WHEATON®

2014 UK PRODUCT CATALOGUE

Service. Quality. Flexibility.

About WHEATON® UK

WHEATON UK is the UK's premier manufacturer of tubular glass vials and global supplier of general laboratory consumables. For over 30 years, our experience and passion has been serving the general laboratory, life science, clinical and diagnostic packaging industries.

WHEATON UK also markets plastic laboratory consumables to the UK's clinical (NHS) and education sectors.

Unparalleled experience and flexibility drives our dedication to customer satisfaction and performance improvement, making us incredibly easy to deal with for both standard and bespoke glass products. Our life's work has been founded in providing outstanding customer service in all areas of the markets we now reach.

For more information on WHEATON UK products, contact our Direct Sales team at +44 (0)1706 767219 or visit our website at wheaton-uk.com.

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Table of Contents

Autoclave Bags

- High Temperature autoclave bags, suitable for use up to 135°C
- Manufactured from heavy gauge polypropylene

Code	Description	Size (W x L) mm	Units / Case
370100	High Temperature Autoclave Bags	310 x 660	200
370110	High Temperature Autoclave Bags	415 x 660	200
370120	High Temperature Autoclave Bags	610 x 810	200
350190	Autoclave Tape	19	48
350195	Autoclave Tape	25	36

For recommendations for use, please refer to Technical section, page 33

Specimen Bags

- Grip seal polyethylene bags for sampling purposes
- Available with Biohazard sign for hazardous samples
- All bags include separate document pouch

Code	Description	Size (W x L) mm	Units / Case
370150	Specimen Bags with Biohazard	140 x 150	1000
370155	Specimen Bags with Biohazard	225 x 150	1000
370160	Plain Specimen Bags	104 x 150	1000

WHEATON®

Blood Collection Tubes, Glass

> Manufactured from soda glass

> Labelled product is CE Marked in accordance with European Directive 98 / 79 / EC

> Supplied non-sterile

> Available labelled for sample / patient identification

See more information on Blood Collection on page 11.

7mL Polystyrene Bijou

- Leak proof, flow seal cap
- Available pre-filled with boric acid for urine samples

Code	Description	Capacity (mL)	Label	Units / Case
327145	Bijou Container	7	No	700
327147	Bijou Container	7	Plain	700
327149	Bijou Container, Boric Acid	7	Printed	700

30mL Polystyrene Universal

- Leak proof, flow seal cap
- Available pre-filled with boric acid for urine samples

Code	Description	Capacity (mL)	Label	Units / Pack	Units / Case
327151	Universal Container	30	No	50	400
327152	Universal Container	30	Printed	50	400
327150	Universal Container	30	Plain	50	400
327153	Universal Container, Boric Acid	30	Printed	50	400
327155	Universal Container, with Spoon	30	Printed	50	400

60mL Polystyrene Container

- Manufactured from FDA approved virgin polystyrene
- All materials are non-cytotoxic
- Flow seal metal or self seal plastic cap option

Code	Description	Capacity (mL)	Label	Cap	Units / Pack	Units / Case
360100	60mL Container	60	No	Metal	60	300
360101	60mL Container	60	Printed	Metal	60	300
360099	60mL Container	60	Plain	Metal	60	300
360102	60mL Container	60	No	Plastic	60	300
360103	60mL Container	60	Printed	Plastic	60	300
360104	60mL Container	60	Plain	Plastic	60	300

Polystyrene & Polypropylene Containers

- Manufactured from virgin, medical grade, polystyrene or polypropylene
- Ideal for sample containment and storage
- For in vitro use only
- CE marked in accordance with European Directive 98 / 79 / EC*
- All sample containers supplied sterile

* For more information on CE marking, please refer to the Technical section, page 32.

COMING SOON! - Primary Urine Collection Tubes

- Will be available bulk packed or individually wrapped with collection cup
- Plain tube or pre-dosed with boric acid
- 16 x 100mm tube to fit standard automated urine analysers
- Please enquire for more details of availability and price

100mL, 150mL and 250mL Polystyrene Containers

- Manufactured from FDA approved virgin polystyrene
- All materials are non-cytotoxic
- Leak proof metal cap

Code	Description	Capacity (mL)	Label	Cap	Units / Pack	Units / Case
360200	100mL Container	100	No	Metal	40	200
360201	100mL Container	100	Printed	Metal	40	200
360199	100mL Container	100	Plain	Metal	40	200
360205	150mL Container	150	No	Metal	30	120
360206	150mL Container	150	Printed	Metal	30	120
360207	150mL Container	150	Plain	Metal	30	120
360251	250mL Container	250	No	Metal	25	50
360250	250mL Container	250	Printed	Metal	25	50
360252	250mL Container	250	Plain	Metal	25	50

30mL Polypropylene Universal

- Leak proof, flow seal cap
- Available pre-filled with boric acid for urine samples

Code	Description	Capacity (mL)	Label	Units / Pack	Units / Case
327151PP	Universal Container	30	No	50	400
327152PP	Universal Container	30	Printed	50	400
327150PP	Universal Container	30	Plain	50	400
327153PP	Universal Container, Boric Acid	30	Printed	50	400
327155PP	Universal Container	30	Printed	50	400

60mL Polypropylene Container

- Flow seal metal or self seal plastic cap option

Code	Description	Capacity (mL)	Label	Cap	Units / Pack	Units / Case
360100PP	60mL Container	60	No	Metal	60	300
360101PP	60mL Container	60	Printed	Metal	60	300
360099PP	60mL Container	60	Plain	Metal	60	300
360102PP	60mL Container	60	No	Plastic	60	300
360103PP	60mL Container	60	Printed	Plastic	60	300
360104PP	60mL Container	60	Plain	Plastic	60	300

24-Hour Urine Container

- 2.5L container for collection of 24-hour urine samples
- Available labelled or unlabeled

Code	Description	Capacity (L)	Label	Units / Case
360110	24-Hour Urine Container	2.5	No	40
360111	24-Hour Urine Container	2.5	Printed	40

Embedding Cassettes

- Disposable plastic cassettes for tissue processing and embedding
- Moulded from high density acetal polymer
- Efficient flow through slots to maximise fluid exchange and ensure proper draining

Code	Description	Colour	Units / Pack	Units / Case
M480-1	Tissue Processing / Embedding Cassette	Clear	500	1500
M480-2	Tissue Processing / Embedding Cassette	White	500	1500
M480-3	Tissue Processing / Embedding Cassette	Pink	500	1500
M480-4	Tissue Processing / Embedding Cassette	Green	500	1500
M480-5	Tissue Processing / Embedding Cassette	Yellow	500	1500
M480-6	Tissue Processing / Embedding Cassette	Blue	500	1500
M480-7	Tissue Processing / Embedding Cassette	Peach	500	1500
M480-8	Tissue Processing / Embedding Cassette	Tan	500	1500
M480-9	Tissue Processing / Embedding Cassette	Grey	500	1500
M480-10	Tissue Processing / Embedding Cassette	Lilac	500	1500
M480-11	Tissue Processing / Embedding Cassette	Orange	500	1500
M480-12	Tissue Processing / Embedding Cassette	Aqua	500	1500
M481	Metal Process Cover	—	—	25

Swingsette™

- Disposable plastic cassettes for tissue and biopsy processing and embedding
- Moulded from high density acetal polymer
- Efficient flow through slots to maximise fluid exchange and ensure proper draining
- Easy to remove hinged cover
- Totally resistant to chemical action of histological solvents
- Anterior 45° writing area

Code	Description	Colour	Units / Pack	Units / Case
M515-2	Tissue Processing / Embedding Cassette	White	500	1500
M515-3	Tissue Processing / Embedding Cassette	Pink	500	1500
M515-4	Tissue Processing / Embedding Cassette	Green	500	1500
M515-5	Tissue Processing / Embedding Cassette	Yellow	500	1500
M515-6	Tissue Processing / Embedding Cassette	Blue	500	1500
M516-2	Biopsy Processing / Embedding Cassette	White	500	1500
M516-3	Biopsy Processing / Embedding Cassette	Pink	500	1500
M516-4	Biopsy Processing / Embedding Cassette	Green	500	1500
M516-5	Biopsy Processing / Embedding Cassette	Yellow	500	1500
M516-6	Biopsy Processing / Embedding Cassette	Blue	500	1500

Additional colours available – please enquire*
Cassettes in 'Quick load' sleeves are also available for use with cassette printers*
*Minimum order quantities may apply

Macrosette™

- Processing and embedding cassettes specifically for larger tissue specimens
- 12mm deep cassette
- One piece integral lid eliminates need for separate steel lids
- Special lid mounting and locking design ensures sample integrity during processing

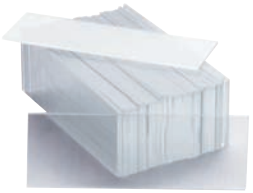
Code	Description	Colour	Units / Case
M512	Deep Processing / Embedding Cassette	White	750

Tissue Vials

- Wide-mouth CryoELITE® vial for use with tissue sections
- Suitable for long term storage in the vapour phase of liquid nitrogen
- Made from low binding, cryogenic grade virgin polypropylene
- 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
- Lot certified RNase / DNase and endotoxin free and non-pyrogenic providing assurance for sample integrity
- Freestanding bottom for stability
- Stippled vial surface for easier handling and labeling
- Temperature range: -196°C to 121°C
- Non-cytotoxic, non-mutagenic USP, Class VI tested

Code	Description	Dimensions OD x H (mm)	Units / Bag	Units / Case
W985100	CryoELITE® Tissue Vial	22 x 23	25	250

Microscope Slides



- Premium quality slides for routine microscopy applications
- 90° ground edge
- Confirm to BS7011 / 2
- Size (L x W) mm: 76 x 26

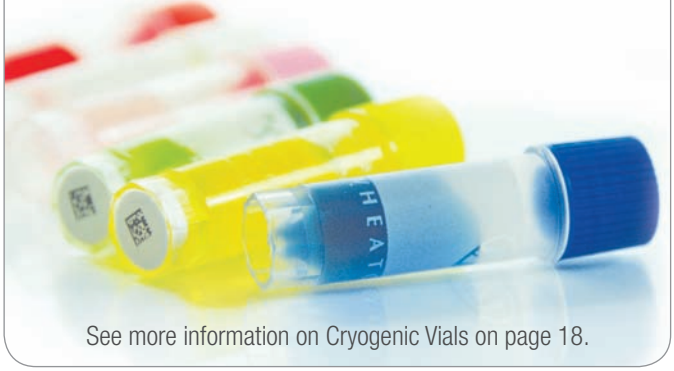
Code	Description	Thickness (mm)	Units / Case
100903N	Plain Ground Edge Slide	1.0 - 1.2	1000
100904N	Double Frosted Ground Edge Slide	1.0 - 1.2	1000

Microscope Slides, CE Marked

- 45° and 90° ground edge slides
- For routine microscopy applications
- 45° slides have clipped corners making them ideally suited to automatic equipment
- CE marked and cellophone wrapped to conform to ISO8037 / 1
- Size (L x W) mm: 76 x 26

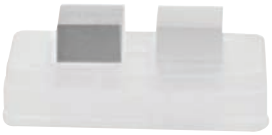
Code	Description	Ground Finish	Thickness (mm)	Units / Case
100801	Plain Ground Edge Slide	45°	1.0	1000
100802	Double Frosted Ground Edge Slide	45°	1.0	1000
100803	Plain Ground Edge Slide	90°	1.0 - 1.2	1000
100804	Double Frosted Ground Edge Slide	90°	1.0 - 1.2	1000

WHEATON®
CryoELITE® Cryogenic Vials



See more information on Cryogenic Vials on page 18.

