1)] | < 1.5 % | < 0.8 % | 10µL |
| W870904-A | W870904 | 0.5 - 10µL | 0.05µL | <±1.2 %[2)] | <± 0.8 % | <± 0.6 % | < 1.5 %[2)] | < 0.7 % | < 0.35 % | 10µL |
| W870906-A | W870906 | 0.5 - 10YµL* | 0.05µL | <± 1.2 %[2)] | <± 0.8 % | <± 0.6 % | < 1.7 %[2)] | < 0.8 % | < 0.4 % | 200µL |
| W870908-A | W870908 | 1 - 20µL | 0.1µL | <± 1.2 %[2)] | <± 0.6 % | <± 0.5 % | < 1.2 %[2)] | < 0.4 % | < 0.3 % | 200µL |
| W870910-A | W870910 | 2.5 - 50µL | 0.25µL | <± 1.0 %[2)] | <± 0.6 % | <± 0.5 % | < 0.7 %[2)] | < 0.3 % | < 0.25 % | 200µL |
| W870912-A | W870912 | 5 - 100µL | 0.5µL | <± 1.0 %[2)] | <± 0.6 % | <± 0.5 % | < 0.7 %[2)] | < 0.3 % | < 0.2 % | 200µL |
| W870914-A | W870914 | 10 - 200µL | 1.0µL | <± 1.0 %[2)] | <± 0.6 % | <± 0.4 % | < 0.6 %[2)] | < 0.2 % | < 0.15 % | 200µL |
| W870916-A | W870916 | 50 - 1000µL | 5.0µL | <± 0.8 %[2)] | <± 0.5 % | <± 0.4 % | < 0.4 %[2)] | < 0.15 % | < 0.1 % | 1000µL |
| Macropipettes Acura® *electro* 936 | | | | | | | | | | |
| W870918-A | W870918 | 0.1 - 2mL | 0.01mL | <± 1.5 %[2)] | <± 1.0 % | <± 0.5 % | < 0.6 %[2)] | < 0.3 % | < 0.15 % | 2mL |
| W870920-A | W870920 | 0.25 - 5mL | 0.05mL | <± 1.2 %[2)] | <± 0.8 % | <± 0.5 % | < 0.6 %[2)] | < 0.3 % | < 0.15 % | 5mL |
| W870922-A | W870922 | 0.5 - 10mL | 0.05mL | <± 1.0 %[2)] | <± 0.7 % | <± 0.5 % | < 0.5 %[2)] | < 0.2 % | < 0.15 % | 10mL |
| 8-Channel Pipettes Acura® *electro* 956 | | | | | | | | | | |
| W870924-A | W870924 | 0.5 - 10µL | 0.05µL | <± 3.5 %[2)] | <± 1.5 % | <± 1.0 % | < 3.0 %[2)] | < 0.9 % | < 0.7 % | 10µL |
| W870926-A | W870926 | 2.5 - 50µL | 0.25µL | <± 1.0 %[2)] | <± 0.9 % | <± 0.8 % | < 1.0 %[2)] | < 0.6 % | < 0.4 % | 200µL |
| W870928-A | W870928 | 10 - 200µL | 1.0µL | <± 0.9 %[2)] | <± 0.7 % | <± 0.6 % | < 0.6 %[2)] | < 0.4 % | < 0.25 % | 200µL |
| W870930-A | W870930 | 20 - 350µL | 5.0µL | <± 1.0 %[2)] | <± 0.8 % | <± 0.6 % | < 0.6 %[2)] | < 0.4 % | < 0.25 % | 350µL |
| 12-Channel Pipettes Acura® *electro* 956 | | | | | | | | | | |
| W870932-A | W870932 | 0.5 - 10µL | 0.05µL | <± 3.5 %[2)] | <± 1.5 % | <± 1.0 % | < 3.0 %[2)] | < 0.9 % | < 0.7 % | 10µL |
| W870934-A | W870934 | 2.5 - 50µL | 0.25µL | <± 1.0 %[2)] | <± 0.9 % | <± 0.8 % | < 1.0 %[2)] | < 0.6 % | < 0.4 % | 200µL |
| W870936-A | W870936 | 10 - 200µL | 1.0µL | <± 0.9 %[2)] | <± 0.7 % | <± 0.6 % | < 0.6 %[2)] | < 0.4 % | < 0.25 % | 200µL |
| W870938-A | W870938 | 20 - 350µL | 5.0µL | <± 1.0 %[2)] | <± 0.8 % | <± 0.6 % | < 0.6 %[2)] | < 0.4 % | < 0.25 % | 350µL |

Performance values obtained in Forward mode with double-distilled water at constant temperature (± 0.5°C) comprised between 20 and 25°C in accordance with ISO 8655.

Performance measured at: [1)] 0.5 µL, [2)] 10% of nominal volume

* This pipette must be used with a 200µL pipette tip

## Great Built-in Working Flexibility

Scroll through mode selection by pressing a single button.


**Forward Mode**
Aspiration and pipetting of set volume. Suitable for all applications.

**Reverse Mode**
Aspiration in excess, followed by dosing of set volume. Enhances reproducibility below 20µL. Especially recommended for viscous and foaming liquids.

**Stepper Mode**
Tip filling and step-by-step distribution. Best suited to aliquot samples.

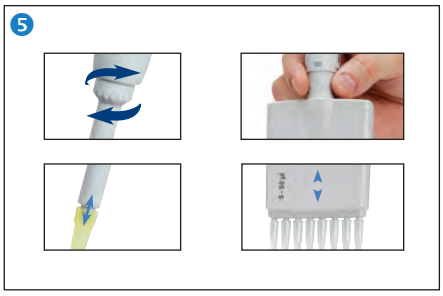
**Dilution Mode**
Aspiration of 2 or 3 different volumes for restitution in one shot. An easy way to dilute samples.

**Tactile Mode**
"Start and stop" liquid measurement, titration and gel loading by simple touch of activation button.

**Mixing**
"Up and down" liquid flow in the tip / vial.








### Natural Ergonomics 1

The Acura® *electro* offers shape, balance and working ergonomics resembling those of a manual instrument. But comfort is greatly improved, thus pipetting and result consistency are outstanding.

### Unique "Right or Left" Display Reading 2

Display converts instantly to right or left side reading. All information is clearly presented and visible at a glance during programming, pipetting and calibration steps.

### Variable Working Speed 3

Located on the front side, speed selector allows swift change even during the pipetting process. In addition, slow speed access at any time by gentle touch of start button.

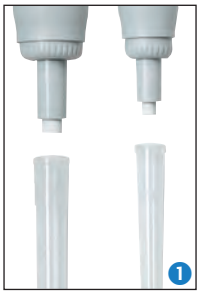
### Pipetting Cycle Counter 4

A simple double click gives access to the number of pipetting cycles performed since last zeroing.

### Tip Ejection - Easier Than Ever 5

Maximal efficiency obtained with a large surface, ergonomically located ejector button. The shaft height adjustment system called Justip™ (4mm span) - controlled by efficient click-stops - allows a wide selection of tips to tightly fit the nozzle.

The multichannel bowed shape ejector head permits effortless, sequential tip ejection.








### Nozzle Protection Filter 1

Macro models accommodate a filter protecting instrument against liquid overflow and contamination. Located in the nozzle, it can be removed and changed easily.

### Pasteur Pipette 2

Pasteur pipette adapter nozzle allows use with 2mL glass Pasteur pipettes instead of Polypropylene tips.

### Optimal Working Position 3

360° rotation of multichannel volumetric modules allows selection of the best working position.

### Time Efficient Maintenance 4

Pipette construction limits maintenance to a minimum - no tool required to remove volumetric module. The pipetting cycle counter facilitates maintenance monitoring. Whenever sterilization is needed, volumetric modules can be autoclaved at 121°C/250°F.

### Initial Package 5

Recommended when purchasing an Acura® *electro* for the first time, each initial package contains one electronic pipette, QC certificate and operating instructions, charging stand, power supply, additional battery pack, pipette tips samples. Thereafter, additional pipettes can be purchased alone and charged on existing stand.



### Calibration 1

Control software gives immediate access to calibration menu. Performance check possible over two or three independent volumes (Vmin, Vmid and Vmax). New settings entered directly from the keyboard. Error message warns of any inaccurate plunger movement.

### Compact Charging Rack 2

Space saving stand holds up to three battery packs simultaneously. The ideal charging and storage accessory for spare batteries, available at any time.

### Pipette Charging Stand 3

Stand allows charging and storing up to three electronic pipettes or battery packs simultaneously. Each position is fitted with a red / green charging LED. One stand supplied with every initial package.

### Long Working Autonomy 4

NiMH battery pack exchangeable instantly. Fast battery charging (<1.5 hours) and extended working autonomy (>3000 consecutive pipetting cycles). Battery charge level clearly visible on display. Automatic energy saving stand-by when unused.

## Interchangeable Volumetric Modules

One control unit fits a choice of 27 volumetric assemblies available sep-arately. This greatly extends working possibilities and makes electronic pipetting affordable to all budgets. Disassembling and re-assembling without any tool contributes towards maximal flexibility. Calibration specificities of extra modules, as set by factory QC or by pipette owner, are retained in instrument memory.

## Volumetric Modules

| Cat. No. | Volume Range | Tip Style |
|---|---|---|
| **Single Channel Microvolumes Reduced Shaft Length** | | |
| W870012 | 0.1 - 2µL | Ultra 10µL |
| W870014 | 0.5 - 10µL | Ultra 10µL |
| W870016 | 0.5 - 10µL | 200µL |
| W870018 | 1 - 20µL | 200µL |
| W870020 | 2.5 - 50µL | 200µL |
| W870022 | 5 - 100µL | 200µL |
| W870024 | 10 - 200µL | 200µL |
| W870026 | 50 - 1000µL | 1000µL |
| **Regular Shaft Length** | | |
| W870112 | 0.1 - 2µL | Ultra 10µL |
| W870114 | 0.5 - 10µL | Ultra 10µL |
| W870116 | 0.5 - 10µL | 200µL |
| W870118 | 1 - 20µL | 200µL |
| W870120 | 2.5 - 50µL | 200µL |
| W870122 | 5 - 100µL | 200µL |
| W870124 | 10 - 200µL | 200µL |
| W870126 | 50 - 1000µL | 1000µL |
| **Single Channel Macrovolumes** | | |
| W870128 | 0.1 - 2mL | 2mL |
| W870130 | 0.25 - 5mL | 5mL |
| W870132 | 0.5 - 10mL | 10mL |
| **8-Channel Microvolumes** | | |
| W870134 | 0.5 - 10µL | Ultra 10µL |
| W870136 | 2.5 - 50µL | 200µL |
| W870138 | 10 - 200µL | 200µL |
| W870140 | 20 - 350µL | 350µL |
| **12-Channel Microvolumes** | | |
| W870142 | 0.5 - 10µL | Ultra 10µL |
| W870144 | 2.5 - 50µL | 200µL |
| W870146 | 10 - 200µL | 200µL |
| W870148 | 20 - 350µL | 350µL |

## Accessories

| Cat. No. | Description | Qty / Pack |
|---|---|---|
| W851342 | Nozzle Protection Filters for 2 and 5mL Models, PP Fibers | 250/pk |
| 851346 | Nozzle protection Filters for 10mL Model, PP Fibers | 100/pk |
| W820023 | Pasteur Pipette Adapter Nozzle for 5mL Model | 1/pk |

## Charging Accessories

| Cat. No. | Description | Qty / Pack |
|---|---|---|
| W820019 | Pipette Charging Stand, 3 Charging Positions, Holds Pipettes or Spare Batteries * | 1/pk |
| W820020 | Compact Charging Stand, 3 Charging Positions, Holds Spare Batteries Only * | 1/pk |
| W870001 | Spare Battery Pack (NiMH, 4.8V) | 1/pk |
| W870002 | Spare Battery Duo Pack (NiMH, 4.8V) | 2/pk |
| W820022-A | Power Supply, 100-240V | 1/pk |

* Power Supply sold separately

# The Next Generation in Pipetting

The Socorex® complete line of liquid handling products offers your lab a single source for superior quality pipettes, tips and accessories. Socorex pipettes which are manufactured in Switzerland are available exclusively by WHEATON in the United States. Socorex *manual* pipettes meet and exceed users' needs for precision, accuracy and affordability. The Acura 825 and 835 are classic manual pipettes for all applications; the Acura 826 XS is the newest, light weight pipette designed intentionally to be shorter in length to facilitate working in small microtubes. In addition, all Acura *manual* pipettes are designed with optimal ergonomics to help prevent repetitive stress injuries. Specifically, the Acura 826 XS features an ultra-soft plunger which greatly reduces thumb and hand fatigue from long hours of pipetting.

## Acura® *manual* 825

### Product Advantages

- Smart and reliable volume adjustment
- Single-handed volume setting
- Precision digital display visible at all times
- Justip™ adjustable tip ejector* fitting most tips
- Swift-set user calibration system*
- Shock, UV-light and autoclaving resistance
- CE Certified IVD 98/79 EEC

* Socorex patented

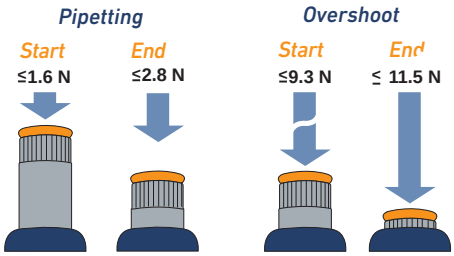
**825**
0.1 - 2µL
0.5 - 10µL
1 - 10µL
2 - 20µL
5 - 50µL
10 - 100µL
20 - 200µL
100 - 1000µL

## Acura® *manual* 826 XS

### Product Advantages

- Excellent ergonomic shape and size ratio
- New springs and tightness seal for extra-smooth activation
- Reduced weight - lighter than leading brands
- Increased drivability with short, narrow shaft
- Easier to use when working in a fume hood
- Conical shaft end for easy reach in smaller microtubes


**826 XS**
0.1 - 2µL
0.5 - 10µL
1 - 10µL
2 - 20µL
5 - 50µL
10 - 100µL
20 - 200µL
100 - 1000µL




*1 Newton (N) ~ 0.1 kilogram force (kgf)*

### Extra Smooth Activation

- Unique tightness lip seal and new springs provide for ultra-soft pipetting, reducing hand fatigue while working.
- Forces measured on a 20 - 200µL model, are indicative of very limited finger efforts. Yet, the overshoot stop offers a clear tactile indicator.

### Most Comfortable Pipetting 1

The Acura® *manual* fits everybody's hand with or without glove. Ergonomic shape, light weight and soft plunger travel care for better comfort.

### Ejector Button 2

Ergonomically positioned, the large surface, soft padded ejector provides for low-pressure activation.

### Adjustable Tip Ejection 3 4

Ejector shaft height adjustment system called Justip™ allows a wide selection of tips to tightly fit the nozzle.

### Minimum Maintenance / Sterilization 5

Easy disassembling for thorough cleaning. Sterilization achieved by auto-claving instrument fully assembled (121°C / 250°F).

### Instant Calibration 6 7

Swift-set user calibration system - with integrated key and locking mechanism - makes tedious procedures a thing of the past. Easy and precise, it is in full compliance with international standards and recommendations.

### Safety Seal 8

Though easily removed when needed, the switch protection seal is autoclaving resistant.









## Calibration Seal Stickers

| Cat. No. | Description | Qty / Case |
|---|---|---|
| W810620 | Replacement seals | 25 |
| W810622 | Replacement seals | 100 |

## Performance and Ordering Information - Acura® manual 825 and 826 XS Micropipettes

| Cat. No. | Volume | Division | Inaccuracy (E%) Min. Vol. | Mid. Vol. | Max. Vol. | Imprecision (CV%) Min. Vol. | Mid. Vol. | Max. Vol. | Weight (g) | Tip Style |
|---|---|---|---|---|---|---|---|---|---|---|
| **Micropipettes Acura® manual 825** | | | | | | | | | | |
| W810300 | 0.1 - 2µL | 0.002µL | < ± 6.0 %[1)] | < ± 4.0 % | < ± 2.0 % | < 5.0 %[1)] | < 3.3 % | < 1.5 % | 88 | 10µL |
| W810302 | 0.5 - 10µL | 0.01µL | < ± 2.5 %[2)] | < ± 1.8 % | < ± 1.0 % | < 1.8 %[2)] | < 1.2 % | < 0.5 % | 88 | 10µL |
| W810304 | 1 - 10YµL* | 0.01µL | < ± 2.5 % | < ± 1.8 % | < ± 1.0 % | < 2.5 % | < 1.6 % | < 0.7 % | 88 | 200µL |
| W810306 | 2 - 20µL | 0.02µL | < ± 2.5 % | < ± 1.8 % | < ± 1.0 % | < 1.7 % | < 1.1 % | < 0.5 % | 88 | 200µL |
| W810308 | 5 - 50µL | 0.1µL | < ± 1.5 % | < ± 1.3 % | < ± 1.0 % | < 1.0 % | < 0.7 % | < 0.4 % | 90 | 200µL |
| W810310 | 10 - 100µL | 0.1µL | < ± 1.5 % | < ± 1.2 % | < ± 0.8 % | < 1.0 % | < 0.6 % | < 0.2 % | 92 | 200µL |
| W810312 | 20 - 200µL | 0.2µL | < ± 1.5 % | < ± 1.1 % | < ± 0.6 % | < 0.6 % | < 0.4 % | < 0.2 % | 90 | 200µL |
| W810314 | 100 - 1000µL | 1µL | < ± 1.5 % | < ± 1.0 % | < ± 0.5 % | < 0.5 % | < 0.4 % | < 0.2 % | 95 | 1000µL |
| **Micropipettes Acura® manual 826 XS** | | | | | | | | | | |
| W810300-XS | 0.1 - 2µL | 0.002µL | < ± 6.0 %[1)] | < ± 4.0 % | < ± 2.0 % | < 5.0 %[1)] | < 3.3 % | < 1.5 % | 84 | 10µL |
| W810302-XS | 0.5 - 10µL | 0.01µL | < ± 2.5 %[2)] | < ± 1.8 % | < ± 1.0 % | < 1.8 %[2)] | < 1.2 % | < 0.5 % | 84 | 10µL |
| W810304-XS | 1 - 10YµL* | 0.01µL | < ± 2.5 % | < ± 1.8 % | < ± 1.0 % | < 2.5 % | < 1.6 % | < 0.7 % | 85 | 200µL |
| W810306-XS | 2 - 20µL | 0.02µL | < ± 2.5 % | < ± 1.8 % | < ± 1.0 % | < 1.7 % | < 1.1 % | < 0.5 % | 85 | 200µL |
| W810308-XS | 5 - 50µL | 0.1µL | < ± 1.5 % | < ± 1.3 % | < ± 1.0 % | < 1.0 % | < 0.7 % | < 0.4 % | 86 | 200µL |
| W810310-XS | 10 - 100µL | 0.1µL | < ± 1.5 % | < ± 1.2 % | < ± 0.8 % | < 1.0 % | < 0.6 % | < 0.2 % | 87 | 200µL |
| W810312-XS | 20 - 200µL | 0.2µL | < ± 1.5 % | < ± 1.1 % | < ± 0.6 % | < 0.6 % | < 0.4 % | < 0.2 % | 86 | 200µL |
| W810314-XS | 100 - 1000µL | 1µL | < ± 1.5 % | < ± 1.0 % | < ± 0.5 % | < 0.5 % | < 0.4 % | < 0.2 % | 88 | 1000µL |

Performance values obtained with double-distilled water at constant temperature (± 0.5°C) comprised between 20°C and 25°C in accordance with ISO 8655.

[1)] measured at 0.5µL [2)] measured at 1µL

* This pipette must be used with a 200µL pipette tip

## Acura® *manual* 835 Macropipettes

Instruments combining high-tech materials with user-friendly ergonomics. Optimal for indoor and outdoor environmental analysis, clinical chemistry and cell culture applications, they offer superior performance and make pipetting safer than ever.

### Product Advantages

- Smart and reliable volume adjustment
- Single-handed volume setting
- Interchangeable nozzle protection filter
- Justip™ adjustable tip ejector* fitting most tips
- Swift-set user calibration system*
- Shock, UV-light and autoclaving resistance
- Pasteur pipette fitting 2 and 5mL models

* Socorex patented

835
0.2 - 2mL
0.5 - 5mL
1 - 10mL

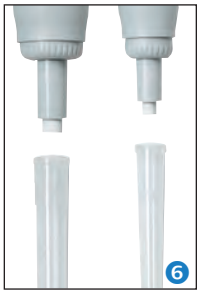
1

2


3

4


5


6

### Display Always Visible 1

Located on the front of the instrument, the display window allows set volume to be visible at all times during pipetting. A comforting reassurance for the user.

### Smart and Reliable Volume Adjustment 2

State-of-the-art micrometric volume setting is performed smoothly and precisely by turning push button. Finely machined click-stops and free rotating cap prevent any unwanted volume alteration.

### Patented Tip Ejection System 3 4

Ergonomically positioned, the large surface, soft padded ejector provides for low-pressure activation. In addition, the shaft height adjustment system called Justip™ allows optimal distance setting between ejector and tip.

### Pasteur Pipette Adapter 5

Adapter nozzles allow fitting of Pasteur pipette on Acura® *manual* 2 and 5mL models in addition to polypropylene tips. The adapters have two O-rings guaranteeing proper holding and tightness of standard 2mL Pasteur pipettes (Ø 7mm).

### Nozzle Protection Filter 6

Protection against liquid overflow and contamination.

## Performance and Ordering Information - Acura® *manual* 835 Macropipettes

| Cat. No. | Volume | Division | Inaccuracy (E%) Min. Vol. | Mid. Vol. | Max. Vol. | Imprecision (CV%) Min. Vol. | Mid. Vol. | Max. Vol. | Tip Style |
|---|---|---|---|---|---|---|---|---|---|
| W810315 | 0.2 - 2mL | 0.002mL | < ± 1.5 % | < ± 1.0 % | < ± 0.5 % | < 0.5 % | < 0.3 % | < 0.2 % | 2mL |
| W810316 | 0.5 - 5mL | 0.01mL | < ± 1.5 % | < ± 1.1 % | < ± 0.6 % | < 0.6 % | < 0.5 % | < 0.3 % | 5mL |
| W810318 | 1 - 10mL | 0.01mL | < ± 1.5 % | < ± 0.7 % | < ± 0.5 % | < 0.5 % | < 0.3 % | < 0.2 % | 10mL |

Performance values obtained with double-distilled water at constant temperature (± 0.5°C) comprised between 20°C and 25°C in accordance with ISO 8655..

## Acura® *manual* 855 Multichannel Pipette

Built with the users in mind, these pipettes combine high-tech materials with exceptional, user-friendly ergonomics. They extend pipetting possibilities in 96-well microplates and guarantee outstanding performance and results.

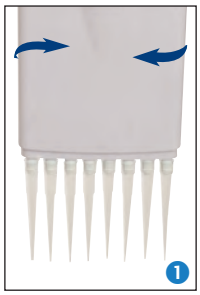
### Product Advantages

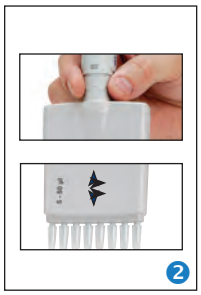
- 8 and 12-channel models up to 350µL
- Light weight and perfect hand fitting
- Precision digital display visible at all time
- Justip™ adjustable tip ejector* fitting most tips
- Swift-set user calibration system*
- 360° rotation of volumetric module

* Socorex patented

**8-Channel**
0.5 - 10µL
5 - 50µL
20 - 200µL
40 - 350µL


**12-Channel**
0.5 - 10µL
5 - 50µL
20 - 200µL
40 - 350µL





### Optimal Working Position 1

Revolving over 360°, the volumetric module (lower assembly) helps reach the appropriate hand position.

### Adjustable Tip Ejector 2

Position of tip ejector can be adjusted in no time within a 4mm span to perfectly match with tips used. Bowed shape of ejector head guarantees effortless, easy sequential tip removal.

### Multichannel Reservoirs 3

Well adapted for multichannel pipettes, the reagent reservoirs offer various shapes and volumes.

(see page 118 for reservoirs)

## Performance and Ordering Information - Acura® *manual* 855 Multichannel Pipettes

| Cat. No. | Volume | Division | Inaccuracy (E%) Min. Vol. | Inaccuracy (E%) Mid. Vol. | Inaccuracy (E%) Max. Vol. | Imprecision (CV%) Min. Vol. | Imprecision (CV%) Mid. Vol. | Imprecision (CV%) Max. Vol. | Weight (g) | Tip Style |
|---|---|---|---|---|---|---|---|---|---|---|
| **8-Channel** | | | | | | | | | | |
| W810600 | 0.5 - 10µL | 0.01µL | < ± 3.5 % [1] | < ± 2.5 % | < ± 1.5 % | < 3.0 % [1] | < 2.0 % | < 1.0 % | 155 | 10µL |
| W810602 | 5 - 50µL | 0.1µL | < ± 1.0 % | < ± 0.9 % | < ± 0.8 % | < 1.0 % | < 0.7 % | < 0.4 % | 165 | 200µL |
| W810603 | 20 - 200µL | 0.2µL | < ± 0.9 % | < ± 0.8 % | < ± 0.7 % | < 0.6 % | < 0.5 % | < 0.3 % | 165 | 200µL |
| W810604 | 40 - 350µL | 0.4µL | < ± 1.0 % | < ± 0.9 % | < ± 0.8 % | < 0.6 % | < 0.5 % | < 0.3 % | 168 | 350µL |
| **12-Channel** | | | | | | | | | | |
| W810606 | 0.5 - 10µL | 0.01µL | < ± 3.5 % [1] | < ± 2.5 % | < ± 1.5 % | < 3.0 % [1] | < 2.0 % | < 1.0 % | 184 | 10µL |
| W810608 | 5 - 50µL | 0.1µL | < ± 1.0 % | < ± 0.9 % | < ± 0.8 % | < 1.0 % | < 0.7 % | < 0.4 % | 199 | 200µL |
| W810609 | 20 - 200µL | 0.2µL | < ± 0.9 % | < ± 0.8 % | < ± 0.7 % | < 0.6 % | < 0.5 % | < 0.3 % | 201 | 200µL |
| W810610 | 40 - 350µL | 0.4µL | < ± 1.0 % | < ± 0.9 % | < ± 0.8 % | < 0.6 % | < 0.5 % | < 0.3 % | 203 | 350µL |

Performance values obtained with double-distilled water at constant temperature (± 0.5°C) comprised between 20°C and 25°C in accordance with ISO 8655.
[1] measured at 1µL

## Acura® *manual* 815 / 835 Fixed Volume Pipettes

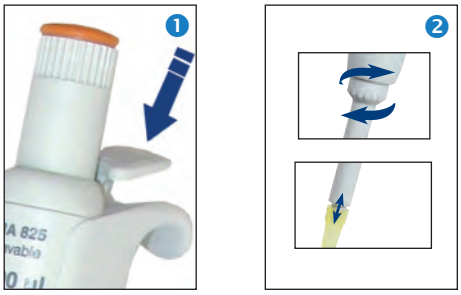
Fixed volume micro and macropipettes show the most stable performance. They provide consistent results for any analytical or routine diagnostic tests by eliminating the risk of erroneous volume setting.

## Product Advantages

- Slim ergonomic design and lightweight
- Soft plunger activation
- Justip™ adjustable tip ejector* fitting most tips
- User calibration with integrated key
- Color coded smartie cap
- Selection includes macropipette volumes
- Three-year warranty

* Socorex patented

815 / 835F
1µL to 10mL



### Tip Ejection - Easier Than Ever ❶❷

Most ergonomically positioned, the large surface, soft padded ejector button provides for low-pressure activation. In addition to ease of tip ejection, the shaft height adjustment system called Justip™ - controlled by efficient click-stops - allows a wide selection of tips to tightly fit the nozzle.

## Performance and Ordering Information

| Cat. No. | Volume | Inaccuracy (E%) | Imprecision (CV%) | Tip Style |
|---|---|---|---|---|
| Acura® *manual* 815 | | | | |
| W810000 | 1µL | < ± 2.0 % | < 2.0 % | 10µL |
| W810002 | 5µL | < ± 1.4 % | < 1.0 % | 10µL |
| W810004 | 10µL | < ± 0.7 % | < 0.7 % | 10µL |
| 851206 | 10YµL* | < ± 0.7 % | < 0.8 % | 200µL |
| W810006 | 15µL | < ± 0.7 % | < 0.5 % | 200µL |
| W810008 | 20µL | < ± 0.75 % | < 0.5 % | 200µL |
| W810010 | 25µL | < ± 0.7 % | < 0.6 % | 200µL |
| W810012 | 30µL | < ± 0.7 % | < 0.6 % | 200µL |
| W810013 | 32µL | < ± 0.7 % | < 0.6 % | 200µL |
| W810014 | 40µL | < ± 0.7 % | < 0.5 % | 200µL |
| W810016 | 50µL | < ± 0.7 % | < 0.5 % | 200µL |
| W810018 | 60µL | < ± 0.7 % | < 0.6 % | 200µL |
| W810020 | 70µL | < ± 0.7 % | < 0.6 % | 200µL |
| W810022 | 75µL | < ± 0.7 % | < 0.5 % | 200µL |
| W810024 | 80µL | < ± 0.7 % | < 0.4 % | 200µL |
| W810026 | 90µL | < ± 0.7 % | < 0.3 % | 200µL |
| W810028 | 100µL | < ± 0.7 % | < 0.3 % | 200µL |
| W810030 | 120µL | < ± 0.7 % | < 0.4 % | 200µL |
| W810032 | 150µL | < ± 0.7 % | < 0.3 % | 200µL |
| W810034 | 200µL | < ± 0.7 % | < 0.4 % | 200µL |
| W810036 | 250µL | < ± 0.7 % | < 0.4 % | 1000µL |
| W810038 | 300µL | < ± 0.7 % | < 0.4 % | 1000µL |
| W810040 | 400µL | < ± 0.7 % | < 0.3 % | 1000µL |
| W810042 | 500µL | < ± 0.7 % | < 0.3 % | 1000µL |
| W810044 | 600µL | < ± 0.7 % | < 0.3 % | 1000µL |
| W810046 | 700µL | < ± 0.7 % | < 0.2 % | 1000µL |
| W810048 | 750µL | < ± 0.7 % | < 0.2 % | 1000µL |
| W810050 | 800µL | < ± 0.7 % | < 0.2 % | 1000µL |
| W810052 | 900µL | < ± 0.7 % | < 0.2 % | 1000µL |
| W810054 | 1000µL | < ± 0.6 % | < 0.2 % | 1000µL |
| Acura® *manual* 835F | | | | |
| W810056 | 2mL | < ± 0.8 % | < 0.5 % | 2mL |
| W810058 | 2.5mL | < ± 0.8 % | < 0.5 % | 5mL |
| W810060 | 5mL | < ± 0.7 % | < 0.3 % | 5mL |
| W810062 | 10mL | < ± 0.5 % | < 0.2 % | 10mL |

Performance values obtained with double-distilled water at constant temperature (± 0.5°C) comprised between 20 and 25°C in accordance with ISO 8655.

* This pipette must be used with a 200µL pipette tip

## Acura® *manual* 825 / 835 Triopack

- Three adjustable micropipettes
- Large choice of volume combinations up to 10mL
- Nine different packs

Including: Sampling of pipette tips, silicone grease, Q.C. certificates and operating instructions

| Cat. No. | Contents (Micro / Macropipette Models) | | |
|---|---|---|---|
| W810319 | 2µL (0.1 - 2) | 10µL (0.5 - 10) | 50µL (5 - 50) |
| W810320 | 2µL (0.1 - 2) | 20µL (2 - 20) | 200µL (20 - 200) |
| W810321 | 10YµL* (1 - 10) | 50µL (5 - 50) | 200µL (20 - 200) |
| W810322 | 10µL (0.5 - 10) | 100µL (10 - 100) | 1000µL (100 - 1000) |
| W810323 | 10YµL* (1 - 10) | 100µL (10 - 100) | 1000µL (100 - 1000) |
| W810324 | 20µL (2 - 20) | 200µL (20 - 200) | 1000µL (100 - 1000) |
| W810325 | 50µL (5 - 50) | 200µL (20 - 200) | 1000µL (100 - 1000) |
| W810326 | 100µL (10 - 100) | 1000µL (100 - 1000) | 5mL (0.1 - 5) |
| W810327 | 1000µL (100 - 1000) | 5mL (0.5 - 5) | 10mL (1 - 10) |

* This pipette must be used with a 200µL pipette tip

## Acura® 826 XS Starter Kit

- 1 Acura 826 XS manual pipette, W810302-XS (0.5-10µL)
- 1 Acura 826 XS manual pipette, W810310-XS (10-100µL)
- 1 Acura 826 XS manual pipette, W810312-XS (20-200µL)
- 1 Acura 826 XS manual pipette, W810314-XS (100-1000µL)
- 1 Twister Blue Pipette Stand
- 1 Rack with 10µL tips
- 2 Racks with 200µL tips
- 1 Rack with 1000µL tips

| Cat. No. | Qty |
|---|---|
| W810200-XS | 1 |

- Two adjustable volume pipettes
- Free shelf pipette holder included
- Volume combinations up to 1000µL
- Six different packs available


Including: Shelf pipette holder, pipette tips samples, silicone grease, Q.C. certificates and operating instructions

| Cat. No. | Contents (Micropipettes) | |
|---|---|---|
| W810305-TXS | 2µL (0.1 - 2) | 20µL (2 - 20) |
| W810307-TXS | 10µL (0.5 - 10) | 100µL (10 - 100) |
| W810313-TXS | 20µL (2 - 20) | 200µL (20 - 200) |
| W810309-TXS | 50µL (5 - 50) | 200µL (20 - 200) |
| W810311-TXS | 100µL (10 - 100) | 1000µL (100 - 1000) |
| W810315-TXS | 200µL (20 - 200) | 1000µL (100 - 1000) |

## All Purpose Reagent Reservoirs

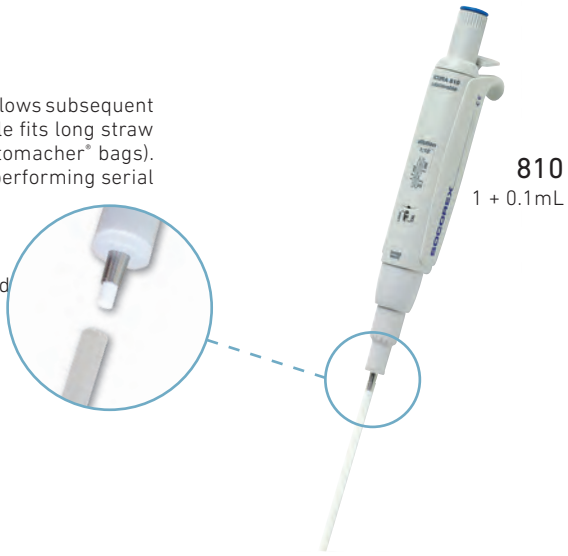
Particularly well suited for single and multichannel pipetting. Various shape, material and capacity provides ideal solutions for many applications.

| Cat. No. | Style | Volume (mL) | Sterile | Qty / Pack |
|---|---|---|---|---|
| W851368 | PS, 12-Channel Reservoirs | 48 | Yes | 10 |
| W845900 | PS, 8-Channel Reservoir | 48 | No | 30 |
| W845901 | PS, 8-Channel Reservoir | 48 | No | 100 |
| W845902 | PS, 12-Channel Reservoir | 48 | No | 30 |
| W845903 | PS, 12-Channel Reservoir | 48 | No | 100 |
| W851239 | PS, Sterile 8-Channel Reservoirs | 48 | Yes | 10 |
| 851249 | PP, V-Shaped, No Lid | 75 | No | 10 |
| W851364 | PP, V Shaped Reservoir | 75 | No | 20 |
| W851365 | PP, Hinged Lid Reservoir | 125 | No | 20 |

Materials are PP (Polypropylene) and PS (Polystyrene). PP Reservoirs are autoclavable.

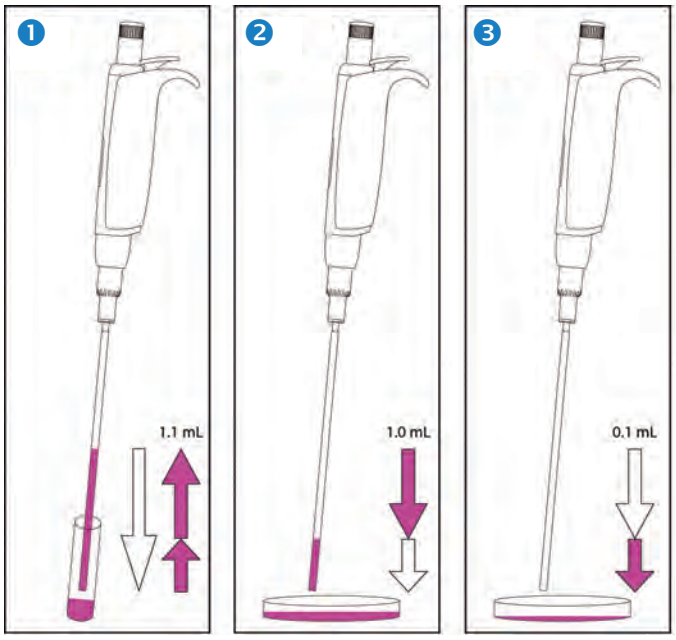
## Acura® *manual* 810 Dilution Pipette

Air displacement pipette with two pre-calibrated steps allows subsequent pipetting of 1 and 0.1mL of the same liquid. Metal nozzle fits long straw tips to aspirate from narrow or deep reservoirs (i.e. Stomacher® bags). Ideal alternative to the graduated glass pipettes when performing serial 1:10 dilutions in bacteriology.




## Product Advantages

- Two pre-calibrated fixed volumes - no setting required
- Smooth activation, excellent ergonomics
- Interchangeable PE nozzle protection filter
- Justip™ system for height adjustment of tip ejector
- Independent calibration for each volume
- Easy maintenance, cleaning and disinfection
- Fully autoclavable 121°C/250°F
- Three-year warranty




### Simple Operation

1. Depress plunger button in full, then release slowly to aspirate 1.1mL
2. Depress plunger button to first stop, thus dispensing 1mL in Petri dish
3. Depress plunger button to second stop, thus dispensing residual 0.1mL in next Petri dish


## Performance and Ordering Information - Instrument

| Cat. No. | Volumes | Inaccuracy (E%) | Imprecision (CV%) |
|---|---|---|---|
| 851343* | 1mL | < ± 0.5 % | < 0.4 % |
| | 0.1mL | < ± 2.0 % | < 2.5 % |

Performance values obtained with double-distilled water at constant temperature (± 0.5°C) comprised between 20 and 25°C in accordance with ISO 8655.

* Includes 10 Nozzle Protection Filters and one 1.1mL Straw Tip

## Ordering Information - Accessories

| Cat. No. | Description | Volume | Qty / Pack |
|---|---|---|---|
| 851344 | Straw Tips, Polypropylene, Sterile (L: 190mm, dia: 4mm) | 1.1mL | 4 x 25/pk |
| W851348 | Nozzle Protection Filter, PE Material | | 100 |

### No Setting Required 1

Two fixed volumes within one plunger travel.

### Innovative Dual Calibration 2

Both volumes of 1mL and 0.1mL can be calibrated independently from each other. Calibration switch protected by seal sticker.

### Justip™ Ejector 3

Turn left or right to adjust ejector to straw tip position on the nozzle.

### Straw Tips 4

Made of high quality polypropylene. Specially designed for narrow vials and Stomacher® bags. Large diameter (4mm) prevents blocking by particles in suspension.

# Calibra® *digital* 822 Micro / 832 Macro Pipettes

The combination of instant volume adjustment, mechanical precision and ease of use makes the Calibra® *digital* a most reliable and robust micropipette line in the market.

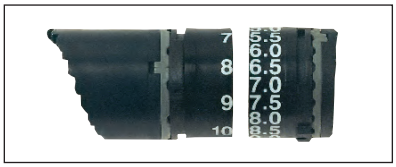
## Product Advantages

- Winding-free, instant, volume adjustment
- Long term performance and calibration stability
- Robust, long lasting construction
- Shock, UV light and autoclave resistant
- Reliable user calibration
- Minimal maintenance requirements
- CE certified IVD 98/79 EEC
- Interchangeable nozzle filter in all macro models
- Three-year warranty

Thin shaft shape helps reach contents from microtubes and/or narrow containers. The Calibra® provides convenient access into those hard to reach places.

**822 micro**
0.2 - 2µL
1 - 10µL
2 - 20µL
10 - 100µL
20 - 200µL
100 - 1000µL

**832 macro**
0.2 - 2mL
1 - 10mL



### Instant Volume Setting

Twin cam system fitted with pre-calibrated steps providing for true digital volume entry and numerical display. The dual incrementation allows fast volume setting without tedious winding.


### Key Volume Adjustment

Example: from 10 to 50µL in half a revolution of the setting wheel placed in its normal position.


### Fine Tuning Adjustment

Example: from 50 to 55.5µL in half a revolution of the setting wheel in its "pulled" position.

## Performance and Ordering Information

| Cat. No. | Volume | Division | Inaccuracy (E%) Min. Vol. | Mid. Vol. | Max. Vol. | Imprecision (CV%) Min. Vol. | Mid. Vol. | Max. Vol. | Tip Style |
|---|---|---|---|---|---|---|---|---|---|
| Calibra® *digital* 822 | | | | | | | | | |
| 851160 | 0.2 - 2µL | 0.1µL | < ± 6.0 %[1] | < ± 4.0 % | < ± 2.0 % | < 5.0 %[1] | < 3.3 % | < 1.5 % | 10µL |
| 851162 | 1 - 10µL | 0.05µL | < ± 2.5 % | < ± 1.5 % | < ± 1.0 % | < 2.0 % | < 1.3 % | < 0.5 % | 10µL |
| 851163 | 2 - 20µL | 0.1µL | < ± 2.5 % | < ± 1.5 % | < ± 1.0 % | < 1.7 % | < 1.1 % | < 0.5 % | 200µL |
| 851164 | 10 - 100µL | 0.5µL | < ± 1.5 % | < ± 0.9 % | < ± 0.8 % | < 1.0 % | < 0.6 % | < 0.2 % | 200µL |
| 851166 | 20 - 200µL | 1.0µL | < ± 1.5 % | < ± 0.9 % | < ± 0.6 % | < 0.6 % | < 0.4 % | < 0.2 % | 200µL |
| 851168 | 100 - 1000µL | 5.0µL | < ± 1.5 % | < ± 0.6 % | < ± 0.5 % | < 0.5 % | < 0.4 % | < 0.2 % | 1000µL |
| Calibra® *digital* 832 | | | | | | | | | |
| 851340 | 0.2 - 2mL | 0.01mL | < ± 1.5 % | < ± 1.0 % | < ± 0.5 % | < 0.5 % | < 0.3 % | < 0.2 % | 2mL |
| 851345 | 1 - 10mL | 0.1mL | < ± 1.5 % | < ± 1.0 % | < ± 0.5 % | < 0.3 % | < 0.3 % | < 0.15 % | 10mL |

Performance values obtained with double-distilled water at constant temperature (± 0.5°C) comprised between 20 and 25°C in accordance with ISO 8655.

[1] measured at 0.5µL

## Calibra® *digital* 852 Multichannel Pipettes

8 and 12-channel micropipettes with winding-free, instant volume adjustment extend pipetting possibilities in microplates.

## Product Advantages

- Winding-free, instant volume adjustment
- Long term performance and calibration stability
- Lower assembly rotates 360° for optimal working comfort
- Easy sequential tip ejection
- Calibration simple to perform by user
- Shock, UV-light and autoclaving resistance
- CE certified IVD 98/79 EEC
- Three-year warranty







### Easy In-lab Calibration ❶ ❷

The calibration screw is located under the rubber pad. Engraved graduations help calibrate instrument quickly and precisely. Calibration key supplied with the instrument.

### 360° Rotation ❸

In addition to ergonomic hand fitting, the pipette lower assembly revolves for added user comfort.

### Sequential Tip Ejection ❹

Special shape of ejector head guarantees sequential, easy tip ejection.

### Multichannel Reservoirs ❺

Well adapted for multichannel pipettes, the reagent reservoirs offer various shapes and volumes.

## Performance and Ordering Information

| Cat. No. | Volume | Division | Inaccuracy (E%) Min. Vol. | Mid. Vol. | Max. Vol. | Imprecision (CV%) Min. Vol. | Mid. Vol. | Max. Vol. | Tip Style |
|---|---|---|---|---|---|---|---|---|---|
| **8-Channel** | | | | | | | | | |
| W851180-2 | 1 - 10µL | 0.05µL | < ± 3.5 % | < ± 2.5 % | < ± 1.5 % | < 3.0 % | < 2.0 % | < 1.0 % | 10µL |
| 851183-2 | 10 - 100µL | 0.5µL | < ± 1.0 % | < ± 0.9 % | < ± 0.7 % | < 1.0 % | < 0.7 % | < 0.4 % | 200µL |
| 851187-2 | 20 - 200µL | 1.0µL | < ± 0.9 % | < ± 0.9 % | < ± 0.7 % | < 0.6 % | < 0.4 % | < 0.3 % | 200µL |
| **12-Channel** | | | | | | | | | |
| 851184-2 | 10 - 100µL | 0.5µL | < ± 1.0 % | < ± 0.9 % | < ± 0.7 % | < 1.0 % | < 0.7 % | < 0.4 % | 200µL |
| 851188-2 | 20 - 200µL | 1.0µL | < ± 0.9 % | < ± 0.9 % | < ± 0.7 % | < 0.6 % | < 0.4 % | < 0.3 % | 200µL |

Performance values obtained with double-distilled water at constant temperature (± 0.5°C) comprised between 20 and 25°C in accordance with ISO 8655.

## Acura® 846 Positive Displacement Micropipette

Pipettes with ETFE tipped plunger provide for positive displacement of sample in a precision capillary tube. Optimal accuracy and reproducibility when pipetting high density, viscous, foaming or volatile liquids. Five models cover a range from 1 to 200µL. Model 846 is not autoclavable. Instruments covered with a three year factory warranty.


**846**
1 - 5µL
5 - 25µL
10 - 50µL
60 - 100µL
100 - 200µL

## Product Advantages

- Step-wise volume adjustment
- Interchangeable plunger and glass capillary
- Matching color codes on pipette, plunger and capillary
- Stainless steel, ETFE tipped plunger (5µL model has an all stainless steel plunger)
- Three-year warranty





### Enhanced Pipetting Comfort / Soft Activation 1

Instrument slim shape fits any hand. Comfortable hook enables pipette to rest naturally on finger. Well engineered spring system reduces plunger force requirement.

### Reliable Volume Adjustment 2

Each pipette have five, easy to adjust pre-set volumes. Clear volume reading on pipette barrel.

### Color Coding 3

Pipette, plunger tip and glass capillary bear color coding for easy volume identification.

### ETFE Tipped Plunger 4

Chemically inert ETFE material offers excellent resistance when coming in direct contact with liquids.

### Work Station (Holds 3 Positive Displacement Pipettes)

| Cat. No. | Color | Qty / Case |
|---|---|---|
| W851369 | Light Gray | 1 |

## Performance and Ordering Information - Instrument

| Cat. No. | Volumes | Inaccuracy (E%) Min. Vol. | Mid. Vol. | Max. Vol. | Imprecision (CV%) Min. Vol. | Mid. Vol. | Max. Vol. |
|---|---|---|---|---|---|---|---|
| W851295 | 1 - 2 - 3 - 4 - 5µL | < ± 3.0 % | < ± 2.3 % | < ± 2.0 % | < 2.5 % | < 2.0 % | < 1.2 % |
| W851299 | 5 - 10 - 15 - 20 - 25µL | < ± 1.5 % | < ± 1.2 % | < ± 0.8 % | < 1.0 % | < 0.9 % | < 0.6 % |
| W851303 | 10 - 20 - 30 - 40 - 50µL | < ± 1.2 % | < ± 1.0 % | < ± 0.7 % | < 0.8 % | < 0.7 % | < 0.4 % |
| W851307 | 60 - 75 - 80 - 90 - 100µL | < ± 0.7 % | < ± 0.7 % | < ± 0.7 % | < 0.6 % | < 0.5 % | < 0.3 % |
| W851311 | 100 - 120 - 150 - 175 - 200µL | < ± 0.7 % | < ± 0.7 % | < ± 0.7 % | < 0.3 % | < 0.3 % | < 0.3 % |

Performance values obtained with double-distilled water at constant temperature (± 0.5°C) comprised between 20 and 25°C in accordance with ISO 8655.

## Ordering Information - Accessories

| Cat. No. | Color Code | Volumes | Qty/Pack |
|---|---|---|---|
| **Spare glass capillaries** | | | |
| 851321 | White Line | 1 - 5µL | 200 |
| 851322 | 2 White Lines | 5 - 25µL | 200 |
| 851323 | Green Line | 10 - 50µL | 200 |
| 851324 | Blue Line | 60 - 100µL | 200 |
| 851325 | Red Line | 100 - 200µL | 100 |

| Cat. No. | Color Code | Volumes | Qty/Pack |
|---|---|---|---|
| **Spare plungers** | | | |
| 851330 | Steel | 1 - 5µL | 5 |
| 851331 | White | 5 - 25µL | 5 |
| 851332 | Green | 10 - 50µL | 5 |
| 851333 | Blue | 60 - 100µL | 5 |
| 851334 | Red | 100 - 200µL | 5 |

Each plunger supplied with one glass capillary.

## PIPET-PAL® Controller

Wheaton has a long history of providing liquid handling solutions to laboratories from research to academia. The latest addition to our offering, the Wheaton Pipet-Pal Controller, is ergonomically designed to sit comfortably in your hand and allow your fingers to keep a natural position during long hours of pipetting and dosing activities.

In addition to ergonomics, this controller is lighter, faster and provides a longer operating time. This will help you cut your work time and offer you an improved ergonomic pipetting experience.

## Product Advantages

- Lightweight (195g) and well-balanced, making even prolonged pipetting very comfortable
- Quiet, robust pump for high pipetting speed
- Precise finger-control of pipetting enables accurate dispensing, even drop-by-drop
- Versatile for both fine dosing and gravimetric dispensing
- Designed for use with all serological pipettes in the volume range 1-100mL
- Eliminate contamination with a replaceable, sterile filter
- Lithium-Polymer battery technology for long operating time
- Autoclavable pipette holder for cleanliness and safety
- Supplied with a universal power supply for worldwide use
- 1 year warranty


## Material Selection

Parts in contact with liquid flow are chemically inert, providing for stability and long instrument life.

| Parts | Material |
|---|---|
| Body | Polyamide |
| Nosepiece | Polyoxymethylene |
| Pipette mount | Silicone |
| Filter Rubber | Silicone |

## Performance and Ordering Information

Supplied with Quick Start Guide, warranty registration card, Lithium-Polymer battery (included in the instrument), wall mount, power adapters with 4 country plugs (US/JP, EU, UK, AU) and a spare 0.45 um sterile filter.

| Cat. No. | Description | Qty/Case |
|---|---|---|
| W155091 | PIPET-PAL Controller, Translucent Blue | 1 |
| W155521 | PIPET-PAL Wall Mount | 1 |
| W153016 | Replacement PTFE Filters, 0.45µm, non-sterile | 10 |
| W153015 | Replacement PTFE Filters, 0.45µm, sterile | 10 |
| W156607 | Replacement PTFE Filters, 0.20µm, non-sterile | 10 |
| W156608 | Replacement PTFE Filters, 0.20µm, sterile | 10 |

*For additional spare parts, please go to www.wheaton.com.

## Choice of Pipetting Speeds

The PIPET-PAL Controller has a unique motor design that allows for a wide range of pipetting speeds. The innovative valve and dosing system provide precise control of the liquid, from drop by drop dispensing to fast liquid displacement.

The general pipetting speed is easily preset via the thumb wheel ❶ on the back of the instrument. The speed is then easily regulated with the tips of your fingers, providing you with a precise control of the liquid level in the pipette.

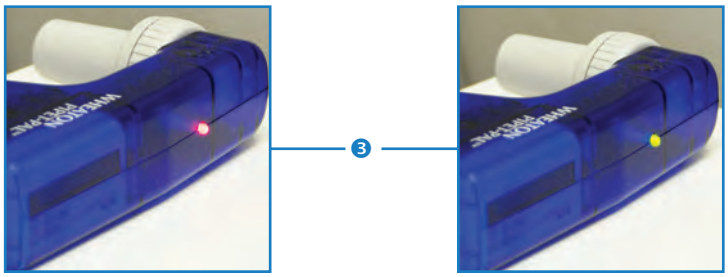
When working with large volume pipettes, the Turbo Mode provides the unit with 20% extra pipetting speed. ❷ Simply connect the power supply to the instrument to make it one of the fastest pipette controllers on the market.



## Longer Operating Time❸

The PIPET-PAL Controller is supplied with the latest Lithium-Polymer battery technology. This battery provides a cordless working time of over 6.5 hours of non-stop pipetting with a minimal charging time of only 3.5 hours without memory effect.

The LED battery indicator on the controller displays clearly the status of the instrument's charge. A green indicator light indicates the controller is fully charged. A flashing red light indicates the battery is low and need to be charged soon. Once the red light flashes, PIPET-PAL can be used for approximately 100 pipetting cycles before shutting down.




## PIPET-PAL™ Controller

| Feature | Details |
|---|---|
| Maximum pipetting speed | 13.5mL/s<br>(with a 50mL pipette) |
| Gravity dispense | Slight pressure on dispense button |
| Pipette compatibility | Glass and plastic pipettes with volume from 1 to 100mL |
| Filter protection | 0.45µm (included) or 0.2µm (order separately) |
| Weight | 195 grams |
| Operating conditions | 5–40°C, max. 80% RH |
| Power requirements | Input: 100-240 VAC, 50/60 Hz<br>Output: 17 VDC ±10 %/180 mA ±10 % |
| Rechargeable battery | Lithium Polymer, 7-10 V, min. 550 mAh |
| Dimensions (H x W x D) | 125 x 130 x 35mm |
| Running time with fully charged battery | 5500 cycles of aspiration and dispensing of 25mL |
| Typical charging time | 3.5 hours |

## Profiller™ *manual* 435 Pipette Controller

Robust and easy to use, this controller offers ergonomic shape and light weight. It provides smooth control in both aspirating and dispensing using glass or plastic pipettes of volume up to 100mL.

## Product Advantages

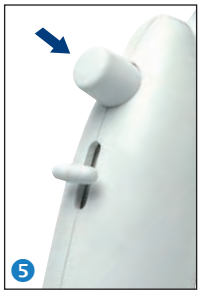
- Large capacity bulb
- Soft action lever button
- Efficient blow-out system
- PTFE protection membrane filter
- Maintenance free
- One year warranty

435

Pipettes up to 100mL








### Protection Filter 1

Interchangeable hydrophobic membrane filter guarantees effective protection against airborne contamination during aspiration and dispensing.

### Squeezable Bulb 2

Simply squeeze large capacity silicone bulb for efficient aspiration. If additional aspiration is needed, it can be squeezed even during pipetting.

### Pipette Holder 3

Conical shape of silicone pipette holder tightly fits graduated glass or plastic pipettes. Autoclavable.

### Precise Control 4

Thumb lever button for left and right-handed users to easily control both aspiration and dispensing speeds.

### Liquid Blow-out 5

Press large button to expel residual liquid when using blow-out type pipettes

## Ordering Information - Instruments

| Cat. No. | Description | Qty / Pack |
|---|---|---|
| W835000 | Profiller™ *manual* 435, Egg Style Blue Bulb | 1 |

## The Profillette™ 406 Pipette Fillers

Low cost, easy to use pipette filler suitable for graduated glass and plastic pipettes. Rotate wheel to aspirate. Fast release by pressing air inlet valve button, or gradual release by gently turning wheel. Assorted package includes one of each size.

## Product Advantages

- One-hand operation
- Easy filling and dispensing
- Ideal for students
- Air inlet valve for fast distribution
- Color coding per size
- Maintenance free
- Not autoclavable
- One year warranty

406
2mL
10mL
25mL

## Ordering Information - Instruments

| Cat. No. | Volumes | Colors | Qty / Pack |
|---|---|---|---|
| W835145 | 2mL | Blue | 1 |
| W835146 | 10mL | Green | 1 |
| W835147 | 25mL | Red | 1 |
| W835148 | 2 / 10 / 25mL | Assorted | 3 |

## Ordering Information - Accessories

| Cat. No. | Description | Qty / Pack |
|---|---|---|
| W835024 | Spare silicone pipette holder | 1 |
| W835149 | Replacement nose screw | 1 |

## WHEATON® Liquid Handling Service Center

### Services Available:

Repair Maintenance Calibration

#### Why choose WHEATON?

DWK Life Sciences guarantees that only genuine Socorex spare parts are used for repairs. Socorex instruments are built to last. In order to guarantee trouble-free usage over time, a minimum maintenance and regular calibration are strongly recommended. From basic repair to GLP requirements, the WHEATON® Liquid Handling Service Center provides fast and reliable service and calibration.

#### Personalized Technical Support

Highly qualified personnel with significant product knowledge are available for all technical matters. The team also provides professional answers and solutions about handling, maintenance and control procedures.


DWK Life Sciences is the only Socorex authorized service center in the U.S.

#### Warranty Repair

In order to perform a warranty repair, the product's warranty registration must be on file at DWK Life Sciences or the user must provide a proof of purchase with date. Each new product contains a warranty registration card. This card must be completed and returned within (one) 1 month of purchase to DWK Life Sciences.

If repair or adjustment is necessary within the warranty period and has not been the result of mishandling or abuse, you may return the unit freight prepaid and DWK Life Sciences will correct the defect or adjust the unit at no charge. A return authorization number MUST be obtained before the unit can be returned. Please contact the Repair Department for this information.

#### Preparation for Repair

Items returned for repair or adjustment should be thoroughly cleaned and packed very carefully to prevent damage in transit and also should be insured for your protection. Should damage occur in transit, all claims should be made against the carrier. DWK Life Sciences will repair or adjust out-of-warranty products at a nominal charge.

#### Contact Us

Call: 800.225.1437 x2587

Email: servicerequest@wheaton.com

## The Stepper™ 411 Repeater Pipette

Highly comfortable pipette intended for reliable repeat dispensing within 10 to 5000µL. Unique trigger action mechanism eliminates thumb fatigue. Selected materials offer outstanding shock resistance. Compact shape greatly limits internal instrument contamination. Large selection among 53 different volumes; up to 73 doses per filling.

## Product Advantages

- 4-finger activation
- Setting knobs are clearly marked with volumes and number of aliquots
- Three positive displacement syringes, color coded
- Self-locking mechanism
- Two-year warranty




### Clear Setting Indication 1 2

After inserting disposable syringe, select appropriate volume. Markings on selector buttons allow direct reading of set volume and corresponding number of aliquots.

### Fingertip Activation 3

User friendly 4-finger trigger action eliminates thumb fatigue during repeat dosing. Automatic safety lock prevents false delivery when dosing is completed.

## Ordering Information

| Cat. No. | Description | Qty / Pack |
|---|---|---|
| 851601 | Stepper™ 411 (incl. 3 color coded selector buttons, adapter, Ecostep™ syringe samples) | 1 |
| 851625 | Replacement white adapter for red Ecostep™ syringe | 5 |
| W835010 | Stand for one Stepper™ 4 | 1 |



411
10 - 5000µL

## Color Coding

Ecostep™ syringe and selector button bear color coding to eliminate any setting error.

| No. of aliquots | Volume (µL) | Volume (µL) | Volume (µL) |
|---|---|---|---|
| 73 | 10 | 50 | 500 |
| 49 | 15 | 75 | 750 |
| 36 | 20 | 100 | 1000 |
| 29 | 25 | 125 | 1250 |
| 24 | 30 | 150 | 1500 |
| 20 | 35 | 175 | 1750 |
| 18 | 40 | 200 | 2000 |
| 15 | 45 | 225 | 2250 |
| 14 | 50 | 250 | 2500 |
| 12 | 55 | 275 | 2750 |
| 11 | 60 | 300 | 3000 |
| 10 | 65 | 325 | 3250 |
| 9 | 70 | 350 | 3500 |
| 8 | 75 | 375 | 3750 |
| 8 | 80 | 400 | 4000 |
| 7 | 85 | 425 | 4250 |
| 7 | 90 | 450 | 4500 |
| 7 | 95 | 475 | 4750 |
| 6 | 100 | 500 | 5000 |

## Performances and Ordering Information – Ecostep™ Syringes

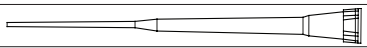
Only three sizes cover full volume range from 10 to 5000µL. PE / PP materials.
Supplied non-sterile in bulk, or sterilized, individually wrapped.

| | | | Syringe | Inaccuracy (E%) | | Imprecision (CV%) | | | |
|---|---|---|---|---|---|---|---|---|---|
| Cat. No. | Volume | Color | Capacity | At Min. Vol. | At Max. Vol. | At Min. Vol. | At Max.Vol. | Sterile | Qty / Pack |
| 851604 | 10 - 100µL | Yellow | 0.75mL | < ± 1.2 % | < ± 1.0 % | < 2.3 % | < 0.6 % | No | 100 |
| W851616 | 10 - 100µL | Yellow | 0.75mL | < ± 1.2 % | < ± 1.0 % | < 2.3 % | < 0.6 % | Yes | 50 |
| 851608 | 50 - 500µL | Blue | 3.75mL | < ± 1.0 % | < ± 0.5 % | < 1.8 % | < 0.4 % | No | 100 |
| W851620 | 50 - 500µL | Blue | 3.75mL | < ± 1.0 % | < ± 0.5 % | < 1.8 % | < 0.4 % | Yes | 50 |
| 851612* | 500 - 5000µL | Red | 37.5mL | < ± 0.8 % | < ± 0.5 % | < 1.2 % | < 0.4 % | No | 100 |
| W851624* | 500 - 5000µL | Red | 37.5mL | < ± 0.8 % | < ± 0.5 % | < 1.2 % | < 0.4 % | Yes | 50 |

Performance values obtained with double-distilled water at constant temperature (± 0.5°C) comprised between 20 and 25°C
*Includes one adaptor for red Ecostep Syringes.

## Pipette Tips Ordering Information

### Microtips, 10µL

| | Reference | Cat No. | Length (mm) | Description | Qty/Case | DNase, RNase Free | Filter | Pyrogen Free | Sterile |
|---|---|---|---|---|---|---|---|---|---|
|  | A | 851172 | 45 | Short Tip, 10 racks of 100, Natural | 1000 | ✓ | | | |
|  | B | 851174 | 76 | Long Tip, 4 racks of 200, Natural | 800 | ✓ | | | |
|  | E | W851239-01 | 31 | 10 racks of 96 tips, Natural | 960 | | | | |
|  | F | W851239-02 | 31 | 10 racks of 96 tips, Natural | 960 | ✓ | | ✓ | ✓ |
|  | G | W851239-03 | 31 | Bulk pack of 1000 tips, Natural | 1000 | | | | |

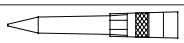
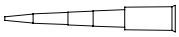
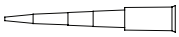
### Microtips, 100µL

| | Reference | Cat No. | Length (mm) | Description | Qty/Case | DNase, RNase Free | Filter | Pyrogen Free | Sterile |
|---|---|---|---|---|---|---|---|---|---|
|  | H | 851179-02 | 54 | 10 racks of 96 tips, Natural | 960 | ✓ | ✓ | ✓ | ✓ |

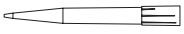
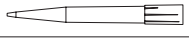
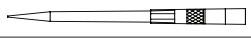
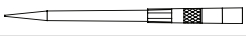
### Microtips, 200µL

| | Reference | Cat No. | Length (mm) | Description | Qty/Case | DNase, RNase Free | Filter | Pyrogen Free | Sterile |
|---|---|---|---|---|---|---|---|---|---|
|  | I | 851246 | 50 | 10 racks of 96 tips, Natural | 960 | ✓ | | | |
|  | J | 851247 | 50 | 10 racks of 96 tips, Natural | 960 | ✓ | | ✓ | ✓ |
|  | K | 851248 | 50 | Bulk pack of 1000 tips, Natural | 1000 | | | | |
|  | L | W851270 | 49.6 | 1 - 200 uL Tip, 7 X 52 mm, Ylw, Bvl, Bulk | 1000 | ✓ | | ✓ | |
|  | M | 851272 | 53 | 10 racks of 96 tips, Yellow | 960 | ✓ | | ✓ | |

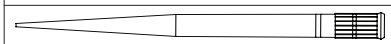
### Microtips, 300 / 350µL

| | Reference | Cat No. | Length (mm) | Description | Qty/Case | DNase, RNase Free | Filter | Pyrogen Free | Sterile |
|---|---|---|---|---|---|---|---|---|---|
|  | N | 851181-01 | 59 | 300µL - Bulk pack of 1000 tips, Natural | 1000 | ✓ | ✓ | | |
|  | O | 851181-04 | 59 | 300µL -10 racks of 96 tips, Natural | 960 | ✓ | ✓ | ✓ | ✓ |
|  | P | W851189 | 59 | 350µL - Bulk pack of 1000 tips, Natural | 1000 | | | | |
|  | Q | W851190 | 59 | 350µL -10 racks of 96 tips, Natural | 960 | | | | |

### Microtips, 1000µL

| | Reference | Cat No. | Length (mm) | Description | Qty/Case | DNase, RNase Free | Filter | Pyrogen Free | Sterile |
|---|---|---|---|---|---|---|---|---|---|
|  | R | W851274 | 75.9 | 1-1000 uL Tip, 10x70mm, Blu, Bvl, Bulk | 1000 | ✓ | | ✓ | |
|  | S | W851275 | 75.9 | 1-1000 uL Tip, 10 X 70mm, Blu, Bvl, RP | 1000 | ✓ | | ✓ | |
|  | T | 851180-01 | 88 | Individually wrapped, Natural | 1000 | ✓ | ✓ | ✓ | ✓ |
|  | U | 851180-02 | 88 | 10 racks of 100 tips, Natural | 1000 | ✓ | ✓ | ✓ | ✓ |

### Macrotips, 2, 5, 10mL

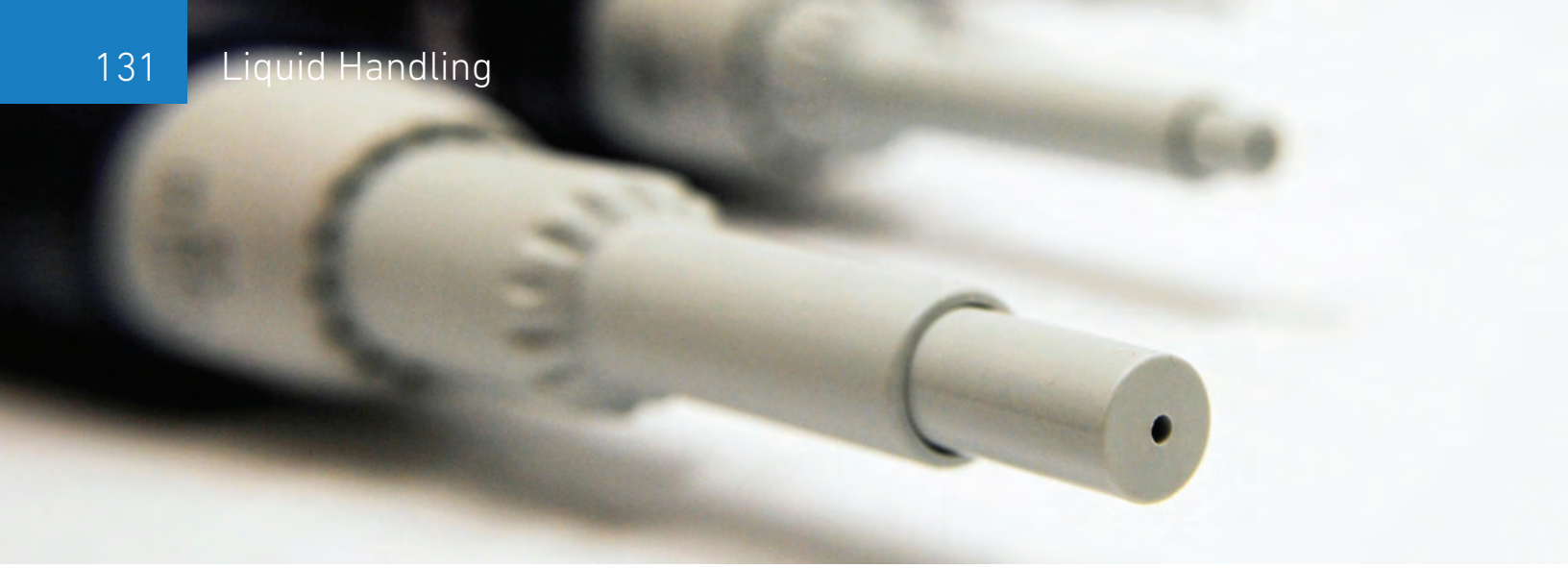
| | Reference | Cat No. | Length (mm) | Description | Qty/Case | DNase, RNase Free | Filter | Pyrogen Free | Sterile |
|---|---|---|---|---|---|---|---|---|---|
|  | V | 851355 | 115 | 2mL - Bulk pack of 250 tips, Natural | 250 | | | | |
|  | W | 851358 | 150 | 10mL - Bulk pack of 100 tips, Natural | 100 | | | | |
| | | W835150 | | Autoclaving Box for 24 - 10mL tips | 4 | | | | |
|  | X[1] | W851362 | 123 | 5mL - 2 packs of 250 tips, Natural* | 500 | | | | |
|  | Y[1] | W851363 | 123 | 5mL - 2 racks of 50 tips, Natural* | 100 | | | | |

[1] 5mL tip used for 2mL unit up to serial number 17091050 *Graduated

| Cat. No. | Model | Volume | Tip Ref. |
|---|---|---|---|
| 851160 | 822 | 0.2-2µL | A,B,E,F,G |
| 851162 | 822 | 1-10µL | A,B,E,F,G |
| 851163 | 822 | 2-20µL | I,J,K,L,M,N,O |
| 851164 | 822 | 10-100µL | H,I,J,K,L,M,N,O |
| 851166 | 822 | 20-200µL | I,J,K,L,M,N,O |
| 851168 | 822 | 100-1000µL | R,S,T,U |
| 851183-2 | 852 | 10-100µL | H,I,J,K,L,M,N,O |
| 851184-2 | 852 | 10-100µL | H,I,J,K,L,M,N,O |
| 851187-2 | 852 | 20-200µL | I,J,K,L,M,N,O |
| 851188-2 | 852 | 20-200µL | I,J,K,L,M,N,O |
| 851206 | 815 | 10YµL | I,J,K,L,M,N,O |
| 851340 | 832 | 0.2-2mL | V |
| 851343 | 810 | 0.1 & 1mL | AA |
| 851345 | 832 | 1-10mL | W |
| 851350 | 831 | 5mL | X, Y |
| W810000 | 815 | 1µL | A,B,E,F,G |
| W810002 | 815 | 5µL | A,B,E,F,G |
| W810004 | 815 | 10µL | A,B,E,F,G |
| W810006 | 815 | 15µL | I,J,K,L,M,N,O |
| W810008 | 815 | 20µL | I,J,K,L,M,N,O |
| W810010 | 815 | 25µL | H,I,J,K,L,M,N,O |
| W810012 | 815 | 30µL | H,I,J,K,L,M,N,O |
| W810013 | 815 | 32µL | H,I,J,K,L,M,N,O |
| W810014 | 815 | 40µL | H,I,J,K,L,M,N,O |
| W810016 | 815 | 50µL | H,I,J,K,L,M,N,O |
| W810018 | 815 | 60µL | H,I,J,K,L,M,N,O |
| W810020 | 815 | 70µL | H,I,J,K,L,M,N,O |
| W810022 | 815 | 75µL | H,I,J,K,L,M,N,O |
| W810024 | 815 | 80µL | H,I,J,K,L,M,N,O |
| W810026 | 815 | 90µL | H,I,J,K,L,M,N,O |
| W810028 | 815 | 100µL | H,I,J,K,L,M,N,O |
| W810030 | 815 | 120µL | I,J,K,L,M,N,O |
| W810032 | 815 | 150µL | I,J,K,L,M,N,O |
| W810034 | 815 | 200µL | I,J,K,L,M,N,O |
| W810036 | 815 | 250µL | R,S,T,U |
| W810038 | 815 | 300µL | R,S,T,U |
| W810040 | 815 | 400µL | R,S,T,U |
| W810042 | 815 | 500µL | R,S,T,U |
| W810044 | 815 | 600µL | R,S,T,U |
| W810046 | 815 | 700µL | R,S,T,U |
| W810048 | 815 | 750µL | R,S,T,U |
| W810050 | 815 | 800µL | R,S,T,U |
| W810052 | 815 | 900µL | R,S,T,U |
| W810054 | 815 | 1000µL | R,S,T,U |
| W810056 | 835F | 2mL | V,X,Y |
| W810058 | 835F | 2.5mL | X,Y |
| W810060 | 835F | 5mL | X,Y |
| W810062 | 835F | 10mL | W |
| W810300 | 825 | 0.2-2µL | A,B,E,F,G |
| W810300-XS | 826 | 0.2-2µL | A,B,E,F,G |
| W810302 | 825 | 0.5-10µL | A,B,E,F,G |
| W810302-XS | 826 | 0.5-10µL | A,B,E,F,G |
| W810304 | 825 | 1-10Yµl | I,J,K,L,M,N,O |
| W810304-XS | 826 | 1-10Yµl | I,J,K,L,M,N,O |
| W810306 | 825 | 2-20µL | I,J,K,L,M,N,O |
| W810306-XS | 826 | 2-20µL | I,J,K,L,M,N,O |
| W810308 | 825 | 5-50µL | H,I,J,K,L,M,N,O |
| W810308-XS | 826 | 5-50µL | H,I,J,K,L,M,N,O |
| W810310 | 825 | 10-100µL | H,I,J,K,L,M,N,O |

| Cat. No. | Model | Volume | Tip Ref. |
|---|---|---|---|
| W810310-XS | 826 | 10-100µL | H,I,J,K,L,M,N,O |
| W810312 | 825 | 20-200µL | I,J,K,L,M,N,O |
| W810312-XS | 826 | 20-200µL | I,J,K,L,M,N,O |
| W810314 | 825 | 100-1000µL | R,S,T,U |
| W810314-XS | 826 | 100-1000µL | R,S,T,U |
| W810315 | 835 | 0.2-2mL | V,X,Y |
| W810316 | 835 | 0.5-5mL | X,Y |
| W810318 | 835 | 1-10mL | W |
| W810600 | 855 | 0.5-10µL | A,B,E,F,G |
| W810602 | 855 | 5-50µL | H,I,J,K,L,M,N,O |
| W810603 | 855 | 20-200µL | I,J,K,L,M,N,O |
| W810604 | 855 | 40-350µL | N,O,P,Q |
| W810606 | 855 | 0.5-10µL | A,B,E,F,G |
| W810608 | 855 | 5-50µL | H,I,J,K,L,M,N,O |
| W810609 | 855 | 20-200µL | I,J,K,L,M,N,O |
| W810610 | 855 | 40-350µL | N,O,P,Q |
| W851180-2 | 852 | 1-10µL | A,B,E,F,G |
| W810900 | 925 | 0.5-10µL | A,B,E,F,G |
| W810902 | 925 | 2.5-50µL | H,I,J,K,L,M,N,O |
| W810916 | 935 | 0.25-5mL | X,Y |
| W810916-A | 935 | 0.25-5mL | X,Y |
| W810918 | 935 | 0.5-10mL | W |
| W810918-A | 935 | 0.5-10mL | W |
| W810924 | 955 | 0.5-10µL | A,B,E,F,G |
| W810924-A | 955 | 0.5-10µL | A,B,E,F,G |
| W810926 | 955 | 2.5-50µL | H,I,J,K,L,M,N,O |
| W810926-A | 955 | 2.5-50µL | H,I,J,K,L,M,N,O |
| W810930 | 955 | 0.5-10µL | A,B,E,F,G |
| W810930-A | 955 | 0.5-10µL | A,B,E,F,G |
| W810932 | 955 | 2.5-50µL | H,I,J,K,L,M,N,O |
| W810932-A | 955 | 2.5-50µL | H,I,J,K,L,M,N,O |
| W810934 | 955 | 20-350µL | N,O,P,Q |
| W810934-A | 955 | 20-350µL | N,O,P,Q |
| W820015 | 925 | 0.5-10µL | A,B,E,F,G |
| W820016 | 925 | 2.5-50µL | H,I,J,K,L,M,N,O |
| W820017 | 925 | 10-200µL | I,J,K,L,M,N,O |
| W820024 | 935 | 0.25-5mL | X,Y |
| W820025 | 935 | 0.5-10mL | W |
| W820026 | 955 | 0.5-10µL | A,B,E,F,G |
| W820027 | 955 | 2.5-50µL | H,I,J,K,L,M,N,O |
| W820028 | 955 | 20-350µL | N,O,P,Q |
| W820029 | 955 | 0.5-10µL | A,B,E,F,G |
| W820030 | 955 | 2.5-50µL | H,I,J,K,L,M,N,O |
| W820031 | 955 | 20-350µL | N,O,P,Q |
| W870012 | 926 | 0.1-2µL | A,B,E,F,G |
| W870014 | 926 | 0.5-10µL | A,B,E,F,G |
| W870016 | 926 | 0.5-10Yµl | I,J,K,L,M,N,O |
| W870018 | 926 | 1-20µL | I,J,K,L,M,N,O |
| W870020 | 926 | 2.5-50µL | H,I,J,K,L,M,N,O |
| W870022 | 926 | 5-100µL | H,I,J,K,L,M,N,O |
| W870024 | 926 | 10-200µL | I,J,K,L,M,N,O |
| W870026 | 926 | 50-1000µL | R,S,T,U |
| W870112 | 926 | 0.1-2µL | A,B,E,F,G |
| W870114 | 926 | 0.5-10µL | A,B,E,F,G |
| W870116 | 926 | 0.5-10Yµl | I,J,K,L,M,N,O |
| W870118 | 926 | 1-20µL | I,J,K,L,M,N,O |
| W870120 | 926 | 2.5-50µL | H,I,J,K,L,M,N,O |
| W870122 | 926 | 5-100µL | H,I,J,K,L,M,N,O |
| W870124 | 926 | 10-200µL | I,J,K,L,M,N,O |

| Cat. No. | Model | Volume | Tip Ref. |
|---|---|---|---|
| W870126 | 926 | 50-1000µL | R,S,T,U |
| W870128 | 936 | 0.1-2mL | V,X,Y |
| W870130 | 936 | 0.25-5mL | X,Y |
| W870132 | 936 | 0.5-10mL | W |
| W870134 | 956 | 0.5-10µL | A,B,E,F,G |
| W870136 | 956 | 2.5-50µL | H,I,J,K,L,M,N,O |
| W870138 | 956 | 10-200µL | I,J,K,L,M,N,O |
| W870140 | 956 | 20-350µL | N,O,P,Q |
| W870142 | 956 | 0.5-10µL | A,B,E,F,G |
| W870144 | 956 | 2.5-50µL | H,I,J,K,L,M,N,O |
| W870146 | 956 | 10-200µL | I,J,K,L,M,N,O |
| W870148 | 956 | 20-350µL | N,O,P,Q |
| W870902 | 926 | 0.1-2µL | A,B,E,F,G |
| W870902-A | 926 | 0.1-2µL | A,B,E,F,G |
| W870904 | 926 | 0.5-10µL | A,B,E,F,G |
| W870904-A | 926 | 0.5-10µL | A,B,E,F,G |
| W870906 | 926 | 0.5-10Yµl | I,J,K,L,M,N,O |
| W870906-A | 926 | 0.5-10Yµl | I,J,K,L,M,N,O |
| W870908 | 926 | 1-20µL | I,J,K,L,M,N,O |
| W870908-A | 926 | 1-20µL | I,J,K,L,M,N,O |
| W870910 | 926 | 2.5-50µL | H,I,J,K,L,M,N,O |
| W870910-A | 926 | 2.5-50µL | H,I,J,K,L,M,N,O |
| W870912 | 926 | 5-100µL | H,I,J,K,L,M,N,O |
| W870912-A | 926 | 5-100µL | H,I,J,K,L,M,N,O |
| W870914 | 926 | 10-200µL | I,J,K,L,M,N,O |
| W870914-A | 926 | 10-200µL | I,J,K,L,M,N,O |
| W870916 | 926 | 50-1000µL | R,S,T,U |
| W870916-A | 926 | 50-1000µL | R,S,T,U |
| W870918 | 936 | 0.1-2mL | V,X,Y |
| W870918-A | 936 | 0.1-2mL | V,X,Y |
| W870920 | 936 | 0.25-5mL | X,Y |
| W870920-A | 936 | 0.25-5mL | X,Y |
| W870922 | 936 | 0.5-10mL | W |
| W870922-A | 936 | 0.5-10mL | W |
| W870924 | 956 | 0.5-10µL | A,B,E,F,G |
| W870924-A | 956 | 0.5-10µL | A,B,E,F,G |
| W870926 | 956 | 2.5-50µL | H,I,J,K,L,M,N,O |
| W870926-A | 956 | 2.5-50µL | H,I,J,K,L,M,N,O |
| W870928 | 956 | 10-200µL | I,J,K,L,M,N,O |
| W870928-A | 956 | 10-200µL | I,J,K,L,M,N,O |
| W870930 | 956 | 20-350µL | N,O,P,Q |
| W870930-A | 956 | 20-350µL | N,O,P,Q |
| W870932 | 956 | 0.5-10µL | A,B,E,F,G |
| W870932-A | 956 | 0.5-10µL | A,B,E,F,G |
| W870934 | 956 | 2.5-50µL | H,I,J,K,L,M,N,O |
| W870934-A | 956 | 2.5-50µL | H,I,J,K,L,M,N,O |
| W870936 | 956 | 10-200µL | I,J,K,L,M,N,O |
| W870936-A | 956 | 10-200µL | I,J,K,L,M,N,O |
| W870938 | 956 | 20-350µL | N,O,P,Q |
| W870938-A | 956 | 20-350µL | N,O,P,Q |



# How To Use a Pipette

## Abstract

Pipettors are precision tools that, when used properly, will provide years of trouble-free service. However, many users do not receive training to use this common laboratory utensil.

## Procedure

Socorex® Pipettors are precision tools that will help you efficiently perform your research and testing tasks. Like any tools, your pipettor should be used and stored with care to provide the best possible results.

The information below applies to Socorex Pipettors as well as other manufacturers' pipettors. All air displacement pipettors work on the same principle. A plunger is used to displace air- when the plunger is returned to its initial position (upper stop), it creates a vacuum that is used to draw liquid into the disposable tip. The pipette is calibrated such that the vacuum draws a volume of water as indicated on the volume setting. Liquids lighter than water are pulled further into the tip, so these liquids will pipette to a larger volume. Similarly, liquids heavier than water pipette to a lesser volume. In the case of either lighter or heavier liquids, compared with water, the volume dispensed will be different than that indicated on the pipettor. Pushing the plunger pushes air, which then pushes on the liquid in the tip, which is dispensed.

It is important that you use approved tips with your pipettors to assure accuracy. Using unapproved tips may lead to inconsistent results.

## Normal Pipetting

1. Fit the tip, set the volume (variable pipettors only) and press down the plunger to the first stop (metering stroke) with your thumb. Immerse the tip 2-3mm in the sample while holding the pipettor vertically.
2. Slowly retract the pipetting plunger while watching the liquid fill the tip. You should not observe bubbles or turbulence, which indicate gasses being pulled from the liquid. These gasses affect the vacuum that draws the liquid, reducing the amount of liquid aspirated into the pipet tip.
3. When the pipetting plunger has been retracted to its upper stop, remove your thumb as the absence of pressure increases the precision of the pipettor. Slowly withdraw the pipettor from the liquid. Wipe any drops on the outside of the tip on the wall of the vessel you are drawing liquid from.
4. To dispense the liquid, hold the tip against the side of the receiving container at a slight angle. Use your thumb to push down the pipetting plunger to the first stop, and hold it for one second. After one second, push the button to the second stop. Pushing to the second stop blows out any liquid left in the tip.

For work with volatile solvents, such as methanol, you may perform this procedure on a "dummy" sample to saturate the system with vapor. This may improve accuracy, as pre-saturating the air will reduce the tendency to "blow out" the liquid before you are ready to dispense the sample. You should saturate the tip in this fashion every time you change tips.

## Reverse Pipetting

Reverse pipetting is used to aspirate an additional volume of liquid. This technique is useful when working with thick, viscous liquids. This is also useful for volatile solvents.

1. Press the pipetting plunger with your thumb to the second stop. This is different from the procedure listed for normal pipetting.
2. Holding the pipettor vertically, slowly retract the plunger to its upper stop. Wait for the liquid to properly fill the tip. With viscous liquids, this will take longer than when pipetting water. A larger amount of liquid will be aspirated than normal operation since the plunger was pushed to the second stop.
3. When dispensing, push the plunger only as far as the first stop. Wipe any liquid hanging on the tip on the side of the receiving container. Any remaining liquid will be discarded with the tip.

## Working Position

When aspirating the sample, the pipettor must be held vertically, or else too much liquid will be drawn in. Tilting the pipettor by 30 degrees causes nearly 1% more liquid to be drawn!

When dispensing the sample, the tip should be held at an angle against the container to draw out the liquid in the tip. Under normal pipetting operations, analytical chemists will recognize the pipettor as a "to contain" pipettor.

When aspirating the sample, the tip should generally be immersed to 2-3mm. Placing the tip deeper into the sample allows pressure from the liquid to help push the sample into the tip, reducing accuracy.

## Working Conditions

Under ideal conditions, the sample should have the same temperature used to calibrate the pipettor. Cold liquids are denser than warm liquids. If the pipettor was calibrated at room temperature, but used in a cold-room, smaller samples than expected would be dispensed.

## Storage

Pipettors should be stored in an appropriate rack or stand. This reduces the risk of scratching or damaging the nose cone. Damage to the nose cone could result in a poor seal to the pipet tip, which will reduce accuracy.

## Testing & Calibration

You should periodically check the operation of your pipettor by checking its calibration. Socorex air-displacement pipettors are warranted for calibration for 2 years. Under modern quality management such as GLP / GMP, ISO-9000 or regulatory requirements, you should test your pipettors' calibration. If a pipettor is dropped, or you suspect any type of damage, you should check the calibration.

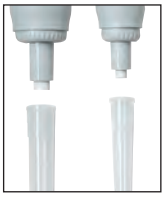
Testing is generally performed gravimetrically, using an analytical balance. Calibration is usually done at room temperature, away from drafts or direct sunlight. The actual calibration details vary between pipettors and are listed in the instructions.

## Smartie Caps - Color Coding for Easy Identification

All Acura® pipettes have color-coded button caps for individual, lab or department identifications. Pick among 14 colors or choose the smartie mix for other color combinations.

| Cat. No. | Color | Cat. No. | Color |
|---|---|---|---|
| **Smarties Button Caps (6/pack)** | | | |
| W820000 | White | W820007 | Rose |
| W820001 | Grey | W820008 | Pink |
| W820002 | Vanilla | W820009 | Purple |
| W820003 | Lemon | W820010 | Ice Blue |
| W820004 | Yellow | W820011 | Blue |
| W820005 | Orange | W820012 | Mint |
| W820006 | Red | W820013 | Green |
| **Smartie Assortment (14/pack)** | | | |
| W820014 | Assorted colors (one of each above) | | |

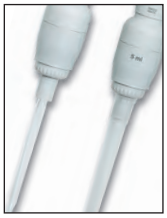
## Nozzle Filters for Macropipettes



Add protection against liquid overfill or pipette contamination. Filters are interchangeable, non-sterile and non-autoclavable. Fits Socorex macro

| Cat. No. | Fits | Material | Qty / Bag |
|---|---|---|---|
| 851341 | Calibra® *manual* 832, 2mL | Cellulose | 250 |
| W851342 | Acura® *manual* 835, 2 and 5mL<br>Acura® *electro* 935, 5mL | PP fibers | 250 |
| 851346 | Calibra® *digital* 832, 10mL<br>Acura® *electro* 935, 10mL<br>Acura® *manual* 835, 10mL | PP fibers | 100 |

## Pasteur Pipette Adapter



PVDF adapter fits pipette nozzle to accommodate standard glass Pasteur pipettes. The adapter has two FPM O-rings guaranteeing proper holding and tightness of standard glass 2mL Pasteur Pipettes.

| Cat. No. | Description | Qty / Pack |
|---|---|---|
| W820125 | For model 832 and 835, 2mL | 1 |
| W820023 | For model 835, 5mL | 1 |

### Disposable Glass Pasteur Pipettes

| Cat. No. | Overall Length (mm) | Tip Length (mm) | Body Length (mm) | Shelf Pack | Qty / Case |
|---|---|---|---|---|---|
| W357331 | 150 | 45 | 101 | 250 | 1000 |
| W357335 | 230 | 108 | 120 | 250 | 1000 |

## Twister™ Pipette Stand, Model 336


| Cat. No. | Color | Qty / Pack |
|---|---|---|
| W870152 | Blue | 1 |
| W870154 | Green | 1 |
| W870156 | Orange | 1 |
| W870158 | Grey | 1 |
| W870160 | Red | 1 |
| W870162 | White | 1 |
| W870164 | Yellow | 1 |

## Work Stations, Models 337 & 340


337

340

| Cat. No. | Color | Qty / Pack |
|---|---|---|
| **Universal 7 Pipette Work Station, Model 337** | | |
| W851354 | Ice blue | 1 |
| W851356 | Mint green | 1 |
| W851359 | Vanilla yellow | 1 |
| W851360 | Pastel rose | 1 |
| W851361 | Light grey | 1 |
| **3 Pipette Work Station, Model 340** | | |
| W851369 | Light grey | 1 |

## Shelf Pipette Holder, Model 332

| Cat. No. | Color | Qty / Pack |
|---|---|---|
| **Shelf Pipette Holder, Model 332** | | |
| W844131 | Transparent blue | 1 |
| W844132 | Transparent blue | 4 |

## Silicone Grease for *manual* Pipettes

| Cat. No. | Description | Qty / Pack |
|---|---|---|
| W810624 | 1 gram Tube | 5 |
| W810626 | 10 gram Tube | 1 |

## Acurex™ *compact* 501 Low Profile Dispensers

Compact dispensers for safe reagent handling, adapted to refrigerator storage as well as water bath heating. Dosing mechanism entirely protected inside reservoir. Manufactured and tested to fully comply with the latest regulations on instrument safety and precision. Volumes range from 0.2 to 30mL.


**501**
0.2 - 2mL
0.4 - 5mL
1 - 10mL
1 - 30mL

## Product Advantages

- Integrated dosing mechanism
- Simple, robust construction
- Retractable graduated column reduces instrument height
- Fluid path materials excluding any metal
- Choice of four reservoir sizes
- Fully autoclavable at 121°C/250 °F
- Two-year warranty

For Chemical Compatibility see page 137.





### Space Saving Low Profile ❶ ❷

The graduated column is retractable for height reduction, making the dispenser ideal for storage in refrigerators.

### Glass Reservoir ❸

Amber glass offers optimal light protection.

### Autoclavable Extension Tubing ❹

PTFE Jet-Pen™ and tubing help dispense into vessels with maximum comfort within a 60 cm distance. For 1 and 2L reservoirs (Cat. No. W844070).

| | | | | | | |
|---|---|---|---|---|---|---|
| 844060 | 0.2 - 2mL | 0.1mL | < 0.5 % | < 0.35 % | < 0.1 % | 250mL |
| W844055 | 0.2 - 2mL | 0.1mL | < 0.5 % | < 0.35 % | < 0.1 % | 1000mL |
| W844056 | 0.2 - 2mL | 0.1mL | < 0.5 % | < 0.35 % | < 0.1 % | 2000mL |
| 844062 | 0.4 - 5mL | 0.2mL | < 0.5 % [1] | < 0.35 % | < 0.1 % | 500mL |
| W844057 | 0.4 - 5mL | 0.2mL | < 0.5 % [1] | < 0.35 % | < 0.1 % | 1000mL |
| W844058 | 0.4 - 5mL | 0.2mL | < 0.5 % [1] | < 0.35 % | < 0.1 % | 2000mL |
| 844064 | 1 - 10mL | 0.2mL | < 0.5 % | < 0.35 % | < 0.1 % | 1000mL |
| W844059 | 1 - 10mL | 0.2mL | < 0.5 % | < 0.35 % | < 0.1 % | 2000mL |
| 844068 | 1 - 30mL | 1.0mL | < 0.5 % [2] | < 0.35 % | < 0.1 % | 2000mL |

Performance values obtained with double-distilled water at constant temperature (± 0.5°C) comprised between 20 and 25°C in accordance with ISO 8655. [1] at 0.5mL [2] at 3mL

## Chemically Inert Materials

All parts in contact with the liquid are made from chemically inert materials:

| Parts | Materials |
|---|---|
| Valve | Pyrex® Glass and Synthetic Ruby |
| Barrel | Neutral Glass |
| Plunger | PTFE Coated Glass |
| Reservoir | Amber Glass |
| Delivery jet and union | PVDF / FEP / PFA |

## Acurex™ 501 Accessories

| Cat. No. | Description | Bottle Taper Size | Qty |
|---|---|---|---|
| W844070 | PTFE Jet Pen™ Extension Tubing | — | 1 |
| 844082 | Replacement 250mL Amber Glass Reservoir | 34 / 22 | 1 |
| 844086 | Replacement 1000mL Amber Glass Reservoir | 60 / 46 | 1 |
| 844088 | Replacement 2000mL Amber Glass Reservoir | 60 / 46 | 1 |

## Calibrex™ *universal* 520 Bottle Top Dispensers

Designed for performance handling of liquids from a large variety of bottles and flasks, the Calibrex™ dispensers combine the latest in dosing technology, high-tech materials and ergonomic design. They are manufactured and tested to fully comply with current safety regulations. Three color-coded 520-models with adjustable volumes are available, with ranges of 0.25 - 2mL, 1 - 5mL and 1 - 10mL. Fixed volume dispensers are also available; please contact WHEATON Customer Service.