Coverslips



- No 1. thickness coverslips (0.13 - 0.16mm)
- Made from clear white borosilicate glass, hydrolytic class 1
- Free from flaws and blisters

Code	Description	Thickness	SIze (L x W) mm	Units / Case
1200819 / 1	Coverglass	No. 1	15 x 15	1000
1200820	Coverglass	No. 1	18 x 18	1000
1200821	Coverglass	No. 1	20 x 20	1000
1200822	Coverglass	No. 1	22 x 22	1000
1200823	Coverglass	No. 1	24 x 24	1000
1200823 / 1	Coverglass	No. 1	21 x 26	1000
1200824	Coverglass	No. 1	22 x 26	1000
1200825	Coverglass	No. 1	22 x 32	1000
1200826	Coverglass	No. 1	22 x 40	1000
1200827	Coverglass	No. 1	22 x 50	1000
120082 / 1	Coverglass	No. 1	22 x 60	1000
1200828	Coverglass	No. 1	22 x 64	1000
1200829	Coverglass	No. 1	22 x 32	1000
1200830	Coverglass	No. 1	24 x 40	1000
1200831	Coverglass	No. 1	24 x 50	1000
1200834	Coverglass	No. 1	24 x 60	1000

Alternative thickness and round coverslips are also available – please enquire
Minimum order quantities may apply

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: 91mm L x 71mm W x 60mm D

Code	Description	Units / Case
W900200	Complete (Dish, Cover, Rack & Handle)	6
W900201	Dish	3
W900202	Cover	3
W900203	Dish & Cover	3
W900204	Glass Slide Rack	3
W900205	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: 75mm L x 55mm W x 35mm D

Code	Description	Units / Case
W900170	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: 121mm L x 90mm W x 66mm D

Code	Description	Units / Case
W900303	Dish & Cover	6
W900301	Dish	3
W900302	Cover	3
W900234	30-Slide Rack Stainless Steel, with Hinged Handle	3
W900254	16-32 Slide Rack, Glass	3
W900304	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: 185mm L x 88mm W x 78mm D

Code	Description	Units / Case
W900400	Complete (Dish, Cover & Rack)	6
W900401	Dish	3
W900402	Cover	3
W900403	Dish & Cover	3
W900404	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: 76mm L x 25mm W x 75mm D

Code	Description	Units / Case
W900630	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

Code	Description	Units / 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
- The unit has a rectangular base and holds approximately 55mL
- Manufactured from soda-lime glass
- Approximate inside bottom dimensions: 26mm L x 26mm W x 70mm D

Code	Description	Units / Case
W900520	Coplin Jar with PP Screw Cap	6
W900522	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: 26mm L x 26mm W x 90mm D

Code	Description	Units / Case
W900570	Complete	6
W900522	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: 28mm L x 26mm W x 92mm D

Code	Description	Units / Case
W900470	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: 28mm L x 26mm W x 92mm D

Code	Description	Units / Case
W276840	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: 47mm L x 26mm W x 85mm D

Code	Description	Units / Case
W900620	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

Code	Description	Units / Case
W900575	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

Code	Description	Dimensions L x W (mm)	Units / Case
W798550	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
- The reservoir holds 100mL of liquid

Code	Description	Dia. x H (mm)	Units / Case
W208890	Mounting Media / Balsam Bottle	75 x 100	6
Replacement Parts			
W208892	Glass Applicator	—	2

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

Code	Description	Dia. x H (mm)	Units / Case
W237070	Alcohol Burner	75 x 100	6
Replacement Parts			
W237071	Wick, 0.25" Dia x 6" L	—	25
W237072	Cork Stopper Assembly	—	10

Pasteur Pipettes, Plastic

- Manufactured from non-toxic LDPE
- Ideal for safe and easy transfer of liquids and samples
- Graduations on 1mL and 3mL for easy measurement
- Narrow stem pipette suitable for use as freeze vial when bulb heat sealed

Code	Description	Sterile	Bulb Draw (mL)	Capacity (mL)	Units / Case
711115	1mL Graduated Pasteur Pipette	No	3	5	500
726129	1mL Graduated Pasteur Pipette, Individually wrapped	Yes	3	5	500
711117S / 10	1mL Graduated Pasteur Pipette, 10's	Yes	3	5	500
711117S / 20	1mL Graduated Pasteur Pipette, 20's	Yes	3	5	500
711116	3mL Graduated Pasteur Pipette	No	3	7	500
726128	3mL Graduated Pasteur Pipette, Individually wrapped	Yes	3	7	500
711118S / 10	3mL Graduated Pasteur Pipette, 10's	Yes	3	7	500
711118S / 20	3mL Graduated Pasteur Pipette, 20's	Yes	3	7	500
711117F	Fine Tip Pasteur Pipette	No	3	5	500
711117F1S	Fine Tip Pasteur Pipette, Individually wrapped	Yes	3	5	500
711117F10S	Fine Tip Pasteur Pipette, 10's	Yes	3	5	500
711117F20S	Fine Tip Pasteur Pipette, 20's	Yes	3	5	500
711230	Jumbo Pasteur Pipette	No	10	23	100

Pipette Tips, Barrier Tips

- High Quality, Neptune™ brand barrier pipette tips
- S3 Low Retention Polymer eliminates virtually all sample hold up for accurate sample delivery
- Tested and certified to conform to 4 bio-load specifications (DNA / RNA, Endonuclease, PCR inhibitor and Endotoxin free)
- Racked and pre-sterilised
- Exclusive Neptune™ dispenser box for easy access to tip trays
- Sizes from 10µL to 1mL

Code	Description	Sterile	Tip Type	Units / Pack
BT10	10µL Micro Barrier Tip, Racked	Yes	S3 Low Retention	10 Trays of 96
BT10XL	10µL Extra Long Barrier Tip, Racked	Yes	Natural PP	10 Trays of 96
BT20	20µL Barrier Tip, Racked	Yes	S3 Low Retention	10 Trays of 96
BT100	100µL Barrier Tip, Racked	Yes	S3 Low Retention	10 Trays of 96
BT200	200µL Barrier Tip, Racked	Yes	S3 Low Retention	10 Trays of 96
BT1250	1250µL Barrier Tip, Racked	Yes	S3 Low Retention	8 Trays of 96

Tip barriers have been coloured for ease of visibility in image. Actual barrier is white

Pipette Tips, Standard Tips

- High Quality, Neptune™ brand pipette tips.
- Exclusive Neptune™ dispenser box for easy access to tip trays
- S3 Low Retention Polymer eliminates virtually all sample hold up for accurate sample delivery
- Available in bulk packs, racked and racked / pre-sterilised
- Environmentally Sensitive Packaging (ESP) refill packs
- Sizes from 10µL to 5mL

Code	Description	Sterile	Units / Pack	Packs / Case
2040	10µL Micro Tip, Bulk	No	1000 / Bag	20
2042	10µL Micro Tip, Racked	No	10 Trays of 96	5
2042.S	10µL Micro Tip, Racked	Yes	10 Trays of 96	5
2047	10µL Micro Tip, ESP Refill	No	20 Cards of 96	4
2047.S	10µL Micro Tip, ESP Refill	Yes	20 Cards of 96	4
2100	200µL Precise Point Tip, Bulk	No	1000 / Bag	10
2102.Y	200µL Precise Point Tip, Racked	No	10 Trays of 96	5
2102.YS	200µL Precise Point Tip, Racked	Yes	10 Trays of 96	5
2107.Y	200µL Precise Point Tip, ESP Refill	No	10 Cards of 96	10
2107.YS	200µL Precise Point Tip, ESP Refill	Yes	10 Cards of 96	10
2160	1000µL Tip, Bulk	No	1000 / Bag	4
2162.96	1000µL Tip, Racked	No	8 Trays of 96	4
2162.96.S	1000µL Tip, Racked	Yes	8 Trays of 96	4
2167.96	1000µL Tip, ESP Refill	No	10 Trays of 96	5
2167.96.S	1000µL Tip, ESP Refill	Yes	10 Trays of 96	5
2250	5mL Tip, Bulk	No	250 / Bag	10
2252.S	5mL Tip, Racked	Yes	10 Trays of 50	—

Pipette Tips, Economy Packs

- Precision moulded pipette tips for general laboratory use
- Manufactured from virgin polypropylene
- Non sterile and autoclavable at 121°C
- Available in convenient bulk packs

Code	Description	Colour	Units / Pack
711132	5-100µL Pipette Tip, Eppendorf	Yellow	1000 / bag
711167	5-200µL Pipette Tip, Gilson	Natural	1000 / bag
711134	10-200µL Pipette Tip, Oxford SlimLine	Natural	1000 / bag
711133	100-1000µL Pipette Tip, Eppendorf	Blue	1000 / bag
711166	200-1000µL Pipette Tip, Gilson	Blue	1000 / bag

Pipette Tips, Speciality

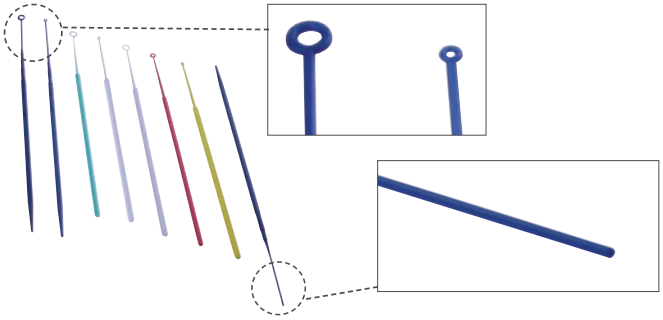
2016

- Wide Bore Tips - reduce damaging shear forces when handling genomic DNA, labile cells and organelles
- Gel Loading Tips – designed to help loading the thinnest sequencing gels
- Fit all standard pipettors in 20 to 1000µL range
- Non-sterile and autoclavable

Code	Description	Colour	Tip External Diam. (mm)	Units / Pack	Packs / Case
2190	1000µL Wide Bore Tip, Bulk	Natural	—	1000 / Bag	10
2012	200µL Round Gel Tip, Racked	Natural	0.63	10 Trays of 96	5
2020	200µL Flat Gel Tip, Racked	Natural	0.17	1 Tray of 200	4
2016	200µL Extra long Gel Tip, Racked	Natural	0.57	1 Tray of 200	4

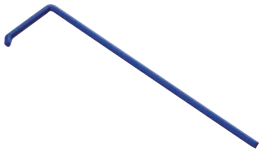
Inoculation Loops & Needles

- Fixed volume inoculating loops for dilution streaking
- Needle at opposite end for colony extraction
- Smooth loop head for smooth plating and streaking
- Available as hard or soft loops to suit application and user
- Supplied sterile in packs of 20



Code	Description	Volume (µL)	Colour	Material	Units / Pack	Units / Case
711300	Hard Inoculation Loop, Peel Pouch	10	Blue	ABS	20	1000
711310	Hard Inoculation Loop, Peel Pouch	1	Blue	ABS	20	1000
711315	Hard Inoculation Loop, Re-seal Bag	10	Green	ABS	20	1000
711305	Hard Inoculation Loop, Re-seal Bag	1	Clear	ABS	20	1000
711320	Soft Inoculation Loop, Re-seal Bag	10	White	PP	20	1000
711330	Soft Inoculation Loop, Re-seal Bag	5	Red	PP	20	1000
711340	Soft Inoculation Loop, Re-seal Bag	1	Yellow	PP	20	1000
370200	Inoculation Needle, Peel Pouch	—	Blue	ABS	20	1000

Inoculation Spreaders

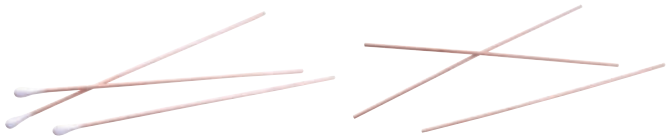


- For dispersion of liquids and sample spreading across agar surface
- Smooth L shape to prevent gouging of agar
- Supplied sterile in various pack sizes

Code	Description	Units / Pack	Units / Case
711410	Inoculation Spreaders	1	500
711420	Inoculation Spreaders	5	500
711430	Inoculation Spreaders	25	500

Swabs & Applicators

- Cotton swabs and applicators for microbiological applications
- Wooden stick: 148cm long
- Cotton swab sticks supplied sterile



Code	Description	Sterile	Units / Pack	Units / Case
370300	Wooden Stick Applicator	No	—	1000
370310	Cotton Swab with Wooden Stick	Yes	1	1000
370320	Cotton Swab with Wooden Stick	Yes	100	1000

96 Well / ELISA Plates

- Manufactured from virgin Polystyrene for excellent optical clarity
- Untreated, providing a low binding surface
- Suitable for Serology, ELISA, absorbance assays and sample storage / transport
- CE marked in accordance with European Directive 98 / 79 / EC*
- Orientation corners and alphanumeric lids for easy sample identification
- Suitable for use at 340nm
- Supplied sterile and individually wrapped

Code	Description	Well Capacity (µL)	Units / Case
712122	96 Well Plate, Flat	400	50
712120	96 Well Plate, U	330	50
712121	96 Well Plate, V	310	50
712130	Microtitre Plate Lid	—	50

For selecting assistance, please refer to Technical section, page 32

* For more information on CE marking, please refer to the Technical section, page 32

WHEATON®
Centrifuge Tubes

> 15mL and 50mL conical centrifuge tubes
> Polystyrene or polypropylene
> Polypropylene option allows higher centrifugation speeds
> Sterility assured
> Available bulk packed or racked

go for a SPIN...

See more information on Centrifuge Tubes on page 11.

Culture Tubes, Glass

- Manufactured from Type 1B, Neutral Borosilicate Glass
- More resistant to thermal shock than soda glass
- Screw neck tube with cap

Code	Description	Size (OD x H) mm	Thread Size	Units / Case
110535	Round Bottom Culture Tube	13 x 100	13 / 415	1000
110540	Round Bottom Culture Tube	16 x 100	15 / 415	1000
110515	Round Bottom Culture Tube	16 x 125	15 / 415	1000
110550	Round Bottom Culture Tube	16 x 150	15 / 415	1000
110560	Round Bottom Culture Tube	20 x 125	18 / 415	500
110570	Round Bottom Culture Tube	20 x 150	18 / 415	500
2513415	Polypropylene Screw Cap	—	13	1000
2515415	Polypropylene Screw Cap	—	15	1000
2518415	Polypropylene Screw Cap	—	18	500

Culture Tubes, Plastic

- Non-sterile tubes suitable for use in Bacteriology, RIA and coagulation applications
- Precision moulded from virgin polystyrene or polypropylene
- Suitable for centrifugation
  - Polypropylene to 3000g
  - Polystyrene to 1400g
- Polypropylene tubes can be autoclaved

Code	Description	Material	Capacity (mL)	Size (OD x H) mm	Units / Pack	Units / Case
T400-3AS	Round Bottom Tube	PS	5	12 x 75	125	1000
T400-3S	Round Bottom Tube	PP	5	12 x 75	125	1000

Caps for Culture Tubes

- Dual position snap caps for aerobic microbiological applications

Code	Description	Material	Fit Tubes (OD) mm	Colour	Units / Case
T401-3DSPE	Dual Position Cap for PS Tubes	PE	12	Natural	1000
T401-3DSPP	Dual Position Cap for PP Tubes	PE	12	Natural	1000

Test Tubes, Soda Glass

- Small Durham style test tubes
- Manufactured from Type III Soda Glass
- Suitable for microbiological and precipitin applications

Code	Description	Capacity (mL)	Size (OD x H) mm	Units / Case
110517CH	Glass Test Tube	0.5	6 x 30	300
110500	Glass Test Tube	0.9	6 X 50	2000
110518CH	Glass Test Tube	1	8 x 35	350
110501	Glass Test Tube	1.2	7 X 51	1000
110502	Glass Test Tube	3.5	10 X 50	1500

Test Tubes, Borosilicate Glass

- Manufactured from Type 1B Neutral Glass
- More resistant to thermal shock than soda glass
- Pharmaceutical grade
- For caps, please refer Test Tube Caps, page 11

Code	Description	Capacity (mL)	Size (OD x H) mm	Units / Case
10B	Glass Test Tube	4	10 x 75	1000
12B	Glass Test Tube	6	12 x 75	1000
13B	Glass Test Tube	10	13 x 100	1000
16B	Glass Test Tube	15	16 x 100	1000
165B	Glass Test Tube	19	16 x 125	1000
166B	Glass Test Tube	22	16 x 150	1000
18B	Glass Test Tube	30	18 x 150	500

Test Tubes, Polystyrene

- Rimless round bottom test tubes
- Manufactured from virgin polystyrene
- Suitable for general laboratory use
- For caps, please refer to Test Tube Caps below

Code	Description	Size (OD x H) mm	Units / Case
711120	Polystyrene Test Tube	11 x 64	2500
711119	Polystyrene Test Tube	12 x 55	1000
350025	Polystyrene Test Tube	12 x 75	1000
711125	Polystyrene Test Tube	13 x 75	1000
711129	Polystyrene Test Tube	16 x 100	3000
711130	Polystyrene Test Tube, Conical Base	16 x 100	2000
711150	Polystyrene Test Tube	16 x 150	1000

Test Tube Caps

- A range of finned or over fit caps
- Suitable for glass and plastic rimless test tubes

170402N

170320N

Code	Description	Material	Units / Case
170402N	Finned cap for 12mm tubes	Polyethylene	1000
170403N	Finned cap for 13mm tubes	Polyethylene	1000
170404N	Finned cap for 16mm tubes	Polyethylene	1000
170320N	Over fit caps for 12-13mm tubes	Polyethylene	1000
350010	Over fit caps for 15-16mm tubes	Polyethylene	1000

Blood Collection Tubes, Glass

- Manufactured from soda glass
- Labelled product is CE Marked in accordance with European Directive 98 / 79 / EC*
- Supplied non-sterile
- Available labelled for sample / patient identification

Code	Description	Capacity (mL)	Label	Units / Case
113010	Blood Collection Tube with PP Cap	2	None	1000
113011	Blood Collection Tube with PP Cap	2	Printed	1000
116090	Blood Collection Tube with PP Cap	5	None	1870
116091	Blood Collection Tube with PP Cap	5	Printed	1870
116096	Blood Collection Tube with PP Cap	10	None	1000
116097	Blood Collection Tube with PP Cap	10	Printed	1120
116105	Wide Neck Blood Collection Tube with PP Cap	10	None	500
116106	Wide Neck Blood Collection Tube with PP Cap	10	Printed	500

Blood Collection Tubes, Plastic

- Manufactured from virgin polystyrene or polypropylene
- CE Marked in accordance with European Directive 98 / 79 / EC*
- Available labelled for sample / patient identification

Code	Description	Capacity (mL)	Material	Label	Units / Case
216102	Blood Collection Tube with PP Cap	5	PS	Printed	1000
216103	Blood Collection Tube with PP Cap	5	PS	None	1000
216106	Blood Collection Tube with Separate PP Cap	5	PS	None	1000
316107	Blood Collection Tube with PP Cap	5	PP	Printed	1000
316108	Blood Collection Tube with PP Cap	5	PP	None	1000
216104	Blood Collection Tube with PP Cap	10	PS	Printed	500
216105	Blood Collection Tube with PP Cap	10	PS	None	500

* For more information on CE marking, please refer to the Technical section, page 32

Centrifuge Tubes

- 15 and 50mL Conical centrifuge tubes
- Manufactured from either polystyrene or polypropylene
- Polypropylene is more chemically resistant than polystyrene and allows for higher centrifugation speeds
- Supplied sterile
- 15mL tubes available racked in inner packs of 50 or bulk packed in bags
- 50mL tubes available racked in inner packs of 25 or bulk packed in bags

Code	Description	Capacity (mL)	Max RCF (xg)	Material (Tube / Cap)	Bulk / Racked	Units / Case
380200	Centrifuge Tube	15	6,000	PS / PE	Bulk	500
380210	Centrifuge Tube	15	6,000	PS / PE	Racked	500
380220	Centrifuge Tube	15	11,000	PP / PE	Bulk	500
380230	Centrifuge Tube	15	11,000	PP / PE	Racked	500
380100	Centrifuge Tube	50	9,500	PP / PE	Bulk	500
380110	Centrifuge Tube	50	9,500	PP / PE	Racked	500
380240	Centrifuge Tube, Skirted	50	9,500	PP / PE	Bulk	500

Microcentrifuge Tubes

- Manufactured from polypropylene
- Maximum RCF 15,000g
- Bulk packed for general lab use
- Available in 0.5 and 2.0mL sizes

Code	Description	Capacity (mL)	Colour	Units / Case
350035	Microcentrifuge Tube with Flip Top Cap	0.5	Natural	1000
350040	Microcentrifuge Tube with Flip Top Cap	1.5	Natural	1000
350045	Microcentrifuge Tube with Flip Top Cap	2.0	Natural	1000
150407	Microcentrifuge Tube, Skirted with Screw Thread	2.0	Natural	500
5380-11	Screw Cap & O-Ring	—	Natural	500
5380-11B	Screw Cap & O-Ring	—	Blue	500
5380-11G	Screw Cap & O-Ring	—	Green	500
5380-11O	Screw Cap & O-Ring	—	Orange	500
5380-11R	Screw Cap & O-Ring	—	Red	500
5380-11W	Screw Cap & O-Ring	—	White	500
5380-11Y	Screw Cap & O-Ring	—	Yellow	500

Micrewtubes®

- Graduated microcentrifuge tubes
- Manufactured from polypropylene
- Supplied with o-ring seal and flat top cap
- Maximum RCF 17,000g
- Suitable for use at extreme temperatures from to -196°C to +121°C
- Sizes from 0.5 to 2mL

Code	Description	Colour	Capacity (mL)	Units / Pack	Units / Case
T335-2SPR	Micrewtube® Skirted	Natural	0.5	50	500
T335-4SPR	Micrewtube® Skirted	Natural	1.5	50	500
T335-5SPR	Micrewtube® Conical	Natural	1.5	50	500
T335-6SPR	Micrewtube® Skirted	Natural	2.0	50	500
T335-7SPR	Micrewtube® Conical	Natural	2.0	50	500

Other coloured caps and coloured cap inserts are available. Minimum order quantities may apply– please enquire

For more details on recommended centrifugation speeds and a nomograph, please refer to the Technical section, page 33.

Microcentrifuge Storage Boxes

- 100 place storage box for Micrewtubes® 0.5 – 2mL
- For use within temperature range -196°C to +121°C
- Pre-printed cover and keyed base to prevent misalignment
- Manufactured from polypropylene

Code	Description	Material	Colour	Units / Pack	Units / Case
T350-100B	Micrewtube® Storage Box	PP	Blue	4	24
T350-100G	Micrewtube® Storage Box	PP	Green	4	24
T350-100R	Micrewtube® Storage Box	PP	Red	4	24
T350-100Y	Micrewtube® Storage Box	PP	Yellow	4	24

Amplitube™ PCR Reaction Tubes, Individual

- Ultra thin walled tubes for rapid thermal transfer and reduction in PCR reaction time
- Moulded from transparent superior quality polypropylene
- Designed for oil-free operation
- Polished internal surface for maximum sample recovery
- Attached, hinged and pierceable flat caps
- Cap contains integral contamination shield
- Frosted writing surface for sample identification
- 0.5mL tubes have graduations in 0.1mL increments
- Autoclavable and certified DNase / RNase and Pyrogen free

Code	Description	Volume (mL)	Colour	Units / Case
T325-2N	PCR Reaction Tube	0.2	Natural	1000
T325-4N	PCR Reaction Tube	0.5	Natural	1000

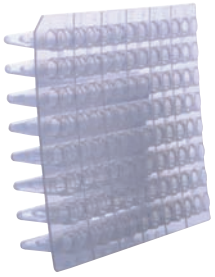
Additional colours are available – please enquire. Minimum order quantities may apply

Amplitube™ PCR Reaction Tubes, Strips

- Strips of 8 integral 0.2mL tubes and caps
- Ultra thin walled tubes for rapid thermal transfer and reduction in PCR reaction time
- Moulded from transparent superior quality polypropylene
- Designed for oil-free operation
- Polished internal surface for maximum sample recovery
- Individually attached, pierceable flat caps
- Caps contain integral contamination shield
- Easier to handle than individual tubes
- Frosted writing surface for sample identification
- Autoclavable and certified DNase / RNase and Pyrogen free