520

0.25 - 2mL
1 - 5mL
1 - 10mL

## Product Advantages

- Superior chemical resistance
- Long lasting performance stability
- Simple construction - no tool for disassembling
- Instant volume setting
- In-lab calibration
- Autoclavable at 121°C/250°F fully assembled
- Two-year warranty

For Chemical Compatibility see page 137.







### Easy Digital Volume Setting 1 2

Fast and precise volume adjustment. Efficient click-stop mechanism prevents unwanted alteration. Large display is easy to read; the window adjusts to desired side of instrument body. Each step on the cylindrical cam is pre-calibrated and corresponds to one division on the volume adjustment scale.

### Optimized Working Position 3

The instrument rotates 360° for adequate positioning on top of the bottle.

### Air Filter 4

Air inlet can be enlarged to receive a membrane filter, if airborne contamination is a concern.

### In-Lab Calibration 5

Calibrex™ dispensers are factory calibrated and can be easily recalibrated by means of a dedicated adjustment screw.

### Easy Maintenance 6

Disassembling / reassembling is facilitated by the limited number of well-connected parts, no tool needed.

## Performance and Ordering Information - Calibrex™ 520

Calibrex™ 520 dispensers have a 32mm base thread and also fits GPI thread sizes 33-400 and 33-430. They come with three adapters (28, 40, 45mm) and feed tube 300mm.

| | | | Inaccuracy (E%) | | | Imprecision (CV%) | | |
|---|---|---|---|---|---|---|---|---|
| Cat. No. | Volume | Division | Min. Vol. | Mid. Vol. | Max. Vol. | Min. Vol. | Mid. Vol. | Max. Vol. |
| 844000 | 0.25 - 2mL | 0.05mL | < ± 3.0 % | < ± 1.8 % | < ± 0.6 % | < 0.5 % | < 0.35 % | < 0.1 % |
| 844002 | 1 - 5mL | 0.1mL | < ± 2.0 % | < ± 1.3 % | < ± 0.6 % | < 0.5 % | < 0.35 % | < 0.1 % |
| 844004 | 1 - 10mL | 0.25mL | < ± 1.5 % | < ± 1.1 % | < ± 0.6 % | < 0.5 % | < 0.35 % | < 0.1 % |

*Specify desired fixed volume within instrument range when ordering.
Performance values obtained with double-distilled water at constant temperature (± 0.5°C) comprised between 20 and 25°C in accordance with ISO 8655.

## Superior Material Selection

Special attention is paid to component materials, providing for long instrument life. Parts coming in contact with the liquid flow are chemically inert.

| Parts | Material |
|---|---|
| Feed Ttube | PTFE |
| Intake Valve | Ceramic |
| Valve Balls | Pyrex® Glass |
| Valve Spring | Platinum-iridium |
| Barrel | Borosilicate Glass |
| Barrel Plate / Base | PTFE |
| Plunger | Glass with PFA Coating |
| Outlet Valve | Ceramic |
| Body | ETFE |
| Delivery Jet Assembly | PTFE / ETFE |

## Calibrex™ *organo* 525 / *solutae* 530 Bottle Top Dispensers

This new generation of Socorex® Bottle Top Dispensers is intended for the safe and reproducible liquid distribution of volumes up to 25, 50 and 100mL. The Calibrex™ organo 525 includes a ground glass plunger, best suited for organics, non-crystallizing acid and base solutions. The Calibrex™ solutae 530 has a PFA coated plunger preventing the plunger and barrel from seizing together. This enables trouble free distribution of salt solutions, weak and strong acids, as well as bases.

## Product Advantages

525 / 530

- Selection between organo and solutae models for best chemical resistance — 2.5 - 25mL; 5 - 50mL; 10 - 100mL
- Permanent fluid path visibility
- Integrated calibration system
- Choice of adjustment button with each unit
- Long lasting performance stability
- Autoclavable at 121°C / 250°F fully assembled
- Two year warranty





### Choice of Setting Buttons

Spring loaded sliding cursor ❶ softly moves up and down scale and precisely stops at desired graduation. Alternative classical screw button ❷ supplied with each dispenser for easy exchange.

### Color Coding

Yellow for *organo* model best suited for organics, non-crystallizing acid and base solutions. Red for s*olutae* model enabling trouble-free distribution of salt solutions, weak and strong acids, as well as bases.

### Easy in-lab Calibration ❸

Mechanism with integrated key located under plunger cap. Engraved instructions for fast and correct setting. Access protected by seal sticker.

For Chemical Compatibility see page 137.

## Material Selection

Parts in contact with liquid flow are chemically inert, providing for stability and long instrument life.

| Parts | 525 *organo* | 530 *solutae* |
|---|---|---|
| Feed Tube | FEP | |
| Valve | Ceramic | |
| Valve Balls | Ceramic | |
| Valve Springs | Platinium-iridium | |
| Valve Plate | PTFE | |
| Barrel | Borosilicate glass | |
| Plunger | Ground glass | PFA coated glass |
| Body | ETFE | |
| Delivery Jet | FEP/ PCTFE | |
| Stopper | ETFE | |

## Performance and ordering information – Calibrex™ 525 and 530

Supplied with 45 mm base thread, 120mm delivery jet and stopper, 350mm feed tube, alternative screw-type volume setting button, three bottle neck adapters (32, 38 and 40mm), QC certificate and operating instructions.

| Cat. No. | | | | Inaccuracy (E%) | | | Imprecision (CV%) | | |
|---|---|---|---|---|---|---|---|---|---|
| 525 *organo* | 530 *solutae* | Volume | Division | Min. Vol. | Mid. Vol. | Max. Vol. | Min. Vol. | Mid. Vol. | Max. Vol. |
| W845000 | W845016 | 0.1 - 1mL | 0.02mL | < ± 3.0 % | < ± 1.8 % | < ± 0.6 % | < 1.2 % | < 0.70 % | < 0.17 % |
| W845002 | W845018 | 0.25 - 2.5mL | 0.05mL | < ± 2.7 % | < ± 1.6 % | < ± 0.6 % | < 0.9 % | < 0.55 % | < 0.17 % |
| W845004 | W845020 | 0.5 - 5mL | 0.1mL | < ± 2.0 % | < ± 1.3 % | < ± 0.6 % | < 0.5 % | < 0.35 % | < 0.10 % |
| W845006 | W845022 | 1 - 10mL | 0.2mL | < ± 1.5 % | < ± 1.2 % | < ± 0.6 % | < 0.5 % | < 0.35 % | < 0.10 % |
| W844090 | W844102 | 2.5 - 25mL | 0.5mL | < ± 1.5 % | < ± 1.1 % | < ± 0.6 % | < 0.5 % | < 0.35 % | < 0.10 % |
| W844092 | W844104 | 5 - 50mL | 1.0mL | < ± 1.5 % | < ± 1.1 % | < ± 0.6 % | < 0.5 % | < 0.35 % | < 0.10 % |
| W844094 | W844106 | 10 - 100mL | 1.0mL | < ± 1.5 % | < ± 1.1 % | < ± 0.6 % | < 0.5 % | < 0.35 % | < 0.10 % |
| With Flow Control Stopcock | | | | | | | | | |
| W845008 | W845024 | 0.1 - 1mL | 0.02mL | < ± 3.0 % | < ± 1.8 % | < ± 0.6 % | < 1.2 % | < 0.70 % | < 0.17 % |
| W845010 | W845026 | 0.25 - 2.5mL | 0.05mL | < ± 2.7 % | < ± 1.6 % | < ± 0.6 % | < 0.9 % | < 0.55 % | < 0.17 % |
| W845012 | W845028 | 0.5 - 5mL | 0.1mL | < ± 2.0 % | < ± 1.3 % | < ± 0.6 % | < 0.5 % | < 0.35 % | < 0.10 % |
| W845014 | W845030 | 1 - 10mL | 0.2mL | < ± 1.5 % | < ± 1.2 % | < ± 0.6 % | < 0.5 % | < 0.35 % | < 0.10 % |
| W844096 | W844108 | 2.5 - 25mL | 0.5mL | < ± 1.5 % | < ± 1.1 % | < ± 0.6 % | < 0.5 % | < 0.35 % | < 0.10 % |
| W844098 | W844110 | 5 - 50mL | 1.0mL | < ± 1.5 % | < ± 1.1 % | < ± 0.6 % | < 0.5 % | < 0.35 % | < 0.10 % |
| W844100 | W844112 | 10 - 100mL | 1.0mL | < ± 1.5 % | < ± 1.1 % | < ± 0.6 % | < 0.5 % | < 0.35 % | < 0.10 % |

*Performance values obtained by a smooth and steady pace movement, with bidest. water at constant temperature (± 0.5°C) comprised between 20°C and 25°C, according to EN ISO 8655. Omission to untighten connecting body ring before autoclaving, and/or over-tightening ring when dispensing, may reduce performance.

# Calibrex™ Accessories

## Work Stations

### Dispenser Stability

Stand holds dispenser up to 50mL, when screwed on small-size bottles.

### Bulk Container Aspiration

Work station facilitates liquid intake from drum or other remote container (< 10m distance, < 2m elevation).

## Ordering Information

| Cat. No. | Description | Qty / Pack |
|---|---|---|
| W832026 | Stand for Calibrex 520 Dispensers* | 1 |
| W832028 | Stand for remote liquid intake, Calibrex 520* | 1 |
| W832030 | Stand for remote liquid intake, Calibrex 535, 530* | 1 |
| W844136 | Stand for Calibrex 525, 530 Dispensers* | 1 |

* Dispenser and feed tube not included, to be ordered separately

## Delivery Jets

| Cat. No. | Description | Qty / Pack |
|---|---|---|
| W844116 | Standard Length (120cm) Delivery Jet for 25mL Calibrex 525, 530 Dispensers | 1 |
| W844118 | Standard Length (120cm) Delivery Jet for 50 & 100mL Calibrex 525, 530 Dispensers | 1 |
| W844120 | Extended Length (150cm) Delivery Jet for 25mL Calibrex 525, 530 Dispensers | 1 |
| W844122 | Extended Length (150cm) Delivery Jet for 50 & 100mL Calibrex 525, 530 Dispensers | 1 |

### Extension Tubing

Autoclavable PTFE delivery Jet-Pen™ and extension tubing help dispense into vessels with maximum comfort within a 60cm distance. Fits Calibrex™ Model 520 dispenser up to 20mL. Also fits Calibrex Models 525 / 530.

### Feed Tubing

Each Calibrex™ *digital* dispenser is supplied with one PTFE feed tubing. Spare feed tubings are available either cut to the standard size, or uncut by the meter. The latter is also recommended when aspirating from remote bulk containers.

| Cat. No. | Description | Length (mm) | Inside Dia. (mm) |
|---|---|---|---|
| **Extension and Replacement PTFE Tubing** | | | |
| 844024 | Ext. Tubing for Calibrex 520 Dispensers up to 20mL | 600 | 2.2 |
| W844149 | Ext. Tubing for Calibrex 525/530 Dispensers, 2.5-25mL | 600 | 2.2 |
| W844150 | Ext. Tubing for Calibrex 525/530 Dispensers, 5 - 50mL and 10 - 100mL | 600 | 2.2 |
| I051154 | Replacement Feed Tubing, 520 All Sizes | 300 | 5 |
| W844124 | Replacement Feed Tubing, 525 and 530 | 350 | 7 |
| W844126 | Replacement Feed Tubing, 525 and 530 | 1000 | 7 |

## Reagent Bottles

Large selection of glass and Polyethylene reagent bottles, each supplied with one screw cap. Perfectly adapted with Calibrex™ bottle top dispensers. Corresponding neck adapters supplied with the dispensers.

| Cat. No. | Shape | Volume | Screw Thread Size | Qty / Case |
|---|---|---|---|---|
| **Amber Soda-lime Glass** | | | | |
| W832000 | Square | 100mL | 32mm | 1 |
| 844025 | Square | 250mL | 32mm | 1 |
| W844028 | Square | 500mL | 32mm | 1 |
| 844029 | Square | 1000mL | 45mm | 1 |
| 844030 | Round | 2500mL | 45mm | 1 |
| **Amber Soda-lime Glass with Handle** | | | | |
| W832004 | Round | 2500mL | 45mm | 1 |
| **Polyethylene Coated Amber Soda-lime Glass** | | | | |
| 844027 | Square | 500mL | 32mm | 1 |
| W832006 | Square | 1000mL | 45mm | 1 |
| W832008 | Round | 2500mL | 45mm | 1 |
| **Clear Borosilicate Glass with Graduations** | | | | |
| W832010 | Round | 250mL | 45mm | 1 |
| W832012 | Round | 500mL | 45mm | 1 |
| W832014 | Round | 1000mL | 45mm | 1 |
| W832016 | Round | 2000mL | 45mm | 1 |
| **Clear Pyrex® Glass with Connection Neck** | | | | |
| 844026 | Round | 500mL | 32 mm | 1 |
| **Polyethylene Bottle, HDPE** | | | | |
| W832018 | Oblong | 250mL | 25mm | 1 |
| W832022 | Square | 1000mL | 32mm | 1 |
| W832024 | Square | 2500mL | 45mm | 1 |

## Bottle-Top Adapters

The 520 model have a 32mm base thread. They come along with three Polypropylene bottle neck adapters in 28, 40, 45mm diameters (Model 520). These adapters and others are available separately.

| Cat. No. | Fits Bottle Thread Size (mm) | Qty / Case |
|---|---|---|
| **Threaded, PP** | | |
| W830000 | 22 | 1 |
| 844032 | 28 | 1 |
| W830006 | 34 | 1 |
| W830008 | 36 | 1 |
| 844035 | 38 | 1 |
| W830010 | 40 | 1 |
| 844038 | 45 | 1 |
| **Threaded, PTFE** | | |
| W830014 | 38 | 1 |
| W830016 | 40 | 1 |
| W830018 | 45 | 1 |

| Cat. No. | Fits Bottle Taper Size (mm) | Qty / Case |
|---|---|---|
| **Tapered, PP** | | |
| W830020 | 19/26 | 1 |
| W830024 | 29/32 | 1 |
| W830026 | 45/40 | 1 |
| **Tapered, PTFE** | | |
| W830029 | 19/26 | 1 |
| W830031 | 24/29 | 1 |
| W830032 | 29/32 | 1 |

| Reagents | 501 | 520 | 525 | 530 |
|---|---|---|---|---|
| Acetaldehyde (Ethanal) | | | A | A |
| Acetic acid 96% | | | A | B/2 |
| Acetic acid 100% (glacial) | A | A | B/4 | B/2/4 |
| Acetic anhydride | B/4 | B/4 | B/4 | B/4 |
| Acetone (Propanone) | A | B/4 | B/4 | B/4 |
| Acetonitrile (MECN) | A | A | B/4 | B/4 |
| Acetophenone | | | B/4 | B/2/4 |
| Acetyl Chloride | | | B/4 | B/2/4 |
| Acetylacetone | | | A | A |
| Acrylic acid | | | A | A |
| Acrylonitrile | | | B/4 | B/4 |
| Adipic acid | | | C/1 | A |
| Allyl alcohol | | | A | A |
| Aluminum chloride | | | C/1 | A |
| Amino acids | | | C/1 | A |
| Ammonia 20% | | | B/4 | B/4 |
| Ammonia 20-30% | | | B/4 | B/4 |
| Ammonium chloride | | | C/1 | A |
| Ammonium fluoride | | | C/1 | A |
| Ammonium hydroxide | A | A | | |
| Ammonium molybdate | A | A | C/1 | A |
| Ammonium sulfate | | | C/1 | A |
| Amyl alcohol (Pentanol) | | | A | A |
| Amyl chloride (Chloropentane) | | | B/4 | B/2/4 |
| Aniline | A | A | A | A |
| Antimony trichloride | B/2 | A | | |
| Ascorbic acid | A | A | C/1 | A |
| n-Amyl acetate | | | B/4 | B/4 |
| Barium chloride | | | C/1 | A |
| Benzaldehyde | A | A | A | A |
| Benzene | A | B/4 | B/4 | B/4 |
| Benzine | | | A | A |
| Benzoyl chloride | | | B/4 | B/4 |
| Benzyl alcohol | | | A | A |
| Benzyl chloride | | | B/4 | B/4 |
| Bis(2-ethylhexyl) phthalate | A | B/4 | B/4 | B/4 |
| Boric acid 10% | | | B/1 | A |

| Reagents | 501 | 520 | 525 | 530 |
|---|---|---|---|---|
| Boric acid | A | A | | |
| Bromine | B/2 | B/2 | C/4 | C/2/4 |
| Bromobenzene | | | B/4 | B/4 |
| Bromonaphtalene | | | A | A |
| Butanediol | | | B/1 | A |
| Butanol | A | A | A | A |
| Butanone (MEK) | A | B/4 | B/4 | B/4 |
| Butyl acetate | A | A | B/4 | B/4 |
| Butyl acrylate | A | A | | |
| Butyl methyl ether | | | B/4 | B/4 |
| Butylamine | | | B/4 | B/4 |
| Butyric acid | | | B/4 | B/4 |
| Calcium carbonate | | | C/1 | B/1 |
| Calcium chloride | B/1 | A | C/1 | A |
| Calcium hydroxide | | | C/1 | B/1 |
| Calcium hypochlorite | | | C/1 | B/1 |
| Carbon disulfide | A | A | B/4 | B/4 |
| Carbon tetrachloride | A | A | B/4 | B/4 |
| Chlorine dioxide | | | B/4 | B/2/4 |
| Chlorine water | C/2/4 | B/2/4 | | |
| Chloro naphthalene | | | B/4 | B/4 |
| Chloroacetaldehyde 45% | | | B/1 | A |
| Chloroacetic acid | | | B/1 | A |
| Chloroacetone | | | B/4 | B/4 |
| Chlorobenzene | A | A | B/4 | B/4 |
| Chlorobutane | A | A | B/4 | B/4 |
| Chloroethanol | A | A | B/4 | B/4 |
| Chloroform | B/4 | B/4 | B/4 | B/4 |
| Nitro-hydrochloric acid (Aqua regia) | | | B/4 | B/2/4 |
| Chloronitric acid 100% | B/2/3 | B/3 | | |
| Chlorosulfuric acid | | | B/4 | B/4 |
| Chlorosulfuric acid 100% | B/2/3 | B/3 | B/3/4 | B/3/4 |
| Chromic acid 100% | B/2/3 | B/3 | B/3/4 | B/3/4 |
| Chromosulfuric acid 100% | A | A | C/1/3/4 | B/2/3/4 |
| Citric acid | | | B/1 | A |
| Copper fluoride | A | A | C/1 | B/1 |
| Copper sulfate | | | C/1 | A |

**Code explanations (501 / 520)**

A = Good resistance
B = Acceptable with limitations
C = Not recommended

1 = Possible crystallisation - blockage (do not let dry plunger/barrel together).
2 = Swell of plunger protection layer, possible peeling.
3 = Acid vapours (better resistance with lower concentration). Do not leave instrument on bottle.
4 = Risk of softening or discoloration of external parts through vapours. Do not leave instrument on bottle.
5 = Chemical degradation of glass parts (plunger/barrel).

**Code explanations (525 / 530)**

A = Good resistance
B = Acceptable with limitations
C = Not recommended

1 = Possible crystallisation - blockage or possible coating peeling (do not let dry plunger/barrel together).
2 = Swell of plunger protection layer, possible peeling.
3 = Acid vapours (better resistance with lower concentration). Do not leave instrument on bottle.
4 = Risk of damage, softening or discoloration of external parts through vapours. Do not leave instrument on bottle.
5 = Chemical degradation of glass parts (plunger/barrel).

| Reagents | 501 | 520 | 525 | 530 |
|---|---|---|---|---|
| Cresol | | | B/1 | A |
| Cumene (Isopropylbenzene) | | | B/4 | B/4 |
| Cyanoacrylate | C/1 | C/1 | C/1 | C/1 |
| Cyclohexane | A | A | B/4 | B/4 |
| Cyclohexanone | A | A | B/4 | B/4 |
| Cyclopentane | | | B/4 | B/4 |
| 1,2-Diethylbenzene | | | B/4 | B/4 |
| 1,4-Dioxane (Diethylene dioxide) | | | B/4 | B/4 |
| 1-Decanol | | | A | A |
| Decane | | | A | A |
| Di-(2-ethylhexyl) peroxydicarbonate | B/1 | B/4 | B/4 | B/4 |
| Dibenzyl ether | | | B/4 | B/4 |
| Dichloroacetic acid | | | A | A |
| Dichlorobenzene | | | A | A |
| Dichloroethane | B/4 | B/4 | A | A |
| Dichloroethylene | | | B/4 | B/4 |
| Diesel oil (Heating oil) | | | A | A |
| Diethanolamine | | | A | A |
| Diethylamine | | | B/4 | B/4 |
| Diethylene glycol | A | A | A | A |
| Diethylether | A | A | B/4 | B/4 |
| Dimethyl sulfoxide (DMSO) | A | A | B/1/4 | B/4 |
| Dimethylaniline | | | A | A |
| Dimethylformamide (DMF) | A | B/4 | B/4 | B/4 |
| Dioxane /Diethylene dioxide | A | A | | |
| Dioxide chlorine | B/2/4 | B/2/4 | | |
| Diphenyl ether | | | B/1/4 | B/4 |
| Ethanol | A | A | A | A |
| Ethanolamine | | | B/4 | B/4 |
| Ether | A | B/4 | B/4 | B/4 |
| Ethyl acetate | A | A | B/4 | B/4 |
| Ethylbenzene | | | B/4 | B/4 |
| Ethylene chloride | | | B/4 | B/4 |
| Ethylene diamine | A | A | A | A |
| Ethylene glycol | A | A | A | A |
| Fluoroacetic acid | | | B/1/4 | B/4 |
| Formaldehyde (Formalin) | A | A | A | A |
| Formamide | | | A | A |
| Formic acid | A | A | A | A |
| Gamma-butyrolactone | A | A | A | A |
| Gasoline | A | A | B/4 | B/4 |
| Glycerin <40% | A | A | A | A |
| Glycolic acid 50% | | | B/1 | A |
| Heating oil (Diesel oil) | | | A | A |
| Heptane | A | A | A | A |
| Hexane | A | A | A | A |

| Reagents | 501 | 520 | 525 | 530 |
|---|---|---|---|---|
| Hexanoic acid | | | B/1 | A |
| Hexanol | | | A | A |
| Hydriodic acid | | | B/4 | B/4 |
| Hydrobromic acid | | | A | A |
| Hydrochloric acid 20% (HCl) | | | A | A |
| Hydrochloric acid 37% (HCl) | B/2/3 | A | B/3 | B/3 |
| Hydrofluoric acid (HF) | C/5 | C/5 | C/5 | C/5 |
| Hydrogen peroxide | A | A | A | B/2 |
| Iodine | A | A | C/1 | B/1 |
| Iodine bromide | C/2/4 | C/2/4 | C/4 | C/2/4 |
| Iodine chloride | C/2/4 | C/2/4 | C/4 | C/2/4 |
| Isoamyl alcohol | | | A | A |
| Isobutanol | | | A | A |
| Isooctane | A | A | A | A |
| Isopropanol | A | A | A | A |
| Isopropyl ether | | | B/4 | B/4 |
| Iso-propylamine | A | A | B/4 | B/4 |
| Lactic acid | A | A | C/1 | A |
| Liquid ammonia | A | A | | |
| 2-Methoxyethanol | A | A | A | A |
| Methanol | A | A | A | A |
| Methoxybenzene (Anisol) | | | B/4 | B/4 |
| Methyl benzoate | | | B/1/4 | B/4 |
| Methyl chloride (Chloromethane) | A | A | B/4 | B/4 |
| Methyl ethyl ketone (MEK) | A | B/4 | | |
| Methyl formate | | | A | A |
| Methyl iodide (Iodomethane) | A | A | B/4 | B/4 |
| Methyl methacrylate (MMA) | A | A | B/4 | B/4 |
| Methyl propyl ketone (2-Pentanone) | | | A | A |
| Methyl tert-butyl ether | | | B/4 | B/4 |
| Methylene chloride (Dichloromethane) (DCM) | A | B/2/4 | B/4 | B/2/4 |
| Methylpentanone | B/4 | B/4 | A | A |
| Mineral oil (engine oil) | | | A | A |
| Monochloroacetic acid | | | B/1 | A |
| N-Butylamine | B/4 | B/4 | B/4 | B/4 |
| Nitric acid 100% | B/2/3 | B/3 | C/3/4 | C/2/3/4 |
| Nitric acid 30-70% | | | B/4 | B/2/4 |
| Nitric acid dil. <30% | A | A | B/4 | B/4 |
| Nitrobenzene | | | B/4 | B/4 |
| Nitromethane | A | B/4 | B/4 | B/4 |
| N-methyl-2-pyrrolidone (NMP) | A | A | A | A |
| Octane | A | A | A | A |
| Octanol | A | A | A | A |
| Oil (vegetable, animal) | A | A | B/4 | B/4 |
| Oil of turpentine | | | B/4 | B/4 |

| Reagents | 501 | 520 | 525 | 530 |
|---|---|---|---|---|
| Oleic acid | | | B/1 | A |
| Oxalic acid | A | A | C/1 | A |
| Pentane | B/4 | B/4 | B/4 | B/4 |
| Peracetic acid | | | A | A |
| Perchloric acid 100% | B/2/3 | B/3 | B/4 | B/4 |
| Perchloric acid diluted | A | A | A | A |
| Perchloroethylene | | | B/4 | B/4 |
| Petrol benzene | A | A | | |
| Petroleum | | | B/4 | B/4 |
| Petroleum ether / spirit | A | A | B/4 | B/4 |
| Phenol | A | A | A | A |
| Phenylethanol | | | B/4 | B/4 |
| Phenylhydrazine | A | A | B/1/4 | B/4 |
| Phosphine | A | A | | |
| Phosphoric acid 100% | A | A | A | A |
| Phosphoric acid 85% | | | A | A |
| Piperidine | | | B/4 | B/4 |
| Potassium chloride | B/1 | A | C/1 | A |
| Potassium dichromate | A | A | C/1 | B/1 |
| Potassium fluoride | C/4/5 | C/4/5 | | |
| Potassium hydroxide | B/1 | B/1 | C/1 | A |
| Potassium iodide | A | A | C/1 | A |
| Potassium permanganate | A | A | C/1 | B/1 |
| Potassium peroxydisulfate (persulfate) | | | C/1 | B/1 |
| Potassium sulfate | | | C/1 | B/1 |
| Propionic acid (Propanoic acid) | | | A | A |
| Propronic acid | A | A | | |
| Propylene glycol (Propane-1,2-diol) | | | A | A |
| Propylene oxide | A | A | A | A |
| Pyric acid (Trinitrophenol) | A | A | B/4 | B/4 |
| Pyridine | B/4 | B/4 | B/4 | B/4 |
| Pyruvic acid | | | B/1 | A |
| Resorcin | B/4 | B/4 | C/1 | A |
| Salicylaldehyde | | | A | A |
| Scintilation fluid | | | A | A |
| Silver acetate | | | C/1 | C/1 |

| Reagents | 501 | 520 | 525 | 530 |
|---|---|---|---|---|
| Silver nitrate | A | B/1 | C/1 | A |
| Sodium acetate | A | A | C/1 | A |
| Sodium chloride (kitchen salt) | B/1 | A | C/1 | A |
| Sodium dichromate | | | C/1 | A |
| Sodium fluoride | | | C/1 | B/1 |
| Sodium hydroxide 30% | | | C/1 | A |
| Sodium hydroxide | B/1 | B/1 | | |
| Sodium hypochlorite | A | A | C/1 | B/4 |
| Sodium thiosulfate | A | A | C/1 | A |
| Sulfochromic acid 100% | B/2/3 | B/2/3 | | |
| Sulfonitric acid 100% | B/2/3 | B/2/3 | B/3/4 | B/2/3/4 |
| Sulfur dioxide | B/4 | B/4 | B/4 | B/4 |
| Sulfuric acid 100% | B/2/3 | B/2 | | |
| Sulfuric acid 98% | | | B/4 | B/2/4 |
| 1,1,2-Trichlortrifluoroethane | B/4 | B/4 | B/4 | B/4 |
| Tartaric acid | | | C/1 | A |
| Terebentine oil | A | A | | |
| Tetrachlorethylene | B/4 | B/4 | B/4 | B/4 |
| Tetrahydrofuran (THF) | B/2/4 | B/2/4 | B/4 | B/2/4 |
| Tetramethylammonium hydroxide | | | C/1/4 | B/4 |
| Tetramin | A | A | | |
| Toluene | A | B/4 | B/4 | B/4 |
| Trichlorethylene | B/4 | B/4 | B/4 | B/4 |
| Trichloroacetic acid | A | A | B/1/4 | B/4 |
| Trichlorobenzene | | | B/4 | B/4 |
| Trichloroethane | | | B/4 | B/4 |
| Trichloromethane (Chloroform) | B/4 | B/4 | B/4 | B/4 |
| Triethanolamine | | | A | A |
| Triethylene glycol | | | A | A |
| Trifluoroacetic anhydride (TFAA) | B/3 | B/3 | B/4 | B/4 |
| Trifluoroacetic acid (TFA) | B/3 | B/3 | | |
| Trifluoromethane (Fluoroform) | | | B/4 | B/4 |
| Urea | | | C/1 | A |
| Xylene | A | B/4 | B/4 | B/2/4 |
| Zinc chloride 10% | | | C/1 | A |
| Zinc sulfate 10% | | | C/1 | A |

**Code explanations (501 / 520)**

A = Good resistance
B = Acceptable with limitations
C = Not recommended

1 = Possible crystallisation - blockage (do not let dry plunger/barrel together).
2 = Swell of plunger protection layer, possible peeling.
3 = Acid vapours (better resistance with lower concentration). Do not leave instrument on bottle.
4 = Risk of softening or discoloration of external parts through vapours. Do not leave instrument on bottle.
5 = Chemical degradation of glass parts (plunger/barrel).

**Code explanations (525 / 530)**

A = Good resistance
B = Acceptable with limitations
C = Not recommended

1 = Possible crystallisation - blockage or possible coating peeling (do not let dry plunger/barrel together).
2 = Swell of plunger protection layer, possible peeling.
3 = Acid vapours (better resistance with lower concentration). Do not leave instrument on bottle.
4 = Risk of damage, softening or discoloration of external parts through vapours. Do not leave instrument on bottle.
5 = Chemical degradation of glass parts (plunger/barrel).

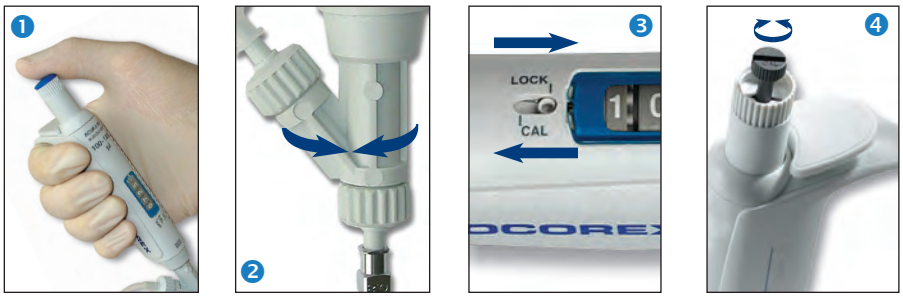
## Acura® *manual* 865 Self Refilling Microdispenser Pipette

Hand-held, self-refilling microdispenser intended for repeat distribution of microliter volumes. Carefully selected materials ensure durability and resistance to aggressive media. Instrument combines easy handling of a regular micropipette with flexibility of a repeater pipette. There is no need for plastic tips or consumables, which may represent substantial savings.

865
5 - 50µL
20 - 200µL
100 - 1000µL


## Product Advantages

- Excellent ergonomics, soft plunger activation
- Large volume display
- Easy in-lab calibration
- No need for consumables
- Autoclavable fully assembled at 121°C/250°F
- Versatile feeding through bottle, tubing or syringe
- Three-year warranty




## Choice of Feeding Sources

Supplied with a 90cm silicone tubing, the instrument also fits optional feeding sources:

❶ Bottle with luer fitting
❷ Serum bottle holder with feed needle
❸ Female luer valve cap for syringe

### Excellent Ergonomics ❶

Instrument shape and lightweight offer most convenient pipetting comfort. Smooth plunger activation drastically reduces hand fatigue.

### Convenient Dispensing ❷

Reliable valve system ensures high performance dispensing, dose after dose. It revolves to allow selection of the best working position.

### Swift-set Calibration System* ❸❹

Easy and precise system with integrated key and locking mechanism, making tedious procedures a thing of the past. Protective calibration seal sticker.

* Socorex patented

## Ordering Information - Accessories

| Cat. No. | Description | Qty / Pack |
|---|---|---|
| W835009 | Vial Holder*, Luer ❷ | 1 |
| W835011 | Reservoir*, 30mL, PP, Luer ❶ | 1 |
| W835012 | Reservoir*, 30mL, PTFE, Luer ❶ | 1 |
| W835014 | Manifold*, 4-Channel, 20mm Spacing, Luer Lock, Stainless Steel | 1 |
| W835016 | Manifold*, 8-Channel, 9mm Spacing, Luer Lock, Stainless Steel | 1 |
| W835017 | Inlet Valve PP Cap, Female Luer (for syringe) ❸ | 1 |
| W851369 | Work Station 340 for 3 Pipettes | 1 |

*Autoclavable

## Performance and Ordering Information - Instruments

Including: 90cm silicone tubing, SS blunt end cannula, female Luer inlet valve cap, Q.C. certificate and operating instructions.

| | | | Inaccuracy (E%) | | | Imprecision (CV%) | | |
|---|---|---|---|---|---|---|---|---|
| Cat. No. | Volume | Division | Min. Vol. | Mid. Vol. | Max. Vol. | Min. Vol. | Mid. Vol. | Max. Vol. |
| W835001 | 5 - 50µL | 0.1µL | < ± 5.0 % | < ± 3.5 % | < ± 1.5 % | < 2.0 % | < 1.4 % | < 0.4 % |
| W835002 | 20 - 200µL | 0.2µL | < ± 2.5 % | < ± 1.8 % | < ± 1.0 % | < 1.5 % | < 1.0 % | < 0.3 % |
| W835004 | 100 - 1000µL | 1.0µL | < ± 1.5 % | < ± 1.1 % | < ± 0.6 % | < 0.6 % | < 0.4 % | < 0.2 % |

*Performance values obtained with double-distilled water at constant temperature (± 0.5°C) comprised between 20 and 25°C in accordance with ISO 8655.

## Dosys™ Laboratory Syringes

From the basic unit to the corrosion resistant model, the laboratory dedicated syringe line offers precision instruments you can trust. Intended for safe and reliable liquid distribution, the selection of pistol grip and two ring instruments comes in a wide volume range.

## Product Advantages

- Optimal hand balance and ergonomics
- Fast and reliable volume setting
- Excellent reproducibility
- Plunger tightness without O-ring
- High chemical resistance
- Fully autoclavable at 121°C/250°F
- One-year warranty

Two Ring Handle

162

163

164

Pistol Grip Handle

172

173

174


### Simple, Natural Movements ❶❷

Both pistol grip and two-ring handles fit any hand in a comfortable way. Activation performed with limited effort for efficient work even during long dispensing series.

### Volume Selection - Reliable Reproducibility ❸

Volume is set within seconds. It will not vary while activating the syringe, thanks to the safety-locking nut on the micrometric screw. Dose by dose reproducibility (CV) is excellent, as witnessed by performance figures.

### Plunger Tightness without O-ring ❹

Smooth plunger travel and tightness achieved through high precision stainless steel plunger and grounded glass barrel. No O-ring to mess with or replace.

### Syringe Stand

Stand holds syringe in ready-to-use position. Easy to clean material. Autoclavable. (Cat. No. W855008)

### Glass Protection ❺

Interchangeable glass barrel is protected by a PVC sleeve (not autoclavable) to prevent breakage.

### Few Part Assembly - Low Maintenance ❻

The automatic syringes are made of only six main parts, easy to disassemble. Fast access to all elements allows rapid and efficient cleaning. Spares are available at reasonable costs.

## Performance All Models

| Volume | Imprecision (CV%) Min. Vol. | Mid. Vol | Max. Vol. |
|---|---|---|---|
| 0.025 - 0.3mL | < 1.8 %[1)] | < 1.2 % | < 0.5 % |
| 0.1 - 0.5mL | < 1.2 % | < 0.9 % | < 0.4 % |
| 0.1 - 1mL | < 0.7 % | < 0.6 % | < 0.4 % |
| 0.3 - 2mL | < 0.6 % | < 0.5 % | < 0.4 % |
| 0.5 - 5mL | < 0.5 % | < 0.4 % | < 0.2 % |
| 1 - 10mL | < 0.5 % | < 0.4 % | < 0.2 % |
| 5 - 20mL | < 0.5 % | < 0.4 % | < 0.4 % |

Tests performed with double-distilled water, using stainless steel cannula (1.2x50 mm), at constant working speed. [1)] measured at 0.075mL

## Liquid Path Materials (For Chemical Resistance)

| Parts | Basic / Classic Models | Premium Models |
|---|---|---|
| Feed tubing | Silicone | Silicone |
| Barrel | Borosilicate glass | Borosilicate glass |
| Washer, barrel | FPM (Fluoroelastomer) | FPM (Fluoroelastomer) |
| Plunger | Stainless steel DIN 304 | Stainless steel DIN 316L |
| Valve system | Ni-Cr Brass | Stainless steel DIN 316L |
| Washer, valve | PTFE | PTFE |
| Spring and balls, valve | Stainless steel, DIN 304 | Stainless steel, DIN 304 |
| Sinker, feed cannula | Ni-Cr Brass | Ni-Cr Brass |

## Dosys™ Laboratory Syringes - Unlimited Applications

Dose-By-Dose Distribution

Dispensing Distribution

Sterile Work

Filtration at Your Nozzle Tip

Aspiration with Reverse Modus Valve

## Instrument Descriptions and Ordering Information

### Dosys™ Basic Syringes 162 / 172

- Fill by fill (automatic) through needle or cannula
- Supplied without valve system
- Luer Lock nozzle
- Package includes syringe, PVC protection sleeve and operating instructions

| Dosys 162 Cat. No. | Dosys 172 Cat. No. | Volume | Division |
|---|---|---|---|
| W852000 | W853000 | 0.1 - 1mL | 0.05mL |
| W852002 | W853002 | 0.3 - 2mL | 0.1mL |
| W852004 | W853004 | 0.5 - 5mL | 0.5mL |
| — | W853006 | 1 - 10mL | 1.0mL |

### Dosys™ Classic Syringes 163 / 173

- Self-refilling automatic
- Integrated valve system
- Luer Lock nozzle
- Package includes syringe, one meter silicone feed tube, sinker, PVC protection sleeve, aspiration and vent cannulas, set of spares for valve, operating instructions

| Dosys 163 Cat. No. | Dosys 173 Cat. No. | Volume | Division |
|---|---|---|---|
| W852006 | W853008 | 0.025 - 0.3mL | 0.025mL |
| W852008 | W853010 | 0.1 - 0.5mL | 0.1mL |
| W852010 | W853012 | 0.1 - 1mL | 0.05mL |
| W852012 | W853014 | 0.3 - 2mL | 0.1mL |
| W852026 | W853016 | 0.5 - 5mL | 0.5mL |
| W852028 | W853018 | 1 - 10mL | 1mL |
| — | W853020 | 5 - 20mL | 1mL |

### Dosys™ Premium Syringes 164 / 174

Corrosion Resistant

- Self-refilling automatic
- Detachable valve system
- Enhanced corrosion resistance
- Luer Lock nozzle
- Package includes syringe, one meter silicone feed tube, sinker, PVC protection sleeve, aspiration, vent and dosing cannulas, set of spares for valve, operating instructions

| Dosys 164 Cat. No. | Dosys 174 Cat. No. | Volume | Division |
|---|---|---|---|
| W852014 | 851371 | 0.1 - 1mL | 0.05mL |
| W852016 | 851372 | 0.3 - 2mL | 0.1mL |
| W852018 | 851373 | 0.5 - 5mL | 0.5mL |
| W852020 | 851375 | 1 - 10mL | 1.0mL |

## Dosys™ All-Glass Syringes

The reusable borosilicate glass syringes offer superior chemical and heat shock resistance. A precious, low cost alternative to disposable plastic syringes, complementing the self-refilling models in many applications.

### Product Advantages

- Precision-machined plunger and barrel
- Excellent fitting and tightness
- Permanent, high visibility graduations
- Sterilization up to 160°C/320°F


155

1 to 250mL

### Ordering Information

| Glass Luer Nozzle Cat. No. | Metal Luer Lock Nozzle Cat. No. | Volume | Division | Qty / Pack |
|---|---|---|---|---|
| W851000 | W851008 | 0.1 - 1mL | 0.05mL | 3 |
| — | W851010 | 0.5 - 2mL | 0.1mL | 3 |
| W851002 | W851011 | 0.2 - 5mL | 0.2mL | 3 |
| W851004 | W851012 | 1 - 10mL | 0.2mL | 3 |
| W851006 | W851014 | 1 - 20mL | 1mL | 2 |
| W851007 | W851015 | 1 - 30mL | 2mL | 2 |
| — | W851016 | 1 - 50mL | 2mL | 1 |
| W851009 | W851017 | 10 - 100mL | 10mL | 1 |
| — | W851018 | 10 - 150mL | 10mL | 1 |
| — | W851019 | 10 - 200mL | 10mL | 1 |
| — | W851020 | 10 - 250mL | 10mL | 1 |

## Dosys™ Syringe Accessories

### Alternative Feed Sources

Optional vial holder conversion set and reagent reservoirs for additional liquid feeding possibilities.

| Cat. No. | Description | Qty / Pack |
|---|---|---|
| W860068 | Vial Holder Conversion Set for 163 and 173 Models (except 20mL), without Vial | 1 |
| W860086* | Polypropylene Bottle, 60mL | 1 |
| W860088* | Polypropylene Bottle, 125mL | 1 |
| WI056842 | Rotlauf Inlet Valve | 1 |

*Use with Rotlauf inlet valve (Cat. No. WI056842) only, to be ordered separately.

### Enhanced Tightness Set

The special clear glass barrel / X-ring fitted plunger enhance tightness when demanded by application. (ex. filtration, aspiration, etc.)

| Cat. No. | Description | Qty / Pack |
|---|---|---|
| W860072 | Set includes one each plunger, X-ring, 5mL barrel and grease | 1 |
| W860074 | Spare barrel for tightness set, 5mL | 6 |

### Aspiration Valve

Reverse modus valve set for liquid aspiration (ex. waste collection in separate container). Vented waste collector cap and enhanced tightness set are recommended.

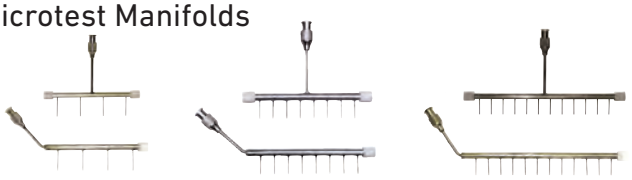
| Cat. No. | Description | Qty / Pack |
|---|---|---|
| W860078 | Reverse modus aspiration valve unit for 164 / 174 models | 1 |
| W860080 | Screw cap (Inside Diameter) 45mm, with tubing connection and filtered air outlet | 1 |

### Dispensing Cannulas

Blunt end dispensing cannulas with Luer Lock, stainless steel, autoclavable.

| Cat. No. | Size (Dia x L in mm) | Description | Qty / Pack |
|---|---|---|---|
| 851411 | 1.2 x 50mm | 18 gauge x 2" for 1mL and 2mL Dosys™ Syringes | 1 |
| 851412 | 2.2 x 100mm | 14 gauge x 4" for 5, 10 and 20mL Dosys™ Syringes | 1 |
| W860045 | 0.8 x 40mm | 21 gauge x 1 5/8" for Microdispenser 865, All Glass Syringes and Dosys™ Syringes | 12 |

## Microtest Manifolds



- Ideal for use with 24 or 96 well microplates
- Tightly fitting Luer and Luer Lock syringe nozzles
- Available in both a straight "T" style and an angular style with an offset hub
- Stainless steel with PTFE stoppers, autoclavable
- Increased efficiency for inoculations, cell feedings, and washing

| Cat. No. | Description | Center to Center (mm) | Qty / Case |
|---|---|---|---|
| 851380 | 4 Position, Straight, 24 Well | 20 | 1 |
| 851381 | 8 Position, Straight, 96 Well | 9 | 1 |
| 851382 | 4 Position, Angular, 24 Well | 20 | 1 |
| 851383 | 8 Position, Angular, 96 Well | 9 | 6 |
| 851388 | 12 Position, Straight, 96 Well | 9 | 1 |
| 851389 | 12 Position, Angular, 96 Well | 9 | 1 |

## Injection Needles

Beveled, high quality needles, stainless steel, autoclavable.

| Cat. No. | ID x L (mm) | Gauge x Inches | Qty / Pack |
|---|---|---|---|
| W860009 | 0.8 x 10 | 21G x 0.375 | 12 |
| W860011 | 0.8 x 30 | 21G x 1.125 | 12 |
| W860012 | 0.8 x 40 | 21G x 1.625 | 12 |
| W860016 | 1.0 x 10 | 19G x 0.375 | 12 |
| W860020 | 1.0 x 30 | 19G x 1.125 | 12 |
| W860021 | 1.2 x 10 | 18G x 0.375 | 12 |
| W860023 | 1.2 x 20 | 18G x 0.75 | 12 |
| W860024 | 1.2 x 35 | 18G x 1.375 | 12 |
| W860025 | 1.2 x 50 | 18G x 2 | 12 |
| W860027 | 1.4 x 20 | 17G x 0.75 | 12 |
| W860030 | 1.6 x 20 | 16G x 0.75 | 12 |
| W860031 | 1.6 x 25 | 16G x 1 | 12 |
| W860032 | 1.6 x 30 | 16G x 1.125 | 12 |
| W860033 | 1.6 x 100 | 16G x 4 | 12 |
| W860035 | 1.8 x 20 | 15G x 0.75 | 12 |
| W860036 | 1.8 x 30 | 15G x 1.125 | 12 |
| W860037 | 2.0 x 30 | 14G x 1.125 | 12 |
| W860038 | 2.0 x 40 | 14G x 1.625 | 12 |
| W860039 | 2.0 x 50 | 14G x 2 | 12 |
| W860041 | 1.6 x 20 | 16G x 0.75 | 1 |
| W860042 | 2.0 x 30 | 14G x 1.125 | 1 |
| W860043 | 2.0 x 40 | 14G x 1.625 | 1 |
| W860044 | 2.0 x 50 | 14G x 2 | 1 |

*Additional sizes available, contact WHEATON Technical Service.