Code	Description	Volume (mL)	Colour	Units / Case
T320-2N	PCR Reaction Strip	0.2	Natural	125
T320-2B	PCR Reaction Strip	0.2	Blue	125
T320-2G	PCR Reaction Strip	0.2	Green	125
T320-2R	PCR Reaction Strip	0.2	Red	125
T320-2Y	PCR Reaction Tube	0.2	Yellow	125

Amplate™ PCR Plates



- 96-well, thin walled PCR plates
- Designed for rapid thermal transfer
- Precision moulded to ensure well to well and plate to plate uniformity
- Polished, inert internal surface for maximum sample recovery
- Flexible design allows for them to be easily cut into strips
- Alphanumeric grid for better identification
- Low profile option reduces head space between sample and cover
- Autoclavable and certified DNase / RNase and Pyrogen free

Code	Description	Volume (mL)	Colour	Units / Bag	Units / Case
T323-96N	Thin Wall PCR Plate	0.2	Natural	10	100
T323-96LPN	Low Profile Thin Wall PCR Plate	0.1	Natural	10	100

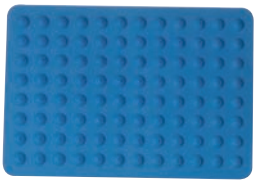
Additional colours are available - please enquire. Minimum order quantities may apply

PCR Plate Sealers, SecureSeal™ Foil

- Adhesive aluminium foil ideal for high throughput applications
- Resistant to temperatures -86°C to +95°C
- Pierceable with pipette tip for easy access to samples
- DMSO resistant
- Use roller, T329-9 to ensure perfect bond
- Roller made of medium hard rubber with a heavy duty handle and comfort grip

Code	Description	Units / Case
T329-5	SecureSeal™ Foil	100
T329-9	Amplate™ Roiller	1

PCR Plate Sealers, Amplate™ Mat



- Flexible sealing cover for 96-well PCR plates
- Secure and effective method of sealing
- Autoclavable and re-useable
- Dimples on one side ensure secure seal over each tube of the plate

Code	Description	Units / Case
T329-10	Amplate™ Mat	5

WHEATON®
Neptune™ Barrier Tips

> Low retention polymer eliminates virtually all sample hold up

> DNA / RNA, Endonuclease, PCR inhibitor and Endotoxin Free

> Racked and pre-sterilised

> Sizes from 10µL to 1mL

Total Sample Recovery

See more information on Barrier Tips on page 8.

For the Smaller Samples in Life

Vials & Bottles

WHEATON UK offers a comprehensive portfolio of vials and accessories for the clinical and research laboratory markets.

When you are looking for a high quality, dependable vial, WHEATON can provide the best product for your application. We can additionally offer custom manufacturing solutions, critical cleaning and surface treatment services.

Highlights:

- Tubular glass vials offer uniform sidewall and bottom thickness
- WHEATON CryoELITE® vials provide unrivalled cap seals and barcoding options for cryogenic storage
- Liquid scintillation vials manufactured from low potassium borosilicate glass, PET, HDPE or Polypropylene
- Custom manufacturing solutions

For more information on WHEATON vials and bottles contact your WHEATON Account Manager or Customer Service at +44 (0)1706 767219.

Dram Vials

- Manufactured from clear Type 1B Neutral Glass in WHEATON's UK facility
- Suitable for media, diagnostic, storage, display and sample collection applications
- Available from stock in convenient pack sizes
- Squat and tall form options with standard neck sizes
- 1 Dram equates to approximately 3.55mL (or 1 / 8 fl. oz.)

Code	Description	Volume (Dram)	Volume (mL)	Size (OD x H) mm	Cap Required	Units / Case
151061	Tall Form Dram Vial	0.5	1.75	11 x 36	110060	882
151062	Tall Form Dram Vial	1	3.5	12 x 46	110060	666
151063	Tall Form Dram Vial	2	7.0	17 x 58	110061	399
151064	Tall Form Dram Vial	3	10.5	17 x 67	110061	399
151065	Tall Form Dram Vial	4	14.0	20 x 72	110062	264
151066	Tall Form Dram Vial	6	21.3	20 x 86	110062	231
151067	Tall Form Dram Vial	8	28.0	23 x 96	110063	190
152061	Squat Form Dram Vial	2	8.0	20 x 43	110062	264
152062	Squat Form Dram Vial	4	14.0	23 x 58	110063	190
152063	Squat Form Dram Vial	8	28.0	27 x 72	110064	140

Caps for Dram Vials

- Black urea cap with foil liner
- Specifically manufactured to fit Dram Vials

Code	Description	Cap Size	Units / Case
110060	Urea Cap with Foil Liner	10mm	1
110061	Urea Cap with Foil Liner	15mm	1
110062	Urea Cap with Foil Liner	18mm	1
110063	Urea Cap with Foil Liner	22mm	1
110064	Urea Cap with Foil Liner	28mm	1

Tubular Glass Vials

- Manufactured in our UK facility with a proven reputation for quality, these vials are suitable for media, diagnostic and sample collection applications
- Manufactured from pharmaceutical quality Type III Soda Glass
- Fully autoclavable, including caps
- Available from stock in convenient pack sizes

Code	Description	Capacity (mL)	Cap Material	Neck Finish	Units / Case
128138	Tubular Glass Bijou	7	None	18R3	1715
120128C	Tubular Glass Bijou	7	Fitted PP Cap	18R3	1715
120128	Tubular Glass Bijou	7	Separate PP Cap	18R3	1715
127028	Tubular Glass Universal	30	None	24R3	500
127030	Tubular Glass Universal	30	Fitted PP Cap	24R3	500
300200	18mm Polypropylene Cap	—	PP / Self Seal	18R3	1000
300204	24mm Polypropylene Cap	—	PP / Self Seal	24R3	1000

All tubular glass bijoux and universals are also available in Type 1B Neutral borosilicate glass – please enquire

Pathology Media Vials, Moulded

- Manufactured from pharmaceutical quality Type 1B Neutral Glass
- Heavy walled moulded media vial
- Fully Autoclavable, including caps
- Available from stock in convenient pack sizes

Code	Description	Capacity (mL)	Cap Material	Neck Finish	Units / Case
128139S	Pathology Vial, Moulded Glass Bijou	7	None	20R3	255
128145	Pathology Vial, Moulded Glass Bijou	7	Separate PP Cap	20R3	765
128135	Pathology Vial, Moulded Glass Bijou	7	Fitted Aluminium Cap	20R3	288
128136	Pathology Vial, Moulded Glass Bijou	14	Fitted Aluminium Cap	20R3	288
128040S	Pathology Vial, Moulded Glass Universal	30	None	28R3	150
128040CS	Pathology Vial, Moulded Glass Universal	30	Separate PP Cap	28R3	150
128044F	Pathology Vial, Moulded Glass Universal	30	Fitted PP Cap	28R3	144
128040F	Pathology Vial, Moulded Glass Universal	30	Fitted Aluminium Cap	28R3	144
300201	20mm Polypropylene Cap	—	PP / Self Seal	20R3	1000
300205	28mm Polypropylene Cap	—	PP / Self Seal	28R3	1000
400206B	20mm Aluminium Cap	—	Aluminium / Rubber	20R3	1000
400211M	28mm Aluminium Cap	—	Aluminium / Rubber	28R3	1000

Specimen Vials with Stoppers

- Manufactured from Type III Soda Glass
- Suitable for a wide range of applications including pharmaceutical, cosmetic and healthcare industries
- 13 different sizes from 2mL to 55mL
- Plug neck finish tubes supplied with separate triple finned polythene stoppers
- Available from stock in convenient pack sizes

Code	Description	Capacity (mL)	Size (OD x H) mm	Neck Finish	Units / Case
ST3809	Specimen Vial with Stopper	2	11 x 38	Plug	250
ST5009	Specimen Vial with Stopper	3	11 x 50	Plug	250
ST3812	Specimen Vial with Stopper	3	13 x 38	Plug	100
ST5012	Specimen Vial with Stopper	4	13 x 50	Plug	100
ST7512	Specimen Vial with Stopper	6.5	13 x 75	Plug	100
ST5018	Specimen Vial with Stopper	8	18 x 50	Plug	100
ST10012	Specimen Vial with Stopper	9	13 x 100	Plug	100
ST7516	Specimen Vial with Stopper	10	16 x 75	Plug	100
ST7518	Specimen Vial with Stopper	13.5	18 x 75	Plug	100
ST5024	Specimen Vial with Stopper	16	25 x 50	Plug	100
ST7524	Specimen Vial with Stopper	25	25 x 75	Plug	100
ST10024	Specimen Vial with Stopper	35	25 x 100	Plug	100
ST15024	Specimen Vial with Stopper	55	25 x 150	Plug	100

Size dimensions are of vials only, without cap

Snap / Clip Top Vials

- Manufactured from Type 1B Neutral Glass
- Particularly suitable for the storage of powders and 'dry' samples
- Snap ring neck finish fits a 'flip off' style, flexible low density polythene closure
- Single cap fits all vial sizes
- Available from stock in convenient pack sizes

Code	Description	Capacity (mL)	Size (D x H) mm	Neck Finish	Units / Case
105000	Snap / Clip Top Vial	7	23 x 35	22mm Clip	190
105010	Snap / Clip Top Vial	10	23 x 47	22mm Clip	190
105020	Snap / Clip Top Vial	15	23 x 48	22mm Clip	162
105030	Snap / Clip Top Vial	20	23 x 66	22mm Clip	162
105040	Snap / Clip Top Vial	30	23 x 73	22mm Clip	140
105050	Polyethylene Closure	—	22	—	1

Diagnostic Vials

- Manufactured in our UK facility, from Type 1B Neutral Tubular Glass
- Suitable for diagnostic and pharmaceutical applications
- Suitable for freeze-drying and autoclaving
- Controlled bore ensures excellent fit with rubber stoppers
- Caps and rubber stoppers made from pharmaceutical grade materials
- Available from stock in convenient pack sizes

102000 102030

Code	Description	Colour	Capacity	Size (OD x H) mm	Neck Finish (mm)	Units / Case
102000	Diagnostic Vial	Clear	3	18 x 36	15.5	320
102020	Diagnostic Vial	Clear	5	18 x 41	15.5	320
102040	Diagnostic Vial	Clear	10	25 x 50	22	154
102060	Diagnostic Vial	Clear	20	28 x 63	22	130
102080	Diagnostic Vial	Clear	25	32 x 63	22	99
102010	Diagnostic Vial	Amber	3	18 x 36	15.5	320
102030	Diagnostic Vial	Amber	5	18 x 41	15.5	320
102050	Diagnostic Vial	Amber	10	25 x 50	22	154
102070	Diagnostic Vial	Amber	20	28 x 63	22	130
102090	Diagnostic Vial	Amber	25	32 x 63	22	99

Caps for Diagnostic Vials

300180

300190

600005

Code	Description	Size (mm)	Material / Liner	Neck Finish	Units / Case
300180	White Closure	15.5	Polypropylene / None	15.5R4	1000
300203	White Closure	22	Polypropylene / None	22R3	1000
300190	White Closure	15.5	Urea / EPE	15.5R4	1000
300208	White Closure	22	Urea / EPE	22R3	1000
600005	Freeze Dry Stopper	14	Butyl Rubber	—	1000
700005	Freeze Dry Stopper	20	Butyl Rubber	—	1000

Injection Vials

- High quality tubular and moulded glass vials
- Manufactured from Type 1B Clear Neutral Glass
- Suitable for diagnostic, pharmaceutical and healthcare applications
- Aluminium crimp seals and rubber stoppers available
- Hand crimping tools and de-cappers are also available

Code	Description	Capacity (mL)	Size (D x H) mm	Neck Finish	Units / Case
700000	Tubular Glass Injection Vial	2	15 x 33	13mm Crimp	466
150865	Tubular Glass Injection Vial	5	23 x 39	20mm Crimp	208
150826D	Tubular Glass Injection Vial	10	24 x 46	20mm Crimp	160
150870	Tubular Glass Injection Vial	20	29 x 56	20mm Crimp	95
700027	Moulded Glass Injection Vial	10	25 x 54	13mm Crimp	198
700028	Moulded Glass Injection Vial	20	32 x 58	13mm Crimp	252
700029	Moulded Glass Injection Vial	30	36 x 63	20mm Crimp	156
700030	Moulded Glass Injection Vial	50	43 x 73	20mm Crimp	81
700035	Moulded Glass Injection Vial	100	52 x 94	20mm Crimp	49