## Cleaning Brushes

Heavy duty nylon brushes with tufted end and plastic handle for barrel cleaning

| Cat. No. | Description | Qty / Pack |
|---|---|---|
| W855000 | For 0.3, 0.5, 1mL Barrels | 6 |
| W855002 | For 1, 2, 5mL Barrels | 6 |
| W855004 | For 5, 10, 20mL Barrels | 3 |
| W855006 | Set of 6 Nylon Brushes, 2 Each | 6 |

## Drenchers

For safe animal mouth and nose feeding. Stainless steel, autoclavable

| Cat. No. | Size (Inside Dia x L) | Qty / Pack |
|---|---|---|
| **Drenchers, Straight** | | |
| W855012 | 1.2 x 51mm | 3 |
| W855016 | 3 x 203mm | 2 |
| **Drenchers, Bent** | | |
| W855020 | 1.2 x 51mm | 3 |
| W855022 | 1.6 x 102mm | 2 |
| W855024 | 3 x 203mm | 2 |

## ABF™ (Anti-Blocking Factor) Lubricant Spray

- Spray is a premium non-oily, non-sticky, non-toxic, silicone-free lubricant.
- The ABF Spray is packaged in a handy spray bottle.

Application: Spray a thin layer on the metal plunger. The lubricant provides effective corrosion protection and reduces wear. The syringe remains autoclavable fully assembled even after application of ABF lubricant.


| Cat. No. | Description | Qty / Case |
|---|---|---|
| W860092 | ABF Lubricant Spray, 70mL | 1 |

## Spare Parts for Dosys™ Syringes

### Grounded Glass Syringe Barrels

| Cat. No. | Description | Qty / Pack |
|---|---|---|
| W860048 | Barrel, Syringe 0.3mL | 6 |
| W860049 | Barrel, Syringe 0.5mL | 6 |
| 851391 | Barrel, Syringe 1mL | 1 |
| 851392 | Barrel, Syringe 2mL | 1 |
| 851393 | Barrel, Syringe 5mL | 1 |
| 851395 | Barrel, Syringe 10mL | 1 |
| W860051 | Barrel, Syringe 20mL | 3 |

| | | |
|---|---|---|
| 851401 | Piston, 1mL Premium Syringe | 1 |
| 851402 | Piston, 2mL Premium Syringe | 1 |
| 851403 | Piston, 5mL Premium Syringe | 1 |
| 851405 | Piston, 10mL and 20mL Premium Syringe | 1 |

## Valve Assembly Parts Kit

| Cat. No. | Description | Qty / Pack |
|---|---|---|
| W860064 | Kit for Valve, Syringe 0.3mL | 1 |
| W860066 | Kit for Valve, Syringe 0.5mL | 1 |
| 851425 | Kit for Valve, Syringe 1mL | 1 |
| 851426 | Kit for Valve, Syringe 2mL | 1 |
| 851427 | Kit for Valve, Syringe 5mL | 1 |
| 851428 | Kit for Valve, Syringe 10mL | 1 |
| 851429 | Kit for Valve, Syringe 20mL | 1 |

Includes 2 springs, 2 balls, 2 washers for valve and a barrel washer

## PVC Protection Sleeves

| Cat. No. | Description | Qty / Pack |
|---|---|---|
| W860052 | Sleeve, 0.3, 0.5mL Barrels | 6 |
| W860056 | Sleeve, 2mL Barrels | 6 |
| W860058 | Sleeve, 5mL Barrels | 6 |
| W860060 | Sleeve, 10mL Barrels | 6 |
| W860062 | Sleeve, 20mL Barrels | 3 |

## Vent Cannulas

| Cat. No. | Description | Qty / Pack |
|---|---|---|
| **Short Vent Cannulas** | | |
| 851414 | Chrome Plated, Syringe 10mL | 1 |
| 851421 | Chrome Plated, Syringe 20mL | 1 |

## Feed Tubing (Medical Quality Silico

| Cat. No. | Description | Qty / Pack |
|---|---|---|
| 851419 | Tube, Syringes 0.3 to 10mL, Cut | 1 meter |
| 851424 | Tube, Syringe 20mL, Cut | 1 meter |
| 851417 | Sinker for 0.3mL-10mL Dosys Syringes | 1 |
| 851423 | Glass Sinker for 20mL Dosys Syringes | 1 |

A

UniSpense® PRO Peristaltic Dispensing Pump

B

OmniSpense® ELITE Peristaltic Dispensing Pump

## Comparison

| Functionality | UniSpense® PRO A | OmniSpense® ELITE B |
|---|---|---|
| Modes | Dispense Mode | Dispense Mode and Flow Mode |
| Motor | Dual Speed 75 and 150 RPM | Variable Speed 0.5 to 400 RPM |
| Direction | Unidirectional; Clockwise | Bidirectional; Clockwise and Counterclockwise |
| Ramp | Not Offered | User Ramp Control for Dispense and Flow Modes – 5 Profiles |
| Drawback | Not Offered | For Filling into a Closed Container |
| Pump Heads | Single | Single, Dual, Microcassette |

## Suggested Applications

### Research, Development, and Quality Control
Transfer and distribution of fluids into smaller containers, serial dilutions, sample preparation and media dispensing.

### Pharmaceutical and Biotechnology
Dispensing microbiological media, pill coating, dilutions, transferring live cells, additions and harvests to and from bioreactors, packaging and filling.

### Food and Beverage
Common uses include dispensing flavorings, colorings, vitamins and other additives in processing applications and simple dispensing of end products on production lines or into shelf packages.

### Waste Water and Sample Collection
Industrial and QC applications, environmental compliance hazardous / toxic materials evaluation and site sampling for liquids, sludge, earth / soil, water, etc. Ideal for sampling from barrels and drums.

### International
The Icon Driven display and multi-language help screen will work well in laboratories abroad.

## Ordering Information

| UniSpense® PRO W375040 - ☐<br>OmniSpense® ELITE W375030 - ☐ | |
|---|---|
| ***A** = North American Cord, 120 V | ***F** = Aus / China Cord, 240 V |
| ***B** = Japan Cord, 100 V | ***G** = Italy / Chile Cord, 230 V |
| ***C** = Europe Cord, 230 V | ***J** = India Cord, 230 V |
| ***D** = UK Cord, 230 V | |

*When ordering, please reference the letter corresponding to the correct electrical cord. Refer to page 189-190 for plug styles.

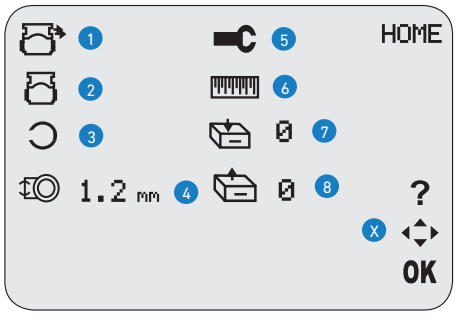
Stacking Pump Head with Standard Pump Head

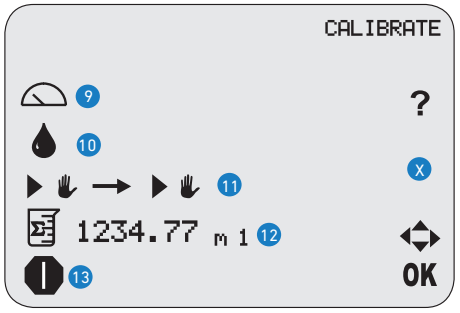
Stacking Pump Head

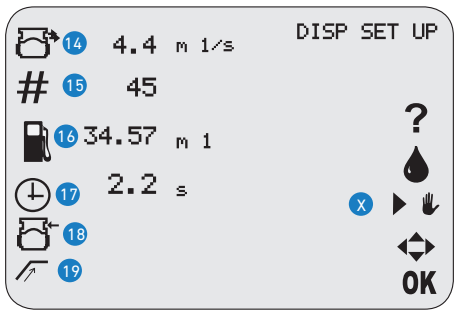
Microcassette Pump Head

## Optional Pump Heads

| Cat. No. | Description | Qty / Case |
|---|---|---|
| W375021 | Single Pump Head for 2.3mm Wall Tubing | 1 |
| W375022 | Optional Stacking Pump Head for 2.3mm Wall Tubing | 1 |
| W375023 | Optional Pump Head for 1.6mm Wall Tubing | 1 |
| W375024 | Optional Stacking Pump Head for 1.6mm Wall Tubing | 1 |
| W375025 | Optional 5-Channel Pump Head for use with Small Bore Tubing | 1 |




### Home Screen

1. Mode
2. Pump Head Type (OmniSpense Elite Only)
3. Direction (OmniSpense Elite Only)
4. Tubing Diameter
5. Setup
6. Calibration
7. Save Settings
8. Recall Settings

### Calibration Screen

9. Pump Speed Adjustment
10. Prime
11. Start & Stop of Calibration
12. Calibration Volume
13. Pump Movement Indicator

X. Right Screen - Active Keys

### Dispensing Screen

14. Flow Rate
15. Dispenses Per Batch
16. Volume Per Dispense
17. Time Between Dispenses
18. Drawback (OmniSpense Elite Only)
19. Soft Start Ramping (OmniSpense Elite Only)

X. Right Screen - Active Keys

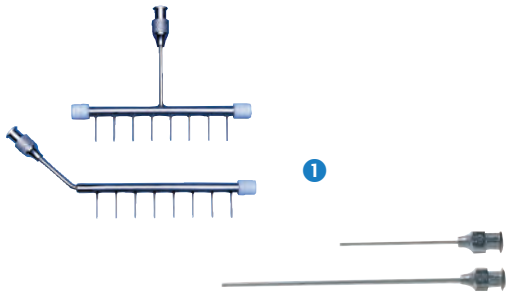
## Specifications

| Model Pump | VAC | Hz | WATTS | Operating Speed (RPM) | Tubing Sizes Available (mm ID) | Dispense Ranges for Tubing (mL) | Flow Rate Ranges for Tubing (mL/min) | Accuracy Midrange | Delay Time / Sec | Weight | Dim. w/ Pumphead (HxWxD) | Optional Pump Head Support |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OmniSpense® ELITE | 100-240 | 50/60 | 37 | 0.5-400 | 2 | .01-9999.99 | 20.4 - 174mL/min | As High as ± 1% | 0.5-99.9 Automatic Mode | 11.8/5.4 lbs/kg | 7 x 8.75 x 13 17.3 x 22.3 x 33.0cm | • Stack up to 2 Pump Heads<br>• Stacking Pump Head for 2.3mm Wall Tubing<br>• Pump Head for 1.6mm Wall Tubing<br>• Stacking Pump Head for 1.6mm Wall Tubing<br>• 5-Channel Pump Head for Small-Bore Tubing |
| | | | | | 3 | .01-9999.99 | 40.2 - 354mL/min | | | | | |
| | | | | | 6 | .01-9999.99 | 131 - 1176mL/min | | | | | |
| | | | | | 8 | .01-9999.99 | 200 - 1746mL/min | | | | | |
| UniSpense® PRO | 100-240 | 50/60 | 37 | 75 & 150 | 2 | .01-9999.99 | 30 & 60mL/min | As High as ± 1% | 0.5-99.9 Automatic Mode | 11.8/5.4 lbs/kg | 7 x 8.75 x 13 17.3 x 22.3 x 33.0cm | • Pump Head for 1.6mm Wall Tubing<br>• Pump Head for 2.3mm Wall Tubing |
| | | | | | 3 | .01-9999.99 | 60 & 120mL/min | | | | | |
| | | | | | 6 | .01-9999.99 | 270 & 540mL/min | | | | | |
| | | | | | 8 | .01-9999.99 | 540 & 1080mL/min | | | | | |

## Microtest Manifolds & Dispensing Cannulas 1

- Ideal for use with 24 and 96 well microplates. This unique dispensing system enables you to perform sample inoculations and cell feedings faster and more efficiently under sterile conditions.

| Cat. No. | Accessories | Qty / Case |
|---|---|---|
| **Dispensing Cannulas w/ Luer Lock** | | |
| 851411 | 18 Gauge x 2 in | 1 |
| 851412 | 14 Gauge x 4 in | 1 |
| **Microtest Manifolds** | | |
| 851380 | 4 Position, Straight, 24 Well | 1 |
| 851381 | 8 Position, Straight, 96 Well | 1 |
| 851382 | 4 Position, Angular, 24 Well | 1 |
| 851383 | 8 Position, Angular, 96 Well | 1 |
| 851388 | 12 Position, Straight, 96 Well | 1 |
| 851389 | 12 Position, Angular, 96 Well | 1 |




## Polypropylene Nozzle & Glass Sinker 2

- The nozzle connects to the pump tubing for dispensing of liquids
- The glass sinker is used to secure tubing when drawing from a container

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 374324 | 2 and 3mm Polypropylene Nozzle | 6 |
| 374326 | 6mm Polypropylene Nozzle | 6 |
| 374328 | 8mm Polypropylene Nozzle | 6 |
| 374320 | Small Glass Sinker (fits 2 and 3mm ID Tubing) | 6 |
| 374321 | Large Glass Sinker (fits 6 and 8mm ID Tubing) | 6 |


## Footswitch 3

- Footswitch starts and stops the dispensing cycle without the use of hands

| Cat. No. | Description | Qty / Case |
|---|---|---|
| I050694 | Footswitch | 1 |


## Tubing Support Stand 4

- Optional tubing support stand conveniently holds the tubing in place for filling operations

| Cat. No. | Description | Qty / Case |
|---|---|---|
| I054106 | Tubing Support Stand | 1 |


## Hose Barb / Luer Adapter 5

- The luer adapter allows connection to equipment and components with a female luer connector

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 374322 | Hose Barb / Luer Adapter for Attaching Manifold (fits 2 and 3mm) | 1 |

## Microcassette Tubing



- Platinum cured silicone translucent tubing USP CLASS VI for medical, laboratory and pharmaceutical use
- For use with microcassette pump head
- Does not require stops or clamps
- Perfect for small volume applications
- Autoclavable, sterilizable, reusable

| Cat. No. | ID (mm) | Length (ft) | Qty / Case |
|---|---|---|---|
| W374700 | 2.38 | 50 | 1 |
| W374701 | 2.64 | 50 | 1 |

## Peroxide Cured Silicone Tubing

- Assembly consists of 1.5m (5') section of silicone tubing with a wall thickness of 2.3mm, a borosilicate glass sinker, and a polypropylene delivery nozzle. Bulk tubing also available
- Autoclavable

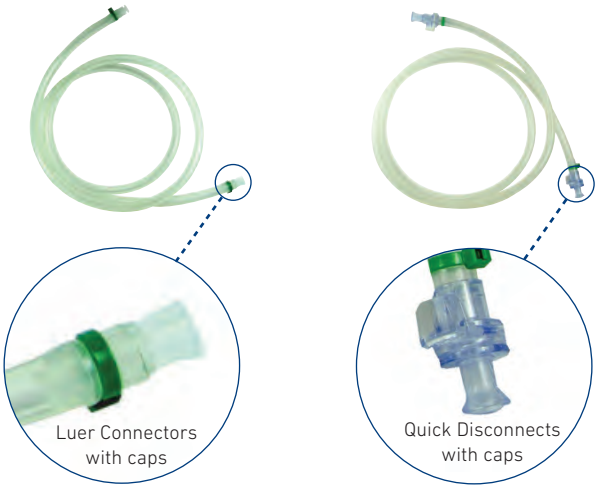
| Cat. No. | Accessories | Qty / Case |
|---|---|---|
| **Silicone Tubing Assembly, 2.3mm Wall Thickness** | | |
| 374310 | 2mm ID, 5 ft Section (1.5m) | 1 |
| 374311 | 3mm ID, 5 ft Section (1.5m) | 1 |
| 374313 | 6mm ID, 5 ft Section (1.5m) | 1 |
| 374314 | 8mm ID, 5 ft Section (1.5m) | 1 |
| **Bulk Silicone Tubing, 2.3mm Wall Thickness** | | |
| 374304 | 2mm ID, 25 ft Section (7.62m) | 1 |
| 374305 | 3mm ID, 25 ft Section (7.62m) | 1 |
| 374306 | 6mm ID, 25 ft Section (7.62m) | 1 |
| 374308 | 8mm ID, 25 ft Section (7.62m) | 1 |

## USP Class VI Platinum Cured Silicone Tubing & Tubing Kit

- Kit includes sinker and polypropylene dispensing nozzle
- Platinum cured silicone translucent tubing USP CLASS VI for medical, laboratory and pharmaceutical use
- For use with WHEATON Standard 2.3mm Pump Head and optional 1.6mm pump head
- Autoclavable, radiation sterilizable
- 5' tubing kit with glass sinker and dispensing nozzle
- Bulk 50' roll supplied enclosed in bag and a box

| Cat. No. | ID (mm) | Wall Thickness (mm) | Qty / Case |
|---|---|---|---|
| **Tubing Kits** | | | |
| W374702 | 3.18 | 1.6 | 1 |
| W374704 | 6.35 | 1.6 | 1 |
| W374706 | 4.75 | 2.3 | 1 |
| W374708 | 6.35 | 2.3 | 1 |
| **Bulk Tubing** | | | |
| W374703 | 3.18 | 1.6 | 1 |
| W374705 | 6.35 | 1.6 | 1 |
| W374707 | 4.75 | 2.3 | 1 |
| W374709 | 6.35 | 2.3 | 1 |

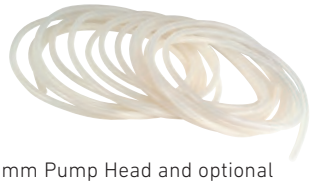
## TPE Sterile Connections Kits




- Radiation sterilized kit includes male and female Luer or quick-disconnects affixed to 5' of TPE tubing
- 5 individually packaged assemblies per case for quick implementation on high value samples, cultures or titers
- Translucent thermoplastic elastomer tubing ideal for biopharmaceutical, pharmaceutical and diagnostic industries
- USP CLASS VI and animal derived components free (ADCF)
- For use with WHEATON Standard 2.3mm pump head and optional 1.6mm pump head
- Sterilizable by autoclave, radiation, EtO, chemicals, reusable, heat sealable, heat weldable

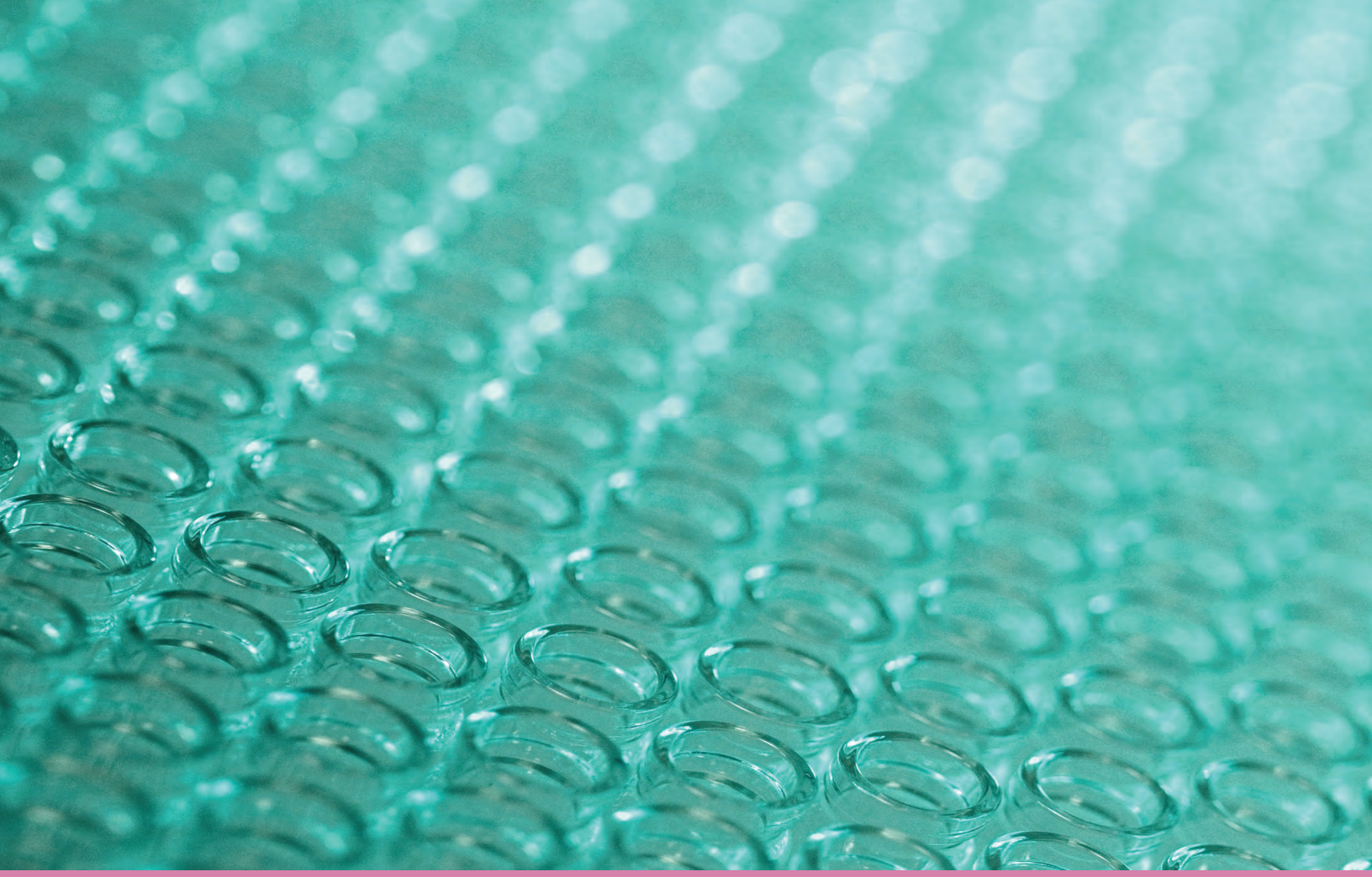
| Cat. No. | ID (mm) | Wall Thickness (mm) | Length (ft) | Connector | Qty / Case |
|---|---|---|---|---|---|
| W374730 | 3.18 | 1.6 | 5 | Luer Connectors | 5 |
| W374731 | 3.18 | 1.6 | 5 | Quick Disconnects | 5 |
| W374732 | 6.35 | 1.6 | 5 | Luer Connectors | 5 |
| W374733 | 6.35 | 1.6 | 5 | Quick Disconnects | 5 |
| W374734 | 6.35 | 2.3 | 5 | Luer Connectors | 5 |
| W374735 | 6.35 | 2.3 | 5 | Quick Disconnects | 5 |

## TPE Bulk Tubing



- Thermoplastic elastomer tubing ideal for biopharmaceutical, pharmaceutical and diagnostic industries
- USP CLASS VI and animal derived components free (ADCF)
- For use with WHEATON Standard 2.3mm Pump Head and optional 1.6mm Head
- Supplied as a roll enclosed in bag and a box
- Sterilizable by autoclave, radiation, EtO, chemicals, reusable, heat sealable, heat weldable
- Less permeable than silicone

| Cat. No. | ID (mm) | Wall Thickness (mm) | Description | Qty / Case |
|---|---|---|---|---|
| W374736 | 3.18 | 1.6 | Bulk 50' roll | 1 |
| W374737 | 6.35 | 1.6 | Bulk 50' roll | 1 |
| W374738 | 6.35 | 2.3 | Bulk 50' roll | 1 |



# For the Smaller Samples in Life

## Vials

DWK Life Sciences offers the most comprehensive line of vials and accessories for the laboratory research market. Sample vials, fabricated from high-quality glass tubing, offer uniform sidewall and bottom thickness. Liquid scintillation vials are the original scintillation vials invented by WHEATON® over 60 years ago. Manufactured from low potassium borosilicate glass, PET and HPDE, the DWK Life Sciences line of vials is the largest and most diverse in the industry. High recovery vials feature a conical interior that allows for maximum retrieval of a sample with a syringe. Certain vial styles can be used with automated compound storage systems and easily bar coded using a 2D or linear bar code format. WHEATON® CryoELITE® Cryogenic Vials offer unrivaled capseals that exceed DOT and IATA regulations.

When you are looking for a high-quality and dependable vial, DWK Life Sciences can provide the best product for your application. We can also accommodate the custom design and manufacturing of vials as well as bar coding, critical cleaning, and surface treatment services.

# Vials



# WHEATON® **COMPLETE**PAK

The WHEATON® **COMPLETE**PAK product line is a range of crimp top vials, rubber stoppers and seals that are ready-to-use and are off-the-shelf, which can be customized for any application. This reduces our customer's supply chain due to our one source solution capability. Each kit comes with specific United States Pharmacopeia (USP) certificates showing that the product meets or exceeds critical USP standards that are enforced by the Federal Drug Administration (FDA). This kind of solution allows for our customers to focus on their core competency which is manufacturing, compounding and developing drug products.

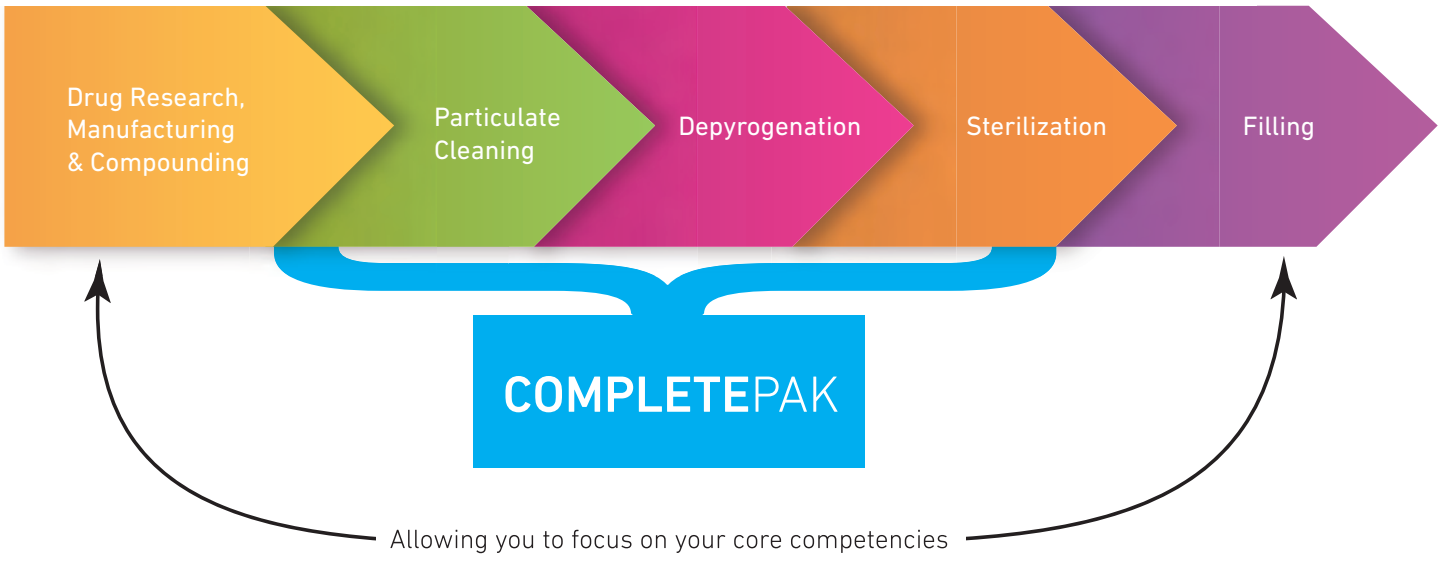
## Target Applications

- Compounding pharmaceuticals
- Aseptic filling of injectable drug products
- Drug discovery
- Drug research
- Freeze drying / lyophilized drug products
- Large and small molecule drug packaging

## Key Benefits

- Sterilized, off-the-shelf, ready-to-use products
- 18 month shelf life from date of processing
- Variety of different sterile components — a solution for any application
- Comes with critical certifications such as USP <788> Particulate Matter in Injections, USP <85> The Bacterial Endotoxins Test and USP <71> The Sterility Test
- Container Closure Integrity (CCI) certification available upon request
- Each kit has equal amounts of components for reduced scrap rates
- Pre & post-sales support due to in-house technical support and quality teams
- Complete manufacturing traceability

## ENHANCING THE EFFICIENCY OF DRUG DISCOVERY AND DRUG COMPOUNDING



# WHEATON® **COMPLETE**PAK

## TOP 10 REASONS WHY YOU SHOULD CHOOSE COMPLETEPAK FOR YOUR APPLICATION:

1. Products supplied ready-to-use
2. Reduces lead times
3. Focuses your efforts on core competencies
4. Eliminates capital investments in equipment needed for cleaning and preparing glassware or plastic containers
5. Frees up valuable clean room space
6. Limits number of suppliers required to provide complete packaging product
7. Improves quality
8. Validated processes
9. Saves valuable time and money while maintaining a high quality product and streamlining process
10. One source for total packaging solutions

## **COMPLETE**PAK Kits

| Cat. No. | Description (pieces/kit) | Qty / Case |
|---|---|---|
| W990000-CP | 2mL Clear Sterile Vial (210), 13mm Ultra Pure Sterile Serum Stopper (230), Sterile Blue Seal (230) | 1 |
| W990001-CP | 2mL Clear Sterile Vial (210), 13mm Omni Flex 3G Sterile Serum Stopper (230), Sterile Blue Seal (230) | 1 |
| W990002-CP | 2mL Clear Sterile Vial (210), 13mm OmniFlex 3G Sterile Igloo Lyo Stopper (230), Sterile Blue Seal (230) | 1 |
| W990003-CP | 2mL Clear Sterile Vial (210), 13mm Ultra Pure Sterile Serum Stopper (230), Sterile Red Seal (230) | 1 |
| W990004-CP | 2mL Clear Sterile Vial (210), 13mm Omni Flex 3G Sterile Serum Stopper (230), Sterile Red Seal (230) | 1 |
| W990005-CP | 2mL Clear Sterile Vial (210), 13mm OmniFlex 3G Sterile Igloo Lyo Stopper (230), Sterile Red Seal (230) | 1 |
| W990006-CP | 5mL Clear Sterile Vial (200), 20mm Ultra Pure Sterile Serum Stopper (220), Sterile Blue Seal (220) | 1 |
| W990007-CP | 5mL Clear Sterile Vial (200), 20mm OmniFlex 3G Sterile Serum Stopper (220), Sterile Blue Seal (220) | 1 |
| W990008-CP | 5mL Clear Sterile Vial (200), 20mm OmniFlex 3G Igloo Lyo Stopper (220), Sterile Blue Seal (220) | 1 |
| W990009-CP | 5mL Clear Sterile Vial (200), 20mm Ultra Pure Sterile Serum Stopper (220), Sterile Red Seal (220) | 1 |
| W990010-CP | 5mL Clear Sterile Vial (200), 20mm OmniFlex 3G Sterile Serum Stopper (220), Sterile Red Seal (220) | 1 |
| W990011-CP | 5mL Clear Sterile Vial (200), 20mm OmniFlex 3G Sterile Igloo Lyo Stopper (220), Sterile Red Seal (220) | 1 |
| W990012-CP | 10mL Clear Sterile Vial (158), 20mm Ultra Pure Sterile Serum Stopper (220), Sterile Blue Seal (220) | 1 |
| W990013-CP | 10mL Clear Sterile Vial (158), 20mm OmniFlex 3G Sterile Serum Stopper (220), Sterile Blue Seal (220) | 1 |
| W990014-CP | 10mL Clear Sterile Vial (158), 20mm OmniFlex 3G Sterile Igloo Lyo Stopper (220), Sterile Blue Seal (220) | 1 |
| W990015-CP | 10mL Clear Sterile Vial (158), 20mm Ultra Pure Sterile Serum Stopper (220),Sterile Red Seal (220) | 1 |
| W990016-CP | 10mL Clear Sterile Vial (158), 20mm OmniFlex 3G Sterile Serum Stopper (220), Sterile Red Seal (220) | 1 |
| W990017-CP | 10mL Clear Sterile Vial (158), 20mm OmniFlex 3G Sterile Igloo Lyo Stopper (220), Sterile Red Seal (220) | 1 |

## **COMPLETE**PAK Sterile Components

| Cat. No. | Description | Qty / Case |
|---|---|---|
| **Vials** | | |
| W986000-S | 2mL Clear Sterile Serum Vial | 210 |
| W986001-S | 5mL Clear Sterile Serum Vial | 200 |
| W986002-S | 10mL Clear Sterile Serum Vial | 158 |
| **Stoppers** | | |
| W986003-S | 13mm OmniFlex 3G Sterile Serum Stopper | 230 |
| W986004-S | 13mm Ultra Pure Sterile Serum Stopper | 230 |
| W986005-S | 13mm OmniFlex 3G Sterile Igloo Lyo Stopper | 230 |
| W986006-S | 20mm OmniFlex 3G Sterile Serum Stopper | 220 |
| W986007-S | 20mm Ultra Pure Sterile Serum Stopper | 220 |
| W986008-S | 20mm OmniFlex 3G Sterile Igloo Lyo Stopper | 220 |
| **Seals** | | |
| W986009-S | 13mm Sterile Flip Red Seal | 230 |
| W986010-S | 13mm Sterile Flip Blue Seal | 230 |
| W986011-S | 20mm Sterile Flip Red Seal | 220 |
| W986012-S | 20mm Sterile Flip Blue Seal | 220 |

The WHEATON CryoELITE® Tissue Vial is for those who value sample integrity, designed specifically for tissue collection, transport and storage to provide the utmost protection. Different from cells and biofluids, tissue specimens have particular requirements for cryogenic storage. Offering researchers a uniform vial able to maintain sample integrity while maximizing storage capacity and organization, the CryoELITE Tissue Vials feature a wide-mouth opening, 5mL capacity and high integrity closure. The CryoELITE Tissue Vial offers researchers who work with tissue samples ease of use, convenience and security.

The CryoELITE Tissue Vials are manufactured from low binding, cryogenic-grade virgin polypropylene that meets the USP Class VI classification. Lot tested and certified to be free of pyrogens, RNase / DNase and endotoxins, the vials have a sample capacity of 5mL and a storage temperature range of -156°C to 121°C. The externally threaded cap provides a seal that exceeds DOT and IATA classifications for diagnostic specimens and their transport and is capable of maintaining a secure closure during freeze/thaw procedures. The vials have a flat bottom and a stippled external surface to promote easier handling.

The CryoELITE Tissue Vial is for those who value sample integrity, designed specifically for tissue collection, transport and storage to provide the ultimate protection. When your decision depends on sample integrity...Trust that specimen to a WHEATON CryoELITE Tissue Vial.

## CryoELITE® Tissue Vial

- Lot certified RNase/DNase and Endotoxin Free providing assurance of product integrity
- Unrivaled cap seal exceeds DOT and IATA regulations ensuring ultimate protection of samples during transportation and demanding freeze-thaw handling
- Wide mouth for insertion and removal of tissue with forceps
- 5mL volume for use with tissue sections
- Directional indicators to allow orientation of tissue within vial
- Bagged in packs of 25 vials

| Cat. No. | Size (mL) | Color | Sterile | Dimensions Dia. x H (mm) | Depth (mm) | Qty/ Case |
|---|---|---|---|---|---|---|
| W985100 | 5 | White | Yes | 22 x 24 | 18 | 250 |

## CryoELITE® Cryogenic Vials

- Lot certified RNase / DNase and endotoxin free and non-pyrogenic providing assurance for sample integrity
- Unrivaled cap seal exceeds DOT and IATA regulations ensuring ultimate protection of samples during transportation and demanding freeze-thaw handling
- Made from low binding, cryogenic grade virgin polypropylene
- Screw cap can be easily removed with one hand

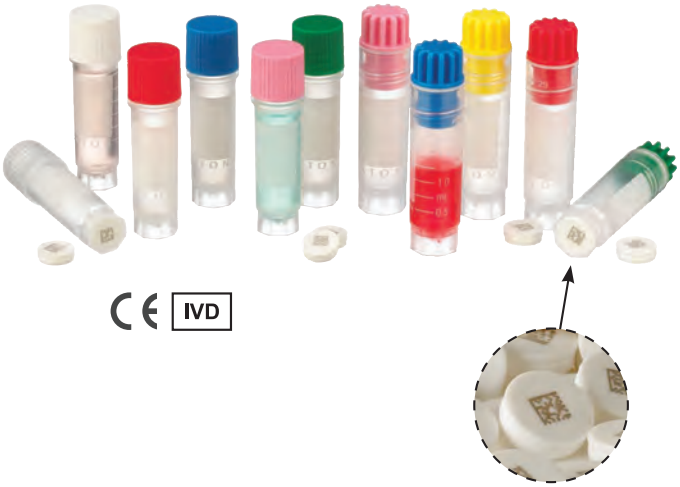
### Freestanding

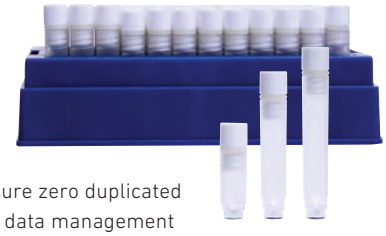
- Loctagon™ Vial Skirt provides stability in freestanding position and locks into CryoELITE® Benchmate Rack in order to provide easy open and close with one hand
- Colored caps allow for color coding projects along with WHEATON colored freezer and storage boxes
- Optional 2D Data Matrix Bar Code Insert provides unique identifier for traceability
- Bottom format allows unrestricted view of 2D bar code for convenient automated scanning

### Round Bottom

- Exacting round bottom allows for up to 17,000 MAX RCF (xG)

| Cat. No. | Size (mL) | Color | Writing Patch | Sterile | Dimensions Dia. x H (mm) | Qty / Case |
|---|---|---|---|---|---|---|
| **CryoELITE® Vials, Freestanding, Internal Thread** | | | | | | |
| W985915 | 1.2 | Natural | Yes | Yes | 12 x 40 | 500 |
| W985902 | 2 | Natural | Yes | No | 12 x 50 | 1000 |
| W985903 | 2 | Natural | No | No | 12 x 50 | 1000 |
| W985922 | 2 | Natural | Yes | Yes | 12 x 50 | 500 |
| W985916 | 2 | White | Yes | Yes | 12 x 50 | 500 |
| W985917 | 2 | Red | Yes | Yes | 12 x 50 | 500 |
| W985918 | 2 | Pink | Yes | Yes | 12 x 50 | 500 |
| W985919 | 2 | Yellow | Yes | Yes | 12 x 50 | 500 |
| W985920 | 2 | Green | Yes | Yes | 12 x 50 | 500 |
| W985921 | 2 | Blue | Yes | Yes | 12 x 50 | 500 |
| W985923 | 3 | Natural | Yes | Yes | 12 x 63 | 500 |
| W985924 | 4 | Natural | Yes | Yes | 12 x 77 | 500 |
| W985925 | 5 | Natural | Yes | Yes | 12 x 91 | 500 |
| **CryoELITE® Vials, Freestanding, External Thread** | | | | | | |
| W985874 | 0.5 | White | Yes | Yes | 12 x 49 | 500 |
| W985862 | 1.2 | Natural | Yes | Yes | 12 x 37 | 500 |
| W985883 | 1.2 | White | Yes | Yes | 12 x 37 | 500 |
| W985884 | 1.2 | Red | Yes | Yes | 12 x 37 | 500 |
| W985885 | 1.2 | Pink | Yes | Yes | 12 x 37 | 500 |
| W985886 | 1.2 | Yellow | Yes | Yes | 12 x 37 | 500 |
| W985887 | 1.2 | Green | Yes | Yes | 12 x 37 | 500 |
| W985888 | 1.2 | Blue | Yes | Yes | 12 x 37 | 500 |
| W985852 | 2 | Natural | Yes | No | 12 x 49 | 1000 |
| W985853 | 2 | Natural | No | No | 12 x 49 | 1000 |
| W985872 | 2 | Natural | Yes | Yes | 12 x 49 | 500 |
| W985863 | 2 | White | Yes | Yes | 12 x 49 | 500 |
| W985864 | 2 | Red | Yes | Yes | 12 x 49 | 500 |
| W985865 | 2 | Pink | Yes | Yes | 12 x 49 | 500 |
| W985866 | 2 | Yellow | Yes | Yes | 12 x 49 | 500 |
| W985867 | 2 | Green | Yes | Yes | 12 x 49 | 500 |
| W985868 | 2 | Blue | Yes | Yes | 12 x 49 | 500 |
| W985869 | 3 | Natural | Yes | Yes | 12 x 63 | 500 |
| W985870 | 4 | Natural | Yes | Yes | 12 x 78 | 500 |
| W985871 | 5 | Natural | Yes | Yes | 12 x 93 | 500 |
| **CryoELITE® Vials, Round Bottom, Internal Thread** | | | | | | |
| W985910 | 1.2 | Natural | Yes | Yes | 12 x 39 | 500 |
| W985911 | 2 | Natural | Yes | Yes | 12 x 49 | 500 |
| W985900 | 2 | Natural | Yes | No | 12 x 49 | 1000 |
| W985901 | 2 | Natural | No | No | 12 x 49 | 1000 |
| W985912 | 3 | Natural | Yes | Yes | 12 x 63 | 500 |
| W985913 | 4 | Natural | Yes | Yes | 12 x 76 | 500 |
| W985914 | 5 | Natural | Yes | Yes | 12 x 90 | 500 |
| **CryoELITE® Vials, Round Bottom, External Thread** | | | | | | |
| W985860 | 1.2 | Natural | Yes | Yes | 12 x 35 | 500 |
| W985861 | 2 | Natural | Yes | Yes | 12 x 49 | 500 |
| W985850 | 2 | Natural | Yes | No | 12 x 49 | 1000 |
| W985851 | 2 | Natural | No | No | 12 x 49 | 1000 |





## E-Z Microtube

- Polypropylene
- Uniquely numbered to ensure zero duplicated
- Fully traceable for perfect data management
- For storage down to -196°C
- Long lasting performance stability
- Supplied in a standard format 96-well rack with locking lid
- 1.0 and 1.4mL tubes supplied in standard twist-lock 96-well rack with locking lid

| Cat. No. | Volume (mL) | Description | Qty / Case |
|---|---|---|---|
| W280110 | 0.5 | E-Z Microtube, PP, 2D Barcode | 10 |
| W280121 | 1.0 | E-Z Microtube, PP, 2D Barcode | 10 |
| W280135 | 1.4 | E-Z Microtube, PP, 2D Barcode | 10 |

## CryoELITE® Cryogenic Vials Shelf Packs

- Packed in convenient smaller quantities
- 2 packs of 50 vials

| Cat. No. | Size (mL) | Color | Writing Patch | Sterile | Dimensions Dia. x H (mm) | Qty / Case |
|---|---|---|---|---|---|---|
| CryoELITE® Vials, Freestanding, External Thread | | | | | | |
| W985863-100 | 2 | White | Yes | Yes | 12 x 49 | 100 |
| W985864-100 | 2 | Red | Yes | Yes | 12 x 49 | 100 |
| W985865-100 | 2 | Pink | Yes | Yes | 12 x 49 | 100 |
| W985866-100 | 2 | Yellow | Yes | Yes | 12 x 49 | 100 |
| W985867-100 | 2 | Green | Yes | Yes | 12 x 49 | 100 |
| W985868-100 | 2 | Blue | Yes | Yes | 12 x 49 | 100 |
| W985872-100 | 2 | Natural | Yes | Yes | 12 x 49 | 100 |

## CryoELITE® Cryogenic Vials, Pre-inserted Barcodes

- CryoELITE vials w/ 2D Data Matrix Barcode insert already applied

| Cat. No. | Size (mL) | Color | Writing Patch | Sterile | Dimensions Dia. x H (mm) | Qty / Case |
|---|---|---|---|---|---|---|
| CryoELITE® Vials, Freestanding, External Thread | | | | | | |
| W985863-BC | 2 | White | Yes | Yes | 12 x 49 | 500 |
| W985864-BC | 2 | Red | Yes | Yes | 12 x 49 | 500 |
| W985865-BC | 2 | Pink | Yes | Yes | 12 x 49 | 500 |
| W985866-BC | 2 | Yellow | Yes | Yes | 12 x 49 | 500 |
| W985867-BC | 2 | Green | Yes | Yes | 12 x 49 | 500 |
| W985868-BC | 2 | Blue | Yes | Yes | 12 x 49 | 500 |

## 2D Data Matrix Bar Code Bottom Insert

- When purchasing WHEATON CryoELITE® freestanding vials, you can purchase an optional 2D Data Matrix Bar Code Insert that allows for immediate bar coding of your samples. The insert can also be applied to the vial at a future date, which eliminates jeopardizing the integrity of your sample by transferring it to another vial
- 2D Data Matrix Bar Code Insert press fits and locks into place in bottom of vial

| Cat. No. | Description | Sterile | Shelf Pack | Qty / Case |
|---|---|---|---|---|
| W985881 | 2D Data Matrix Bar Code Bottom Insert | No | 100 | 500 |

## CryoELITE® Technical Information

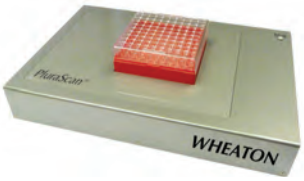
| | |
|---|---|
| Material: | Made from low binding, cryogenic grade virgin polypropylene |
| Temperature Range: | -156°C to +121°C, tested to -196°C |
| Sterility: | Lot Certified Sterile, Radiation Sterilization |
| DNase & RNase Free: | Lot Certified, Ethidium Bromide (EtBr) Agarose Gel Electrophoresis Analysis |
| Non-Pyrogenic, Endotoxin Free: | Lot Certified < 0.500 EU/mL (Kinetic Turbidimetric LAL Method, FDA guideline) |
| Seal psi: | Exceeds 15 psi / 1 atmosphere / 95kPa pressure tested |
| IATA (International Air Transportation Association): | Can be used as a primary receptacle for the Transport of Diagnostic Specimens as outlined by the IATA Dangerous Goods Regulations, Part 6.3,5 |
| DOT (U.S. Department of Transportation): | Exceeds U.S. DOT 49 CFR Parts 171-180 requirements for Diagnostic Specimen Packing and Transportation Requirements |
| Liquid Nitrogen: | Liquid phase tested / Vapor phase accepted |
| Autoclavable: | Recommended at +121°C, 15 psi (1 bar) for 20 minutes |
| Cap Pigmentation: | Cap colors were chosen to ensure no reactivity with common biological samples |
| 2D Data Matrix Capacity: | Numeric 16 / Alphanumeric 10 |
| 2D Data Matrix Symbol Size: | Row x Column: 14 x 14 |
| CE: | Product is CE compliant to The European *In Vitro* Diagnostic Medical Devices Directive 98/79/EC |