Rubber Stoppers & Overseals

Code	Description	Material / Colour	Size (mm)	To Fit Neck Finish (mm)	Units / Case
700014	Injection Stopper	Butyl Rubber / Grey	13	13	1000
700004	Freeze Dry Stopper	Butyl Rubber / Grey	13	13	1000
700006G	Injection Stopper	Butyl Rubber / Grey	20	20	1000
700005	Freeze Dry Stopper	Butyl Rubber / Grey	20	20	1000
700018	Injection Silicone Stopper	Silicone / Clear	20	20	1500
700007	Fully Tear Off Seal	Aluminium / Silver	13	13	1000
700009	Fully Tear Off Seal	Aluminium / Silver	20	20	1000
700008	Centre Tear Off Seal	Aluminium / Silver	20	20	1000
700008S	12mm Centre Hole Seal	Aluminium / Silver	20	20	1000
700016B	Fully Tear Off Seal	Aluminium / Blue	20	20	1000
700016G	Fully Tear Off Seal	Aluminium / Green	20	20	1000
700016R	Fully Tear Off Seal	Aluminium / Red	20	20	1000
700103B	Flip Tear Off Seal	Aluminium / Blue	20	20	1000
700104G	Flip Tear Off Seal	Aluminium / Green	20	20	1000
700105R	Flip Tear Off Seal	Aluminium / Red	20	20	1000
700101W	Flip Tear Off Seal	Aluminium / White	20	20	1000

Hand Crimping Tools and Decappers

- Used to attach and remove aluminium seals to / from bottles and vials with a crimp finish
- E-Z Crimper™ and E-Z Decapper™ have cushioned ergonomic handles to help reduce hand fatigue
- Labelled for quick size identification
- Polished crimping jaws provide consistent sealing
- 2 year warranty on E-Z brand tools

Code	Description	Cap Size (mm)	Units / Case
W225302	E-Z Crimper™	13	1
W225303	E-Z Crimper™	20	1
W225352	E-Z Decapper™	13	1
W225353	E-Z Decapper™	20	1
9300FO-13	Hand Crimping Tool, Flip Type Seals	13	1
9300FO-20	Hand Crimping Tool, Flip Type Seals	20	1

Dropper Bottles & Dropper Assemblies

- Tubular glass vials and dropper assemblies
- Manufactured at our UK facility from neutral Type 1B tubular glass
- Suitable for a range of diagnostic, pharmaceutical and healthcare applications
- Pipettes available to custom specification and with controlled drop size
- Available from stock in convenient pack sizes

Code	Description	Capacity (mL)	Size (D x H) mm	Neck Finish (mm)	Units / Case
101080D	Dropper Bottle	3	16 x 36	14.5	374
101090D	Dropper Bottle	4.5	16 x 47	14.5	374
150820D	Dropper Bottle	7	20 x 43	18	245
150550D	Dropper Bottle	10	20 x 58	18	245
800017X	40µL Dropper Assembly for 101080D	—	—	—	1122
800025X	40µL Dropper Assembly for 101090D	—	—	—	1122
800002XC	50µL Dropper Assembly for 150820D	—	—	—	980
800001XC	50µL Dropper Assembly for 150550D	—	—	—	980

Dropper assemblies can be supplied with coloured caps. Please enquire for further details. Colour coded bulbs are also available to special order, subject to minimum order quantities

Scintillation Vials, Glass

- Suitable for liquid scintillation counting, gamma counting and chromatography applications
- Manufactured from Type 1A Neutral Glass ensures low potassium content
- Choice of cap

Code	Description	Capacity (mL)	Size (D x H) mm	Cap Material	Units / Case
227170	Glass Scintillation Vial	20	27 x 60	Wadless PP	480
227180	Glass Scintillation Vial, Fitted Cap	20	27 x 60	Foil Lined Urea	500

Scintillation Vials, PET, 20mL

- 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

Code	Cap Material	Liner Material	Cap Size	Size (OD x H) mm*	Units / Case
Caps Attached to Vials					
W986730	Polypropylene	Foamed Polyethylene	22-400	27 x 61	500
W986731	Polypropylene	Metal Foil / Pulp	22-400	27 x 61	500
W986732	Urea	Metal Foil / Cork	22-400	27 x 61	500
W986734	Polyethylene	Linerless	22-400	27 x 61	500
W986736	Urea	Polyethylene Cone	22-400	27 x 61	500

*Measurement taken with cap attached

Scintillation Vials, Plastic, Snaptwist®

- Suitable for liquid scintillation counting, gamma counting and chromatography applications
- Manufactured from translucent polypropylene or opaque polyethylene
- Shoulderless vial features full width opening for ease of access
- Vials securely sealed with Snaptwist® closures by simply snapping the caps on
- Quality sealing system ensures it is not necessary to tighten closure to achieve leak proof seal
- Removal of caps requires simple ¼ turn

Code	Description	Capacity (mL)	Material (Tube / Cap)	Size (OD x H) mm	Units / Case
S207	Scintillation Vial	6.5	HDPE / PP	16 x 57	1000
S207-5	Scintillation Vial	6.5	PP / PP	16 x 57	1000

Scintillation Vials, Plastic, 20mL

- Suitable for liquid scintillation counting, gamma counting and chromatography applications
- Manufactured from polypropylene
- Shoulderless vial features full width opening for ease of access
- Caps secured by simple ¼ turn
- Quality sealing system ensures it is not necessary to tighten closure to achieve leak proof seal

Code	Description	Capacity (mL)	Material (Tube / Cap)	Size (OD x H) mm	Units / Case
S220	Scintillation Vial, Bulk	20	PP / PE	26 x 61	500
S220-1	Scintillation Vial, 100 / Tray	20	PP / PE	26 x 61	500

WHEATON®
Diagnostic Vials

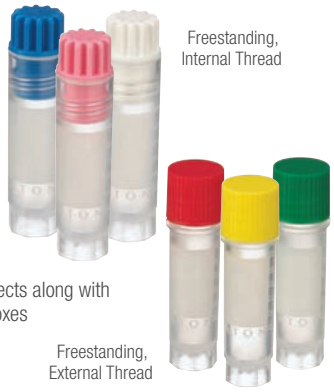
- > Manufactured in our UK facility, from Type 1B neutral tubular glass
- > Choice of clear or amber screw thread vials
- > Suitable for diagnostic and pharmaceutical applications
- > Controlled bore ensures excellent fit with WHEATON rubber stoppers & caps
- > Suitable for freeze-drying and autoclaving

Proudly Made in the UK!

See more information on Diagnostic Vials on page 15.


1.8
1.5
1.0
mL
0.5

CryoELITE® Cryogenic Vials



- Unrivaled cap seal exceeds DOT and IATA regulations ensuring ultimate protection of samples during transportation and demanding freeze-thaw handling
- Lot certified RNase / DNase and Endotoxin Free providing assurance of product integrity
- Loctagon™ Vial Skirt provides stability in freestanding position
- Coloured caps allow for colour coding projects along with WHEATON coloured freezer and storage boxes

CE IVD

Code	Capacity (mL)	Colour	Writing Patch	Sterile	Dimensions Dia x H (mm)	Units / Case
CryoELITE® Cryogenic 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® Cryogenic Vials, Freestanding, External Thread						
W985874	0.5	White	Yes	Yes	12 x 49	500
W985862	1.2	Natural	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

2D Data Matrix Bar Code Bottom Inserts

- 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

Code	Description	Sterile	Units / Case
W985880	2D Data Matrix Bar Code Bottom Insert	Yes	500
W985881	2D Data Matrix Bar Code Bottom Insert	No	500

CryoELITE® Cryogenic Vials, Round Bottom

- Exacting round bottom allows for up to 17,000 MAX RCF (xG)
- Screw cap can be easily removed with one hand
- Unrivaled cap seal exceeds DOT and IATA regulations ensuring ultimate protection of samples during transportation and demanding freeze-thaw handling
- Lot certified RNase / DNase and endotoxin free and non-pyrogenic providing assurance for sample integrity
- Made from low binding, cryogenic grade virgin polypropylene

CE IVD

Code	Size (mL)	Colour	Writing Patch	Sterile	Dimensions Dia. x H (mm)	Units / Case
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

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 colours provide easy sample identification
- Water repellent allows for longer durability
- For use with vapor phase of liquid nitrogen
- Dimensions (L x W x H): CryoFile® (130 x 130 x 52mm) / CryoFile® XL (130 x 130 x 97mm)

Code	Fits	Colour	Units / 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

> If looking for cryogenic storage of tissue samples, please refer to Histology section on page 4.

KeepIT® Freezer Boxes

- KeepIT® Freezer Boxes provide an ideal method for batching and storing samples
- Six different colours match the colours 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®-81 accommodates 81 external threaded cryogenic vials (Vial Sizes: 1.2 - 2mL)
- KeepIT®-100 accommodates up to 100 internal threaded cryogenic vials (Vial 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

KeepIT® -25 Freezer Boxes

KeepIT® 81 - 100 Freezer Boxes

Code	Colour	Units / Case
KeepIT®-25 for External Thread Vials		
W651702-W	White	10
W651702-R	Red	10
W651702-P	Pink	10
W651702-Y	Yellow	10
W651702-G	Green	10
W651702-B	Blue	10
Keep-IT®-81 for External Thread Vials		
W651703-W	White	10
W651703-R	Red	10
W651703-P	Pink	10
W651703-Y	Yellow	10
W651703-G	Green	10
W651703-B	Blue	10
KeepIT®-100 for Internal Thread Vials		
W651704-W	White	10
W651704-R	Red	10
W651704-P	Pink	10
W651704-Y	Yellow	10
W651704-G	Green	10
W651704-B	Blue	10

Cryule® Vial Freezer Box

- Stores 1 to 2mL cryogenic ampules
- Polyethylene coating chipboard for use with vapor phase of liquid nitrogen
- Holds 81 cryogenic ampules
- Dimensions (L x W x H):
  1mL (133 x 133 x 32mm) / 2mL (133 x 133 x 44mm)

Code	Fits	Dimensions (mm)	Units / Case
651490	1mL Cryule® Vials	133 x 133 x 32	15
651492	2mL Cryule® Vials	133 x 133 x 44	15

CryoELITE® Benchmate Rack

- For use with both freestanding and round bottom vials
- Loctagon™ bottom allows one hand cap removal
- Holds 50 cryogenic vials
- Manufactured from polypropylene
- Easily cleaned in an automatic washer or autoclavable at 121°C for 20 minutes
- Non-skid feet offers additional stability for bench work
- Well ID: 12.5mm
- Dimensions (L x W x H): (190 x 100 x 22mm)

Code	Description	No. of Wells	Units / Case
985810	50-Position Rack	5 deep x 10 wide	5

PluraScan™ Bar Code Reader

- 2D Data Matrix Bar Code Reader
- Works with WHEATON KeepIT® 81 & 100 Boxes and WHEATON CryoELITE® Cryogenic Vials and Cryule® Ampules
- Integrated frost reduction system allows multiple racks to be read
- Flexible software integration
- Capable of reading bar codes from wide range of manufacturers and label printers

Code	Description	Units
W986010- [ ]*	PluraScan™ Bar Code Reader	1

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

*When ordering PluraScan, please reference the letter corresponding to the correct electrical cord

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

Code	Description	Units
W986000	SingleScan™ Bar Code Reader	1

WHEATON Scanners Technical Information

	SingleScan™	PluraScan™
Code Formats 1D Linear	✓	—
2D Data Matrix	✓	✓
ISO 16022	✓	✓
Square I Rectangular Format	✓	✓
ECC 200	✓	✓
0-20 Grid Sizes	✓	✓
White on Black I 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	USB 2.0 I 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	

Headspace Vials

- Available in clear Type 1B Borosilicate Glass with crimp finish
- WHEATON Headspace vials and closures form a tight seal for accurate analysis with reproducible results
- Headspace vials are used to heat the sample until the concentration of the liquid and gas phases are in equilibrium. A sample is then taken from the gas phase (headspace) for analysis