## SingleScan™ Bar Code Reader

- Plug and play design enables easy set up with no software installation required
- USB interface allows easy connection to computer
- Reads 1D linear bar codes and 2D Data Matrix bar codes on any vial or ampule
- Inputs decoded bar code ID into any software application where curser is placed

| Cat. No. | Description | Qty |
|---|---|---|
| W986000 | SingleScan™ Bar Code Reader | 1 |

## PluraScan™ Bar Code Reader




- 2D Data Matrix Bar Code Reader
- Works with WHEATON KeepIT® Boxes and WHEATON CryoELITE® Cryogenic Vials and Cryule® Ampules as well as WHEATON E-Z Microtubes
- Flexible software integration
- Integrated frost reduction system allows multiple racks to be read
- Capable of reading bar codes from wide range of manufacturers and label printers

| Cat. No. | Description | Qty |
|---|---|---|
| W986010- [ ]* | PluraScan™ Bar Code Reader | 1 |

## 2D Data Matrix Bar Code Bottom Insert

- When purchasing WHEATON CryoELITE® freestanding vials, you can purchase an optional 2D Data Matrix Bar Code Insert that allows for immediate bar coding of your samples. The insert can also be applied to the vial at a future date, which eliminates jeopardizing the integrity of your sample by transferring it to another vial
- 2D Data Matrix Bar Code Insert press fits and locks into place in bottom of vial

| Cat. No. | Description | Sterile | Qty / Case |
|---|---|---|---|
| W985881 | 2D Data Matrix Bar Code Bottom Insert | No | 500 |

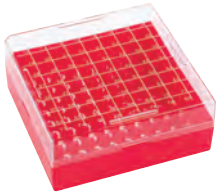
## WHEATON Scanners Technical Information

| Code Formats | SingleScan™ | PluraScan™ |
|---|---|---|
| 1D Linear | ✓ | — |
| 2D Data Matrix | ✓ | ✓ |
| ISO 16022 | ✓ | ✓ |
| Square \| Rectangular Format | ✓ | ✓ |
| ECC 200 | ✓ | ✓ |
| 0-20 Grid Sizes | ✓ | ✓ |
| White on Black \| Black on White | ✓ | ✓ |
| Numeric | ✓ | ✓ |
| Alphanumeric | ✓ | ✓ |
| **Sensor Type** | 1.3 million pixel CMOS sensor | CCD Image Sensor |
| **Light Source** | Class 2M visible laser diode at 630nm | CCFL (Cold Cathode Fluorescent Light Source) |
| **Dimensions (W x D x H)** | 61mm x 167mm x 41.2mm | 75cm x 50cm x 30cm |
| **Power** | USB Hub (5V) | AC 100 to 240V, +10%/-10%, Less than 8W |
| **User Interface** | Keyboard Wedge | WHEATON GUI, including Windows® operating system TCP / IP, ODBC |
| **Cable Interface** | USB | USB2.0 \| USB 1.1 (B Type) |
| **Operating System** | Factory configured for Windows® operating systems compatibility. Also compatible with non-windows operating systems | Windows®7, 2000, XP |
| **Ambient Operating Temperature** | 5 to 50°C | |
| **Storage Temperature** | -20 to 65°C | |
| **Operating Humidity** | (Non-condensing) 5 to 95°C | |

| | Plug Style |
|---|---|
| [A] | North American Cord, 120V |
| [B] | Japan Cord, 100V |
| [C] | Europe Cord, 230V |
| [D] | UK Cord, 230V |
| [F] | Australia / China, 240V |
| [G] | Italy / Chile, 230V |
| [J] | India Cord, 230V |

## KeepIT® Freezer Boxes

KeepIT®-25



KeepIT®-81 & 100

- KeepIT® Freezer Boxes provide an ideal method for batching and storing samples
- Six different colors match the colors of CryoELITE® Cryogenic Vials, creating alternatives for batching and identifying groups of samples
- KeepIT®-25 accommodates up to 25 internal or external threaded cryogenic Vial Sizes: 1.2 - 2mL
- KeepIT®-100 accommodates up to 100 internal threaded cryogenic vials and the KeepIT®-81 accommodates 81 external threaded cryogenic vials (sizes: 1.2 - 2mL)
- Openings in bottom facilitate scanning CryoELITE® 2D Data Matrix Bar Code Inserts
- Made from Eastman Tritan™ BPA free, shatter resistant resin
- Standard footprint compatible with liquid nitrogen storage shelves and freezer drawers

| Cat. No. | Color | Dimensions (L x W x H) (mm) | Qty / Case |
|---|---|---|---|
| **KeepIT®-25 For External Thread Vials** | | | |
| W651702-W | White | 75 x 75 x 52 | 10 |
| W651702-R | Red | 75 x 75 x 52 | 10 |
| W651702-P | Pink | 75 x 75 x 52 | 10 |
| W651702-Y | Yellow | 75 x 75 x 52 | 10 |
| W651702-G | Green | 75 x 75 x 52 | 10 |
| W651702-B | Blue | 75 x 75 x 52 | 10 |
| **Low Profile KeepIT®-81 For External Thread Vials** | | | |
| W651703-W | White | 130 x 130 x 52 | 10 |
| W651703-R | Red | 130 x 130 x 52 | 10 |
| W651703-P | Pink | 130 x 130 x 52 | 10 |
| W651703-Y | Yellow | 130 x 130 x 52 | 10 |
| W651703-G | Green | 130 x 130 x 52 | 10 |
| W651703-B | Blue | 130 x 130 x 52 | 10 |
| **Low Profile KeepIT®-100 For Internal Thread Vials** | | | |
| W651704-W | White | 130 x 130 x 52 | 10 |
| W651704-R | Red | 130 x 130 x 52 | 10 |
| W651704-P | Pink | 130 x 130 x 52 | 10 |
| W651704-Y | Yellow | 130 x 130 x 52 | 10 |
| W651704-G | Green | 130 x 130 x 52 | 10 |
| W651704-B | Blue | 130 x 130 x 52 | 10 |

## CryoELITE® Benchmate Rack


- For use with both freestanding and round bottom vials
- One hand cap removal of freestanding vials
- Holds 50 cryogenic vials
- Manufactured from polypropylene
- Easily cleaned in an automatic washer or autoclavable at 121°C for 20 minutes
- Non-skid feet offer additional stability for bench work
- Stackable
- Well ID: 12.5mm
- Dimensions (L x W x H): (190 x 100 x 22mm)

| Cat. No. | Description | No. of Wells | Qty / Case |
|---|---|---|---|
| W985810 | 50-Position Rack | 5 deep x 10 wide | 5 |

## CryoFile® and CryoFile® XL Storage Boxes

- Use with cryogenic vials
- Partitions numbered from 1 – 81 for easy content identification
- Numbering system printed on lid and bottom of box
- Six colors provide easy sample identification
- Water repellent allows for longer durability
- For use with vapor phase of liquid nitrogen
- Directional holes in bottom allow for drainage and orientation of bottom to top of box
- Dimensions (L x W x H):
  CryoFile® (130 x 130 x 53mm) / CryoFile® XL (130 x 130 x 97mm)
  CryoFile® Tissue Box (130 x 130 x 26mm)

| Cat. No. | Fits | Color | Qty / Case |
|---|---|---|---|
| **CryoFile® Storage Box** | | | |
| W651600 | 1.2 & 2mL Vials | Green | 15 |
| W651601 | 1.2 & 2mL Vials | Yellow | 15 |
| W651602 | 1.2 & 2mL Vials | Pink | 15 |
| W651603 | 1.2 & 2mL Vials | White | 15 |
| W651604 | 1.2 & 2mL Vials | Blue | 15 |
| W651605 | 1.2 & 2mL Vials | Red | 15 |
| **CryoFile® XL Storage Box** | | | |
| W651600-XL | 3, 4 & 5mL Vials | Green | 15 |
| W651601-XL | 3, 4 & 5mL Vials | Yellow | 15 |
| W651602-XL | 3, 4 & 5mL Vials | Pink | 15 |
| W651603-XL | 3, 4 & 5mL Vials | White | 15 |
| W651604-XL | 3, 4 & 5mL Vials | Blue | 15 |
| W651605-XL | 3, 4 & 5mL Vials | Red | 15 |
| **CryoFile® Tissue Storage Box (holds 25 Tissue Vials)** | | | |
| W651610-G | 5mL Tissue Vials | Green | 15 |
| W651610-Y | 5mL Tissue Vials | Yellow | 15 |
| W651610-P | 5mL Tissue Vials | Pink | 15 |
| W651610-W | 5mL Tissue Vials | White | 15 |
| W651610-B | 5mL Tissue Vials | Blue | 15 |
| W651610-R | 5mL Tissue Vials | Red | 15 |

## FTA® Nucleic Acid Collection Storage box

- Storage boxes provide an ideal method for batching and storing FTA Nucleic Acid Collection pouches
- For use with small or large FTA cards
- Accommodates two rows of 3" FTA card pouches or one row of 6" FTA Card Pouches
- Removable divider for use with smaller pouches
- Water repellent box material allows for longer durability
- For use at RT, 4°C, -20°C or colder

| Cat. No. | Dimensions (L x W x H) (in) | Qty / Case |
|---|---|---|
| W651611 | 18 x 6 x 4 | 2 |
| W651612 | 18 x 7 x 4 | 2 |

## Select from Glass, HDPE and PET Vials

- Packaged in 5 utility trays with each partition tray holding 100 vials
- Utility trays serve as a way to store your samples
- For additional organization of your vials, use the WHEATON Vial Rack 868806 or M-T Vial File® W228792
- Cases with 1000 vials are packed in a single plastic bag with caps in a separate bag

## Glass

- Made from WHEATON 180 low potassium borosilicate glass that conforms to USP Type I and ASTM E 438 Type I, Class A requirements
- Background counts are consistent and low, ultraviolet transmission is high

## HDPE

- Made from high density polyethylene with lightweight walls for increased counting efficiency
- Manufactured to precise tolerances to avoid jamming

## PET

- Vials offer low permeability to solvents and minimal background counts
- Clarity of glass with the safety of plastic
- Vials can be safely incinerated; no harmful gas is generated

## Cap Liner Guide

| Liner Material | Description | Applications |
|---|---|---|
| Foamed Polyethylene (PE Foam) | A one piece, three ply coextruded liner consisting of both foamed and solid LDPE. The foam core is sandwiched with solid clear PE. | General Purpose: Broad applications base. Good chemical resistance to acids, alkalis, solvents, alcohols, oils, household cosmetics and aqueous products. Poor for hydrocarbon solvents. Liner provides tight seal. |
| Pulp / Metal Foil | Aluminum foil bonded to pulp board. | Good barrier properties and resistance to hydrocarbons, oils, ketones and alcohols. Not good for acids or alkalis. |
| Polyethylene Cone (PE Cone) | Manufactured from polyethylene (LDPE). The unique cone design provides a wedge type seal that not only seals across the top but also across the inside diameter. | Unique problem solving type of liner. This liner is stress crack resistant and offers superior torque retention and excellent sealing characteristics. It is recommended that this liner be tested prior to use for leak seal. |

Note: Closures and liners are designed for a variety of applications. Product performance can vary depending on conditions. It is recommended that proper tests be performed to determine the best liner for the application.

## Liquid Scintillation Vials

| Cat. No. | Size (mL) | Vial Material | Cap Material | Liner Material | Cap Size | Dia. x H (mm)* | Qty / Case |
|---|---|---|---|---|---|---|---|
| Caps Attached to Vials | | | | | | | |
| 986540 | 20 | Glass | Polypropylene | Foamed Polyethylene | 22-400 | 28 x 61 | 500 |
| 986541 | 20 | Glass | Polypropylene | Metal Foil / Pulp | 22-400 | 28 x 61 | 500 |
| 986542 | 20 | Glass | Urea | Metal Foil / Cork | 22-400 | 28 x 61 | 500 |
| 986546 | 20 | Glass | Urea | Polyethylene Cone | 22-400 | 28 x 61 | 500 |
| 986548 | 20 | Glass | Urea | Polyethylene Disc | 22-400 | 28 x 61 | 500 |
| 986560 | 20 | Glass | Polypropylene | Foamed Polyethylene | 24-400 | 28 x 61 | 500 |
| 986561 | 20 | Glass | Polypropylene | Metal Foil / Pulp | 24-400 | 28 x 61 | 500 |
| 986562 | 20 | Glass | Urea | Metal Foil / Cork | 24-400 | 28 x 61 | 500 |
| 986568 | 20 | Glass | Urea | Polyethylene Disc | 24-400 | 28 x 61 | 500 |
| 986700 | 20 | HDPE | Polypropylene | Foamed Polyethylene | 22-400 | 27 x 61 | 500 |
| 986701 | 20 | HDPE | Polypropylene | Metal Foil / Pulp | 22-400 | 27 x 61 | 500 |
| 986702 | 20 | HDPE | Urea | Metal Foil / Cork | 22-400 | 27 x 61 | 500 |
| 986704 | 20 | HDPE | Polyethylene | Linerless | 22-400 | 27 x 61 | 500 |
| 986706 | 20 | HDPE | Urea | Polyethylene Cone | 22-400 | 27 x 61 | 500 |
| 986730 | 20 | PET | Polypropylene | Foamed Polyethylene | 22-400 | 27 x 61 | 500 |
| 986731 | 20 | PET | Polypropylene | Metal Foil / Pulp | 22-400 | 27 x 61 | 500 |
| 986732 | 20 | PET | Urea | Metal Foil / Cork | 22-400 | 27 x 61 | 500 |
| 986734 | 20 | PET | Polyethylene | Linerless | 22-400 | 27 x 61 | 500 |
| 986736 | 20 | PET | Urea | Polyethylene Cone | 22-400 | 27 x 61 | 500 |
| Caps Packaged Separately | | | | | | | |
| 986580 | 20 | Glass | Polypropylene | Foamed Polyethylene | 22-400 | 28 x 61 | 500 |
| 986581 | 20 | Glass | Polypropylene | Metal Foil / Pulp | 22-400 | 28 x 61 | 500 |
| 986582 | 20 | Glass | Urea | Metal Foil / Cork | 22-400 | 28 x 61 | 500 |
| 986586 | 20 | Glass | Urea | Polyethylene Cone | 22-400 | 28 x 61 | 500 |
| 986590 | 20 | Glass | Polypropylene | Foamed Polyethylene | 24-400 | 28 x 61 | 500 |
| 986591 | 20 | Glass | Polypropylene | Metal Foil / Pulp | 24-400 | 28 x 61 | 500 |
| 986710 | 20 | HDPE | Polypropylene | Foamed Polyethylene | 22-400 | 27 x 61 | 500 |
| 986720 | 20 | HDPE | Polypropylene | Foamed Polyethylene | 22-400 | 27 x 61 | 1000 |
| 986711 | 20 | HDPE | Polypropylene | Metal Foil / Pulp | 22-400 | 27 x 61 | 500 |
| 986721 | 20 | HDPE | Polypropylene | Metal Foil / Pulp | 22-400 | 27 x 61 | 1000 |
| 986714 | 20 | HDPE | Polyethylene | Linerless | 22-400 | 27 x 61 | 500 |
| 986724 | 20 | HDPE | Polyethylene | Linerless | 22-400 | 27 x 61 | 1000 |
| 986722 | 20 | HDPE | Urea | Metal Foil / Cork | 22-400 | 27 x 61 | 1000 |
| 986716 | 20 | HDPE | Urea | Polyethylene Cone | 22-400 | 27 x 61 | 500 |
| 986726 | 20 | HDPE | Urea | Polyethylene Cone | 22-400 | 27 x 61 | 1000 |
| 986750 | 20 | PET | Polypropylene | Foamed Polyethylene | 22-400 | 27 x 61 | 500 |
| 986740 | 20 | PET | Polypropylene | Foamed Polyethylene | 22-400 | 27 x 61 | 1000 |
| 986751 | 20 | PET | Polypropylene | Metal Foil / Pulp | 22-400 | 27 x 61 | 500 |
| 986741 | 20 | PET | Polypropylene | Metal Foil / Pulp | 22-400 | 27 x 61 | 1000 |
| 986754 | 20 | PET | Polyethylene | Linerless | 22-400 | 27 x 61 | 500 |
| 986744 | 20 | PET | Polyethylene | Linerless | 22-400 | 27 x 61 | 1000 |
| 986752 | 20 | PET | Urea | Metal Foil / Cork | 22-400 | 27 x 61 | 500 |
| 986742 | 20 | PET | Urea | Metal Foil / Cork | 22-400 | 27 x 61 | 1000 |
| 986756 | 20 | PET | Urea | Polyethylene Cone | 22-400 | 27 x 61 | 500 |
| 986746 | 20 | PET | Urea | Polyethylene Cone | 22-400 | 27 x 61 | 1000 |

*Measurement taken with cap attached.

## Glass Liquid Scintillation Vial

(Without Screw Caps)

- Made from WHEATON 180 low potassium borosilicate glass that conforms to USP Type I and ASTM E 438 Type I, Class A requirements
- Background counts are consistent and low, ultraviolet transmission is high
- Screw caps can be purchased separately
- Packaged in 5 utility trays with each partitioned tray holding 100 vials each
- Utility trays serve as a way to store your samples
- For additional organization of your vials use the WHEATON Vial Rack 868806 or M-T Vial File® W228792

| Cat. No. | Size (mL) | Cap Size | Dia. x H (mm) | Qty / Case |
|---|---|---|---|---|
| 986532 | 20 | 22-400 | 28 x 57 | 500 |

## Liquid Scintillation Vial Screw Caps

- Screw caps for WHEATON liquid scintillation vials
- Use as replacement caps or for vials that are provided without caps
- Choose the right size screw cap for your vial
- Select cap and liner material for your application
- Not autoclavable

| Cat. No. | Cap Size (mm) | Cap Material | Cap Liner Material | Qty / Case |
|---|---|---|---|---|
| 241009 | 15-425 | Urea | Metal Foil | 1000 |
| 240804 | 22-400 | Polypropylene | Metal Foil | 1000 |
| 241017 | 22-400 | Urea | Metal Foil | 1000 |
| 240817 | 22-400 | Urea | Polyethylene Disc | 1000 |
| 240917 | 22-400 | Urea | PE Cone | 1000 |
| 241317 | 22-400 | Polyethylene | Linerless | 1000 |
| 240805 | 24-400 | Polypropylene | Foil / Pulp | 1000 |
| 241018 | 24-400 | Urea | Metal Foil | 1000 |
| 240818 | 24-400 | Urea | Polyethylene Disc | 1000 |

## Omni-Vial®, Polypropylene

- 4mL polypropylene vial for wide variety of lab applications
- Press-fit cap made from polypropylene
- Vials and caps are packed separately in two polybags containing 500 each
- Vial can be autoclaved for 15 minutes at 121°C at 15 psi

| Cat. No. | Size (mL) | Liner Material | Dia. x H (mm) | Qty / Case |
|---|---|---|---|---|
| 225402 | 4 | Linerless | 13 x 57 | 1000 |

## Scintillation Vial, HDPE

Quarter Turn Cap

Quarter Turn Hanging Cap

- 6mL vial made from high density polyethylene
- Hanging cap allows for suspending vial in 20mL vial with 22mm neck finish
- Dimensions with cap attached: 17mm x 57mm
- For additional organization of your vials use the WHEATON Vial Rack 868810
- Polypropylene cap included

| Cat. No. | Cap Type | Liner Material | Qty / Case |
|---|---|---|---|
| 225414 | Quarter Turn | Linerless | 1000 |
| 225415 | Quarter Turn Hanging Style | Linerless | 1000 |

## Sampule® Vials

Glass HDPE

- 6mL vial made from glass or HDPE
- Glass vials made from WHEATON 180 low potassium borosilicate glass that conforms to ASTM E 438 Type I, Class A and USP Type I requirements
- Background counts are consistent and low in glass vials; ultraviolet transmission is high
- HDPE vials are economical choice for scintillation counting
- Caps packaged separately
- For additional organization of your vials use the WHEATON Vial Rack 868810

| Cat. No. | Cap Material | Liner Matertial | Cap Size | Dia. x H (mm) | Qty / Case |
|---|---|---|---|---|---|
| **Glass** | | | | | |
| 986491 | Urea | Metal Foil / Pulp | 13-425 | 17 x 58 | 1000 |
| 986492 | Urea | Metal Foil / Pulp | 15-425 | 17 x 58 | 1000 |
| **HDPE** | | | | | |
| 986644 | Polypropylene | Linerless | 18mm | 17 x 57 | 1000 |
| 986645 | Polypropylene | Linerless | 18mm | 17 x 57 | 2000 |

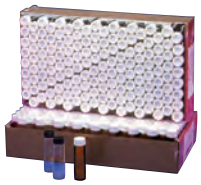
## Culture Vial

- Culture vials feature deep-skirted screw caps to allow safer, more dependable handling when working with infectious materials
- Vials are manufactured from WHEATON 33 low extractable borosilicate glass that conforms to USP Type I and ASTM E 438 Type I, Class A requirements
- Pre-attached deep skirted solid-top black phenolic screw cap with 14B rubber liner
- Autoclavable
- Vials packaged in corrugated trays with partitions
- Use M-T Vial File® (Cat. No. 228780) for storing 4mL vials and (Cat. No. W228790) for storing 8mL vials

| Cat. No. | Size (mL) | *Dia. x H (mm) | Cap Size | Qty / Case |
|---|---|---|---|---|
| 225142 | 4 | 15 x 51 | 13-415 | 144 |
| 225144 | 8 | 17 x 70 | 15-415 | 144 |
| 225145 | 12 | 19 x 72 | 15-415 | 144 |

*Measurement taken with cap attached.

## EPA Vial, 40mL



- Ideal for use in water sampling according to EPA 40 CFR 136, "Guidelines for Establishing Test Procedures for the Analysis of Pollutants"
- Clear vials manufactured from WHEATON 33 low extractable borosilicate glass that conforms to USP Type I and ASTM E438 Type I, Class A requirements
- Amber vials manufactured from WHEATON 320 amber glass that conforms to USP Type I requirements for light transmission to protect light-sensitive products
- Caps attached to vials
- Vials packaged in convenient trays for ease of use

| Cat. No. | Size (mL) | Size (dr) | *Dia. x H (mm) | Cap Size | Qty / Case |
|---|---|---|---|---|---|
| **Clear Vial with Open Top Black Phenolic PTFE Faced Silicone Lined Cap** | | | | | |
| 225310 | 40 | 10 | 28 x 98 | 24-400 | 72 |
| **Amber Vial with Open Top White Polypropylene PTFE Faced Silicone Lined Cap** | | | | | |
| 225315 | 40 | 10 | 28 x 98 | 24-400 | 72 |

*Measurement taken with cap attached.

## Replacement 24-400 Screw Caps & Septa

| Cat. No. | Description | Qty / Case |
|---|---|---|
| W240518 | Black Phenolic Open Top Screw Cap w/o Septa | 200 |
| W224600 | White Glass-Filled Open Top Polypropylene Cap with Bonded 5 mils PTFE / 120 mils Silicone Septa | 200 |

## Dilution Vial


- Vial is marked with a blue line at the 3mL level
- Vials are manufactured from WHEATON 33 low extractable borosilicate glass that conforms to USP Type I and ASTM E 438 Type I, Class A requirements
- Pre-attached solid-top black phenolic screw cap with 14B rubber liner
- Autoclavable
- Vials are packaged in corrugated trays with partitions
- Use M-T Vial File® (Cat. No. 228780) for storing vials

| Cat. No. | Size (mL) | *Dia. x H (mm) | Cap Size | Qty / Case |
|---|---|---|---|---|
| 225002 | 4 | 15 x 48 | 13-425 | 144 |

*Measurement taken with cap attached.

## Vials for Environmental Analysis

| Cat. No. | Size (mL) | Size (dr) | Dia. x H (mm)* | Cap Size | Qty / Case |
|---|---|---|---|---|---|
| **Clear Vial with Open Top White Polypropylene PTFE Faced Silicone Lined Cap** (Septa of 5 mils of PTFE facing 120 mils of silicone is bonded to cap.) | | | | | |
| W224609 | 20 | 5 | 28 x 60 | 24-400 | 72 |
| W224610 | 25 | 6.25 | 28 x 73 | 24-400 | 72 |
| **Amber Vial with Open Top White Polypropylene PTFE Faced Silicone Lined Cap** (Septa of 5 mils of PTFE facing 120 mils of silicone is bonded to cap.) | | | | | |
| W224612 | 20 | 5 | 28 x 60 | 24-400 | 72 |
| W224614 | 40 | 10 | 28 x 98 | 24-400 | 72 |

*Cap on

# WHEATON®
## AUTOSAMPLER VIALS

WHEATON's selection of Chromatography Vials and accessories offers quality, value and reliability. WHEATON chromatography vials are designed for trouble-free operation in most autosamplers. 12 x 32 autosampler vials are offered in variety of finishes for both GC and HPLC applications. Closures are available in variety of colors and septa materials to ensure chemical compatibility with your sample.

> WHEATON offers 12 x 32mm autosampler, headspace and shell vials

> Screw thread, crimp top and snap cap vial finishes available for 12 x 32mm vials

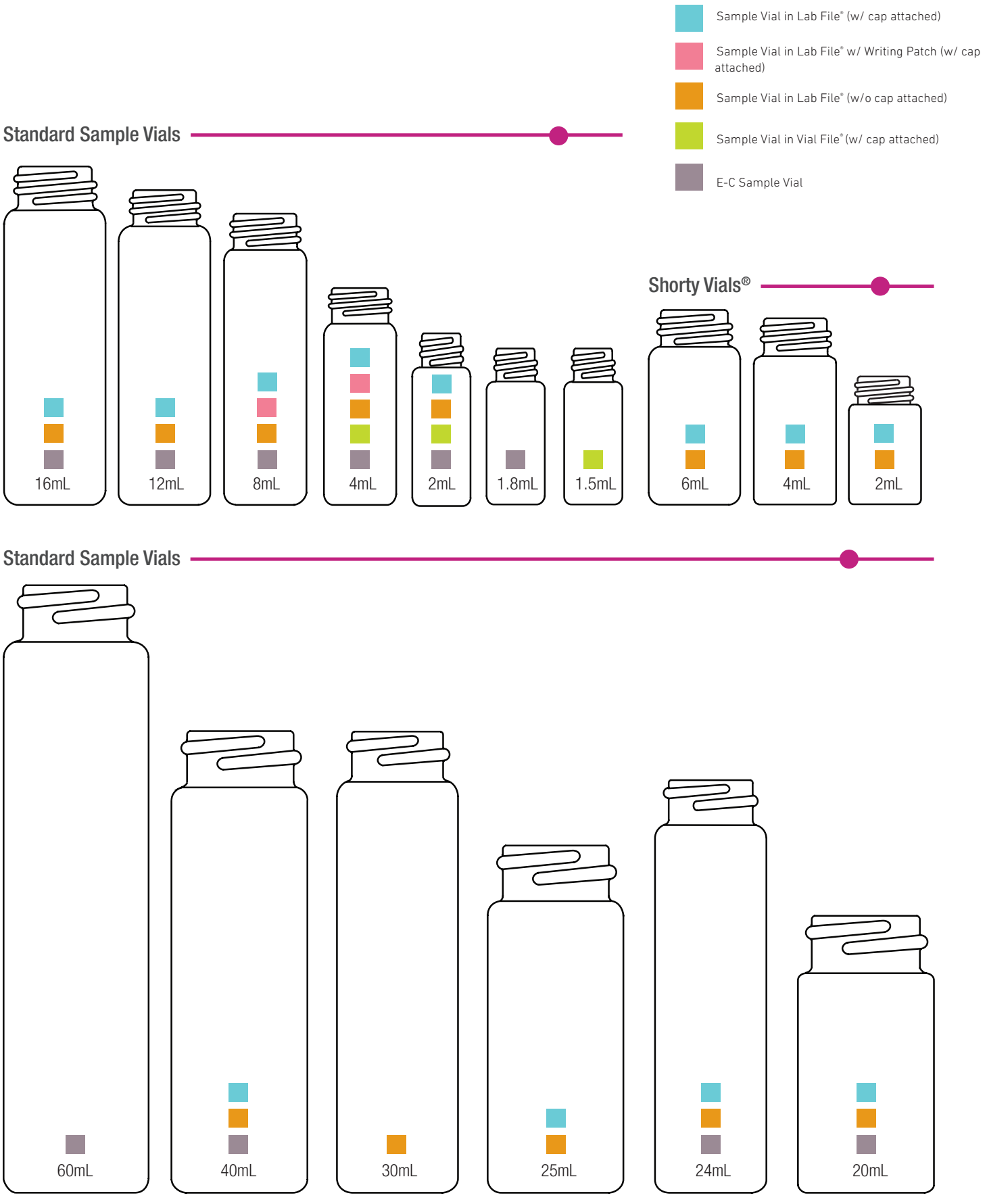
> Purchase vials and caps separately or together in Convenience Packs

> Glass vials are manufactured from Type I borosilicate glass

> Limited volume inserts are available for microsampling applications

See more information on Autosampler Vials on page 83.

## Sample Vial Sizer Guide (Approximate Size)



## Sample Vials in Lab File® (With Caps Attached)

Shorty Vials®

Standard Clear and Amber Vials

- Sample vials with caps attached to vial help maintain cleanliness
- Lab File® with partitioned trays provides an easy way to inventory samples or to store empty vials
- Clear vials made from low extractable borosilicate glass to provide superior chemical resistance
- Clear vials conform to USP Type I and ASTM E 438 Type I, Class A requirements
- Amber vials made from borosilicate glass that conforms to USP Type I requirements for light transmission
- Shorty Vials® feature a low profile for greater stability and less dead volume
- 14B rubber lined black phenolic screw cap for aqueous samples
- PTFE / 14B rubber lined black phenolic screw cap for organic samples
- Replacement caps can be purchased separately
- Vials and caps are autoclavable

| Cat. No. | Color | Size (mL) | Size (dr) | Cap Material | Cap Description | Liner Material | Cap Size | Dia. x H (mm) | Qty / Case | Fits M-T File® | Fits Vial Rack |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Shorty Vials with Caps Attached** | | | | | | | | | | | |
| W225291 | Clear | 2 | .5 | Black Phenolic | Solid Top | 14B Rubber | 13-425 | 15 x 31 | 200 | 228780 | 868804 |
| W224606 | Clear | 2 | .5 | Black Phenolic | Solid Top | PTFE / 14B Rubber | 13-425 | 15 x 31 | 200 | 228780 | 868804 |
| W225292 | Clear | 4 | 1 | Black Phenolic | Solid Top | 14B Rubber | 15-425 | 17 x 41 | 200 | — | 868810 |
| W224607 | Clear | 4 | 1 | Black Phenolic | Solid Top | PTFE / 14B Rubber | 15-425 | 17 x 41 | 200 | — | 868810 |
| W225293 | Clear | 6 | 1.5 | Black Phenolic | Solid Top | 14B Rubber | 15-425 | 19 x 43 | 200 | — | — |
| W224608 | Clear | 6 | 1.5 | Black Phenolic | Solid Top | PTFE / 14B Rubber | 15-425 | 19 x 43 | 200 | — | — |
| **Standard Vials with Caps Attached** | | | | | | | | | | | |
| 224881 | Clear | 2 | .5 | Black Phenolic | Solid Top | 14B Rubber | 8-425 | 12 x 38 | 288 | 228778 | 985800 |
| W224581 | Clear | 2 | .5 | Black Phenolic | Solid Top | PTFE / 14B Rubber | 8-425 | 12 x 38 | 288 | 228778 | 985800 |
| 224981 | Amber | 2 | .5 | Black Phenolic | Solid Top | 14B Rubber | 8-425 | 12 x 38 | 288 | 228778 | 985800 |
| W224681 | Amber | 2 | .5 | Black Phenolic | Solid Top | PTFE / 14B Rubber | 8-425 | 12 x 38 | 288 | 228778 | 985800 |
| 225081 | Clear | 2 | .5 | White Urea | Solid Top | Metal Foil / Pulp | 8-425 | 12 x 38 | 288 | 228778 | 985800 |
| 224882 | Clear | 4 | 1 | Black Phenolic | Solid Top | 14B Rubber | 13-425 | 15 x 48 | 144 | 228780 | 868804 |
| W224582 | Clear | 4 | 1 | Black Phenolic | Solid Top | PTFE / 14B Rubber | 13-425 | 15 x 48 | 144 | 228780 | 868804 |
| 224982 | Amber | 4 | 1 | Black Phenolic | Solid Top | 14B Rubber | 13-425 | 15 x 48 | 144 | 228780 | 868804 |
| W224682 | Amber | 4 | 1 | Black Phenolic | Solid Top | PTFE / 14B Rubber | 13-425 | 15 x 48 | 144 | 228780 | 868804 |
| 224884 | Clear | 8 | 2 | Black Phenolic | Solid Top | 14B Rubber | 15-425 | 17 x 63 | 144 | W228790 | 868810 |
| W224584 | Clear | 8 | 2 | Black Phenolic | Solid Top | PTFE / 14B Rubber | 15-425 | 17 x 63 | 144 | W228790 | 868810 |
| 224984 | Amber | 8 | 2 | Black Phenolic | Solid Top | 14B Rubber | 15-425 | 17 x 63 | 144 | W228790 | 868810 |
| W224684 | Amber | 8 | 2 | Black Phenolic | Solid Top | PTFE / 14B Rubber | 15-425 | 17 x 63 | 144 | W228790 | 868810 |
| 224885 | Clear | 12 | 3 | Black Phenolic | Solid Top | 14B Rubber | 15-425 | 19 x 68 | 144 | — | — |
| W224585 | Clear | 12 | 3 | Black Phenolic | Solid Top | PTFE / 14B Rubber | 15-425 | 19 x 68 | 144 | — | — |
| 224886 | Clear | 16 | 4 | Black Phenolic | Solid Top | 14B Rubber | 18-400 | 21 x 73 | 144 | — | — |
| W224586 | Clear | 16 | 4 | Black Phenolic | Solid Top | PTFE / 14B Rubber | 18-400 | 21 x 73 | 144 | — | — |
| 225288 | Clear | 20 | 5 | Black Phenolic | Solid Top | 14B Rubber | 24-400 | 28 x 60 | 72 | W228792 | 868806 |
| W224589 | Clear | 20 | 5 | Black Phenolic | Solid Top | PTFE / 14B Rubber | 24-400 | 28 x 60 | 72 | W228792 | 868806 |
| W224820 | Amber | 20 | 5 | Black Phenolic | Solid Top | 14B Rubber | 24-400 | 28 x 60 | 72 | W228792 | 868806 |
| W224604 | Amber | 20 | 5 | Black Phenolic | Solid Top | PTFE / 14B Rubber | 24-400 | 28 x 60 | 72 | W228792 | 868806 |
| 224888 | Clear | 24 | 6 | Black Phenolic | Solid Top | 14B Rubber | 20-400 | 23 x 88 | 144 | — | 868805 |
| W224588 | Clear | 24 | 6 | Black Phenolic | Solid Top | PTFE / 14B Rubber | 20-400 | 23 x 88 | 144 | — | 868805 |
| 225289 | Clear | 25 | 6.76 | Black Phenolic | Solid Top | 14B Rubber | 24-400 | 28 x 73 | 72 | — | 868806 |
| W224590 | Clear | 25 | 6.76 | Black Phenolic | Solid Top | PTFE / 14B Rubber | 24-400 | 28 x 73 | 72 | — | 868806 |
| 225290 | Clear | 40 | 10.8 | Black Phenolic | Solid Top | 14B Rubber | 24-400 | 28 x 98 | 72 | — | 868806 |
| W224591 | Clear | 40 | 10.8 | Black Phenolic | Solid Top | PTFE / 14B Rubber | 24-400 | 28 x 98 | 72 | — | 868806 |
| W224840 | Amber | 40 | 10.8 | Black Phenolic | Solid Top | 14B Rubber | 24-400 | 28 x 98 | 72 | — | 868806 |
| W224605 | Amber | 40 | 10.8 | Black Phenolic | Solid Top | PTFE / 14B Rubber | 24-400 | 28 x 98 | 72 | — | 868806 |
| **Standard Vials with Writing Patch and Caps Attached** | | | | | | | | | | | |
| 225012 | Clear | 4 | 1 | Black Phenolic | Solid Top | 14B Rubber | 13-425 | 15 x 48 | 144 | 228780 | 868804 |
| 225014 | Clear | 8 | 2 | Black Phenolic | Solid Top | 14B Rubber | 15-425 | 17 x 63 | 144 | W228790 | 868810 |

## Sample Vials in Lab File® (Without Caps)

- Sample vials packaged in partitioned trays without caps
- Partitioned trays provide an easy way to inventory samples or to store empty vials
- Clear vials made from low extractable borosilicate glass that provides superior chemical resistance
- Clear vials conform to USP Type I and ASTM E 438 Type I, Class A requirements
- Amber vials made from borosilicate glass that conforms to USP Type I requirements for light transmission to protect light-sensitive products
- Shorty Vials® feature a low profile for greater stability and less dead volume
- Screw caps can be purchased separately
- Vials are autoclavable

| Cat. No. | Color | Size (mL) | Size (dr) | Cap Size | Dia. x H (mm) | Qty / Case | Fits M-T File® | Fits Vial Rack |
|---|---|---|---|---|---|---|---|---|
| **Shorty Vials without Caps** | | | | | | | | |
| 224821 | Clear | 2 | .5 | 13-425 | 15 x 28 | 200 | 228780 | 868804 |
| 224822 | Clear | 4 | 1 | 15-425 | 17 x 38 | 200 | — | 868810 |
| 224823 | Clear | 6 | 1.5 | 15-425 | 19 x 40 | 200 | — | — |
| **Standard Vials without Caps** | | | | | | | | |
| 224801 | Clear | 2 | .5 | 8-425 | 12 x 35 | 200 | 228778 | 985800 |
| 224811 | Amber | 2 | .5 | 8-425 | 12 x 35 | 200 | 228778 | 985800 |
| 224802 | Clear | 4 | 1 | 13-425 | 15 x 45 | 200 | 228780 | 868804 |
| 224812 | Amber | 4 | 1 | 13-425 | 15 x 45 | 200 | 228780 | 868804 |
| 224804 | Clear | 8 | 2 | 15-425 | 17 x 60 | 200 | W228790 | 868810 |
| 224814 | Amber | 8 | 2 | 15-425 | 17 x 60 | 200 | W228790 | 868810 |
| 224805 | Clear | 12 | 3 | 15-425 | 19 x 65 | 200 | — | — |
| 224806 | Clear | 16 | 4 | 18-400 | 21 x 70 | 200 | — | — |
| 224831 | Clear | 20 | 5 | 24-400 | 28 x 57 | 200 | W228792 | 868806 |
| W224815 | Amber | 20 | 5 | 24-400 | 28 x 57 | 200 | W228792 | 868806 |
| 224808 | Clear | 24 | 6 | 20-400 | 23 x 85 | 200 | — | 868805 |
| 224832 | Clear | 25 | 6.76 | 24-400 | 28 x 70 | 200 | — | 868806 |
| W224834 | Clear | 30 | 8 | 22-400 | 25 x 95 | 200 | — | — |
| 224833 | Clear | 40 | 10.8 | 24-400 | 28 x 95 | 200 | — | 868806 |
| 224836 | Amber | 40 | 10.8 | 24-400 | 28 x 95 | 200 | — | 868806 |

## Sample Vials in Vial File®

224891

224892

W224896

- Provides a compact, easily accessible means of sample storage
- Polystyrene case with partitions, foam inserts and alphanumerical indexing card organize and protect vials
- Clear vials are manufactured from low extractable borosilicate glass that conforms to USP Type I and ASTM E 438 Type I, Class A requirements
- Amber vials made from borosilicate glass that conforms to USP Type I requirements for light transmission to protect light-sensitive products
- Choice of solid or open top black phenolic screw cap
- Open top screw cap provides for sample retrieval with a syringe
- Caps attached to vials
- Vials and caps are autoclavable

| Cat. No. | Color | Size (mL) | Size (dr) | Graduations | Cap Style | Cap Material | Liner Material | Cap Size | Dia. x H (mm) | Vials/File | Qty / Case |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 224950 | Clear | 1.5 | .375 | No | Open Top | Black Phenolic | PTFE / Silicone | 8-425 | 12 x 35 | 60 | 1 |
| W224954 | Amber | 1.5 | .375 | No | Open Top | Black Phenolic | PTFE / Silicone | 8-425 | 12 x 35 | 60 | 1 |
| 224891 | Clear | 2 | .5 | No | Solid Top | Black Phenolic | 14B Rubber | 8-425 | 12 x 38 | 60 | 1 |
| W224693 | Clear | 2 | .5 | No | Solid Top | Black Phenolic | PTFE / 14B Rubber | 8-425 | 12 x 38 | 60 | 1 |
| W224896 | Amber | 2 | .5 | No | Solid Top | Black Phenolic | 14B Rubber | 8-425 | 12 x 38 | 60 | 1 |
| W224695 | Amber | 2 | .5 | No | Solid Top | Black Phenolic | PTFE / 14B Rubber | 8-425 | 12 x 38 | 60 | 1 |
| 224892 | Clear | 4 | 1 | No | Solid Top | Black Phenolic | 14B Rubber | 13-425 | 15 x 48 | 40 | 1 |
| W224694 | Clear | 4 | 1 | No | Solid Top | Black Phenolic | PTFE / 14B Rubber | 13-425 | 15 x 48 | 40 | 1 |
| 224952 | Clear | 4 | 1 | No | Open Top | Black Phenolic | PTFE / Silicone | 13-425 | 15 x 48 | 40 | 1 |
| W224897 | Amber | 4 | 1 | No | Solid Top | Black Phenolic | 14B Rubber | 13-425 | 15 x 48 | 40 | 1 |
| W224696 | Amber | 4 | 1 | No | Solid Top | Black Phenolic | PTFE / 14B Rubber | 13-425 | 15 x 48 | 40 | 1 |
| W224955 | Amber | 4 | 1 | No | Open Top | Black Phenolic | PTFE / Silicone | 13-425 | 15 x 48 | 40 | 1 |

## E-C Sample Vials

- E-Conomically priced by packaging vials and screw caps separately
- Clear vials made from low extractable borosilicate glass that provides superior chemical resistance
- Clear vials conform to USP Type I and ASTM E 438 Type I, Class A requirements
- Amber vials made from borosilicate glass that conforms to USP Type I requirements for light transmission to protect light-sensitive products
- Vials packed in two shrink-wrapped packs of 100 vials which reduces contamination from corrugate
- 14B rubber lined black phenolic screw cap for aqueous samples
- PTFE-faced 14B rubber lined black phenolic screw cap for organic samples
- Caps and replacement caps can be purchased separately
- Vials and caps are autoclavable

| Cat. No. | Color | Size (mL) | Size (dr) | Cap Material | Liner Material | Cap Size | Dia. x H (mm) | Qty / Case | Fits M-T Finish® | Fits Vial Rack |
|---|---|---|---|---|---|---|---|---|---|---|
| 224700 | Clear | 1.8 | .375 | — | — | 8-425 | 12 x 32 | 200 | 228778 | 985800 |
| 224710 | Amber | 1.8 | .375 | — | — | 8-425 | 12 x 32 | 200 | 228778 | 985800 |
| 224720 | Clear | 1.8 | .375 | Black Phenolic | 14B Rubber | 8-425 | 12 x 35** | 200 | 228778 | 985800 |
| 224740 | Clear | 1.8 | .375 | Black Phenolic | PTFE / 14B Rubber | 8-425 | 12 x 35** | 200 | 228778 | 985800 |
| 224730 | Amber | 1.8 | .375 | Black Phenolic | 14B Rubber | 8-425 | 12 x 35** | 200 | 228778 | 985800 |
| 224750 | Amber | 1.8 | .375 | Black Phenolic | PTFE / 14B Rubber | 8-425 | 12 x 35** | 200 | 228778 | 985800 |
| 224701 | Clear | 2 | .5 | — | — | 8-425 | 12 x 35 | 200 | 228778 | 985800 |
| 224711 | Amber | 2 | .5 | — | — | 8-425 | 12 x 35 | 200 | 228778 | 985800 |
| 224721 | Clear | 2 | .5 | Black Phenolic | 14B Rubber | 8-425 | 12 x 38** | 200 | 228778 | 985800 |
| 224741 | Clear | 2 | .5 | Black Phenolic | PTFE / 14B Rubber | 8-425 | 12 x 38** | 200 | 228778 | 985800 |
| 224731 | Amber | 2 | .5 | Black Phenolic | 14B Rubber | 8-425 | 12 x 38** | 200 | 228778 | 985800 |
| 224751 | Amber | 2 | .5 | Black Phenolic | PTFE / 14B Rubber | 8-425 | 12 x 38** | 200 | 228778 | 985800 |
| 224702 | Clear | 4 | 1 | — | — | 13-425 | 15 x 45 | 200 | 228780 | 868804 |
| 224712 | Amber | 4 | 1 | — | — | 13-425 | 15 x 45 | 200 | 228780 | 868804 |
| 224722 | Clear | 4 | 1 | Black Phenolic | 14B Rubber | 13-425 | 15 x 48** | 200 | 228780 | 868804 |
| 224742 | Clear | 4 | 1 | Black Phenolic | PTFE / 14B Rubber | 13-425 | 15 x 48** | 200 | 228780 | 868804 |
| 224732 | Amber | 4 | 1 | Black Phenolic | 14B Rubber | 13-425 | 15 x 48** | 200 | 228780 | 868804 |
| 224752 | Amber | 4 | 1 | Black Phenolic | PTFE / 14B Rubber | 13-425 | 15 x 48** | 200 | 228780 | 868804 |
| 224704 | Clear | 8 | 2 | — | — | 15-425 | 17 x 60 | 200 | W228790 | 868810 |
| 224714 | Amber | 8 | 2 | — | — | 15-425 | 17 x 60 | 200 | W228790 | 868810 |
| 224724 | Clear | 8 | 2 | Black Phenolic | 14B Rubber | 15-425 | 17 x 63** | 200 | W228790 | 868810 |
| 224744 | Clear | 8 | 2 | Black Phenolic | PTFE / 14B Rubber | 15-425 | 17 x 63** | 200 | W228790 | 868810 |
| 224734 | Amber | 8 | 2 | Black Phenolic | 14B Rubber | 15-425 | 17 x 63** | 200 | W228790 | 868810 |
| 224754 | Amber | 8 | 2 | Black Phenolic | PTFE / 14B Rubber | 15-425 | 17 x 63** | 200 | W228790 | 868810 |
| 224705 | Clear | 12 | 3 | — | — | 15-425 | 19 x 65 | 200 | — | — |
| 224725 | Clear | 12 | 3 | Black Phenolic | 14B Rubber | 15-425 | 19 x 68** | 200 | — | — |
| 224745 | Clear | 12 | 3 | Black Phenolic | PTFE / 14B Rubber | 15-425 | 19 x 68** | 200 | — | — |
| 224706 | Clear | 16 | 4 | — | — | 18-400 | 21 x 70 | 200 | — | — |
| 224726 | Clear | 16 | 4 | Black Phenolic | 14B Rubber | 18-400 | 21 x 73** | 200 | — | — |
| 224746 | Clear | 16 | 4 | Black Phenolic | PTFE / 14B Rubber | 18-400 | 21 x 73** | 200 | — | — |
| W224809 | Clear | 20 | 5 | — | — | 24-400 | 28 x 57 | 200 | W228792 | 868806 |
| 224708 | Clear | 24 | 6 | — | — | 20-400 | 23 x 85 | 200 | — | 868805 |
| 224728 | Clear | 24 | 6 | Black Phenolic | 14B Rubber | 20-400 | 23 x 88** | 200 | — | 868805 |
| 224748 | Clear | 24 | 6 | Black Phenolic | PTFE / 14B Rubber | 20-400 | 23 x 88** | 200 | — | 868805 |
| W224810 | Clear | 40 | 10.8 | — | — | 24-400 | 28 x 95 | 200 | — | 868806 |
| W226060* | Clear | 60 | 15 | — | — | 24-400 | 30 x 125 | 143 | — | 868808 |

* Includes one shrink-wrapped pack of 143 vials  ** Measurement with cap attached

## Screw Caps for Sample Vials

Black Phenolic

White Polypropylene Solid Top

White Polypropylene Open Top

- Choice of black phenolic, white polypropylene or urea screw caps
- PTFE faced (14B) styrene-butadiene rubber liner provides a totally inert inner seal and surface facing the sample or product
- Bonded PTFE faced silicone liner ideal for storage of volatile solvents, sensitive compounds and corrosive chemicals
- Open top screw caps have a bonded PTFE faced silicone liner that provides access with a syringe
- Pre-slit PTFE / Silicone liner easily pierced by liquid handing needles
- Can withstand autoclaving / sterilization

| Cat. No. | Cap Size | Cap Style | Cap Material | Color | Cap Liner | Autoclavable | Qty / Case |
|---|---|---|---|---|---|---|---|
| 240206 | 8-425 | Solid Top | Phenolic | Black | 14B Rubber | Yes | 1000 |
| W240406 | 8-425 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | Yes | 200 |
| 240208 | 13-425 | Solid Top | Phenolic | Black | 14B Rubber | Yes | 200 |
| 240408 | 13-425 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | Yes | 200 |
| 239249 | 13-425 | Solid Top | Phenolic | Black | PE Cone | No | 144 |
| 239201 | 13-425 | Solid Top | Polypropylene | White | Poly-Vinyl | No | 144 |
| 239273 | 13-425 | Solid Top | Polypropylene | White | Foamed PE | No | 144 |
| 239225 | 13-425 | Solid Top | Polypropylene | White | PTFE / Foamed PE | No | 144 |
| W240830 | 13-425 | Solid Top | Polypropylene | White | Bonded PTFE / Silicone | Yes | 250 |
| W242710 | 13-425 | Open Top | Polypropylene | Black | Bonded PTFE / Silicone | Yes | 250 |
| W240848 | 13-425 | Open Top | Polypropylene | Black | Pre-Slit Bonded PTFE / Silicone | Yes | 250 |
| 240209 | 15-425 | Solid Top | Phenolic | Black | 14B Rubber | Yes | 200 |
| 240409 | 15-425 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | Yes | 200 |
| 239250 | 15-425 | Solid Top | Phenolic | Black | PE Cone | No | 144 |
| 239202 | 15-425 | Solid Top | Polypropylene | White | Poly-Vinyl | No | 144 |
| 239274 | 15-425 | Solid Top | Polypropylene | White | Foamed PE | No | 144 |
| 239226 | 15-425 | Solid Top | Polypropylene | White | PTFE / Foamed PE | No | 144 |
| W240832 | 15-425 | Solid Top | Polypropylene | White | Bonded PTFE / Silicone | Yes | 250 |
| W240842 | 15-425 | Open Top | Polypropylene | White | Bonded PTFE / Silicone | Yes | 250 |
| W240850 | 15-425 | Open Top | Polypropylene | Black | Pre-Slit Bonded PTFE / Silicone | Yes | 250 |
| 241009 | 15-425 | Closed Top | Urea | White | Metal Foil | No | 1000 |
| 240215 | 18-400 | Solid Top | Phenolic | Black | 14B Rubber | Yes | 500 |
| 240415 | 18-400 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | Yes | 200 |
| 239251 | 18-400 | Solid Top | Phenolic | Black | PE Cone | No | 144 |
| 239203 | 18-400 | Solid Top | Polypropylene | White | Poly-Vinyl | No | 144 |
| 239275 | 18-400 | Solid Top | Polypropylene | White | Foamed PE | No | 144 |
| 239227 | 18-400 | Solid Top | Polypropylene | White | PTFE / Foamed PE | No | 144 |
| W239298 | 20-400 | Solid Top | Phenolic | Black | 14B Rubber | Yes | 144 |
| 240416 | 20-400 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | Yes | 100 |
| 239253 | 20-400 | Solid Top | Phenolic | Black | PE Cone | No | 144 |
| 239229 | 20-400 | Solid Top | Polypropylene | White | PTFE / Foamed PE | No | 144 |
| W239300 | 24-400 | Solid Top | Phenolic | Black | 14B Rubber | Yes | 144 |
| 240418 | 24-400 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | Yes | 100 |
| W242711 | 24-400 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | Yes | 200 |
| 239257 | 24-400 | Solid Top | Phenolic | Black | PE Cone | No | 144 |
| 239209 | 24-400 | Solid Top | Polypropylene | White | Poly-Vinyl | No | 144 |
| 239281 | 24-400 | Solid Top | Polypropylene | White | Foamed PE | No | 144 |
| 239233 | 24-400 | Solid Top | Polypropylene | White | PTFE / Foamed PE | No | 144 |
| W240836 | 24-400 | Solid Top | Polypropylene | White | Bonded PTFE / Silicone | Yes | 100 |
| W240846 | 24-400 | Open Top | Polypropylene | White | Bonded PTFE / Silicone | Yes | 100 |
| 241018 | 24-400 | Solid Top | Urea | White | Metal Foil | No | 1000 |

## E-Z Ex-Traction® Vials

- Conical well ensures maximum sample recovery
- Quality engineered for automated sample handling systems
- Excellent for chemical compound or biological sample storage
- Made from low extractable borosilicate glass that conforms to USP Type I and ASTM E 438 Type I, Class A requirements
- Vials can be easily bar coded using our customized services
- Screw caps can be purchased separately

| Cat. No. | Color | Size (mL) | Size (dr) | Dia. x H (mm) | Cap Size | Qty / Case |
|---|---|---|---|---|---|---|
| W224601 | Clear | 2 | .5 | 15 x 32 | 13-425 | 250 |
| W224603 | Clear | 2 | .5 | 15 x 32 | 13-425 | 1000 |
| W224613 | Clear | 4 | 1 | 15 x 45 | 13-425 | 250 |
| W224617 | Clear | 4 | 1 | 15 x 45 | 13-425 | 1000 |
| W224618 | Clear | 8 | 2 | 16.75 x 60 | 15-425 | 250 |
| W224619 | Clear | 8 | 2 | 16.75 x 60 | 15-425 | 1000 |
| W224634 | Clear | 20 | 5 | 26.5 x 67 | 24-400 | 100 |
| W224636 | Clear | 20 | 5 | 26.5 x 67 | 24-400 | 500 |

## E-Z Ex-Traction® Vial Screw Caps

- Choice of black phenolic or white polypropylene screw caps
- PTFE faced (14B) styrene-butadiene rubber liner provides an inert inner seal and surface facing the sample or product
- Bonded PTFE faced silicone liner ideal for storage of volatile solvents, sensitive compounds and corrosive chemicals
- Open top screw caps have a bonded PTFE faced silicone liner that provides access with a syringe
- Pre-slit PTFE silicone liner easily pierced by liquid handing needles
- Can withstand autoclaving / sterilization

Black Phenolic
Solid Top Cap

White Polypropylene
Open Top Cap

| Cat. No. | Cap Size | Cap Style | Cap Material | Color | Cap Liner | Qty / Pack | Qty / Case |
|---|---|---|---|---|---|---|---|
| W240820 | 13-425 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | 250 | 250 |
| W240821 | 13-425 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | 250 | 1000 |
| W240830 | 13-425 | Solid Top | Polypropylene | White | Bonded PTFE / Silicone | 250 | 250 |
| W240831 | 13-425 | Solid Top | Polypropylene | White | Bonded PTFE / Silicone | 250 | 1000 |
| W242710 | 13-425 | Open Top | Polypropylene | Black | Bonded PTFE / Silicone | 250 | 250 |
| W240840 | 13-425 | Open Top | Polypropylene | White | Bonded PTFE / Silicone | 250 | 250 |
| W240841 | 13-425 | Open Top | Polypropylene | White | Bonded PTFE / Silicone | 250 | 1000 |
| W240848 | 13-425 | Open Top | Polypropylene | Black | Pre-Slit Bonded PTFE / Silicone | 250 | 250 |
| W240849 | 13-425 | Open Top | Polypropylene | Black | Pre-Slit Bonded PTFE / Silicone | 250 | 1000 |
| W240822 | 15-425 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | 250 | 250 |
| W240823 | 15-425 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | 250 | 1000 |
| W240832 | 15-425 | Solid Top | Polypropylene | White | Bonded PTFE / Silicone | 250 | 250 |
| W240833 | 15-425 | Solid Top | Polypropylene | White | Bonded PTFE / Silicone | 250 | 1000 |
| W240842 | 15-425 | Open Top | Polypropylene | White | Bonded PTFE / Silicone | 250 | 250 |
| W240843 | 15-425 | Open Top | Polypropylene | White | Bonded PTFE / Silicone | 250 | 1000 |
| W240850 | 15-425 | Open Top | Polypropylene | Black | Pre-Slit Bonded PTFE / Silicone | 250 | 250 |
| W240851 | 15-425 | Open Top | Polypropylene | Black | Pre-Slit Bonded PTFE / Silicone | 250 | 1000 |
| W240824 | 22-400 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | 100 | 100 |
| W240825 | 22-400 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | 100 | 500 |
| W240834 | 22-400 | Solid Top | Polypropylene | White | Bonded PTFE / Silicone | 100 | 100 |
| W240835 | 22-400 | Solid Top | Polypropylene | White | Bonded PTFE / Silicone | 100 | 500 |
| W240844 | 22-400 | Open Top | Polypropylene | White | Bonded PTFE / Silicone | 100 | 100 |
| W240845 | 22-400 | Open Top | Polypropylene | White | Bonded PTFE / Silicone | 100 | 500 |
| 240418 | 24-400 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | 100 | 100 |
| W240827 | 24-400 | Solid Top | Phenolic | Black | PTFE / 14B Rubber | 100 | 500 |
| W240836 | 24-400 | Solid Top | Polypropylene | White | Bonded PTFE / Silicone | 100 | 100 |
| W240837 | 24-400 | Solid Top | Polypropylene | White | Bonded PTFE / Silicone | 100 | 500 |
| W240846 | 24-400 | Open Top | Polypropylene | White | Bonded PTFE / Silicone | 100 | 100 |
| W240847 | 24-400 | Open Top | Polypropylene | White | Bonded PTFE / Silicone | 100 | 500 |

## NextGen™ V Vials®

- Conical interior provides downward drainage for maximum sample retrieval
- Ideal for small-scale reactions, centrifugation, storage, packaging and shipping
- Low particulate packaging protects against contamination during transportation and storage
- Clear vials conform to USP Type I and ASTM E 438 Type I, Class A requirements
- Amber vials made from amber borosilicate glass that conforms to USP Type I requirements for light transmission to protect light-sensitive products
- Graduated or non-graduated
- Choose screw thread or crimp / serum finish
- Closures for crimp / serum finish vials can be purchased separately

## Spin Vanes

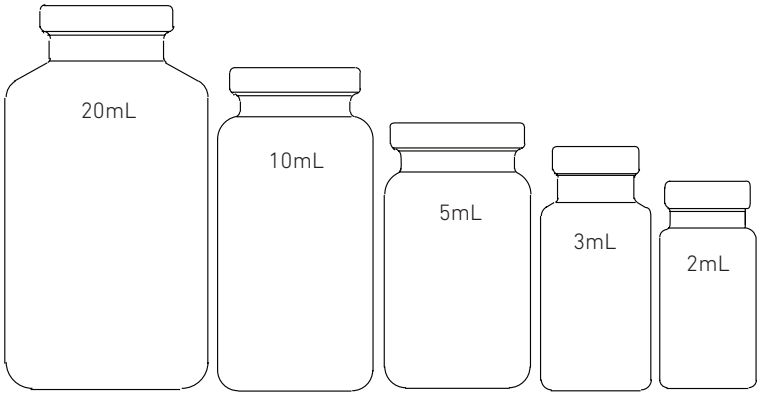
- Magnetic stir bar for use with NextGen™ V Vials®
- Made from PTFE
- Place stir bar in vial and use with magnetic stirrer

| Cat. No. | Description | Qty / Case |
|---|---|---|
| 903061 | Fits 0.3 and 1.0mL V Vials | 6 |
| 903063 | Fits 2, 3, 5 and 10mL V Vials | 6 |

| Cat. No. | Color | Size (mL) | Graduated | Cap Style | Cap Material | Cap Color | Liner Material | Cap Size | Dia. x H (mm) | Qty / Case |
|---|---|---|---|---|---|---|---|---|---|---|
| W986281NG | Clear | 0.1 | No | Open Top, Screw Cap | Phenolic | Black | PTFE / Silicone | 8-425 | 12 x 35 | 12 |
| W986211NG* | Clear | 0.1 | No | Crimp Top, purchase closure separately | | — | — | 11mm | 12 x 32 | 12 |
| W986273NG | Clear | 0.3 | Yes | Solid Top, Screw Cap | Phenolic | Black | PTFE / 14B Rubber | 13-425 | 13 x 35 | 12 |
| W986253NG | Clear | 0.3 | No | Solid Top, Screw Cap | Phenolic | Black | PTFE / 14B Rubber | 13-425 | 13 x 35 | 12 |
| W986282NG | Clear | 0.3 | No | Open Top, Screw Cap | Phenolic | Black | PTFE / Silicone | 8-425 | 12 x 35 | 12 |
| W986283NG | Clear | 0.3 | No | Open Top, Screw Cap | Phenolic | Black | PTFE / Silicone | 13-425 | 13 x 35 | 12 |
| W986293NG | Clear | 0.3 | Yes | Open Top, Screw Cap | Phenolic | Black | PTFE / Silicone | 13-425 | 13 x 35 | 12 |
| W986212NG* | Clear | 0.3 | No | Crimp Top, purchase closure separately | | — | — | 11mm | 12 x 32 | 12 |
| W986213NG* | Clear | 0.3 | No | Crimp Top, purchase closure separately | | — | — | 13mm | 13 x 32 | 12 |
| W986274NG | Clear | 1.0 | Yes | Solid Top, Screw Cap | Phenolic | Black | PTFE / 14B Rubber | 13-425 | 13 x 44 | 12 |
| W986254NG | Clear | 1.0 | No | Solid Top, Screw Cap | Phenolic | Black | PTFE / 14B Rubber | 13-425 | 13 x 44 | 12 |
| W986284NG | Clear | 1.0 | No | Open Top, Screw Cap | Phenolic | Black | PTFE / Silicone | 13-425 | 13 x 44 | 12 |
| W986294NG | Clear | 1.0 | Yes | Open Top, Screw Cap | Phenolic | Black | PTFE / Silicone | 13-425 | 13 x 44 | 12 |
| W986334NG | Amber | 1.0 | No | Solid Top, Screw Cap | Phenolic | Black | PTFE / 14B Rubber | 13-425 | 13 x 44 | 12 |
| W986354NG | Amber | 1.0 | No | Open Top, Screw Cap | Phenolic | Black | PTFE / Silicone | 13-425 | 13 x 44 | 12 |
| W986314NG* | Amber | 1.0 | No | Screw Cap, purchase closure separately | | — | — | 13-425 | 13 x 41 | 12 |
| W986214NG* | Clear | 1.0 | No | Crimp Top, purchase closure separately | | — | — | 13mm | 13 x 41 | 12 |
| W986276NG | Clear | 2.0 | Yes | Solid Top, Screw Cap | Phenolic | Black | PTFE / 14B Rubber | 15-415 | 17 x 61 | 12 |
| W986272NG | Clear | 2.0 | Yes | Solid Top, Screw Cap | Phenolic | Black | PTFE / 14B Rubber | 20-400 | 20 x 44 | 12 |
| W986256NG | Clear | 2.0 | No | Solid Top, Screw Cap | Phenolic | Black | PTFE / 14B Rubber | 15-415 | 17 x 61 | 12 |
| W986261NG | Clear | 2.0 | No | Solid Top, Screw Cap | Phenolic | Black | PTFE / 14B Rubber | 20-400 | 20 x 44 | 12 |
| W986288NG | Clear | 2.0 | No | Open Top, Screw Cap | Phenolic | Black | PTFE / Silicone | 20-400 | 20 x 44 | 12 |
| W986298NG | Clear | 2.0 | Yes | Open Top, Screw Cap | Phenolic | Black | PTFE / Silicone | 20-400 | 20 x 44 | 12 |
| W986336NG | Amber | 2.0 | No | Solid Top, Screw Cap | Phenolic | Black | PTFE / 14B Rubber | 20-400 | 20 x 44 | 12 |
| W986356NG | Amber | 2.0 | No | Open Top, Screw Cap | Phenolic | Black | PTFE / Silicone | 20-400 | 20 x 44 | 12 |
| W986316NG* | Amber | 2.0 | No | Screw Cap, purchase closure separately | | — | — | 20-400 | 20 x 41 | 12 |
| W986216NG* | Clear | 2.0 | No | Crimp Top, purchase closure separately | | — | — | 20mm | 20 x 40 | 12 |
| W986277NG | Clear | 3.0 | Yes | Solid Top, Screw Cap | Phenolic | Black | PTFE / 14B Rubber | 20-400 | 20 x 50 | 12 |
| W986257NG | Clear | 3.0 | No | Solid Top, Screw Cap | Phenolic | Black | PTFE / 14B Rubber | 20-400 | 20 x 50 | 12 |
| W986287NG | Clear | 3.0 | No | Open Top, Screw Cap | Phenolic | Black | PTFE / Silicone | 20-400 | 20 x 50 | 12 |
| W986297NG | Clear | 3.0 | Yes | Open Top, Screw Cap | Phenolic | Black | PTFE / Silicone | 20-400 | 20 x 50 | 12 |
| W986217NG* | Clear | 3.0 | No | Crimp Top, purchase closure separately | | — | — | 20mm | 20 x 46 | 12 |
| W986279NG | Clear | 5.0 | Yes | Solid Top, Screw Cap | Phenolic | Black | PTFE / 14B Rubber | 20-400 | 20 x 65 | 12 |
| W986259NG | Clear | 5.0 | No | Solid Top, Screw Cap | Phenolic | Black | PTFE / 14B Rubber | 20-400 | 20 x 65 | 12 |
| W986289NG | Clear | 5.0 | No | Open Top, Screw Cap | Phenolic | Black | PTFE / Silicone | 20-400 | 20 x 65 | 12 |
| W986299NG | Clear | 5.0 | Yes | Open Top, Screw Cap | Phenolic | Black | PTFE / Silicone | 20-400 | 20 x 65 | 12 |
| W986339NG | Amber | 5.0 | No | Solid Top, Screw Cap | Phenolic | Black | PTFE / 14B Rubber | 20-400 | 20 x 65 | 12 |
| W986359NG | Amber | 5.0 | No | Open Top, Screw Cap | Phenolic | Black | PTFE / Silicone | 20-400 | 20 x 65 | 12 |
| W986319NG* | Amber | 5.0 | No | Screw Cap, purchase closure separately | | — | — | 20-400 | 20 x 62 | 12 |
| W986219NG* | Clear | 5.0 | No | Crimp Top, purchase closure separately | | — | — | 20mm | 20 x 61 | 12 |
| W986260NG | Clear | 10.0 | No | Solid Top, Screw Cap | Phenolic | Black | PTFE / 14B Rubber | 24-400 | 25.4 x 72 | 6 |
| W986290NG | Clear | 10.0 | No | Open Top, Screw Cap | Phenolic | Black | PTFE / Silicone | 24-400 | 25.4 x 72 | 6 |

* Purchase closures separately.

## Serum Tubing Vials




Serum Vial Approximate Size

- 2 - 20mL size
- Clear vials manufactured from low extractable borosilicate glass that conforms to USP Type I and ASTM E 438 Type I, Class A requirements
- Amber glass conforms to USP Type I requirements to protect light-sensitive samples
- Tubular design provides excellent clarity and dimensional consistency from vial to vial
- Specially designed bottom radius adds strength for lyophilization applications
- Lighter weight compared to molded bottles
- Shrink-wrapped modules reduce particulate contamination
- Autoclavable

| Cat. No. | Size (mL) | Mouth ID x OD (mm) | Dia. x H | Qty / Case | Fits Rack |
|---|---|---|---|---|---|
| **Clear Serum Vials** | | | | | |
| 223683 | 2 | 7 x 13 | 15 x 32 | 144 | 868804 |
| 223684 | 3 | 7 x 13 | 17 x 38 | 144 | 868810 |
| 223685 | 5 | 13 x 20 | 22 x 40 | 144 | 868805 |
| 223686 | 10 | 13 x 20 | 24 x 50 | 144 | — |
| 223687 | 20 | 13 x 20 | 30.5 x 58 | 120 | — |
| **Amber Serum Vials** | | | | | |
| 223693 | 2 | 7 x 13 | 15 x 32 | 144 | 868804 |
| 223695 | 5 | 13 x 20 | 22 x 40 | 144 | 868805 |
| 223696 | 10 | 13 x 20 | 24 x 50 | 144 | — |

Note: When selecting a rubber stopper or aluminum seal, match the mouth OD dimension of the vial.

## Serum Bottle, PVC Dropper Tip

- Create a dropper container using a crimp / serum bottle with 20mm mouth OD
- Dropper tip is made from PVC with HDPE closure
- Dispenses 40µL drop using water

| Part. No. | Description | Dia. x H (mm) | Qty / Case |
|---|---|---|---|
| 224080 | PVC Dropper Tip | 23 x 44 | 100 |

## Vacule® Vial

- Heavy wall construction designed for lyophilization and freeze-drying applications
- Screw threads eliminate use of crimp seal
- Manufactured from WHEATON 33 low extractable clear borosilicate glass that conforms to USP Type I and ASTM E 438 Type I, Class A requirements

| Cat. No. | Size (mL) | Dia. x H (mm) | Cap Finish Size | Fits Rack | Qty / Case |
|---|---|---|---|---|---|
| **Vacule® Vial** | | | | | |
| 651954* | 4 | 17 x 45 | 15-425 | 868810 | 200 |
| 651905 | 5 | 22 x 40 | 22-350 | 868805 | 200 |
| 651907 | 10 | 22 x 55 | 22-350 | 868805 | 200 |

| Cat. No. | Description | Qty / Pack | Qty / Case |
|---|---|---|---|
| **Screw Caps and Stoppers for Cat. No. 651954** | | | |
| 224100-080 | Red Rubber Stopper | 100 | 1000 |
| W224100-093 | Lyophilization Stopper, 2-Leg | 100 | 1000 |
| 240209 | Cap, Solid Top, Screw Thread | 200 | 200 |
| W240509 | Cap, Open Top, Screw Thread | 200 | 200 |
| **Screw Caps and Stoppers for Cat. No. 651905 and 651907** | | | |
| 224100-172 | Red Rubber Stoppers | 100 | 1000 |
| W224100-193 | Lyophilization Stopper, 2-Leg | 100 | 1000 |
| W224100-202 | Lyophilization Stopper, 3-Leg | 100 | 1000 |
| 239853 | Cap, Solid Top, Screw Thread | 500 | 500 |

*Purchase closures separately

- Vacule vials have controlled ID, for accurate stopper fit
- Choice of solid or open top screw cap
- Stoppers and accessories listed below
- 651905 and 651907 are supplied with unlined black phenolic cap

## Diagnostic Vials

- Alternative to serum bottles and vials
- Screw thread design eliminates need for crimping tools
- Ideal for lyophilization
- Fits with I-Loc™ closure or screw cap with thin flange stopper
- Tubular design provides excellent clarity and dimensional consistency from vial to vial
- Heavy walled glass provides impact resistance

| Cat No. | Color | Size (mL) | Dia. x H (mm) | Cap Size | Qty / Case |
|---|---|---|---|---|---|
| W219365 | Clear | 5 | 22 x 38 | 20-400 | 480 |
| W216375 | Amber | 5 | 22 x 38 | 20-400 | 480 |
| W219366 | Clear | 10 | 22 x 55 | 20-400 | 480 |
| W216376 | Amber | 10 | 22 x 55 | 20-400 | 480 |
| W216377 | Amber | 20 | 30 x 52 | 20-400 | 480 |
| W216378 | Amber | 30 | 30 x 69 | 20-400 | 288 |

## I-Loc™ Closure

- For use with Screw Neck Diagnostic Bottles
- Advantages of an aluminum seal with the convenience of a screw cap
- Polypropylene screw cap with gray bromobutyl / 50 stopper
- Autoclavable

| Cat. No. | Color | Cap Size | Qty / Case |
|---|---|---|---|
| 240676-01 | Black | 20-400 | 100 |
| 240676-02 | White | 20-400 | 100 |
| 240676-03 | Red | 20-400 | 100 |
| 240676-04 | Blue | 20-400 | 100 |
| 240676-05 | Yellow | 20-400 | 100 |

## Screw Caps for Screw Neck Diagnostic Bottles

- Polypropylene screw caps in 5 colors
- Use with 224100-203 or W224100-190 thin flange stopper
- Autoclavable

| Cat. No. | Cap Size | Cap Style | Color | Autoclavable | Qty / Case |
|---|---|---|---|---|---|
| 240706-01 | 20-400 | Solid Top | Black | Yes | 300 |
| 240706-02 | 20-400 | Solid Top | White | Yes | 300 |
| 240706-04 | 20-400 | Solid Top | Blue | Yes | 300 |
| 240706-05 | 20-400 | Solid Top | Yellow | Yes | 300 |
| 240716-01 | 20-400 | Open-Top | Black | Yes | 300 |
| 240716-02 | 20-400 | Open-Top | White | Yes | 300 |
| 240716-03 | 20-400 | Open-Top | Red | Yes | 300 |
| 240716-04 | 20-400 | Open-Top | Blue | Yes | 300 |
| 240716-05 | 20-400 | Open-Top | Yellow | Yes | 300 |

## Stopper, Thin Flange

- Use with screw caps for Screw Neck Diagnostic Bottles
- Autoclavable

| Cat. No. | Stopper Size | Qty / Case |
|---|---|---|
| 224100-203 | 20mm 3-Leg Lyophilization Gray Chlorbutyl / 55 | 300 |
| W224100-190 | 20mm Thin Flange Snap-On Gray Chlorbutyl / 49 | 300 |

## Vial Racks


9.5mm Well ID
96-Position
985750


12.5mm Well ID
50-Position
985800


12.5mm Well ID
50-Position
W985810*


15.5mm Well ID
48-Position
868804


17.1 Well ID
90-Position
868810


23.1mm Well ID
36-Position
868805


28.1mm Well ID
50-Position
868806


30mm Well ID
50-Position
868808

- Manufactured from polypropylene
- Size of rack depends on vial OD
- Easy to clean and autoclavable
- Alphanumeric indexing indicated on rack
- The racks are sturdy and stackable, even when the vials are in place
- Each well has an opening in the bottom to facilitate drainage

### When selecting the proper rack, the vial OD can not exceed the well ID dimension.

| Cat. No. | Well ID (mm) | Description | No. of Wells | Dimensions (L x W x H) | Qty / Case |
|---|---|---|---|---|---|
| **Polypropylene Rack** | | | | | |
| 985750 | 9.5 | 96-Position Rack | 8 deep x 12 wide | 18.5 x 12.5 x 2.2cm | 5 |
| 985800 | 12.5 | 50-Position Rack | 5 deep x 10 wide | 19 x 10 x 2.2cm | 5 |
| W985810* | 12.5* | 50-Position Rack | 5 deep x 10 wide | 19 x 10 x 2.2cm | 5 |
| 868804 | 15.5 | 48-Position Rack | 4 deep x 12 wide | 26.6 x 9.4 x 2.8cm | 5 |
| 868810 | 17.1 | 90-Position Rack | 6 deep x 15 wide | 33 x 17 x 3cm | 5 |
| 868805 | 23.1 | 36-Position Rack | 3 deep x 12 wide | 32.2 x 9.1 x 2.8cm | 5 |
| 868806 | 28.1 | 50-Position Rack | 5 deep x 10 wide | 33 x 17 x 3cm | 5 |
| 868808 | 30.0 | 50-Position Rack | 5 deep x 10 wide | 33.7 x 17 x 3cm | 5 |

*This rack is specially designed for use with Freestanding CryoELITE® Cryogenic Vials. The vials lock in the rack for one-handed cap removal.

## M-T Vial File®

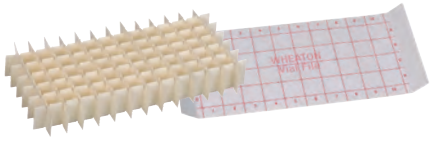
228778

W228792 / 20mL

- Clear plastic hinged case for convenient storage and transportation of sample vials
- Polycoated partitions protect vials from abrasion and breakage
- Alphanumeric index card provides for easy vial identification
- Extra partitions and index cards can be purchased separately

| Cat. No. | Description | Max Vial Size Dia. x H (mm) | Qty / Case |
|---|---|---|---|
| 228778 | Holds 60 – 2mL Vials | 12 x 49 | 6 |
| 228780 | Holds 40 – 4mL Vials | 16 x 49 | 6 |
| W228790 | Holds 54 – 8mL Vials | 18 x 64 | 6 |
| W228792 | Holds 24 – 20mL Vials | 30 x 64 | 6 |

## Replacement Partitions and Index Cards for M-T Vial Files®



Partition Index Card

| Cat. No. | Description | Qty / Case |
|---|---|---|
| W228781 | Partitions for Use with 228778 | 6 |
| W228782 | Partitions for Use with 228780 | 6 |
| W228786 | Partitions for Use with W228790 | 6 |
| W228788 | Partitions for Use with W228792 | 6 |
| 228783 | Index Cards for Use with 228778 | 35 |
| 228785 | Index Cards for Use with 228780 | 35 |
| W228787 | Index Cards for Use with W228790 | 35 |
| W228789 | Index Cards for Use with W228792 | 35 |

# Information of a More Technical Nature

## Technical Data

DWK Life Sciences, with over 120 years of experience, provides quality products and services for the advancement of Science. Being a leading supplier of glass and plastic containers for the laboratory and diagnostics markets, DWK Life Sciences understands the importance of protecting the quality of the most sensitive materials as they may represent one's life's work. We offer containers in a variety of shapes, sizes and materials, meeting the most stringent requirements.

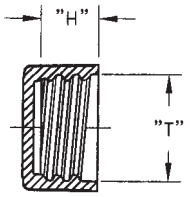
The following pages contain technical information that have been compiled to assist you in selecting and using products from our WHEATON range.

For more information, contact: technical@DWK-LifeSciences.com.

# Technical Data



## Closure Size & Thread Style Guide




The screw closure industry has not standardized dimensions to the extent that the container industry has, thus it is advantageous to buy both container and screw closure from the same supplier when possible. Similar to the container industry, when a closure finish is designated as 33-400, it means that the nominal diameter measured across the inside of the closure at the opening is approximately 33mm. (See 'T' dimensions on illustration.) The 400 ('H' dimension) designates a specific style of thread. The thread finish of the closure and container must be the same. A container with a 33-400 thread finish should be used with a closure that has a 33-400 thread finish.

## Determining Closure Size ('T' Dimension)

To determine closure size, measure the closure opening from one side of the inner wall to the opposite side of the inner wall. Compare this number to the numbers found in the 'T' dimension columns in Table 1. Once this number is found in the table, follow the row to the far left to find the "Nominal Diameter" of the closure (33 in the above example).

## Determining Thread Style ('H' Dimension)

To determine the specific thread style, measure the depth of the screw closure from the liner surface to the outside edge of the closure. Compare this number to the numbers found in the 'H' dimension columns in Table 1 that appear in the same row as the Nominal Diameter of the closure. Once this number is found in the table, follow the column to the top to find the specific style number (400 in the above example). The dimensions in the table are approximate and will probably be slightly different from what is measured (especially the 'H' dimension due to variations in liner thickness), but should be close enough to allow for the proper determination of the closure size.

### Table 1. Closure Thread Finish Dimensions (Dimensions are in millimeters)

| Nominal Dia (mm) | 400 'T' | 400 'H' | 410 'T' | 410 'H' | 415 'T' | 415 'H' | 425 'T' | 425 'H' | 430 'T' | 430 'H' |
|---|---|---|---|---|---|---|---|---|---|---|
| 8 | — | — | — | — | — | — | 9.14 | 6.22 | — | — |
| 10 | — | — | — | — | — | — | 10.54 | 6.48 | — | — |
| 13 | — | — | — | — | 13.21 | 10.92 | 13.21 | 7.11 | — | — |
| 15 | — | — | — | — | 14.86 | 13.59 | 14.86 | 7.11 | — | — |
| 18 | 18.03 | 9.14 | 18.03 | 12.70 | 18.03 | 15.11 | — | — | 18.03 | 15.37 |
| 20 | 20.07 | 9.14 | 20.07 | 13.46 | 20.07 | 18.29 | — | — | 20.07 | 15.37 |
| 22 | 22.10 | 9.14 | 22.10 | 14.22 | 22.10 | 20.70 | — | — | 22.10 | 15.37 |
| 24 | 24.00 | 9.91 | 24.00 | 15.75 | 24.00 | 23.75 | — | — | 24.00 | 16.51 |
| 28 | 27.81 | 9.91 | 27.81 | 17.40 | 27.81 | 26.92 | — | — | 27.81 | 18.42 |
| 30 | 28.70 | 9.91 | — | — | — | — | — | — | 28.70 | 19.30 |
| 33 | 32.26 | 9.91 | — | — | — | — | — | — | 32.26 | 19.69 |
| 35 | 34.80 | 9.91 | — | — | — | — | — | — | — | — |
| 38 | 37.59 | 9.91 | — | — | — | — | — | — | 37.59 | 23.88 |
| 40 | 40.39 | 9.91 | — | — | — | — | — | — | — | — |
| 43 | 42.16 | 9.91 | — | — | — | — | — | — | — | — |
| 45 | 44.45 | 9.91 | — | — | — | — | — | — | — | — |
| 48 | 47.63 | 9.91 | — | — | — | — | — | — | — | — |
| 51 | 50.16 | 9.91 | — | — | — | — | — | — | — | — |
| 53 | 52.71 | 9.91 | — | — | — | — | — | — | — | — |
| 58 | 56.64 | 9.91 | — | — | — | — | — | — | — | — |
| 60 | 59.69 | 9.91 | — | — | — | — | — | — | — | — |
| 63 | 62.74 | 9.91 | — | — | — | — | — | — | — | — |
| 66 | 65.53 | 9.91 | — | — | — | — | — | — | — | — |
| 70 | 69.72 | 9.91 | — | — | — | — | — | — | — | — |
| 75 | 74.17 | 9.91 | — | — | — | — | — | — | — | — |
| 77 | 77.22 | 11.94 | — | — | — | — | — | — | — | — |
| 83 | 83.19 | 11.94 | — | — | — | — | — | — | — | — |
| 89 | 89.41 | 13.08 | — | — | — | — | — | — | — | — |
| 100 | 100.20 | 14.73 | — | — | — | — | — | — | — | — |
| 110 | 110.23 | 14.73 | — | — | — | — | — | — | — | — |
| 120 | 120.27 | 17.14 | — | — | — | — | — | — | — | — |

## Closure Liner Guide

Usually the smallest component part of the package and usually overlooked is the selection of the closure liner. The liner must not alter or be altered by the product. It must withstand repeated applications and removals against the container surface while maintaining the integrity of the sealing surface. Below is information that may help in choosing the right liner from the WHEATON product offering.

| | | |
|---|---|---|
| Pulp / Poly-Vinyl | One mil poly-vinyl film bonded to one mil HDPE on a #30 white pulp paper backing. Superior to plain pulp paper because it provides an excellent moisture barrier. | General purpose: Suitable for wide range of applications. Chemical resistance: Good for mild acids, alkalis, solvents, alcohols, oils and aqueous products. Poor for active hydrocarbons and bleaches. |
| PTFE Faced Foamed Polyethylene (PTFE / PE Foam) | PTFE faced foamed polyethylene liner offers the excellent chemical resistance of PTFE with the compressibility and sealing properties of polyethylene foam. | Typical applications: analytical lab samples, high purity chemicals, strong acids, solvents. Excellent for environmental samples, pharmaceuticals and diagnostic reagents. |
| Polyethylene Cone (PE Cone) | Manufactured from polyethylene (LDPE). The unique cone design provides a wedge type seal that not only seals across the top but also across the inside diameter. | Unique problem solving type of liner. This liner is stress crack resistant and offers superior torque retention and excellent sealing characteristics. It is recommended that this liner be tested prior to use for leak seal. |
| Styrene-Butadiene Rubber (14B) | The 14B white rubber lining material consists of homogeneous sulfur cured styrene-butadiene rubber. FDA Status complies with 21CFR 177.26, "Rubber articles intended for repeated use." | Excellent properties of resilience, resistant to moisture vapor. Satisfactory for most moderate chemicals. Not good for oils, strong acids and hydrocarbons. Not a natural rubber. Autoclavable. |
| Styrene-Butadiene Rubber / 0.005 PTFE (PTFE / Styrene-Butadiene) | The white rubber / 0.005" PTFE liner consists of virign PTFE bonded to the white sulfur cured styrene-butadiene rubber. Complies with the FDA 21CFR 177.1550. | Designed for the ultimate in product safety. PTFE provides a totally inert inner seal and surface facing the sample or product. Autoclavable. |
| Foamed Polyethylene (PE Foam) | A one piece, three ply coextruded liner consisting of both foamed and solid LDPE. The foam core is sandwiched with solid clear PE. | General Purpose: Broad applications base. Chemical resistance-good for acids, alkalis, solvents, alcohols, oils, household cosmetics and aqueous products. Poor for hydrocarbon solvents. Liner provides tight seal. |
| PTFE Faced Silicone Rubber (PTFE / Silicone) | The liner consists of 0.005" thick PTFE bonded to 0.055" thick silicone rubber. | Ideal for low temperature storage applications. PTFE facing provides excellent chemical barrier. Autoclavable |
| Pulp / Metal Foil | Aluminum foil bonded to pulp board. | Good barrier properties, good resistance to hydrocarbons, oils, ketones and alcohols. Not good for acids or alkalis. |
| Low Density Polyethylene (LDPE) Disk | Manufactured from polyethylene. | Good for distilled water, analytical standards and reagents. |

Note: Closures and liners are designed for a variety of applications. Product performance can vary depending on conditions. It is recommended that proper tests be performed to determine the best liner for the application.

## Torque for Screw Closures

The integrity of the closure-to-container seal is dependent upon a number of variables, such as the materials of the closure, liner, and container, the sealing surface of the container, and the application torque applied to the closure. The most important of these is the application torque. If the closure is applied too loosely, the contents could leak, especially during shipping. If the closure is applied too tightly, it may be too difficult to remove, or the container could break during application.

Table 2 offers some suggested torques that should provide an adequate seal for most applications. It is recommended that proper tests be performed to determine the optimum torque for the application. The most practical way to check the tightness is to measure the removal torque after the closure has been on the container for about 5 minutes. The removal torque should closely approximate the application torque. The minimum removal torque noted in the table should be maintained after a 24 hour period.

### Table 2. Suggested Torques for Closures (in-lb)

| | Phenolic / Urea Closure on Glass Container | | Phenolic / Urea Closure on Plastic Container | | PP / PE Closure on Glass Container | | PP / PE Closure on Plastic Container | |
|---|---|---|---|---|---|---|---|---|
| Closure mm | Application Torque | Min Removal Torque | Application Torque | Min Removal Torque | Application Torque | Min Removal Torque | Application Torque | Min Removal Torque |
| 15 | 8 | 4 | 6 | 3 | 12 | 7 | 8 | 4 |
| 18 | 9 | 5 | 7 | 4 | 13 | 8 | 9 | 5 |
| 20 | 10 | 5 | 8 | 4 | 15 | 9 | 10 | 5 |
| 22 | 11 | 6 | 9 | 5 | 17 | 10 | 11 | 5 |
| 24 | 12 | 6 | 10 | 5 | 18 | 11 | 12 | 6 |
| 28 | 14 | 7 | 12 | 6 | 21 | 12 | 14 | 7 |
| 33 | 18 | 9 | 15 | 7 | 24 | 14 | 17 | 8 |
| 38 | 20 | 10 | 17 | 7 | 29 | 17 | 19 | 9 |
| 43 | 22 | 11 | 18 | 9 | 33 | 20 | 22 | 11 |
| 48 | 24 | 12 | 20 | 10 | 36 | 22 | 24 | 12 |
| 58 | 28 | 14 | 24 | 12 | 44 | 26 | 29 | 14 |
| 70 | 35 | 18 | 28 | 14 | 52 | 32 | 35 | 17 |
| 89 | 45 | 22 | 36 | 18 | 65 | 40 | 45 | 22 |
| 100 | 50 | 25 | 40 | 20 | 75 | 45 | 50 | 25 |

Although the information in this chart was acquired from reputable sources, it should only be used as a guide in determining the proper application torque. DWK Life Sciences accepts no responsibility for the accuracy of this data or for any consequences resulting from its use.

## Rubber Stopper Formulation Descriptions

Listed below are the primary stopper formulations with general descriptions that are supplied by DWK Life Sciences.

### Gray Bromobutyl / 39 with Complete Coat (A B C)

Pros: Low gas and vapor permeablilty, good for multiple piercing applications, compatible with most cephalosporin's, resistant to animal, vegetable, and mineral oils, good resistance to aliphatic, aromatic and chlorinated solvents

Cons: Not recommended for use with ketones.

### Gray Bromobutyl / 46 (A B C D)

Pros: Low gas and vapor permeablilty, good for multiple piercing applications, excellent moisture absorption and desorption properties following autoclave and lyophilization drying cycles.

Cons: Poor resistance to mineral oil, aliphatic, aromatic, and chlorinated solvents.

### Gray Bromobutyl / 47 (A B C D)

Pros: Low gas and vapor permeablilty, great for multiple piercing applications after gamma irradiation, ultra low extractable compound, compatible with most cephalosporin's, very good moisture absorption and desorption properties following autoclave and drying cycles, compatible with WFI applications.

Cons: Poor resistance to mineral oil, aliphatic, aromatic, and chlorinated solvents.

### Gray Bromobutyl / 50 (B D)

Pros: Low gas and vapor permeability, very good properties regarding ozone, animal and vegetable oil.

Cons: Not good for multiple piercing applications, poor resistance to mineral oil, aliphatic, aromatic and chlorinated solvents.

### Gray Bromobutyl / 52 (B D)

Pros: Low gas and vapor permeablilty, very good properties regarding ozone, animal and vegetable oil.

Cons: Not good for multiple piercing applications, poor resistance to mineral oil, aliphatic, aromatic, and chlorinated solvents.

### Gray Chlorobutyl / 46 (A B C D)

Pros: Low gas and vapor permeability, good for multiple piercing applications, resistant to animal and vegetable oils, good for lyophilization applications.

Cons: Poor resistance to mineral oil, aliphatic, aromatic, and chlorinated solvents.

### Gray Chlorobutyl / 49 (B D)

Pros: Low gas and vapor permeablilty, resistant to animal and vegetable oils.

Cons: Poor resistance to mineral oil, aliphatic, aromatic, and chlorinated solvents.

### Gray Chlorobutyl / 50 (B C D)

Pros: Low gas and vapor permeability, resistant to animal and vegetable oil, good for lyophilization applications.

Cons: Poor resistance to mineral oil, aliphatic, aromatic, and chlorinated solvents.

### Gray Chlorobutyl / 55 (B D)

Pros: Low gas and vapor permeability, resistant to animal and vegetable oil, good for lyophilization applications.

Cons: Poor resistance to mineral oil, aliphatic, aromatic, and chlorinated solvents.

### Gray Chlorobutyl / Isoprene Blend / 40 (A B C)

Pros: Good coring characteristics, fair resistance to gas and moisture transmission compared to red isoprene.

Cons: Contains dry natural rubber.

### Gray Chlorobutyl / Isoprene Blend / 40 with FEP Facing (A B)

Pros: Barrier properties of FEP, good coring characteristics, fair resistance to gas and moisture transmission compared to red isoprene.

Cons: Contains dry natural rubber.

### Gray Chlorobutyl / Isoprene Blend / 50 (A B D)

Pros: Good coring and reseal characteristics, fair resistance to gas and moisture transmission compared to red isoprene, good for lyophilization applications.

Cons: Contains dry natural rubber.

### Black FKM / 55 (B)

Pros: Low gas and vapor permeability, resistant to animal, vegetable and mineral oil, aliphatic, aromatic, and chlorinated solvents, good for high heat applications.

Cons: Not recommended for ketones.

### Pink Natural / 48 (B C)

Pros: Good coring and very good reseal characteristics.

Cons: Contains dry natural rubber, not good for use with solvents.

### Red Natural / 39 (B C)

Pros: Good reseal characteristics.

Cons: Contains dry natural rubber, not good for use with solvents.

### Red Natural / 40 B C

Pros: Good reseal characteristics.

Cons: Contains dry natural rubber. Not good for use with solvents, not appropriate for products that require an inert gas blanket.

### Red Natural / 40S B C D

Pros: Good reseal characteristics.

Cons: Contains dry natural rubber. Not good for use with solvents, not appropriate for products that require an inert gas blanket.