Code	Description	Volume (mL)	Size (OD x H) mm	Units / Case
36020-2238	Clear Headspace Vial (for P.E.)	6	22 x 38	1000
310020A-2346	Clear Headspace Vial, Rounded Bottom (for Leap)	10	23 x 46	1000
10202346	Clear Headspace Vial	10	23 x 46	1000
320020A-2375	Clear Headspace Vial, Rounded Bottom (for P.E.)	20	23 x 75	1000
10202375	Clear Headspace Vial	20	23 x 75	1000

Aluminium Seals and Septa for Headspace Vials

5140-20

5150-20

Code	Description	Units / Case
5140-20	Aluminium Seal with PTFE / Grey Butyl Rubber Septa	1000
5150-20	Aluminium Seal with PTFE / Silicone Septa	1000
5110-20	Aluminium Seal with PTFE Septa	1000

NB. Additional seals and septa options are available on request – please enquire

Standard Opening Crimp Top Vials

- 11mm Neck finish allows use of Snap Top Caps™, patented Poly Crimp™ Seals or standard aluminium seals
- Snap Ring™ finish eliminates the need for crimping or decapping
- More glass in the neck area minimizes breakage of the neck during decapping
- Compatible with Agilent and other autosamplers
- Available in clear or amber Type 1B Borosilicate Glass.
- Available with marking spots

32011M-1232 32011M-1232A

Code	Description	Capacity (mL)	Size (OD x H) mm	Units / Case
32011-1232	Clear Glass Autosampler Vial	2.0	12 x 32	1000
32011-1232A	Amber Glass Autosampler Vial	2.0	12 x 32	1000
32011M-1232	Clear Glass Autosampler Vial, Marking Spot	2.0	12 x 32	1000
32011M-1232A	Amber Glass Autosampler Vial, Marking Spot	2.0	12 x 32	1000
5140-11	Aluminium Silver Seals / w PTFE / Natural Rubber Septa	—	11	1000
5160-11	Aluminium Silver Seals with PTFE / Silicone Septa	—	11	1000

For hand crimping tools and decappers, please refer to page 15

Standard Opening Screw Thread Vials

- Designed to work in a variety of autosamplers requiring narrow neck vials
- Narrow opening allows use of 8mm / 425 closures and septa
- Available in clear or amber Type 1B Borosilicate Glass
- Available with marking spots

5310-08

32008-1232 32008-1232A

Code	Description	Capacity (mL)	Size (OD x H) mm	Units / Case
32008-1232	Clear Glass Autosampler Vial	2.0	12 x 32	1000
32008-1232A	Amber Glass Autosampler Vial	2.0	12 x 32	1000
32008M-1232	Clear Glass Autosampler Vial, Marking Spot	2.0	12 x 32	1000
32008M-1232A	Amber Glass Autosampler Vial, Marking Spot	2.0	12 x 32	1000
5310-08	Black, Polypropylene Closure, Open Hole	—	8	1000
5310L-08	Black, Polypropylene Closure, Large Open Hole	—	8	1000
5360-08	Black Polypropylene Closure with Liner	—	8	1000
601010-08	White PTFE Septa for 8mm Closures	—	0.25	1000
604040-08	PTFE / Butyl Rubber Septa for 8mm Closures	—	1.2	1000

WISP™ Style Screw Thread Vials

- Designed to work in Shimadzu and Waters WISP™ 48 position autosamplers
- Available in clear or amber Type 1B Borosilicate Glass
- Standard screw threads compatible with 13mm / 425 closures
- Available with graduated marking spots

34013M-1545 34013-1545A

Code	Description	Capacity (mL)	Size (OD x H) mm	Units / Case
34013-1545	Clear Glass Vial	4.0	15 x 45	1000
34013-1545A	Amber Glass Vial	4.0	15 x 45	1000
34013M-1545	Clear Glass Vial, Marking Spot	4.0	15 x 45	1000
34013M-1545A	Amber Glass Vial, Marking Spot	4.0	15 x 45	1000
5310-13	Black, Polypropylene Closure, Open Hole	—	13	1000
5360-13	Black Polypropylene Closure with Liner	—	13	1000
601010-13	White PTFE Septa for 8mm Closures	—	0.25	1000
606040-13	PTFE / Butyl Rubber Septa for 8mm Closures	—	1.5	1000

Shell Vials

- Designed to work in the Waters WISP™ 96 and 48 Position and P.E. ISS Autosamplers
- Available in clear or amber Type 1B Borosilicate Glass
- Vials feature thicker walls for safer sample handling
- Various size options
- Use Starburst snap plug caps

4100-840A

4100-1232

5400SB-08

Code	Description	Capacity (mL)	Size (OD x H) mm	Autoanalyser	Units / Case
4100-840	Clear Shell Vial	1.0	8 x 40	WISP 96 Position Trays	1000
4100-840A	Amber Shell Vial	1.0	8 x 40	WISP 96 Position Trays	1000
4100-1232	Clear Shell Vial	2.0	12 x 32	WISP 48 Position Trays	1000
4100-1232A	Amber Shell Vial	2.0	12 x 32	WISP 48 Position Trays	1000
4100-1545	Clear Shell Vial	4.0	15 x 45	P.E. ISS	1000
4100-1545A	Amber Shell Vial	4.0	15 x 45	P.E. ISS	1000
5400SB-08	Starburst Snap Plugs	—	8	WISP 96 Position Trays	1000
5405SB-12	Starburst Snap Plugs	—	12	WISP 48 Position Trays	1000
5405SB-15	Starburst Snap Plugs	—	15	P.E. ISS	1000

EPA Vials

- Screw neck vials for the collection and processing of water samples for environmental analysis as specified by the Environment Protection Agency (EPA)
- Manufactured from Type 1B Neutral Glass

5310-24W

320024-2856

Code	Description	Colour	Size (OD x H) mm	Thread Finish	Units / Case
320024-2856	20mL EPA Vial	Clear	28 x 56	24-400	100
10402895	40mL EPA Vial	Clear	28 x 95	24-400	130
5310-24	PP Open Hole Cap	Black	—	24-400	100
5310-24W	PP Open Hole Cap	White	—	24-400	100
610050-24	PTFE / Silicone Speta	—	24 x 0.1	—	100

Amber EPA vials also available. Please enquire – minimum order quantities may apply

Glass Powder Jars

- Manufactured from Type III Soda Glass
- Screw neck bottles, closures supplied separately
- Available in clear or amber glass

930210

930220A

Code	Description	Neck Finish	Size (OD x H) mm	Units
930200	15mL Clear Glass Powder Jar	28R3	32 x 52	104
930210	30mL Clear Glass Powder Jar	33R3	39 x 59	60
930220	60mL Clear Glass Powder Jar	38R3	45 x 77	60
930230	120mL Clear Glass Powder Jar	38R3	54 x 95	53
930240	175mL Clear Glass Powder Jar	48R3	60 x 107	46
930250	250mL Clear Glass Powder Jar	48R3	64 x 119	24
930200A	15mL Amber Glass Powder Jar	28R3	32 x 52	104
930210A	30mL Amber Glass Powder Jar	33R3	39 x 59	60
930220A	60mL Amber Glass Powder Jar	38R3	45 x 77	60
930230A	120mL Amber Glass Powder Jar	38R3	54 x 95	53
930240A	175mL Amber Glass Powder Jar	48R3	60 x 107	46
930250A	250mL Amber Glass Powder Jar	48R3	64 x 119	24

Caps for Glass Powder Jars

- Screw finish caps to fit powder jars
- Choice of white polypropylene cap or black urea cap with PVDC liner

Code	Description	Neck Finish	Material	Units
C28R3PP	White Self Seal Cap	28R3	Polypropylene	1
C33R3PP	White Self Seal Cap	33R3	Polypropylene	1
C38R3PP	White Self Seal Cap	38R3	Polypropylene	1
C48R3PP	White Self Seal Cap	48R3	Polypropylene	1
C58R3PP	White Self Seal Cap	58R3	Polypropylene	1
C28R3	Black Urea Cap	28R3	Bakerlite with PVDC Liner	1
C33R3	Black Urea Cap	33R3	Bakerlite with PVDC Liner	1
C38R3	Black Urea Cap	38R3	Bakerlite with PVDC Liner	1
C48R3	Black Urea Cap	48R3	Bakerlite with PVDC Liner	1
C58R3	Black Urea Cap	58R3	Bakerlite with PVDC Liner	1

Syrup Bottles

- Manufactured from Type III Soda Glass
- Available in clear or amber glass
- Screw neck bottles, closures supplied separately
- Neck Size / Finish 28mm

930300

930310A

Code	Description	Size (OD x H) mm	Units / Case
930300	30mL Clear Glass Bottle	35 x 67	156
930310	60mL Clear Glass Bottle	39 x 94	127
930330	100mL Clear Glass Bottle	51 x 96	86
930340	125mL Clear Glass Bottle	49 x 114	104
930350	150mL Clear Glass Bottle	52 x 123	88
930360	180mL Clear Glass Bottle	55 x 130	80
930370	200mL Clear Glass Bottle	57 x 133	67
930380	250mL Clear Glass Bottle	62 x 143	60
930390	300mL Clear Glass Bottle	66 x 151	48
930400	500mL Clear Glass Bottle	77 x 177	32
930410	1000mL Clear Glass Bottle	98 x 217	24
930300A	30mL Amber Glass Bottle	35 x 67	156
930310A	60mL Amber Glass Bottle	39 x 94	127
930320A	90mL Amber Glass Bottle	44 x 103	100
930330A	100mL Amber Glass Bottle	51 x 96	86
930340A	125mL Amber Glass Bottle	49 x 114	104
930350A	150mL Amber Glass Bottle	52 x 123	88
930360A	180mL Amber Glass Bottle	55 x 130	80
930370A	200mL Amber Glass Bottle	57 x 133	67
930380A	250mL Amber Glass Bottle	62 x 143	60
930390A	300mL Amber Glass Bottle	66 x 151	48
930400A	500mL Amber Glass Bottle	77 x 177	32
930410A	1000mL Amber Glass Bottle	98 x 217	24

Caps for Syrup Bottles

- Variety of cap options to fit syrup bottles

Code	Description	Neck Finish (mm)	Units
300205	White PP Cap without Liner	28	1
C28R3PPEPE	White PP Cap with EPE Liner	28	1
C28TE	White Tamper Evident PP Cap	28	1
C28CRTE	White Child Resistant PP Cap	28	1
C28R3	Black Urea Cap	28	1

Square Weigh Boats

- Manufactured from high impact polystyrene
- Anti-static prevents retention of sample by static electricity
- Recesses at the corners facilitate controlled pour-off
- Hydrophobic surface ensures no water absorption from atmosphere or sample
- Suitable for general purpose weighing and fine powders
- Available in black or white to enable sample visualisation

Code	Description	Capacity (mL)	Colour	Size (mm)	Units / Case
SQ7W / AS	Anti Static Square Weigh Boat	7	White	44 x 44	1000
SQ100W / AS	Anti Static Square Weigh Boat	100	White	80 x 80	1000
SQ250W / AS	Anti Static Square Weigh Boat	250	White	140 x 140	1000
SQ7B / AS	Anti Static Square Weigh Boat	7	Black	44 x 44	1000
SQ100B / AS	Anti Static Square Weigh Boat	100	Black	80 x 80	1000
SQ250B / AS	Anti Static Square Weigh Boat	250	Black	140 x 140	1000

Diamond Weigh Boats

- Manufactured from high impact polystyrene
- Anti-static prevents retention of sample by static electricity
- Recesses at the corners facilitate controlled pour-off
- Hydrophobic surface ensures no water absorption from atmosphere or sample
- Suitable for general purpose weighing and fine powders
- Available in black or white to enable sample visualisation

Code	Description	Capacity (mL)	Colour	Size (mm)	Units / Case
DS5W / AS	Anti Static Diamond Weigh Boat	5	White	55 x 35	1000
DS30W / AS	Anti Static Diamond Weigh Boat	30	White	85 x 65	500
DS100W / AS	Anti Static Diamond Weigh Boat	100	White	125 x 100	250
DS5B / AS	Anti Static Diamond Weigh Boat	5	Black	55 x 35	1000
DS30B / AS	Anti Static Diamond Weigh Boat	30	Black	85 x 65	500
DS100B / AS	Anti Static Diamond Weigh Boat	100	Black	125 x 100	250

WHEATON®
PCR Tubes & Plates

Superior Quality for Maximum Sample Recovery

> Amplitube™ brand PCR reaction tubes, strips and plates
> Moulded transparent superior quality polypropylene
> Polished internal surface for maximum sample recovery
> Certified DNase, RNase and Pyrogen Free
> Fully autoclavable

See more information on PCR Tubes and Plates on page 12.

WHEATON®

Custom Manufacturing Capabilities

Unrivalled Experience & Flexibility

- Complete manufacturing flexibility
- Product development from concepts, drawings, prototypes through to production
- Rapid, in-house tooling, screen printing and decorating services

Information of a More Technical Nature

Technical Data

WHEATON has 125 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, WHEATON understands the importance of protecting the quality of the most sensitive materials as they may represent one's life's work. WHEATON offers 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 WHEATON products.

For more information on WHEATON Technical Data, contact your WHEATON Account Manager or Customer Service at +44 (0)1706 767219.

Technical Data

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 moulding. 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 Mould

Usually a metal mould 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 centimetre.

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 hydro-fluoric 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.

Mould 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 mould 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.

Glass Types

Glass products can be made up from many different formulations. Wheaton UK glass products are made from four key formulations as detailed below.

Type 1 Class A Neutral Glass: This is the hardest borosilicate glass in common use, it contains fewer elements and is near to a 'pure glass'. Its levels of boron and silica are much higher, soda ash is only around 6% or less, compared to up to 15% in soda glass, and iron is only a trace, therefore the glass is white. This glass can be used with aggressive chemicals, is very resistant to heat and is known as '33 expansion glass'. The chemical properties are so stable that this glass can be baked at high temperatures to remove organics. The glass is difficult to cut and process, it is therefore the more expensive of the glass types available

Type 1 Class B Neutral Glass: A chemically resistant clear borosilicate glass with outstanding chemical resistance, neutrality, impermeability and strength. Ideally used for glass containers to store or package acidic, neutral and alkaline products and for injectable solutions.

Type I glass is suitable for autoclaving. Recommended autoclave cycles are 121°C @15 psi for 20 minutes

Even though Type I glass has the highest chemical durability, there may still be some sensitivity with certain packaged products and an internal surface treatment (siliconisation) can be used to further improve the durability of the containers

Type 1 Class B Neutral Glass, Amber: Similar in composition to Type 1B glass above this is a chemically resistant amber borosilicate glass for light sensitive applications. Outstanding chemical resistance, neutrality, impermeability and strength it is ideally used for glass containers for injectable solutions.

Type III Soda Glass: A superior soda lime clear glass manufactured to European Pharmacopeia standards. Soda glass is less chemically resistant than Type 1 glass and is typically acceptable for storing dry powders and for containers for general sample storage.

Soda lime glass is not suitable for autoclaving as the autoclaving process will accelerate the glass corrosion reaction. Dry heat sterilisation processes are typically not a problem for Type III soda glass containers.

Physical Properties	Type 1A	Type 1B	Type 1B	Type III
Colour	Clear	Clear	Amber	Clear
Coefficient of mean linear thermal expansion (20-300°C) x10^{7} according to ISO 7991	33	49	54	91
Transformation temperature (°C)	525	565	550	525
Annealing point (°C)	560	565	560	530
Softening point (°C)	825	785	770	720
Working point (°C)	1260	1160	1165	1040
Density at 25°C (g / cm^{-3})	2.23	2.34	2.42	2.5
Chemical Data				
Hydrolytic resistance according to ISO 719	Class HBG 1	Class HGB 1	Class HGB 1	Class HGB 3
Hydrolytic resistance according to Ph. Eur	Type I	Type I	Type I	Type III
Hydrolytic resistance according to USP	Type I	Type I	Type I	Type III
Hydrolytic resistance according to JP	Type I	Type I	Type I	Type III
Acid resistance (DIN 12116)	Class S1	Class S1	Class S2	Class S1
Alkali resistance (ISO 695)	Class A2	Class A2	Class A2	Class A2

Chemical Composition

Chemical composition of key glass types used in Wheaton UK products showing main components in approximate weight %:

	SiO_2	B_2O_3	Al_2O_3	NA_2O	CaO	FE_2O_3	TiO_2	K_2O	BaO	MgO
Type 1A, Clear	81	13	2	4	—	—	—	—	—	—
Type 1B, Clear	75	10.5	5	7	1.5	—	—	—	—	—
Type 1B, Amber	70	7	6	7	<1	1	5	1	2	—
Type III	69	1	4	13	5	—	—	3	2	3

Plastic Manufacturing Terminology

Blow Mould

Cavity that receives the Preform, which will be blown into the desired shape.

Blow Pin

Used in Extrusion Blow Moulding. Hollow tube that pierces Preform and introduces air to blow Preform into shape of Blow Mould.

Cavity

That part of the mould 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 mould 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 mould 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 Moulding. Used in conjunction with a Preform Mould to manufacture a Preform. The Preform is formed around the Core Rod creating a hollow tube, which will then be transferred to a Blow Mould where air will be introduced forcing the Preform to take the shape of the Blow Mould cavity.

Extrusion Blow Moulding

A moulding process whereby heat-softened polymer is forced into the shape of a hollow tube. While still soft, a mould 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 Mould 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 moulded 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 Moulding. 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 mould 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 Moulding

A moulding process in which heat-softened polymer is injected from a Plastifier into a mould cavity creating a Preform, which is then transferred to a Blow Mould where air is blown into the Preform, forcing it to take the shape of the Blow Mould cavity.

Injection Moulding

A moulding 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 Moulding

A moulding process whereby Preforms are introduced into a cavity, stretched axially by a Stretch Rod, and then blown circumferentially to the shape of the Blow Mould 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.

Mould

Contains the cavity or cavities of a desired part in which a heat-softened polymer is shaped.

Mould Seam

A line formed at the point of contact of the Mould halves.

Neck Ring

Part of the mould 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 Mould 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 Moulding 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 Mould 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 moulding.

Release Agent

A lubricant that facilitates moulding.

Stretch Rod

Used in Injection Stretch Blow Moulding. 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 Moulding

A moulding 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 moulded parts on the cores. The swingplate then swings over to a secondary station where the cold runner and moulded parts are removed. While this is happening, another swingplate moves from the secondary station to the first station and new parts are moulded.

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. Sterilisable 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, sterilisable with EtO or gamma radiation. Good stress crack and impact resistance.

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. Sterilisable 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 sterilisable.

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 sterilisable.

Table 8. Typical Properties of Plastics

	HDPE	LDPE	LLDPE	PET	PP	PS	PVC	PTFE
Max. Temp °C	120	80	50	60	135	70	70	240
Transparency	Transl	Transl	Transl	Transp	Transl	Transp	Transl	Opaq
Sterilisable**								
Autoclave	No	No	No	No	Yes	No	No	Yes
Gas	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dry Heat	No	No	No	No	No	No	No	Yes
Radiation	Yes	Yes	Yes	Yes	No	Yes	No	No
Disinfectants	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Density G / Cm^3	0.95	0.92	0.92	1.33	0.90	1.06	1.34	2.15
Flexibility	Semi	Flex	Flex	Semi	Rigid	Rigid	Rigid	Rigid
Brittleness Temp °C	-100	-100	-76	-10	0	+20	-30	-110
Tensile Strength, Psi	4000	2400	2000	8000	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 9. Permeability of Plastics

		HDPE	LDPE	LLDPE	PET	PP	PS	PVC	PTFE
N_2	See Note 1	42	180	—	0.8	44	50	2	—
O_2	See Note 1	150	500	—	5	90-140	185-485	4	—
CO_2	See Note 1	580	2700	—	15	650	1160	4	—
Moisture	See Note 2	0.3	1.3	—	2.0-4.0	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

Sterilisation of Plastics

There are a variety of plastic materials and methods by which these plastic materials can be sterilised. However, not all plastics can be sterilised by every method. An understanding of sterilisation methods, problems that can occur, and terms associated with sterilisation 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, moulding 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 moulded. Until then, a secondary sterilisation process must be performed.

Terms Associated with Sterilisation

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 sterilised 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 sterilised 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.

Sterilisation Techniques

Sterilisation techniques are designed to kill microorganisms. There are varieties of sterilisation 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 sterilisation 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 sterilised. EtO must contact the surfaces to be sterilised. There are several ways EtO sterilisation 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 sterilisation).

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 sterilisation). 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 sterilisation parameters. After exposure, the chamber is purged with filtered sterile air to eliminate residual EtO.

Most plastic ware is capable of being EtO sterilised. However, zinc stearate process aid, used in injection blow moulding, can cause precipitants (particulate) to form in liquid products packaged in EtO sterilised ware.

Therefore, only special LDPE grades and colorants that do not require zinc stearate for injection blow moulded ware should be treated by EtO sterilisation processes. Additionally, tests should always be run on plastic ware to determine suitability for a given sterilisation 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 sterilisation.

Steam Autoclave (Cont.)

If empty ware becomes distorted due to autoclave sterilisation, it may be due to:

- High stresses moulded 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 sterilisation method.

Autoclaving Filled, Sealed Ware

Autoclave sterilisation of filled, sealed ware, is also known as “Terminal Sterilisation”. Many companies prefer terminal sterilisation 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 sterilisation. 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 sterilisation. This may be due to:

- Improper balancing of temperature / pressure upon heating or cooling
- High stresses moulded 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 sterilisation method.

Autoclaving Closures

Polypropylene (PP) closures should be capable of withstanding steam autoclave sterilisation. However, autoclaving may cause blooming of additives in PP. PP homopolymer is more heat resistant than PP copolymer. Linerless closures (closures with specially moulded-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 moulded 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 sterilisation 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 sterilisation:

- 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 sterilisation and E-beam both use radiation, packaging materials react similarly in both systems.

Cobalt 60 Gamma Radiation

A gamma radiation sterilisation 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 sterilised 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 sterilisation, 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 sterilisation. 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 sterilised 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 sterilised, although tests should always be run on plastic ware to determine suitability for a given sterilisation 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 Sterilisation

Normal PP grades yellow noticeably and exhibit long term embrittlement when sterilised via gamma radiation techniques. Special radiation resistant PP grades, having special stabilizers, are available for radiation sterilisation. 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 sterilisation method.

Electron Beam (E-Beam) Radiation

An E-beam radiation sterilisation 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 sterilised. 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 sterilisation, 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 sterilisation. 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 sterilised 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 sterilised, although tests should always be run on plastic ware to determine suitability for a given sterilisation 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 Sterilisation

Normal PP grades yellow noticeably and exhibit long term embrittlement when sterilised via E-Beam. Special PP grades, having special stabilizers, are available for E-beam sterilisation. 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 sterilisation method.

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Autoclave Bags – Recommendations for use

Autoclave bags are used for the steam sterilisation, (decontamination and inactivation) of biological waste. The following are key recommendations for use;

- Do not over fill the bags or autoclave, always leave sufficient room for thorough steam circulation
- Do not put sharp objects, needles or broken glass, into autoclave bags
- Do not plug or cap any vessels containing liquids that are to be put in the bag
- Always add a small amount of water to bags containing solid waste. Once sterilisation temperature has been reached inside the bag the water will vapourise and drive out any residual air.
- Do not tightly seal the bag as this will prevent air escaping during the sterilisation process.

CE Marking and the In Vitro Diagnostic Device Directive 98 / 79 / EC

- The In Vitro Diagnostics Device Directive was introduced in 2003 in order to regulate the safety and performance of in vitro diagnostic devices throughout the European Union.
- Manufacturers of such devices are obliged to conform to careful design, production and quality control of products classed as in vitro medical devices. This includes Specimen containers, blood tubes and microtitre plates
- All such relevant WHEATON products by the directive and can be clearly identified throughout this catalogue by the CE symbol on relevant catalogue entries.
- The Directive does not apply to general laboratory products, such as plastic Pasteur pipettes and pipette tips.
- For some products, there is still no clear distinction between in vitro diagnostic devices and general laboratory products and these products are not currently CE marked until such direction comes from the European Commission

Microtitre Plates

- Selecting the right microtitre plate for your requirements can be crucial to your results.