### Red Natural / 45 B C

Pros: Good reseal characteristics.

Cons: Contains dry natural rubber. Not good for use with solvents, not appropriate for products that require an inert gas blanket.

### Red Natural / 45S B C D

Pros: Good reseal characteristics.

Cons: Contains dry natural rubber. Not good for use with solvents, not appropriate for products that require an inert gas blanket.

### Natural Silicone / 55 B C

Pros: Good for high heat applications, can withstand multiple steam autoclaves.

Cons: Very poor barrier to gas and vapor transmission, not appropriate for products that require an inert gas blanket.

A Meets the requirements for Type I closures as specified in USP<381> and EP 3.2.9

B Can be steam autoclaved at 121 degrees C

C Can be irradiated at 25 kGy

D Siliconized

## Glass Manufacturing Terminology

### Annealing Point

The temperature at which internal stresses in glass are significantly reduced. In the annealing operation, glass is gradually cooled from above the annealing point temperature to below the strain point temperature. This slow cooling relieves residual thermal stresses that would develop if the glass were allowed to cool in an uncontrolled manner.

### Batch

The mixed raw materials used in manufacturing glass that have been blended and proportionally mixed for delivery to the glass furnace.

### Blank

Usually refers to a glass parison that is formed during the first step of glass molding. The piece is then transferred to a lamp worker or glass blower for final shape configuration.

### Blister

A gaseous inclusion or bubble in the glass.

### Blow Mold

Usually a metal mold used to form a piece of glass from a hot gob.

### Borosilicate Glass

A high silicate glass that has at least 5% boron oxide.

### Contraction Coefficient

The fractional change in length of a piece of glass per degree change in temperature on cooling from the annealing point to ambient temperature.

### Cullet

Waste or broken glass. Clean cullet is always used in the batch.

### Density

Mass per unit volume measured in grams per cubic centimeter.

### Distribution

The wall thickness or the evenness of the glass distribution throughout the container.

### Etch

To attack the glass surface with a strong chemical agent, usually hydrofluoric acid. Usually used in decorating glass.

### Finish

The part of a bottle which holds the stopper or closure. The area that has the threads (generally a shortened term for thread finish). The first part made on an automatic machine, but the last part (or finish) to be made when bottles were hand blown. On labware, may refer to an interchangeable ground joint.

### Forming

The shaping of hot glass.

### Glassblowing

The shaping of glass using air pressure.

### Gob

A portion of hot glass that is delivered from the furnace for forming.

### Hard Glass

A glass with a high softening point or high viscosity (usually borosilicate).

### Hot End

A manufacturing term for the area of a glass manufacturing plant where molten glass is processed.

### Lampworking

Flame re-working of a blank or tubing cane, typically on a lathe.

### Lehr

A long belt-fed, tunnel-shaped oven used to heat glass to the annealing point and then slowly cool it to room temperature to remove any residual thermal stresses in the glass. Can also be a large oven where glass is manually loaded and unloaded (batch lehr).

### Linear Coefficient of Expansion

The fractional change in length of a piece of glass per degree change in temperature. The coefficient of expansion generally indicates the thermal endurance of the glass. Glasses with a low linear coefficient of expansion can be subjected to greater rapid temperature changes with less chance of fracture than glasses with a high coefficient of expansion. (Generally, Type I glass has a lower COE than Type III).

### Melt

The amount of glass that is melted at one time.

### Mold Mark

The mark in the bottom of the container that denotes the manufacturer.

### Pressed Glass

Glassware that is formed by pressing a gob between a mold and a plunger.

### Soda-Lime (or Soft) Glass

A glass with a substantial portion of lime in the formula.

### Softening Point

Temperature at which a thread or rod of glass rapidly deforms under its own weight.

### Strain Point

The temperature at which thermal residual stresses become permanent upon cooling. Temperatures above the strain point will introduce permanent stresses that can cause or contribute to fracture. At temperatures below the strain point, the glass can be temporarily heated and cooled without introducing permanent stress. The strain point can be considered the maximum service temperature.

### Tank

The furnace that melts the raw materials into molten glass. Temperatures in the tank vary depending on the glass type being melted, but are typically in excess of 1200°C.

### Temper

The degree of residual stress in annealed glass as measured using polarized light techniques.

### Weathering

The attack on glass surface by atmospheric elements.

## WHEATON Glass Types

The glass products in this catalog are made from many different glass formulations. Following are brief definitions of these glass types and descriptions of their characteristics.

**180 Glass:** An exceptionally clear borosilicate glass of high chemical durability, which has been especially formulated for the lowest background count. Great care has been taken to select only those ingredients for the batch that would not cause unwanted background count or color. Potassium as a separate element has been excluded from the batch to minimize K40. Special controls assure high quality and batch-to-batch uniformity. This glass type is used in the manufacture of specialty tubing containers.

**200 Glass:** Also referred to as 33 expansion low extractable borosilicate glass, is a clear borosilicate glass with exceptional thermal endurance that meets the requirements for ASTM Type I, Class A. This glass also meets USP Type I Glass Grains, USP Arsenic, EP Type I Glass Grains (Test B), and EP Arsenic, as specified in the current revisions of the U.S. Pharmacopeia and European Pharmacopeia. This glass type is used in the manufacture of tubing containers and laboratory glassware. Some containers may also be tested for compliance to the current USP Type I Surface Test and EP Type I Surface Test (Test A). Compliance to these tests will be noted on the certificate of compliance for that item.

**300 Glass:** A chemically resistant clear borosilicate glass that meets the requirements for ASTM Type I, Class B. This glass also meets USP Type I Glass Grains, USP Arsenic, EP Type I Glass Grains (Test B), and EP Arsenic, as specified in the current revisions of the U.S. Pharmacopeia and European Pharmacopeia. This glass type is used in the manufacture of tubing containers. Some containers may also be tested for compliance to the current USP Type I Surface Test and EP Type I Surface Test (Test A). Compliance to these tests will be noted on the certificate of compliance for that item.

**320 Glass:** A similar composition to 300 Glass except amber color for light sensitive applications. Meets UV light protection limits as specified in the current revisions of the U.S. Pharmacopeia and European Pharmacopeia.

**400 Glass:** A clear borosilicate glass that falls well within the limits for USP Type I Glass Grains, USP Arsenic, EP Type I Glass Grains (Test B), and EP Arsenic, as specified in the current revisions of the U.S. Pharmacopeia and European Pharmacopeia. This glass type is used in the manufacture of molded bottles. Some containers may also be tested for compliance to the current USP Type I Surface Test and EP Type I Surface Test (Test A). Compliance to these tests will be noted on the certificate of compliance for that item.

**500 Glass:** Similar to the 400 Glass formulations except amber color for light sensitive applications. Meets UV light protection limits as specified in the current revisions of the U.S. Pharmacopeia and European Pharmacopeia.

**800 Glass:** A superior soda-lime clear glass that meets the requirements for USP Type III Glass Grains, USP Arsenic, EP Type III Glass Grains (Test B), and EP Arsenic, as specified in the current revisions of the U.S. Pharmacopeia and European Pharmacopeia. This glass type is used in the manufacture of molded bottles. Some containers may also be tested for compliance to the current USP Type III Surface Test and EP Type III Surface Test (Test A). Compliance to these tests will be noted on the certificate of compliance for that item.

**900 Glass:** Similar in formulation to 800 Glass except amber color for light sensitive applications. Meets UV light protection limits as specified in the current revisions of the U.S. Pharmacopeia and European Pharmacopeia.

### Table 3. Typical Properties of WHEATON Glass

| | Glass Type | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Borosilicate | | | | | | Soda-Lime | |
| | "180" Tubing Vial Clear | "200" Tubing Vial Clear | "300" Tubing Vial Clear | "320" Tubing Vial Amber | "400" Molded Container Clear | "500" Molded Container Amber | "800" Molded Container Clear | "900" Molded Container Amber |
| Strain Point °C | 510 | 505 | 525 | 510 | 530 | 515 | 510 | 496 |
| Annealing Point °C | 560 | 560 | 570 | 560 | 570 | 550 | 548 | 536 |
| Softening Point °C | 820 | 820 | 785 | 770 | 750 | 745 | 729 | 713 |
| Linear Coefficient of Expansion (0-300°C) x $10^{-7}$ | 33 | 33 | 55 | 54 | 60 | 61 | 88 | 91 |
| Density g/cm3 | 2.23 | 2.23 | 2.33 | 2.39 | 2.41 | 2.42 | 2.48 | 2.50 |
| ASTM E-438 Glass Type & Class | I A | I A | I B | — — | — — | — — | — — | — — |
| USP Powdered Glass <660> | Type I | Type I | Type I | Type I | Type I | Type I | Type III | Type III |
| USP Light Transmission <671> | — | — | — | Yes | — | Yes | — | Yes |
| USP Arsenic <211> | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| EP Glass Grains (Test B) 3.2.1 | Type I | Type I | Type I | Type I | Type I | Type I | Type III | Type III |
| EP Spectral Transmission 3.2.1 | — | — | — | Yes | — | Yes | — | Yes |
| EP Arsenic 3.2.1 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

ASTM= American Society for Testing and Materials USP= U.S. Pharmacopeia EP= European Pharmacopeia

## Factors for Selecting a Glass Container

### Chemical Durability

The U.S. Pharmacopeia classifies pharmaceutical glass containers according to their chemical durability, which is their resistance to water attack. Different types of glass react differently when exposed to solutions and vapors. Reactive substances will leach constituents from the glass surface into the contained product. This reaction can occur with ordinary aqueous, saline and alcohol based solutions. The primary ion removed from the glass surface is sodium; however all elements are subject to leaching. It is not uncommon to experience an increase in product pH as sodium is extracted from the container. Corrosion of the glass occurs over time and is accelerated by moist heat-treating processes like autoclaving.

Containers are classified by the USP as Type I, Type II and Type III. Type I is the most chemically durable glass and Type III is the least durable. Test methods and specification limits are determined by the USP in Chapter <660> Containers. USP Type can be used as a general guide for container selection but should not be the only criteria in the decision making process. A set of criteria has been developed over the years to assist with the selection of glass containers. These guidelines were established to narrow the selection of possible containers. It is the product manufacturers responsibility to do testing to ensure that the glass container is suitable for the application and contained product.

### USP Type I

USP Type I classification is a borosilicate glass with superior chemical resistance. This class of glass represents the least reactive glass containers available. Typically, this glass can be used for most applications, including packaging for parenteral and non-parenteral products. Type I glass may be used to package acidic, neutral and alkaline products. Water for injection, unbuffered products, chemicals, sensitive lab samples and those requiring sterilization are commonly packaged in Type I borosilicate glass. Type I glass can be subject to chemical attack under certain conditions, thus container selection must be made carefully for very low and very high pH applications. Most glass laboratory apparatus are Type I borosilicate glass.

Even though Type I glass has the highest chemical durability, there still may be some sensitivity with certain packaged products. For applications where standard Type I glass does not provide sufficient protection against alkali extraction and pH shifting, internal surface treatment can be used to further improve the chemical durability of the container. This surface enhancement may become especially important for pH sensitive products packaged in small containers because smaller containers have a higher surface area to volume ratio. See the USP Type II description for an explanation of the internal surface treatment process. It should be noted that the USP does not place any additional durability requirements on surface treated Type I glass.

### USP Type II

USP Type II glass is soda-lime glass that has been treated with sulfur compounds to de-alkalize the interior surface of the container. This treatment results in a container with high chemical resistance because alkali is removed from the glass surface prior to use. The amount of ions available to leach into the product is reduced, thus the container durability is increased. Extraction salts will be present on the interior surface of new sulfur treated containers, and the containers may require washing prior to use. Type II glass is less chemically durable than Type I glass, but is more chemically durable than Type III glass. It can be used for acidic and neutral parenteral preparations that remain below pH 7 during their shelf life.

### USP Type III

USP Type III is a soda-lime glass with moderate chemical resistance. It is typically acceptable for packaging dry powders that will be dissolved into solutions or buffers that are insensitive to alkali.

Type III glass may not be suitable for autoclaved products because the autoclaving process will accelerate the glass corrosion reaction. Dry heat sterilization processes are typically not a problem for Type III containers.

## Factors other than USP Type

### Handling Considerations

It is important to consider filling and processing steps when choosing a container. Both mechanical and thermal stresses are important factors. For a given thermal expansion range, a typical tubing vial with thin, uniform walls will withstand thermal shock better than a molded glass container.

The physical design of the container will play a part in the amount of thermal and mechanical shock resistance it exhibits. It is often necessary to make a compromise between high resistance to mechanical shock and high resistance to thermal shock.

### Light Sensitivity

Light sensitive products must be packaged in amber glass. Amber glass is formulated to absorb light in the Ultra Violet region of the electromagnetic spectrum. Test methods and specification limits for light protection can be found in the U. S. Pharmacopoeia.

### Specific Ion Sensitivity

If a product is sensitive to the presence of particular ions, the composition of the glass container should be considered. For example, products that contain sulfate salts may experience the formation of precipitates if packaged in glass with barium or calcium in the formulation. In this example, it would be desirable to avoid glass that contains barium and calcium. A second example is pre-cleaned containers for environmental sampling. Even though the containers are clean, the chemical durability characteristics of the glass have not been altered. Thus, it would not be feasible to test the samples for low levels of sodium, because the sample will extract sodium from the container's surface.

## Determining a Glass Container Thread Finish

GPI refers to the Glass Packaging Institute, which is responsible for establishing and issuing uniform voluntary standards regarding the types and finishes produced by American glass manufacturers. When a container finish is designated as 20-400, it means that the diameter across the outside of the threads is approximately 20mm. (See 'T' dimension on illustration.) The 400 designates a specific style of thread. Table 4 shows average dimensions for comparison and to aid in sizing. The actual dimensions may vary slightly, but should be close enough for proper determination of thread finish.

## Other Variables to Consider

1. Container size and physical design. Narrow mouth vs. wide mouth, tall vs. short, etc.
2. Color. Is light sensitivity an issue? Is amber glass needed?
3. Shelf life. How long are you planning to store a sample or product in the container?
4. Method of fabrication. Molded or tubing based?
5. Processes the container will undergo. Storage conditions (freezing or heat); washing, sterilization; method of sealing; humidity; hot or cold filling; de-pyrogenation.
6. Storage after filling. Time (shelf life needed); heat, cold, moisture; shipping conditions; light exposure.
7. Product composition. Dry powder; pH; concentration of ions; physico-chemical properties.
8. Closure type. Wide mouth vs. narrow mouth; septa lined open top closure; closed closure; liner material; sealing needed; threaded closure orcrimp seal.

## Opening Dimension of Glass Containers with Thread Finish

The minimum opening dimension 'I' of a glass container can be found if the containers thread finish is known. If the thread size of the container is 38-400, the 'I' can be determined from Table 4 by looking down the 'T' Dimension column (far left) until you find the number 38. Follow this row to the right, until you come to the 'I' min. column that is listed under the number 400. This number is the minimum opening of the container. The opening can be larger, but it should not be smaller.

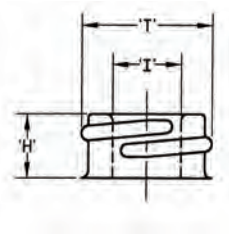


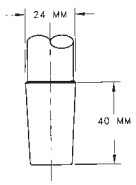

Table 4. Glass Thread Finish Dimensions (Dimensions are in millimeters)

| 'T' | 400 | | 410 | | 415 | | 425 | | 430 | |
|---|---|---|---|---|---|---|---|---|---|---|
| Dim (mm) | 'H' | 'I' min | 'H' | 'I' min | 'H' | 'I' min | 'H' | 'I' min | 'H' | 'I' min |
| 8 | — | — | — | — | — | — | 6.53 | 2.90 | — | — |
| 10 | — | — | — | — | — | — | 6.86 | 3.76 | — | — |
| 13 | — | — | — | — | 11.23 | 5.54 | 7.49 | 5.54 | — | — |
| 15 | — | — | — | — | 13.89 | 6.55 | 7.49 | 6.55 | — | — |
| 18 | 9.04 | 8.26 | 13.03 | 8.26 | 15.42 | 8.26 | — | — | 15.34 | 6.86 |
| 20 | 9.04 | 10.26 | 13.82 | 10.26 | 18.59 | 10.26 | — | — | 15.34 | 7.92 |
| 22 | 9.04 | 12.27 | 14.61 | 12.27 | 21.01 | 12.27 | — | — | 15.34 | 10.41 |
| 24 | 9.78 | 13.11 | 16.15 | 13.11 | 24.05 | 13.11 | — | — | 16.43 | 11.68 |
| 28 | 9.78 | 16.26 | 17.73 | 16.26 | 27.23 | 16.26 | — | — | 18.39 | 13.34 |
| 30 | 9.86 | 16.59 | — | — | — | — | — | — | 19.30 | 14.43 |
| 33 | 9.86 | 20.09 | — | — | — | — | — | — | 19.69 | 17.86 |
| 35 | 9.86 | 22.23 | — | — | — | — | — | — | — | — |
| 38 | 9.86 | 25.07 | — | — | — | — | — | — | 24.03 | 21.03 |
| 40 | 9.86 | 27.71 | — | — | — | — | — | — | — | — |
| 43 | 9.86 | 29.59 | — | — | — | — | — | — | — | — |
| 45 | 9.86 | 31.78 | — | — | — | — | — | — | — | — |
| 48 | 9.86 | 35.08 | — | — | — | — | — | — | — | — |
| 51 | 9.98 | 37.57 | — | — | — | — | — | — | — | — |
| 53 | 9.98 | 40.08 | — | — | — | — | — | — | — | — |
| 58 | 9.98 | 44.07 | — | — | — | — | — | — | — | — |
| 60 | 9.98 | 47.07 | — | — | — | — | — | — | — | — |
| 63 | 9.98 | 50.09 | — | — | — | — | — | — | — | — |
| 66 | 9.98 | 53.09 | — | — | — | — | — | — | — | — |
| 70 | 9.98 | 57.07 | — | — | — | — | — | — | — | — |
| 75 | 9.98 | 61.57 | — | — | — | — | — | — | — | — |
| 77 | 11.99 | 64.67 | — | — | — | — | — | — | — | — |
| 83 | 11.99 | 69.93 | — | — | — | — | — | — | — | — |
| 89 | 13.21 | 74.12 | — | — | — | — | — | — | — | — |
| 100 | 14.78 | 84.94 | — | — | — | — | — | — | — | — |
| 110 | 14.78 | 94.92 | — | — | — | — | — | — | — | — |
| 120 | 17.02 | 104.93 | — | — | — | — | — | — | — | — |

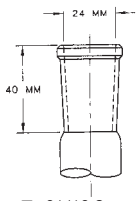
## Glass Joint Specifications

Ⓢ Symbol used to indicate interchangeable joint, stoppers and stopcocks that comply with the requirements of ASTM E676 (taken from commercial standard CS21).

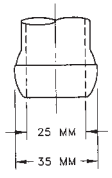
Ⓢ Symbol used to indicate a spherical joint that complies with the requirements of ASTM E677 (taken from commercial standard CS21-58).



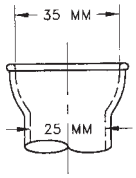

S 24/40 Inner Joint




Ⓢ 24/40 Outer Joint




Ⓢ 35/25 Ball Joint




Ⓢ 35/25 Socket Joint

## Sterilization of Glass Containers

Although most types of glass is sterilizable by either steam or dry heat certain techniques are recommended for specific types of glass. Most Type I borosilicate glass is suitable, when proper techniques are followed, for sterilization and de-pyrogenation. Type III is not recommended for repeated steam sterilization, although this may be appropriate on a single use basis. Recommended autoclave cycles are 121°C @ 15 psi for 20 minutes. Closures should be left loose on the containers. Proper care must be given when venting back to atmosphere or there may be damage to the containers.

Dry heat sterilization can be achieved at a temperature of 160°C for 2 to 3 hours, but glass containers are capable of withstanding sterilization temperatures up to 500°C without noticeable degradation of the glass. Repeated dry heat sterilization of containers containing a fair amount of moisture may be susceptible to glass flaking. Inversion of the container and good ventilation would prevent this from occurring. Inspect glass containers for chips, cracks and scratches before each use and discard if damage is evident, as breakage may occur during sterilization if used. Glass containers may also be sterilized using gas or chemicals. Ethylene oxide (EtO), formaldehyde or peroxide gas is generally used when heat and pressure cannot be used due to material limitations. Chemical disinfectants normally used are quaternary ammonium compounds, iodophors, formalin, benzalkonium chloride and ethanol.

Glass containers may also be sterilized using irradiation, however, the process changes the color of the glass, which may not be acceptable for most applications. There is glass tubing available that will not change color when irradiated. This would be available for those interested in large quantity orders of tubing vials only.

## Mold Lubricants and Residues

Modern high-speed mold production of glass containers requires the use of release agents or coatings on the metal mold equipment to prevent sticking and malformation of the bottles in the molding process. A variety of coatings or lubricants are used to provide optimum viscosity and function according to the particular needs of the individual piece of process equipment as well as service conditions.

The coatings are compounded from colloidal graphite and sulfur suspended in hydrocarbon oils and waxes with small amounts of modifiers such as calcium soaps and greases. This "mold dope" is replenished through periodic swabbing of the mold equipment. The hot forming temperature and the subsequent lehr annealing (1000 – 1100°F) process will burn off the volatile sulfur and organic oils and waxes. Portions of carbon can remain since the major component (graphite) is very slowly decomposed and oxidized in the process. Quality control in manufacturing employs a number of devises (both automatic and manual) to eliminate the small percentage of product that has excess graphite spots.

## Pressure and Vacuum in Glass Vessels

Because the conditions under which glassware is used vary widely, there is no guarantee against breakage. Always exercise care to protect personnel and property when using any vessel with vacuum or pressure. Never subject glassware showing visible signs of damage (chipped, cracked or scratched) to pressure or vacuum.

## Weathering of Glass Containers

When glass containers are formed, the surface of the glass is enriched in alkali. The annealing process further enhances this effect. This phenomena is usually of no practical consequence and goes unnoticed, but in certain circumstances, it interferes with further processing of the container. As glass is exposed to the atmosphere, a complex reaction occurs on the surface between the alkali on the glass and gasses in the air. These reactions are commonly known as weathering. The reaction produces salts, which can absorb water from the air. It is these salts that are the source of surface related decorating problems. Weathering salts are composed of a mixture of various hydrates of sodium carbonate and sulfate along with minor amounts of similar calcium salts. Weathering is a normal condition and such salts are always found on glass surfaces as they are exposed to the atmosphere. The quantity and crystal appearance will vary depending upon time, humidity and temperatures of storage. These salts are easily removed by water rinsing.

All glass weathers, but some are more resistant than others. Borosilicate glass is most resistant, followed by durable soda-lime, and common soda lime. Since glass containers can be decorated in a myriad of ways, the weathering of glass must be considered in selecting a method that is effective and trouble free. Below is a weathering chart to be used as is a rough guide to decorating and labeling of glass.

The surface treatments used to remove weather salts or remove the alkali that cause weathering are somewhat limited. Since the salts are water soluble, a simple wipe with a wet cloth or washing prior to decoration or pressure sensitive labeling is effective in most cases.

Heat and humidity cycling or storing glass in a confined space promotes weathering. Keeping the glass under constant low humidity is effective in slowing weathering as it keeps the surface dry and reduces the salt build-up. Dry heating the container just prior to decorating or pressure sensitive labeling is sometimes successful.

A layer of absorbed moisture on the glass prevents good adhesion of pressure sensitive labels. Water based adhesives, however, would be no problem. Several possible solutions to the problem can be suggested:

1. Simply storing the containers in an area of low humidity for several days may solve the problem.
2. Washing or wiping the ware with warm water. This removes the weathering salts and allows the achievement of a moisture-free surface.
3. Heating the ware will dry the surface and allow good adhesion of the labels. Heating will not remove the salts so the heating must be accomplished shortly before labeling.

The presence of dry salts on the ware will not cause a problem, but the salts can again, rapidly absorb moisture.

## Weathering Chart

| Rate of Weathering | Very slow (months) | Slow under low humidity Rapid under high humidity (typically weeks) |
|---|---|---|
| Pressure Sensitive Labels | √ | √ Success varies with amount of weathering |
| Glue Labels | √ | √ |
| Ceramic Screen | √ | √ |
| Organic Screen | √ | √ |
| Gold | √ | √ If not severely weathered |

(√ = O.K.)

## Safety Coated Containers

A plastisol coating was developed to contain glass fragments and allow for a controlled release of the contents in the event of container breakage. The coating:

- Adds impact, thermal shock and slip resistance
- Contains glass - prevents flying fragments and cuts
- Contains contents - reduces risk of chemical exposure and inhalation. Allows time for proper disposal.

The coating material is plastisol, which is a dispersion of a fine particle size PVC resin (polyvinyl chloride) in a plasticizer where stabilizers, fillers, modifiers, colorants and other compounding ingredients may be added. When the plastisol is heated, the suspended PVC particles begin to swell and absorb the surrounding liquid plasticizer. When the temperature is increased to over 300°F, fusion of the particles occurs and the particles coalesce into a homogeneous mass. The coating process is a heat-and-time related process that determines coating weight and thickness and is controlled by machine line speeds and oven temperatures. The more heat, the heavier the coating, and the slower the line, the heavier the coating.

Non-autoclavable coated containers can be used successfully at 121°C (250°F) and below. Do not use above 300°F or over direct heat or flame. The coating is not dry heat sterlizable. Coating will yellow and burn with high heat exposure but will continue to protect until black.

## Labeling Adhesives for Coated Glass Containers

Labeling of plastisol coated glass containers has always been somewhat of a problem. It is important to select a face stock and adhesive combination with the proper performance characteristics for the intended product and application. It is recommended that prior to the selection of any adhesive, the customer contact the adhesive manufacturer or supplier and discuss the application requirements.

For on-line and pressure sensitive labeling of plastisol coated glassware, an acrylic based adhesive with low rubber and vinyl content is recommended. Other label adhesives will usually extract the plasticizer from the coating, become soft, bleed through the label and eventually lose adhesion. Acrylics block the plasticizer extraction and allow the initial adhesion to remain undisturbed. There are, however, many variations of acrylic based adhesives and some are more effective than others. Adhesives are usually formulations of several chemicals that are combined in a variety of ratios and available in many forms. It is for these reasons, that accelerated age testing is advisable.

When selecting an adhesive for a specific application, consideration should be given to the necessary bond strength and duration, moisture, UV, heat and solvent resistance. There is no substitute for proper testing of the proposed materials under actual usage conditions. The final decision should be made by the customer to choose the label / adhesive combination that meets the requirements of the specific use.

## Autoclave Sterilization

### Recommendations for Autoclavable Coated Containers

The suggested conditions for steam sterilization are 121°C (250°F) @ 15 psi for 20 minutes. Portions of the coating may absorb a small amount of water vapor and appear cloudy after autoclaving, however, the cloudiness will disappear as the coating dries. To speed clearing, glassware can be dried in an oven at 49 – 66°C (120 – 150°F). Autoclaving effects on the coating will vary slightly due to equipment, container size and configuration, procedure and frequency of procedure. It is recommended that containers not be autoclaved touching each other to avoid possible sticking problems. Also, it is recommended that the autoclave pressure be allowed to return to zero before removing glassware. A sudden release of pressure may cause the coating to separate from the glass and produce air pockets under the coating.

Evaluation of a sample is the best way to determine if the safety coating will work for your application.

## Recycling Safety Coated Containers

For after-use disposal, PVC safety coated containers create a unique situation in that they are a composite package of glass and plastic. Depending on the application, there are four ways to handle the disposal of coated containers:

### Reuse

In the laboratory or industrial setting, coated containers can be washed, dried and reused, perhaps for the collection of hazardous waste in the laboratory.

### Recycle

For consumer pharmaceutical and cosmetic applications, coated glass containers should be able to go into residential glass recycling collection. Coated glass makes up such a small percentage of total glass collected that it should not present any recycling problems (variations in state and county recycling programs make it difficult to generalize).

For large quantity industrial or laboratory applications, recycling coated glass containers, as a whole, can create two problems: the grinding of the coated glass into cullet could be difficult, and the PVC in the glass furnace might create organic chlorides in the glass mixture that would affect the final pH of the glass. Also, if a hazardous material was packaged in the containers, many recyclers do not want to accept the glass.

The plastic coating can be cut and peeled from the container and the glass and the plastic jacket recycled, but for safety reasons this is not recommended. Both glass and PVC are recyclable materials. Stripped coatings are recycled into garden hoses and floor mats.

## Recycling Safety Coated Containers (Cont.)

### Landfill

Coated containers can be crushed and safely landfilled. The plastic jacket is made of PVC material, which is very chemically stable and does not leach out harmful chemicals into groundwater. In fact, PVC is often used to make liners for landfill sites.

### Incinerate

Coated containers can be incinerated. PVC is often blamed for the release of toxic dioxins and hydrochloric acid (HCL). However, research has shown that dioxins and hydrochloric acid are generated no matter what amount of PVC is present in the waste. Incinerator operating conditions and temperatures determine the amounts produced. Hydrochloric acid, which can cause acid rain, can be controlled in a modern incinerator equipped with a proper scrubber.

The safety coating was developed to contain the glass fragments and allow for a controlled release of the contents in the event of container breakage. In addition, the coating adds impact, thermal shock and slip resistance, prevents flying fragments and cuts and reduces risk of chemical exposure and inhalation. Few, if any, alternative-coating materials have been found that perform as well or better than PVC plastisol.

## Recycling Glass

Most household glass containers are manufactured from soda-lime glass. All of our soda-lime glass may be recycled in the same manner after performing any necessary decontamination procedures. Borosilicate glass must not be mixed and recycled with soda-lime glass.

## General Cleaning of Glassware

Handle glassware carefully. Most damage to glassware occurs during cleaning. Glassware should be washed as soon as possible after use to avoid caking of residue. It is important not to let soiled glassware dry out. If immediate cleaning is not possible, the glassware should be put to soak in water. Use of a cleaning agent is recommended. Glassware should not to be cleaned with harsh or abrasive cleaners. It is recommended that a mild detergent or non-abrasive cleaner be used. Hard utensils, wire brushes or bottle brushes with wire cores, should not be used for cleaning. It is recommended that a sponge brush that is soft and flexible be used. Scratched glassware is prone to breakage during freezing or heating.

After washing, the glassware should be rinsed with tap water to remove any cleaning agent residue. After the tap water rinse, the glassware should be rinsed with distilled or deionized water. Dry the glassware inverted on racks or pegboards. Inspect the glassware for chips, cracks and scratches on the inside and outside. Do not use glassware with visible signs of damage.

# Plastic Manufacturing Terminology

## Blow Mold

Cavity that receives the Preform, which will be blown into the desired shape.

## Blow Pin

Used in Extrusion Blow Molding. Hollow tube that pierces Preform and introduces air to blow Preform into shape of Blow Mold.

## Cavity

That part of the mold that contains the reverse image of the product being formed.

## Cold Runner

Flow channel for heat-softened polymer that goes from the Plastifier to the mold cavities. Polymer in the flow channel is cooled with shaped parts in cavities and is later removed, reground, and reused.

## Core

That part of a mold that allows the internal shaping of a product such as the internal threads of a closure.

## Core Rod

Used in Injection Blow and Injection Stretch Blow Molding. Used in conjunction with a Preform Mold to manufacture a Preform. The Preform is formed around the Core Rod creating a hollow tube, which will then be transferred to a Blow Mold where air will be introduced forcing the Preform to take the shape of the Blow Mold cavity.

## Extrusion Blow Molding

A molding process whereby heat-softened polymer is forced into the shape of a hollow tube. While still soft, a mold closes around the tube, pinching the top and bottom of the tube closed. A Blow Pin is introduced, and air is forced through the pin forcing the tube to take the shape of the Blow Mold cavity.

## Flame Treating

A method of rendering inert thermoplastic objects receptive to inks, lacquers, paints, adhesives, etc. in which the object is bathed in an open flame to promote oxidation of the surface of the article. Polyolefins (HDPE, LDPE, PP, etc) are primarily those polymers that are flame treated.

## Flash

Extra plastic attached to molded ware along the parting line, which must be removed before the part can be considered finished.

## Gate

Used in Injection, Injection Blow and Injection Stretch Blow Molding. The orifice through which the heat-softened polymer enters the cavity.

## Hot Runner

Flow channel for heat-softened polymer, which goes from the Plastifier to the mold cavities. Polymer in the flow channel is kept softened so there is no runner material to grind up and reuse.

## Hopper

Conical feed reservoir into which polymer pellets are loaded. These pellets then fall into a heated barrel (Plastifier), sometimes through a metering device.

## Injection Blow Molding

A molding process in which heat-softened polymer is injected from a Plastifier into a mold cavity creating a Preform, which is then transferred to a Blow Mold where air is blown into the Preform, forcing it to take the shape of the Blow Mold cavity.

## Injection Molding

A molding process whereby a heat-softened polymer is injected from a Plastifier into a relatively cool cavity, which gives the article the desired shape.

## Injection Stretch Blow Molding

A molding process whereby Preforms are introduced into a cavity, stretched axially by a Stretch Rod, and then blown circumferentially to the shape of the Blow Mold cavity.

## Melt Index

The amount, in grams, of a thermoplastic resin, which can be forced through a 0.0825 inch orifice when subjected to 2160 gms. force in 10 minutes at 190°C.

## Mold

Contains the cavity or cavities of a desired part in which a heat-softened polymer is shaped.

## Mold Seam

A line formed at the point of contact of the Mold halves.

## Neck Ring

Part of the mold assembly that forms the neck and finish of a container.

## Nozzle

Hollow cored orifice that is screwed into the extrusion end of the Plastifier. The nozzle is designed to form a seal under pressure between the Plastifier and the Mold or Runner system. The front end of a nozzle may be either flat or spherical in shape.

## Plastifier

Assembly whereby polymer pellets are fed from a Hopper into a barrel where they drop onto a turning screw which forces the pellets forward. Heater bands wrapped around the barrel melt the pellets as they are forced forward along the inside of the barrel. The molten polymer is then forced out the end of the barrel through the nozzle.

## Preform

Used in Blow Molding processes. Heat-softened polymer is formed into a shape similar to a thick test tube with neck threads. This tube is subsequently inflated while inside a Blow Mold to create the shape of the desired article.

## Regrind

A thermoplastic from a processor's own production that has been reground or re-pelletized after having been previously processed by molding.

## Release Agent

A lubricant that facilitates molding.

## Stretch Rod

Used in Injection Stretch Blow Molding. A rod that is introduced into the Preform to stretch it in an axial direction prior to the Preform being blown into the shape of the cavity.

## Swingplate Injection Molding

A molding process where a heat softened polymer is injected through a stationary plate and then through a second metal plate or "swingplate", through cores mounted on the other side of the swingplate, and into cavities in a third plate. The polymer flows out of and around the cores and filles the cavities. Once the cavities are filled, the third plate moves away from the cores, leaving the molded parts on the cores. The swingplate then swings over to a secondary station where the cold runner and molded parts are removed. While this is happening, another swingplate moves from the secondary station to the first station and new parts are molded.

## Thermoplastic

Material that will repeatedly soften when heated and harden when cooled.

## Plastic Resins

Listed below are the primary resins used in the manufacture of our products. Following are some of the characteristics and features of these resins. Also listed is the Society of the Plastic Industry (SPI) resin identification code number.

### High Density Polyethylene (HDPE)


Flexible but more rigid than LDPE. Natural color is milky white, semi-translucent depending on density. Good impact strength and stress crack resistance. Good chemical resistance. Good vapor barrier but poor gas barrier. Sterilizable via EtO or gamma radiation.

### Low Density Polyethylene (LDPE)


Very flexible, natural milky color, translucent with high impact strength. Excellent for mild and strong buffers, good chemical resistance. Good water vapor and alcohol barrier properties. Poor gas barrier, sterilizable with EtO or gamma radiation. Good stress crack and impact resistance.

### Linear Low Density Polyethylene (LLDPE)


Very flexible, natural milky color, translucent with high impact strength. Excellent for mild and strong buffers, good chemical resistance. Good water vapor and alcohol barrier properties. Poor gas barrier, sterilizable with EtO or gamma radiation. Good stress crack and impact resistance.

### Polybutylene Terephthalate (PBT)


Good chemical resistance, clear color, resistant to water, weak acids and bases at room temperature. Can be sterilized by EtO and autoclaving, at temperatures up to 180°C.

### Polycarbonate (PC)


Rigid and strong, excellent clarity. High impact strength. Poor barrier properties.

### Polyethylene Terephthalate (PET)


Semi-rigid to rigid depending on wall thickness. Natural color — clear and transparent. Good alcohol and solvent barrier; good gas and fair moisture barrier. Good to fair chemical barrier; not good for strong acids or bases. Good moldability. Sterilizable through EtO and gamma radiation. Good stress crack and impact resistance at room temperature and above.

### Polyethylene Terephthalate Glycol (PETG)


Semi-rigid to rigid depending on wall thickness. Natural color — clear and transparent. Good alcohol and solvent barrier; fair gas and good moisture barrier. Good to fair chemical barrier; not good for strong acids or bases. Good moldability. Sterilizable through EtO and gamma radiation. Good stress crack and impact resistance at room temperature and above.

### Polypropylene (PP)


Rigid, solid, durable in container or closure forms. Opaque, natural grayish yellow in natural form. Excellent stress crack and impact resistance. Excellent moisture barrier, good oil and alcohol barrier, poor gas barrier properties. Good chemical resistance. Sterilizable with EtO or autoclaving.

### Polystyrene (PS)


PS is a transparent, rigid and glass-like polymer. Good resistance to inorganic chemicals. Light and heat stable, biologically inert and non-toxic. Poor impact and stress crack resistance, poor barrier properties. EtO or Gamma sterilizable.

### Polyvinyl Chloride (PVC)


Flexible to rigid. Good for coatings; fair water and good oxygen barrier. Transparent to yellowish color in natural state. Good chemical resistance. Sterilizable by EtO. Good impact and some stress crack resistance. Poor recycling due to chloride residues.

### PTFE, FEP, PFA


Polytetraflouroethylene, fluorinated ethylene propylene, perfluoralkoxy. All fluoropolymers feature opaque characteristics, excellent chemical resistance, good heat stability and thermal shock resistance. All are autoclavable, heat, and gas sterilizable.

### Table 5. Typical Properties of Plastics

| | HDPE | LDPE | LLDPE | PC | PET | PETG | PP | PS | PVC | PTFE |
|---|---|---|---|---|---|---|---|---|---|---|
| Max. Temp °C | 120 | 80 | 50 | 135 | 60 | 70 | 135 | 70 | 70 | 240 |
| Transparency | Transl | Transl | Transl | Transp | Transp | Transp | Transl | Transp | Transl | Opaq |
| Sterilization** | | | | | | | | | | |
| Autoclave | No | No | No | Yes | No | No | Yes | No | No | Yes |
| Gas | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Dry Heat | No | No | No | No | No | No | No | No | No | Yes |
| Radiation | Yes | Yes | Yes | Yes | Yes | Yes | No | Yes | No | No |
| Disinfectants | Yes | Yes | Yes | Yes | Yes | Yes | Yes | No | Yes | Yes |
| Density G/Cm$^3$ | 0.95 | 0.92 | 0.92 | 1.19 | 1.33 | 1.27 | 0.90 | 1.06 | 1.34 | 2.15 |
| Flexibility | Semi | Flex | Flex | Rigid | Semi | Semi | Rigid | Rigid | Rigid | Rigid |
| Brittleness Temp °C | <-75 | <-75 | -76 | -135 | -10 | -40 | 0 | +20 | -30 | -110 |
| Tensile Strength, Psi | 4000 | 2400 | 2000 | 9000 | 8000 | 7500 | 5000 | 6000 | 5000 | 4000 |

**Depends on thickness and relates to containers and closures. Because there are many grades of resins and processing methods, the above information should be used as a general guideline only.

### Table 6. Permeability of Plastics

| | | HDPE | LDPE | LLDPE | PC | PET | PETG | PP | PS | PVC | PTFE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| $N_2$ | See Note 1 | 42 | 180 | — | 50 | 0.8 | 10 | 44 | 50 | 2 | — |
| $O_2$ | See Note 1 | 150 | 500 | — | 250 | 5 | 25 | 90-140 | 185-485 | 4 | — |
| $CO_2$ | See Note 1 | 580 | 2700 | — | 1000 | 15 | 125 | 650 | 1160 | 4 | — |
| Moisture | See Note 2 | 0.3 | 1.3 | — | 7.4 | 2.0-4.0 | 0.5 | 0.3-0.7 | 8.5 | 1.0-5.0 | — |

Note 1: Units are cc x mil / 100 in$^2$ x day x atm @ 25°C
Note 2: Units are g x mil / 100 in$^2$ x day @ 38°C, 50 - 90% RH

## Factors for the Selection of a Plastic Container

Plastic containers have been developed for a variety of applications across many different industries over the years. There are many different types of polymers used in the creation of these containers to help fill the demands for the various applications. Polymers offer a variety of properties, each having different levels of importance with different users depending on the application. Some users may have flexibility within their product formula or filling process thus focus on economical containers while others may need containers that are stronger, autoclavable, transparent, sterilized, etc.; therefore requiring more specifications. DWK Life Sciences can help with polymer selection through comprehension of the customer's product, goals, and adaptability. Several questions should be posed to gather this understanding.

### Some Examples Include:

- What is the container size and physical design. Narrow mouth vs. wide mouth, tall vs. short, etc.?
- Must the package be transparent, translucent, opaque or colored for either marketing or light protection?
- Are there specific shipment and storage conditions such as refrigeration, freezing, exclusion of light, etc.?
- Are there governmental regulations pertaining to the product?
- How is the product going to be dispensed by the user?
- Have any tests been run in plastic? Were they unsuccessful and why? What type of plastics?

### Many Things Govern Polymer Suitability for Package Use

These include:

- Permeation / Barrier
- Sorption Characteristics
- Chemical Resistance
- Stress Crack Resistance
- Rigidity / Flexibility
- Impact Resistance
- Sterilizability
- Recyclability
- Temperature Resistance
- Mold Release

### Table 7. Packageability of Plastic Containers

| Requirement | PC | PE | PET | PETG | PP | PS | PVC |
|---|---|---|---|---|---|---|---|
| Lightweight | 6 | 2 | 5 | 5 | 1 | 3 | 6 |
| Clarity | 1 | 3 | 1 | 1 | 2 | 1 | 1 |
| Toughness | 3 | 1 | 2 | 1 | 3 | 9 | 8 |
| Water Adsorption | 6 | 2 | 3 | 3 | 2 | 4 | 2 |
| Water Vapor Permeability | 6 | 2 | 5 | 4 | 2 | 5 | 4 |
| $CO_2$ Permeability | 7 | 6 | 2 | 3 | 5 | 9 | 3 |
| $O_2$ Permeability | 7 | 7 | 2 | 3 | 6 | 8 | 2 |
| Resistance: Acids | 4 | 2 | 4 | 4 | 2 | 4 | 2 |
| Resistance: Alkalis | 7 | 2 | 5 | 5 | 2 | 2 | 2 |
| Resistance: Oils | 4 | 4 | 2 | 2 | 3 | 4 | 2 |
| Resistance: Solvents | 3 | 3 | 2 | 2 | 3 | 6 | 4 |
| Resistance: High Humidity | 6 | 1 | 1 | 1 | 1 | 1 | 1 |
| Resistance: Sunlight | 4 | 4 | 1 | 2 | 4 | 5 | 5 |
| Resistance: Heat (hot fill) | 1 | 3 | 1 | 1 | 2 | 5 | 1 |
| Resistance: Cold | 1 | 1 | 2 | 2 | 4 | 5 | 9 |

This chart is a generalization to aid in selection; there are many forms, thicknesses and various copolymers and additives available. The lower the number, the better the property. 1=Excellent; 9=Poor. (PE Properties are similar for HDPE & LDPE.)

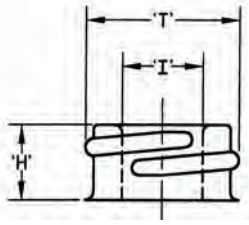
## Biological Properties of Plastics

Plastic products and containers are considered to be biologically inert. For example polyethylenes, fluoropolymers, polypropylene, polystyrene and polycarbonate are considered to be non-toxic to cell cultures. Distilled water for preparing culture media can be collected and stored in polyethylene containers.

## Determining a Plastic Container Thread Finish

When a container finish is designated as 24-410, it means that the diameter across the outside of the threads is approximately 24mm. (See 'T' dimension on illustration.) The 410 designates a specific style of thread. Table 8 shows average dimensions for comparison and to aid in sizing. The actual dimensions may vary slightly.

## Opening Dimension of Plastic Containers with Thread Finish




The minimum opening dimension 'I' of a plastic container can be found if the container's thread finish is known. If the thread size of the container is 38-400, the 'I' can be determined from Table 8 by looking down the 'T' Dimension column (far left) until you find the number 38. Follow this row to the right, until you come to the 'I' min. column that is listed under the number 400. This number is the minimum opening of the container. The opening can be larger, but it should not be smaller.

Table 8. Plastic Thread Finish Dimensions (Dimensions are in millimeters)

| 'T' | 400 | | 410 | | 415 | | 425 | |
|---|---|---|---|---|---|---|---|---|
| Dim (mm) | 'H' | 'I' min | 'H' | 'I' min | 'H' | 'I' min | 'H' | 'I' min |
| 13 | — | — | — | — | 11.48 | 5.54 | 7.87 | 5.54 |
| 15 | — | — | — | — | 14.15 | 6.55 | 7.87 | 6.55 |
| 18 | 9.42 | 8.25 | 13.28 | 8.25 | 15.67 | 8.25 | — | — |
| 20 | 9.42 | 10.26 | 14.07 | 10.26 | 18.85 | 10.26 | — | — |
| 22 | 9.42 | 12.27 | 14.86 | 12.27 | 21.26 | 12.27 | — | — |
| 24 | 10.16 | 13.11 | 16.41 | 13.11 | 24.31 | 13.11 | — | — |
| 28 | 10.16 | 15.59 | 17.98 | 15.59 | 27.48 | 15.59 | — | — |
| 30 | 10.24 | 16.59 | — | — | — | — | — | — |
| 33 | 10.24 | 20.09 | — | — | — | — | — | — |
| 35 | 10.24 | 22.22 | — | — | — | — | — | — |
| 38 | 10.24 | 25.07 | — | — | — | — | — | — |
| 40 | 10.24 | 27.71 | — | — | — | — | — | — |
| 43 | 10.24 | 29.59 | — | — | — | — | — | — |
| 45 | 10.24 | 31.77 | — | — | — | — | — | — |
| 48 | 10.24 | 35.08 | — | — | — | — | — | — |
| 51 | 10.36 | 37.57 | — | — | — | — | — | — |
| 53 | 10.36 | 40.08 | — | — | — | — | — | — |
| 58 | 10.36 | 44.07 | — | — | — | — | — | — |
| 60 | 10.36 | 47.07 | — | — | — | — | — | — |
| 63 | 10.36 | 50.09 | — | — | — | — | — | — |
| 66 | 10.36 | 53.09 | — | — | — | — | — | — |
| 70 | 10.36 | 57.07 | — | — | — | — | — | — |
| 75 | 10.36 | 61.57 | — | — | — | — | — | — |
| 77 | 12.37 | 64.67 | — | — | — | — | — | — |
| 83 | 12.37 | 69.93 | — | — | — | — | — | — |
| 89 | 13.59 | 74.12 | — | — | — | — | — | — |
| 100 | 15.16 | 84.94 | — | — | — | — | — | — |
| 110 | 15.16 | 94.92 | — | — | — | — | — | — |
| 120 | 17.40 | 104.93 | — | — | — | — | — | — |

## Sterilization of Plastics

There are a variety of plastic materials and methods by which these plastic materials can be sterilized. However, not all plastics can be sterilized by every method. An understanding of sterilization methods, problems that can occur, and terms associated with sterilization is helpful in determining plastic and plastic ware capability and performance. The following is presented to assist in gaining that understanding.

## Exposure To Non-Sterile Conditions Causes Non-Sterility

While temperature and time used to melt thermoplastics kills microorganisms, manufactured ware will not remain sterile unless it is made and maintained in a sterile environment. Plastic ware is not "sterile as manufactured" since:

- Ware is not blown with sterile air
- Ware may be exposed to non-sterile conditions immediately after manufacture
- Ware may contact non-sterile atmosphere, bags, boxes, personnel, etc. during packing after ware manufacture or during unpacking at the filling location
- Low particulate does not mean sterile

Producing ware under a shroud and using "particulate-free" or "low particulate" clean room bags does not result in sterile ware. These steps only reduce particulate in and on the ware to a lower level than would be present if ware were produced in an "unshrouded" production situation. In the future, molding may be performed in clean rooms and sterile conditions maintained after ware manufacture, however, until that time, ware cannot be represented as being sterile as molded. Until then, a secondary sterilization process must be performed.

## Terms Associated with Sterilization

### Bioburden

This is the number of microorganisms (bacteria, virus, fungi, etc.) present. Microbiologists can test for these. When sterilizing ware, it is important to eliminate the bioburden to prevent futher microbical growth.

### Pyrogens

A pyrogen, which means fever causing, is a remnant of bacteria that contains chemicals called endotoxins. Endotoxins can cause fever if injected into a mammal. Several tests exist to identify endotoxin contamination. Something may be sterile, but still have pyrogens on it. Glass can be sterilized and de-pyrogenated at the same time. Exposure to high temperature (600°F or higher) will kill microorganisms AND burn up endotoxins. The higher the temperature, the shorter the exposure time needed for de-pyrogenation. Most plastic ware is incapable of being exposed to these high temperatures. Therefore, plastic ware may be sterilized but, if it needs to be de-pyrogenated, it is usually washed with pyrogen free water.

### RNase and DNase

Contaminating enzymes; RNase (which breaks down RNA), and DNase (which breaks down DNA), are the most critical substances influencing experimental work in molecular biology. These contaminants are one of the principle causes of failure in the manipulation and analysis of RNA and DNA in the laboratory. These enzymes come primarily from contact with skin (direct and indirect). Pipettors, lab benches, autoclaves, lab ware, doorknobs, etc. are all frequently handled without gloves. All of these items, and virtually everything in a lab setting, are contaminated with these enzymes after contact with skin. Wearing gloves only offers protection until a surface is contacted that has itself contacted skin, at which time the glove becomes contaminated. Because of the resiliency of these enzymes, maintaining a RNase / DNase – free lab is extremely difficult.

Steam autoclaving ware at 121°C for 20 minutes will destroy DNase, but will not destroy RNase. Baking ware in an oven at 300°C for 4 hours will destroy DNase and RNase. However, this method is not possible with most plastic items because of the high temperature. Alternatively, there are decontaminating cleansing solutions available in the marketplace that will destroy both of these enzymes immediately upon contact and can be used with most materials. The solution is simply sprayed onto the surface of the ware, which is then rinsed thoroughly with nuclease-free water.

## Sterilization Techniques

Sterilization techniques are designed to kill microorganisms. There are varieties of sterilization methods, however the three basic approaches used to sterilize plastic ware are:

- Ethylene Oxide (EtO) Exposure
- Steam Autoclave
- Radiation (gamma radiation, electron beam radiation)

Tests should always be run on plastic ware to determine suitability for a given sterilization method.

### Ethylene Oxide

Ethylene oxide (EtO) is a toxic, cancer causing gas. Technology and worker protection legislation allow continued EtO use. Most plastic can be EtO sterilized. EtO must contact the surfaces to be sterilized. There are several ways EtO sterilization can be accomplished.

### Pure EtO

Empty ware in an open bag or ware in a sealed bag with a "breather" window, is placed in a chamber. Air is evacuated and moisture introduced (dry microorganisms are resistant to EtO sterilization).

Pure EtO is flooded into the chamber. Chamber internal pressure is kept lower than external pressure to ensure gas will not leak. Exposure time varies depending on ware and bioburden. After exposure, the chamber is purged with filtered sterile air to eliminate residual EtO.

### Dilute EtO

Since it is safer than pure EtO, a 10-15% mixture of EtO with inert gas is used. Empty ware in an open bag or ware in a sealed bag with a "breather window" is placed in a chamber. Air is evacuated, and moisture is introduced (dry microorganisms are resistant to EtO sterilization). Dilute EtO is flooded into the chamber and the chamber's temperature increased up to 60°C (140°F). Exposure time of 4 to 24 hours varies depending on ware, bioburden, and sterilization parameters. After exposure, the chamber is purged with filtered sterile air to eliminate residual EtO.

Most plastic ware is capable of being EtO sterilized. However, zinc stearate process aid, used in injection blow molding, can cause precipitants (particulate) to form in liquid products packaged in EtO sterilized ware.

Therefore, only special LDPE grades and colorants that do not require zinc stearate for injection blow molded ware should be treated by EtO sterilization processes. Additionally, tests should always be run on plastic ware to determine suitability for a given sterilization method.

## Steam Autoclave

Autoclaving can sterilize empty OR filled, sealed ware. The effect of temperature AND moisture kills microorganisms. Autoclaving involves exposing ware for a time to steam. The autoclave acts like a pressure cooker, allowing the steam temperature to get above the boiling point of water (100°C=212°F). Typically, autoclaving is done at 15 psi (pounds per square inch) steam being at 121°C (250°F).

### Autoclaving Empty Ware

Empty ware must withstand autoclaving temperature for the exposure time. If it does not, parts will distort. Of the common plastics, polypropylene (PP) and polycarbonate (PC) have enough heat resistance to be autoclaved. Generally, PP homopolymer is slightly more heat resistant than PP copolymer. Also, there is a grade of a new transparent plastic material identified as a cyclic olefin copolymer (COC) that is capable of withstanding steam autoclave sterilization.

## Steam Autoclave (Cont.)

If empty ware becomes distorted due to autoclave sterilization, it may be due to:

- High stresses molded into the ware during manufacture
- Unusual hot spots in the autoclave
- Use of the wrong plastic

Tests should always be run on plastic ware to determine suitability for a given sterilization method.

### Autoclaving Filled, Sealed Ware

Autoclave sterilization of filled, sealed ware, is also known as "Terminal Sterilization". Many companies prefer terminal sterilization IF their product can withstand the rigors. Autoclave temperature must be minimally 121°C (250°F). Of the common plastics, polypropylene (PP) and polycarbonate (PC) have enough heat resistance to be autoclaved. Also, there is a grade of a new transparent plastic material identified as a cyclic olefin copolymer (COC) that is capable of withstanding steam autoclave sterilization. However, autoclaving filled, sealed plastic ware is tricky. Temperature and pressure in the autoclave must be controlled and balanced with temperature and pressure being generated in the filled, sealed ware during autoclave heat up AND cool down. If not, ware could be crushed or ballooned. Special autoclaves are sold to enable this temperature / pressure balancing act.

If filled, sealed containers become distorted during autoclave sterilization. This may be due to:

- Improper balancing of temperature / pressure upon heating or cooling
- High stresses molded into ware at the time of manufacture
- Unusual hot spots within the autoclave chamber
- Use of the wrong plastic

Tests should always be run on plastic ware to determine suitability for a given sterilization method.

### Autoclaving Closures

Polypropylene (PP) closures should be capable of withstanding steam autoclave sterilization. However, autoclaving may cause blooming of additives in PP. PP homopolymer is more heat resistant than PP copolymer. Linerless closures (closures with specially molded-in sealing features) may or may not be acceptable for autoclaving dependent on many factors (e.g. as application torque, autoclave conditions, closure design, etc.) If a closure is lined, the liner and the adhesive used to affix the liner inside the closure must also be considered. Lastly, PP closures applied to containers present a special case. Closures are designed with tolerances that cause interference between the closure and container. This interference results in stress. Since all thermoplastics become softer as temperature increases, stress may be relieved or closure dimensions may change upon autoclaving. This can result in closure torque reduction or seal loss.

If closures distort or a torque retention problem results, it may be due to:

- High stresses molded into ware at the time of manufacture
- Unusual hot spots within the autoclave chamber
- Use of the wrong plastic

Due to moisture absorption, pulp liners are NOT anticipated to be acceptable for autoclaving. Tests should always be run on plastic ware and liner / adhesive combinations to determine suitability for a given sterilization method.

## Radiation

Ware is exposed to ionizing radiation that knocks electrons off atoms it contacts. Ionizing radiation is lethal to microorganisms because of its destructive effect upon the contents of living cells. There are two common sources of ionizing radiation used for sterilization:

- Cobalt 60 (gamma radiation) OR
- Electron beam or E-beam (high energy electrons)

The amount of radiation from either Cobalt 60 or electron beam is measured in MegaRads (MRads) or KiloGrays (KGy). One MegaRad equals ten KiloGrays. Because gamma sterilization and E-beam both use radiation, packaging materials react similarly in both systems.

### Cobalt 60 Gamma Radiation

A gamma radiation sterilization facility consists of a thick walled concrete maze in a room built around a well filled with water. In the well are a number of pencil-sized steel rods impregnated with radioactive Cobalt. Articles to be sterilized are placed on conveyors that bring them through the concrete maze into the room where the radioactive rods are located. The number of rods raised from the well and the exposure time controls the degree of exposure. After exposure, ware is conveyed from the room via the maze.

A radiation dose sufficient to kill bacteria and spores is about 2.5 MRads. To minimize costs plus attain sterilization, bioburden is determined then the minimum dosage plus a safety factor is selected.

Gamma radiation has high penetrating power (about 50 cm or close to 20 inches of the same unit-density material). Thus, many parts can be packed together for sterilization. In this instance, the dosage reaching the center of ware multi-packs is validated. Slightly higher doses occur at the outside edges of multi-packs.

Usually, empty packaging components are sterilized via gamma radiation. Since effects of radiation are cumulative, twice the normal dose is sometimes examined to insure minimal problems.

Listed below are thermoplastic materials that are recognized as capable of being gamma radiation sterilized, although tests should always be run on plastic ware to determine suitability for a given sterilization method:

- Low Density Polyethylene
- Linear Low Density Polyethylene
- High Density Polyethylene (those containing phosphite stabilizers may yellow)
- Polyethylene Terephthalate
- Polystyrene
- Polycarbonate
- Nylon
- Cyclic Olefin Copolymers (a newly emerging group of polymers)
- Polyethylene Naphthalate (a newly emerging group of polymers)

Problems can occur when gamma radiation sterilizing polyvinyl chloride (PVC) or fluoropolymers (PTFE, etc.).

### Important Note About Polypropylene Gamma Radiation Sterilization

Normal PP grades yellow noticeably and exhibit long term embrittlement when sterilized via gamma radiation techniques. Special radiation resistant PP grades, having special stabilizers, are available for radiation sterilization. Also, if ware is to be colored, then the concentrate carrier should be a radiation resistant grade of PP. PP copolymers are more radiation resistant than PP homopolymers. Tests should always be run on plastic ware to determine suitability for a given sterilization method.

## Electron Beam (E-Beam) Radiation

An E-beam radiation sterilization facility consists of a protective maze built around an E-beam generator. The E-beam generator delivers a high dose of electrons focused in a narrow beam at the items to be sterilized. After exposure, ware is conveyed from the maze.

A radiation dose sufficient to kill bacteria and spores is about 2.5 MRads. To minimize costs and attain sterilization, bioburden is determined and the minimum dosage plus a safety factor is selected.

Electrons from the E-beam generator have limited penetrating power (a 10-MeV E-beam will penetrate only about 5 cm or 2 inches of a unit-density material). Thus, a limited number of parts can be packed together for sterilization. The dosage reaching the center of a ware multi-pack is validated. Higher dosages will occur at the outside edges of ware multi-packs.

Usually, empty packaging components are sterilized via E-beam. Since effects are cumulative, twice the normal dose is sometimes examined to insure minimal problems.

Listed below are thermoplastic materials that are recognized as capable of being electron beam radiation sterilized, although tests should always be run on plastic ware to determine suitability for a given sterilization method:

- Low Density Polyethylene
- Linear Low Density Polyethylene
- High Density Polyethylene (those containing phosphite stabilizers may yellow)
- Polyethylene Terephthalate
- Polystyrene
- Polycarbonate
- Nylon
- Cyclic Olefin Copolymers (a newly emerging group of polymers)
- Polyethylene Naphthalate (a newly emerging group of polymer)

Problems can occur when E-beam sterilizing polyvinyl chloride (PVC) or fluoropolymers (PTFE, etc.)

## Important Note About Polypropylene E-Beam Sterilization

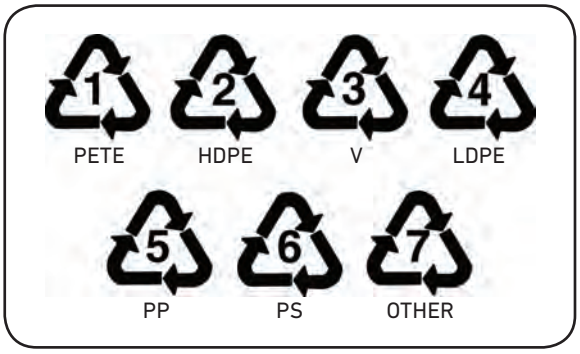
Normal PP grades yellow noticeably and exhibit long term embrittlement when sterilized via E-Beam. Special PP grades, having special stabilizers, are available for E-beam sterilization. Also, if ware is to be colored, then the concentrate carrier should be a radiation resistant grade of PP. PP copolymers are more radiation resistant than PP homopolymers. Tests should always be run on plastic ware to determine suitability for a given sterilization method.



## Resin Identification Codes

DWK Life Sciences follows the Society of the Plastics Industry (SPI) guidelines for marking plastic containers with the appropriate resin identification code numbers as shown below:

DWK Life Sciences mold-marks our containers on the bottom with the appropriate resin identification code. These codes are to assist in identifying material used to manufacture ware to aid in recycling efforts.




1 = **PETE** (polyethylene terephthalate) (PET)

2 = **HDPE** (high density polyethylene)

3 = **V** (vinyl / polyvinyl chloride) (PVC)

4 = **LDPE** (low density polyethylene)

5 = **PP** (polypropylene)

6 = **PS** (polystyrene)

7 = Other

## Plug Styles

| Country | Primary Plug Code | Voltage | Alt. Plug Code | Voltage |
|---|---|---|---|---|
| Afghanistan | C | 220 | — | — |
| Algeria | C | 220 | — | — |
| American Samoa | F | 220 | A | 120 |
| Angola | C | 220 | — | — |
| Anguilla (U.K.) | D | 240 | — | — |
| Antigua | D | 240 | A | 120 |
| Argentina | * | 220 | — | — |
| Armenia | C | 220 | — | — |
| Aruba | A | 127 | C | 220 |
| Australia | F | 230 | — | — |
| Austria | C | 230 | — | — |
| Azores (Portugal) | C | 230 | — | — |
| Bahamas | A | 120 | — | — |
| Bahrain | D | 230/240 | J | 230/240 |
| Bangladesh | J | 230 | D | 230 |
| Barbados | A | 115 | — | — |
| Belarus | C | 220 | — | — |
| Belgium | C | 230 | — | — |
| Belize | A | 110 | J | 220 |
| Benin | C | 220 | — | — |
| Bermuda | A | 120 | — | — |
| Bolivia | C | 230 | — | — |
| Bosnia-Herzegovina | C | 220 | — | — |
| Botswana | D | 230 | J | 230 |
| Brazil | A | 127 | — | — |
| Bulgaria | C | 220 | — | — |
| Burkina Faso | J | 220/230 | D | 220/230 |
| Burundi | C | 220 | — | — |
| Cambodia | C | 220 | — | — |
| Cameroon | C | 220-260 | — | — |
| Canada | A | 120 | — | — |
| Canary Islands | C | 220 | — | — |
| Cape Verde, Rep. of | C | 220 | — | — |
| Cayman Islands | A | 120 | — | — |
| Central African Rep. | C | 220 | — | — |
| Chad | C | 220 | — | — |
| Channel Islands | D | 240 | — | — |
| Chile | G | 220 | — | — |
| China, People's Rep. | F | 220 | — | — |
| Christmas Is. | F | 240 | — | — |
| Cocos Is. (Australia) | F | 240 | — | — |
| Colombia | A | 120 | — | — |
| Congo, Rep. of | C | 220-240 | — | — |
| Cook Is. (N.Z.) | F | 240 | — | — |
| Costa Rica | D | 240 | A | 120 |
| Croatia | C | 230 | — | — |
| Cuba | A | 115 | C | 230 |
| Curacao Is. | A | 110 | C | 220 |
| Cyprus | D | 230 | J | 230 |
| Czech, Rep. of | C | 230 | — | — |
| Denmark | I | 230 | — | — |
| Djibouti, Rep. of | C | 220 | — | — |
| Dominica | D | 230 | J | 230 |
| Dominican Rep. | A | 120 | — | — |
| Ecuador | A | 110 | — | — |
| Egypt | D | 220 | C | 220 |
| El Salvador | A | 120 | — | — |
| England | D | 230 | J | 230 |
| Equatorial Guinea | * | 220 | — | — |
| Estonia | C | 220-230 | — | — |
| Ethiopia | G | 230 | — | — |
| Fiji | F | 240 | — | — |
| Finland | C | 230 | — | — |
| France | C | 230 | — | — |
| French Guiana | C | 220 | — | — |
| Gabon | C | 220 | — | — |
| Gambia | D | 220 | J | 220 |
| Germany | C | 230 | — | — |
| Ghana | D | 220 | J | 220 |
| Gibraltar | D | 240 | J | 240 |

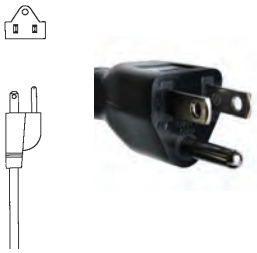
| Country | Primary Plug Code | Voltage | Alt. Plug Code | Voltage |
|---|---|---|---|---|
| Greece | C | 230 | — | — |
| Greenland (Denmark) | I | 230 | — | — |
| Grenada | D | 230 | J | 230 |
| Guadeloupe | C | 220 | — | — |
| Guam | A | 120 | — | — |
| Guatemala | A | 110 | — | — |
| Guinea | C | 220 | — | — |
| Guinea-Bissau | C | 220 | — | — |
| Guyana | D | 240 | J | 240 |
| Haiti | A | 110 | — | — |
| Honduras | A | 110 | — | — |
| Hong Kong | D | 220 | J | 220 |
| Hungary | C | 230 | — | — |
| Iceland | C | 230 | — | — |
| India | J | 230 | — | — |
| Indonesia | C | 220 | — | — |
| Iran | C | 220 | — | — |
| Iraq | D | 220 | C, J | 220 |
| Ireland, Rep. of (S.) | D | 230 | — | — |
| Israel | K | 230 | — | — |
| Italy | G | 230 | — | — |
| Ivory Coast | C | 230 | — | — |
| Jamaica | A | 110 | — | — |
| Japan | B | 100 | — | — |
| Jordan | D | 230 | C | 230 |
| Kenya | D | 240 | J | 240 |
| Kuwait | D | 230 | J | 230 |
| Kyrgyzstan | C | 220 | — | — |
| Laos | C | 220 | — | — |
| Latvia | C | 220 | — | — |
| Lebanon | D | 220 | C, J | 220 |
| Lesotho | D | 220 | J | 220 |
| Liberia | C | 220-230 | — | — |
| Libya | J | 220 | C | 220 |
| Liechtenstein | L | 230 | — | — |
| Lithuania | C | 230 | — | — |
| Luxembourg | C | 230 | — | — |
| Macao | J | 220 | D | 220 |
| Madagascar | C | 220 | — | — |
| Malawi | D | 230 | J | 230 |
| Malaysia | D | 240 | J | 240 |
| Maldives | D | 220 | J | 220 |
| Mali, Rep. of | C | 220 | — | — |
| Malta | D | 230 | — | — |
| Martinique | C | 230 | — | — |
| Mauritania | C | 220 | — | — |
| Mauritius | D | 230 | J | 230 |
| Mexico | A | 127 | — | — |
| Moldova | C | 220 | — | — |
| Monaco | C | 220 | — | — |
| Mongolia | C | 220 | — | — |
| Montseurrat | D | 230 | — | — |
| Morocco | C | 220 | — | — |
| Mozambique | J | 220 | C | 220 |
| Myanmar | D | 230 | J | 230 |
| Namibia (W.S. Africa) | D | 220 | J | 220 |
| Nepal | J | 220 | — | — |
| Neth. Antilles | A | 115-127 | C | 220 |
| Netherlands | C | 230 | — | — |
| New Caledonia | C | 220 | — | — |
| New Zealand | F | 230 | — | — |
| Nicaragua | A | 120 | — | — |
| Niger | C | 220 | — | — |
| Nigeria | D | 230 | J | 230 |
| No. Ireland | D | 230 | — | — |
| North Korea | C | 220 | — | — |
| Norway | C | 230 | — | — |
| Oman | D | 240 | C, J | 240 |
| Pakistan | J | 230 | — | — |
| Panama | A | 120 | — | — |

| Country | Primary Plug Code | Voltage | Alt. Plug Code | Voltage |
|---|---|---|---|---|
| Papua New Guinea | F | 240 | — | — |
| Paraguay | C | 220 | — | — |
| Peru | C | 220 | — | — |
| Philippines | * | 220 | — | — |
| Pitcairn Is. (U.K.) | J | 240 | — | — |
| Poland | C | 230 | — | — |
| Portugal | C | 230 | — | — |
| Puerto Rico | A | 120 | — | — |
| Qatar | D | 240 | J | 240 |
| Romania | C | 230 | — | — |
| Russian Federation | C | 220 | — | — |
| Rwanda | C | 220 | L | 220 |
| Saudi Arabia | A | 127 | C, D, J | 220 |
| Scotland | D | 230 | — | — |
| Senegal | J | 220 | C | 220 |
| Seychelles | D | 230 | J | 230 |
| Sierra Leone | D | 230 | J | 230 |
| Singapore | D | 230 | J | 230 |
| Slovakia | C | 230 | — | — |
| Slovenia | C | 220 | — | — |
| Somalia | J | 220-230 | — | — |
| South Africa | J | 220-250 | D | 220-250 |
| South Korea | A | 120 | C | 220 |
| Spain | C | 230 | — | — |
| Sri Lanka | J | 230 | D | 230 |
| St. Kitts & Nevis | D | 230 | J | 230 |
| St. Lucia | D | 240 | — | — |
| St. Pierre & Miquelon | A | 115 | — | — |
| St. Vincent | D | 230 | — | — |
| Sudan | D | 240 | J | 240 |
| Suriname | A | 127 | C | 220 |
| Svalbard (Norway) | C | 220 | — | — |
| Swaziland | D | 230 | J | 230 |
| Sweden | C | 230 | — | — |
| Switzerland | L | 230 | — | — |
| Syria | C | 220 | — | — |
| Tahiti | C | 220 | A | 110-127 |
| Taiwan | A | 110 | F | 220 |
| Tanzania | D | 230 | J | 230 |
| Thailand | C | 220 | — | — |
| Togo | C | 230 | — | — |
| Tonga | F | 240 | — | — |
| Trinidad and Tobago | A | 115 | — | — |
| Tunisia | C | 220 | — | — |
| Turkey | C | 220 | D, J | 220 |
| Uganda | D | 240 | J | 240 |
| Ukraine | C | 220 | — | — |
| United Arab Emirates | D | 220-240 | J | 220-240 |
| United Kingdom | D | 230 | J | 230 |
| United States | A | 120 | — | — |
| Uruguay | C | 220 | G | 220 |
| Venezuela | A | 120 | — | — |
| Vietnam | C | 220 | — | — |
| Virgin Islands | A | 120 | — | — |
| Wales | D | 230 | J | 230 |
| Western Samoa | F | 230 | — | — |
| Yemen | D | 250 | J | 250 |
| Yugoslavia | C | 230 | — | — |
| Zaire, Rep. of | C | 220-240 | — | — |
| Zambia | D | 230 | J | 230 |
| Zimbabwe | D | 220-230 | J | 220-230 |

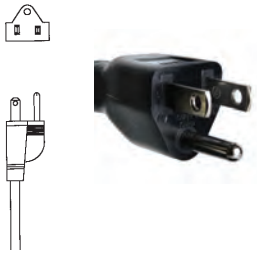
* Additional plug styles may be available through special order. Please contact DWK Life Sciences Technical Services for additional information.

## Plug Style Codes

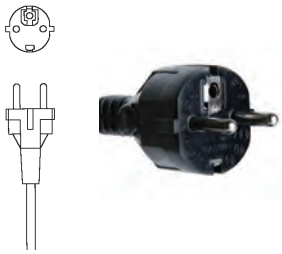
### Plug Code "A":
North America Plug



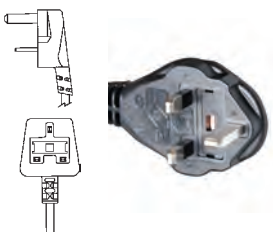
### Plug Code"B":
Japan Plug



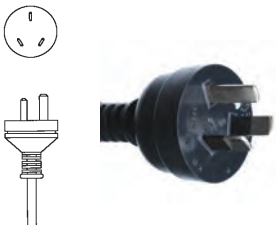
### Plug Code "C":
Continental Europe Plug



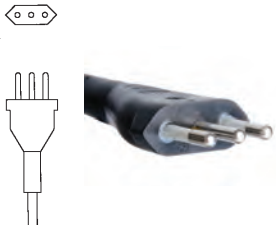
### Plug Code "D":
United Kingdom Plug



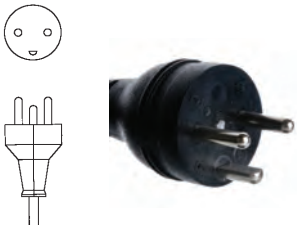
### Plug Code "F":
Australia/China Plug



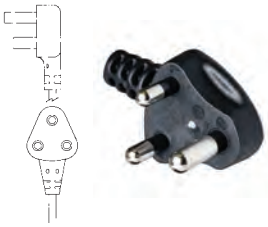
### Plug Code "G":
Italy/Chile Plug



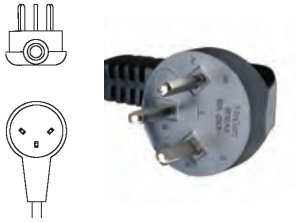
### Plug Code "I":
Denmark Plug



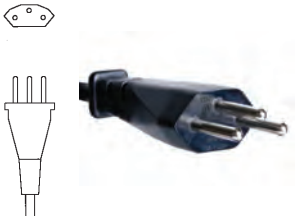
### Plug Code "J":
India Plug



### Plug Code "K":
Israel Plug



### Plug Code "L":
Switzerland Plug



## Common Conversion Factors

| Convert From | Convert Into | Multiply By |
|---|---|---|
| Angstrom units | Centimeter | $1.0 \times 10^{-8}$ |
| | Inches | $3.9370 \times 10^{-9}$ |
| | Microns | 0.0001 |
| | Millimeters | $1.0 \times 10^{-7}$ |
| | Mils | $3.9370 \times 10^{-6}$ |
| Atmospheres (std.) | Bars | 1.01325 |
| | Inches of Hg @ 32°F | 29.9213 |
| | Millibars | 1013.25 |
| | Mm of Hg @ 0°C | 760.0 |
| | Torr | 760.0 |
| Bars | Atmospheres (std.) | 0.98692 |
| | Inches of Hg @ 32°F | 29.5299 |
| | Millibars | 1000.00 |
| | Mm of Hg @ 0°C | 750.062 |
| | Torr | 750.062 |
| Centimeters | Angstrom units | $1.0 \times 10^{8}$ |
| | Inches | 0.39370 |
| | Microns | 1.0 x 104 |
| | Millimeters | 10.0 |
| | Mils | 393.701 |
| Cubic Centimeters | Cubic Inches | 0.06102 |
| | Drams (fluid) | 0.27051 |
| | Gallons (UK liquid) | $2.1997 \times 10^{-4}$ |
| | Gallons (US liquid) | $2.6417 \times 10^{-4}$ |
| | Liters | $1.0 \times 10^{-3}$ |
| | Milliliters | 1.0 |
| | Ounces (UK liquid) | 0.03519 |
| | Ounces (US liquid) | 0.03381 |
| Cubic Inches | Cubic Centimeters | 16.3871 |
| | Drams (fluid) | 4.43290 |
| | Gallons (UK liquid) | $3.6046 \times 10^{-3}$ |
| | Gallons (US liquid) | $4.3290 \times 10^{-3}$ |
| | Liters | 0.01639 |
| | Milliliters | 16.3871 |
| | Ounces (UK liquid) | 0.57674 |
| | Ounces (US liquid) | 0.55411 |
| Drams (fluid) | Cubic Centimeters | 3.69672 |
| | Cubic Inches | 0.22559 |
| | Gallons (UK liquid) | $8.1316 \times 10^{-4}$ |
| | Gallons (US liquid) | $9.7657 \times 10^{-4}$ |
| | Liters | $3.6967 \times 10^{-3}$ |
| | Milliliters | 3.69672 |
| | Ounces (UK liquid) | 0.13011 |
| | Ounces (US liquid) | 0.12500 |
| Gallons (UK liquid) | Cubic Centimeters | 4546.09 |
| | Cubic Inches | 277.419 |
| | Drams (fluid) | 1229.76 |
| | Gallons (US liquid) | 1.20095 |
| | Liters | 4.54609 |
| | Milliliters | 4546.09 |
| | Ounces (UK liquid) | 160.0 |
| | Ounces (US liquid) | 153.722 |
| Gallons (US liquid) | Cubic Centimeters | 3785.41 |
| | Cubic Inches | 231.0 |
| | Drams(fluid) | 1023.99 |
| | Gallons (UK liquid) | 0.83267 |
| | Liters | 3.78541 |
| | Milliliters | 3785.41 |
| | Ounces (UK liquid) | 133.228 |
| | Ounces (US liquid) | 128.0 |
| Grams | Kilograms | $1.0 \times 10^{-3}$ |
| | Ounces (avdp) | 0.03527 |
| | Ounces (troy) | 0.03215 |
| | Pounds (avdp) | $2.2046 \times 10^{-3}$ |
| | Pounds (troy) | $2.6791 \times 10^{-3}$ |
| Inches | Angstrom units | $2.540 \times 10^{8}$ |
| | Centimeters | 2.54 |
| | Microns | 25400.0 |
| | Millimeters | 25.40 |
| | Mils | 1000.0 |
| Inches of Hg @ 32°F | Atmospheres (std.) | 0.03342 |
| | Bars | 0.03386 |
| | Millibars | 33.8639 |
| | Mm of Hg @ 0° | 25.4000 |
| | Torr | 25.4000 |
| Kilograms | Grams | 1000.00 |
| | Ounces (avdp) | 35.2739 |
| | Ounces (troy) | 32.1505 |
| | Pounds (avdp) | 2.20462 |
| | Pounds (troy) | 2.67921 |

| | |
|---|---|
| Temperature | °C = (°F - 32) x 0.56<br>°F = (°C x 1.8) + 32 |
| Power | Amperage = Wattage / Voltage<br>Voltage = Wattage / Amperage<br>Wattage = Voltage x Amperage |

| Convert From | Convert Into | Multiply By |
|---|---|---|
| Liters | Cubic Centimeters | 1000.03 |
| | Cubic Inches | 61.0237 |
| | Drams (fluid) | 270.510 |
| | Gallons (UK liquid) | 0.21997 |
| | Gallons (US liquid) | 0.26418 |
| | Milliliters | 1000.03 |
| | Ounces (UK liquid) | 35.1951 |
| | Ounces (US liquid) | 33.8149 |
| Microns | Angstrom units | 10000.0 |
| | Centimeters | $1.0 \times 10^{-4}$ |
| | Inches | $3.9370 \times 10^{-5}$ |
| | Millimeters | $1.0 \times 10^{-3}$ |
| | Mils | 0.03937 |
| Millibars | Atmosphere (std.) | $9.8692 \times 10^{-4}$ |
| | Bars | $1.0 \times 10^{-3}$ |
| | Inches of Hg @ 32°F | 0.02953 |
| | Mm of Hg @ 0°C | 0.75006 |
| | Torr | 0.75006 |
| Milliliters | Cubic Centimeters | 1.0000 |
| | Cubic Inches | 0.06102 |
| | Drams (fluid) | 0.27051 |
| | Gallons (UK liquid) | $2.1997 \times 10^{-4}$ |
| | Gallons (US liquid) | $2.6417 \times 10^{-4}$ |
| | Liters | $1.0 \times 10^{-3}$ |
| | Ounces (UK fluid) | 0.03519 |
| | Ounces (US fluid) | 0.03381 |
| Millimeters | Angstrom units | $1.0 \times 10^{7}$ |
| | Centimeters | 0.10 |
| | Inches | 0.03937 |
| | Microns | 1000.0 |
| | Mils | 39.3701 |
| Millimeters Hg @ 0°C | Atmospheres (std.) | $1.3158 \times 10^{-3}$ |
| | Bars | $1.3332 \times 10^{-3}$ |
| | Inches of Hg @ 32°F | 0.03937 |
| | Millibars | 1.333221 |
| | Torr | 1.0 |
| Mils | Angstrom units | 254000.0 |
| | Centimeters | $2.540 \times 10^{-3}$ |
| | Inches | $1.0 \times 10^{-3}$ |
| | Microns | 25.40 |
| | Millimeters | 0.0254 |
| Ounces (avdp) | Grams | 28.3495 |
| | Kilograms | 0.02835 |
| | Ounces (troy) | 0.91146 |
| | Pounds (avdp) | 0.06250 |
| | Pounds (troy) | 0.07596 |
| Ounces (troy) | Grams | 31.1035 |
| | Kilograms | 0.03110 |
| | Ounces (avdp) | 1.09714 |
| | Pounds (avdp) | 0.06857 |
| | Pounds (troy) | 0.08333 |
| Ounces (UK liquid) | Cubic Centimeters | 28.4131 |
| | Cubic Inches | 1.73387 |
| | Drams (fluid) | 7.68603 |
| | Gallons (UK liquid) | $6.250 \times 10^{-3}$ |
| | Gallons (US liquid) | $7.8125 \times 10^{-3}$ |
| | Liters | 0.02841 |
| | Milliliters | 28.4131 |
| | Ounces (US liquid) | 0.96076 |
| Ounces (US liquid) | Cubic Centimeters | 29.5735 |
| | Cubic Inches | 1.80469 |
| | Drams (fluid) | 8.0 |
| | Gallons (UK liquid) | $6.5053 \times 10^{-3}$ |
| | Gallons (US liquid) | $7.8125 \times 10^{-3}$ |
| | Liters | 0.02957 |
| | Milliliters | 29.5735 |
| | Ounces (UK liquid) | 1.04084 |
| Pounds (avdp) | Grams | 453.592 |
| | Kilograms | 0.45359 |
| | Ounces (avdp) | 16.0 |
| | Ounces (troy) | 14.5833 |
| | Pounds (troy) | 1.21528 |
| Pounds (troy) | Grams | 373.242 |
| | Kilograms | 0.37324 |
| | Ounces (avdp) | 13.1657 |
| | Ounces (troy) | 12.0 |
| | Pounds (avdp) | 0.82286 |
| Torr | Atmospheres (std.) | $1.3158 \times 10^{-3}$ |
| | Bars | $1.3332 \times 10^{-3}$ |
| | Inches of Hg @ 32°F | 0.03937 |
| | Millibars | 1.33322 |
| | Mm of Hg @ 0°C | 1.0 |

## Chemical Compatibility

| Chemical | Container Materials | | | | | | | Closure Liner Materials | | | | | | Closure Materials | | | | Septa, Stopper & Tubing Materials | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Glass | HDPE | LDPE | PC | PET | PETG | PP | Al Foil | LDPE | Poly-Vinyl | PTFE | SBR | Silicone | PBT | Phenolic | PP | Urea | Butyl Rubber | FKM | Natural Rubber | PTFE | Silicone | TPE |
| Acetic acid, Glacial | A | A | B | C | A | C | A | A | B | B | A | C | B | C | A | A | D | B | D | B | A | B | B |
| Acetone | A | D | D | D | C | D | B | A | D | D | A | D | B | D | A | B | A | B | D | B | A | B | D |
| Acetonitrile | A | A | A | D | B | C | A | A | A | D | A | B | D | – | A | A | – | D | D | D | A | D | D |
| Acrylonitrile | A | A | A | D | B | – | B | B | A | D | A | C | D | – | D | B | – | D | D | D | A | D | – |
| Ammonium Sulfide | A | A | A | D | – | – | A | D | A | A | A | B | A | – | A | A | C | A | C | A | A | A | B |
| Benzene | A | D | D | D | C | D | D | B | D | D | A | D | D | A | A | D | A | D | A | D | A | D | D |
| Bleach | A | A | B | B | C | C | B | D | B | A | A | D | B | C | D | B | – | A | A | D | A | B | A |
| Boric Acid | A | A | A | A | A | A | A | D | A | A | A | A | A | A | B | A | – | A | A | A | A | A | B |
| Carbonic Acid | A | A | A | A | – | A | A | B | A | A | A | B | A | B | – | A | – | A | A | A | A | A | D |
| Chlorobenzene | A | C | D | D | B | C | C | A | D | D | A | D | D | B | A | C | B | D | A | D | A | D | D |
| Chloroform | A | C | C | D | D | D | D | A | C | D | A | D | D | D | A | D | A | D | A | D | A | D | D |
| Dichloromethane (DCM) | A | C | D | D | D | D | C | D | D | D | A | D | D | D | C | C | B | D | B | D | A | D | D |
| Diethylamine | A | C | D | D | – | – | B | A | D | D | A | B | B | – | – | B | – | B | C | B | A | B | – |
| Dimethyl Formamide (DMF) | A | A | A | D | B | C | A | A | A | D | A | D | B | C | A | A | – | D | D | D | A | B | C |
| Dimethyl Sulfoxide (DMSO) | A | A | A | D | B | C | A | A | A | D | A | D | D | C | – | A | – | D | D | D | A | D | – |
| Dioxane | A | B | B | D | A | A | D | D | B | D | A | D | D | B | A | D | – | B | D | D | A | D | – |
| Ether | A | C | D | D | A | A | D | B | D | D | A | D | D | A | B | D | B | D | C | D | A | D | D |
| Ethyl Acetate | A | B | B | D | B | C | C | B | B | D | A | D | C | C | A | C | B | C | D | D | A | C | D |
| Ethyl Alcohol | A | A | A | A | A | A | A | B | A | B | A | A | B | A | B | A | A | A | A | A | A | B | B |
| Ethylene Glycol | A | A | A | A | A | A | A | B | A | A | A | A | A | A | B | A | B | A | A | A | A | A | B |
| Formaldehyde | A | A | A | A | B | A | A | A | A | C | A | B | B | A | B | A | A | A | C | C | A | B | A |
| Formic Acid 50% | A | A | B | B | – | – | A | C | B | B | A | B | C | A | C | A | D | A | C | B | A | C | B |
| Gasoline | A | C | D | C | B | B | C | A | D | D | A | D | D | A | B | C | A | D | A | D | A | D | D |
| Glycerine | A | A | A | A | – | A | A | A | A | C | A | A | B | A | A | A | – | A | A | A | A | B | B |
| Heptane | A | C | D | B | B | – | C | A | D | C | A | D | D | A | A | C | A | D | A | D | A | D | C |
| Hexane | A | B | D | C | C | B | B | A | D | D | A | D | D | A | B | B | – | D | A | D | A | D | B |
| Hydrochloric Acid (HCL) 50% | A | A | A | D | B | C | A | D | A | B | A | D | D | C | A | A | D | A | A | B | A | D | B |
| Hydrofluoric Acid (HF) 50% | D | A | A | D | C | D | A | D | A | C | A | D | D | C | D | A | D | C | A | C | A | D | A |
| Hydrogen Peroxide 50% | B | A | A | A | B | B | A | A | A | C | A | C | B | B | D | A | D | B | A | B | A | B | B |
| Iodine | A | C | D | C | A | – | C | A | D | C | A | B | A | D | - | C | – | B | A | D | A | A | D |
| Isopropyl Alcohol | A | A | A | A | A | A | A | A | A | B | A | B | A | A | A | A | – | A | A | A | A | A | B |
| Methyl Alcohol | A | A | A | B | B | A | A | A | A | C | A | A | A | B | B | A | A | A | D | A | A | A | A |
| Methyl Ethyl Ketone (MEK) | A | D | D | D | B | C | B | A | D | D | A | D | D | C | A | B | – | A | D | D | A | D | B |
| Methylene Chloride | A | C | D | D | D | D | C | D | D | D | A | D | D | D | C | C | B | D | B | D | A | D | D |
| Nitric Acid 50% | A | C | B | B | C | B | C | D | B | B | A | D | D | C | B | C | D | C | B | C | A | D | B |
| Pentane | A | C | C | A | – | – | D | A | C | D | A | D | D | B | – | D | – | D | A | D | A | D | B |
| Perchloric Acid 50% | B | B | B | D | B | C | B | D | B | D | B | D | D | – | – | B | – | B | A | D | B | D | A |
| Phenol 50% | A | D | D | D | D | D | D | A | D | C | A | D | D | D | A | D | – | D | A | D | A | D | D |
| Phosphoric Acid 50% | A | A | A | A | B | – | A | B | A | B | A | D | D | B | B | A | D | B | A | D | A | D | A |
| Picric Acid | A | D | D | D | B | – | D | A | D | D | A | B | D | D | A | D | D | B | A | B | A | D | D |
| Potassium Hydroxide | D | A | A | D | D | D | A | D | A | A | A | B | C | C | D | A | – | A | B | B | A | C | A |
| Sodium Hydroxide 50% | D | A | B | D | D | C | A | D | B | C | A | A | B | C | D | A | C | A | B | A | A | B | C |
| Sodium Peroxide | A | B | B | A | – | – | B | C | B | A | A | B | D | B | B | B | D | A | A | B | A | D | A |
| Sodium Thiosulfate | A | A | A | B | B | – | A | A | A | A | A | B | A | B | A | A | B | A | A | B | A | A | – |
| Sulfuric Acid 50% | A | A | A | B | B | C | B | C | A | C | A | D | D | B | C | B | D | D | A | D | A | D | A |
| Tetrahydrofuran (THF) | A | C | C | D | B | D | B | A | C | D | A | D | D | D | A | B | – | C | D | D | A | D | D |
| Toluene | A | C | C | D | C | C | C | A | C | C | A | D | D | D | A | C | – | D | B | D | A | D | D |
| Trifluoroacetic Acid (TFA) 50% | A | A | A | D | B | – | A | B | A | A | A | B | D | – | – | A | – | B | C | B | A | D | – |
| Vegetable Oil | A | B | B | A | A | A | A | A | B | A | A | D | A | A | A | A | A | C | A | D | A | A | – |
| Xylene | A | C | D | D | C | – | D | A | D | D | A | D | D | C | A | D | B | D | A | D | A | D | D |

(Tests conducted at room temp) A - Resistant B - Limited Resistance C - Poor Resistance D - Not Resistant — - Unknown

**Al Foil** ... aluminum foil
**FKM** ... fluoroelastomer
**HDPE** ... high density polyethylene
**LDPE** ... low density polyethylene
**PBT** ... polybutylene terephthalate
**PC** ... polycarbonate
**PET** ... poyethylene terephthalate
**PETG** ... polyethylene terephthalate g copolymer
**PP** ... polypropylene
**PTFE** ... polytetrafluoroethylene
**SBR** ... styrene butadiene rubber
**TPE** ... thermoplastic Elastomer, C-Flex

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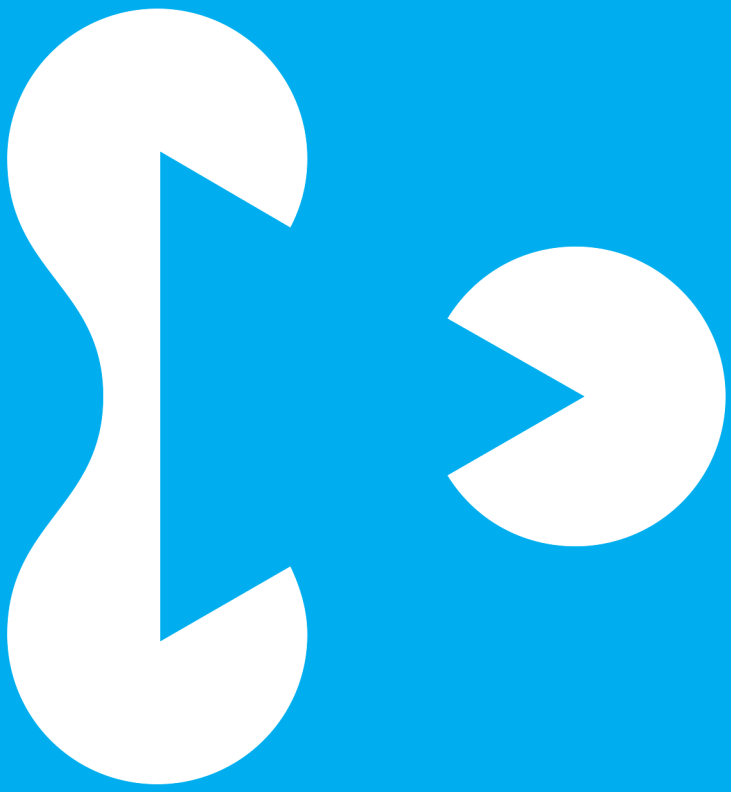

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