Flat Well

- Provides optimal optical characteristics
- Suitable for microscopic applications
- Has low background absorbance

U Well

- Improves washing in ELISA assays
- Enhances sensitivity in fluorescence applications

V Well

- Optimal for magnetic bead and agglutination assays
- Useful for centrifugation or concentration of samples
- Facilitates easy recovery of well contents

- Please use the guide below assistance in selecting the right plate style for your application:

Application	Plate Type
DNA Libraries	All Types, Sterile with Lid
High Throughput Screening	All Types
EIA	U Well
Agglutination Reactions	V Well
Fluorescent Reactions	U Well
Centrifugation	V Well
Sedimentation	V Well
Reagent Injection Reactions	Flat Well

Centrifugation and Centrifuge Tubes

This catalogue details centrifuge and microcentrifuge tubes as well as many other tubes that are routinely used in centrifugation processes. It is important that care is taken not to exceed the maximum relative centrifugal force (RCF) advised for the tubes. The following table and nomograph have been provided to assist in making the correct settings of your centrifuge.

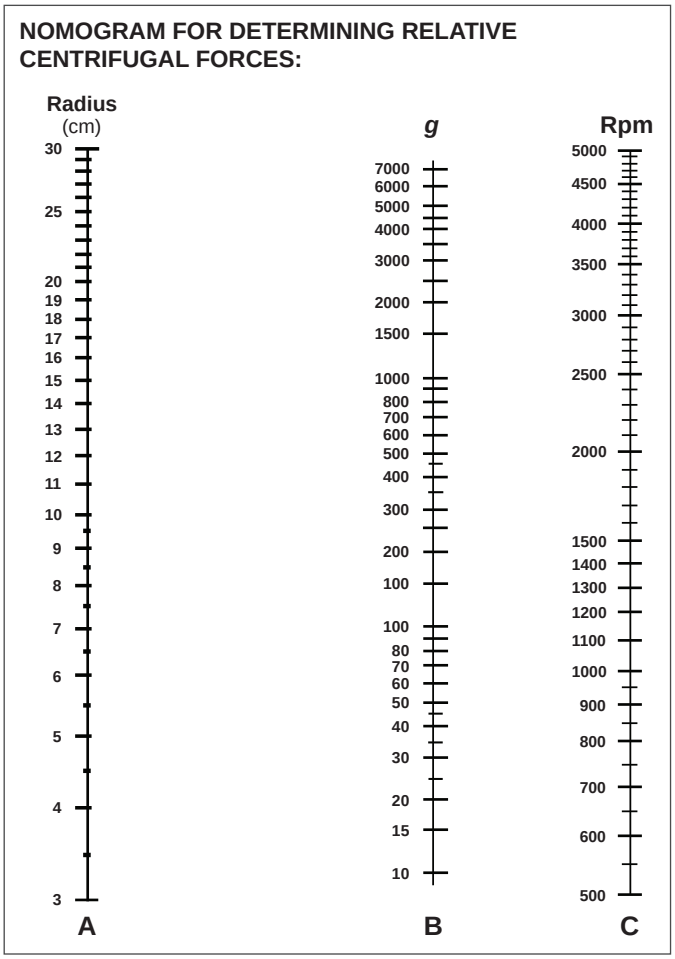
Do ensure that the tubes used are in good condition and are used with balanced rotors, the correct adapters and the appropriate sized buckets in all instances.

WHEATON Code	Description	Capacity (mL)	Material	Max Recommended RCF xg, (Swinging Bucket Rotor)	Max Recommended RCF xg, (Fixed Angle Bucket Rotor)
350035	Microcentrifuge Tube with Flip Top Cap	0.5	PP	—	18,000
350040	Microcentrifuge Tube with Flip Top Cap	1.5	PP	—	20,000
350045	Microcentrifuge Tube with Flip Top Cap	2.0	PP	—	22,000
150407	Microcentrifuge Tube, Skirted with Screw Thread	2.0	PP	—	22,000
380200	Centrifuge Tube	15	PS	2500	2800
380220	Centrifuge Tube	15	PP	4000	11,000
380100	Centrifuge Tube	50	PP	3200	9,500
380240	Centrifuge Tube, Skirted	50	PP	3200	9,500
327145	Bijou Containers	7mL	PS	—	7200
327152	Universal Containers	30mL	PS	—	3800
327152PP	Universal Containers	30mL	PP	—	4000
711120	Polystyrene Test Tube	11 x 64	PS	5800	34,000
711119	Polystyrene Test Tube	12 x 55	PS	5800	34,000
350025	Polystyrene Test Tube	12 x 75	PS	5800	34,000
711125	Polystyrene Test Tube	13 x 75	PS	5800	34,000
711129	Polystyrene Test Tube	16 x 100	PS	5800	34,000
711150	Polystyrene Test Tube	16 x 150	PS	5800	34,000
712120	U Well Microtitre Plate	—	PS	1000	—
712121	V Well Microtitre Plate	—	PS	4800	—
712122	Flat Well Microtitre Plate	—	PS	4800	—

Directions for use of the Nomograph

With the use of a 30cm ruler, the unknown value relating to two other scale values on the chart is determined by joining up the two known values.

For example, the RCF is determined if the speed and radius are known



Common Conversion Factors

Convert From	Convert Into	Multiply By
Angstrom units	Centimetre	1.0×10^{-8}
	Inches	3.9370×10^{-9}
	Microns	0.0001
	Millimetres	1.0×10^{-7}
	Mils	3.9370×10^{-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
Centimetres	Angstrom units	1.0×10^{8}
	Inches	0.39370
	Microns	1.0 x 104
	Millimetres	10.0
	Mils	393.701
Cubic Centimetres	Cubic Inches	0.06102
	Drams (fluid)	0.27051
	Gallons (UK liquid)	2.1997×10^{-4}
	Gallons (US liquid)	2.6417×10^{-4}
	Litre	1.0×10^{-3}
	Millilitre	1.0
	Ounces (UK liquid)	0.03519
	Ounces (US liquid)	0.03381
Cubic Inches	Cubic Centimetres	16.3871
	Drams (fluid)	4.43290
	Gallons (UK liquid)	3.6046×10^{-3}
	Gallons (US liquid)	4.3290×10^{-3}
	Litre	0.01639
	Millilitre	16.3871
	Ounces (UK liquid)	0.57674
	Ounces (US liquid)	0.55411
Drams (fluid)	Cubic Centimetres	3.69672
	Cubic Inches	0.22559
	Gallons (UK liquid)	8.1316×10^{-4}
	Gallons (US liquid)	9.7657×10^{-4}
	Litre	3.6967×10^{-3}
	Millilitre	3.69672
	Ounces (UK liquid)	0.13011
	Ounces (US liquid)	0.12500
Gallons (UK liquid)	Cubic Centimetres	4546.09
	Cubic Inches	277.419
	Drams (fluid)	1229.76
	Gallons (US liquid)	1.20095
	Litre	4.54609
	Millilitre	4546.09
	Ounces (UK liquid)	160.0
	Ounces (US liquid)	153.722
Gallons (US liquid)	Cubic Centimetres	3785.41
	Cubic Inches	231.0
	Drams(fluid)	1023.99
	Gallons (UK liquid)	0.83267
	Litre	3.78541
	Millilitre	3785.41
	Ounces (UK liquid)	133.228
	Ounces (US liquid)	128.0
Grams	Kilograms	1.0×10^{-3}
	Ounces (avdp)	0.03527
	Ounces (troy)	0.03215
	Pounds (avdp)	2.2046×10^{-3}
	Pounds (troy)	2.6791×10^{-3}
Inches	Angstrom units	2.540×10^{8}
	Centimetres	2.54
	Microns	25400.0
	Millimetres	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 °F = (°C x 1.8) + 32
Power	Amperage = Wattage / Voltage Voltage = Wattage / Amperage Wattage = Voltage x Amperage

Convert From	Convert Into	Multiply By
Litre	Cubic Centimetres	1000.03
	Cubic Inches	61.0237
	Drams (fluid)	270.510
	Gallons (UK liquid)	0.21997
	Gallons (US liquid)	0.26418
	Millilitre	1000.03
	Ounces (UK liquid)	35.1951
	Ounces (US liquid)	33.8149
Microns	Angstrom units	10000.0
	Centimetres	1.0×10^{-4}
	Inches	3.9370×10^{-5}
	Millimetres	1.0×10^{-3}
	Mils	0.03937
Millibars	Atmosphere (std.)	9.8692×10^{-4}
	Bars	1.0×10^{-3}
	Inches of Hg @ 32°F	0.02953
	Mm of Hg @ 0°C	0.75006
	Torr	0.75006
Millilitre	Cubic Centimetres	1.0000
	Cubic Inches	0.06102
	Drams (fluid)	0.27051
	Gallons (UK liquid)	2.1997×10^{-4}
	Gallons (US liquid)	2.6417×10^{-4}
	Litre	1.0×10^{-3}
	Ounces (UK fluid)	0.03519
	Ounces (US fluid)	0.03381
Millimetres	Angstrom units	1.0×10^{7}
	Centimetres	0.10
	Inches	0.03937
	Microns	1000.0
	Mils	39.3701
Millimetres Hg @ 0°C	Atmospheres (std.)	1.3158×10^{-3}
	Bars	1.3332×10^{-3}
	Inches of Hg @ 32°F	0.03937
	Millibars	1.333221
	Torr	1.0
Mils	Angstrom units	254000.0
	Centimetres	2.540×10^{-3}
	Inches	1.0×10^{-3}
	Microns	25.40
	Millimetres	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 Centimetres	28.4131
	Cubic Inches	1.73387
	Drams (fluid)	7.68603
	Gallons (UK liquid)	6.250×10^{-3}
	Gallons (US liquid)	7.8125×10^{-3}
	Litre	0.02841
	Millilitre	28.4131
	Ounces (US liquid)	0.96076
Ounces (US liquid)	Cubic Centimetres	29.5735
	Cubic Inches	1.80469
	Drams (fluid)	8.0
	Gallons (UK liquid)	6.5053×10^{-3}
	Gallons (US liquid)	7.8125×10^{-3}
	Litre	0.02957
	Millilitre	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.)	1.3158×10^{-3}
	Bars	1.3332×10^{-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 and Stopper Materials					
	Glass	HDPE	LDPE	PET	PP	PS	Al Foil	LDPE	Poly-Vinyl	SBR	Silicone	PTFE	PBT	Phenolic	PP	Urea	Butyl Rubber	EPDM	Natural Rubber	Silicone	PTFE	FKM
Acetic Acid, Gglacial	A	A	B	A	A	B	A	B	B	C	B	A	C	A	A	D	B	B	B	B	A	D
Acetone	A	D	D	C	B	D	A	D	D	D	B	A	D	A	B	A	B	A	B	B	A	D
Acetonitrile	A	A	A	B	A	D	A	A	D	B	D	A	—	A	A	—	D	B	D	D	A	D
Acrylonitrile	A	A	A	B	B	—	B	A	D	C	D	A	—	D	B	—	D	A	D	D	A	D
Ammonium Sulfide	A	A	A	—	A	—	D	A	A	B	A	A	—	A	A	C	A	A	A	A	A	C
Benzene	A	D	D	C	D	D	B	D	D	D	D	A	A	A	D	A	D	D	D	D	A	A
Bleach	A	A	B	C	B	A	D	B	A	D	B	A	C	D	B	—	A	A	D	B	A	A
Boric Acid	A	A	A	A	A	A	D	A	A	A	A	A	A	B	A	—	A	A	A	A	A	A
Carbonic Acid	A	A	A	—	A	A	B	A	A	B	A	A	—	—	A	—	A	A	A	A	A	A
Chlorobenzene	A	C	D	B	C	—	A	D	D	D	D	A	B	A	C	B	D	D	D	D	A	A
Chloroform	A	C	C	D	D	D	A	C	D	D	D	A	D	A	D	A	D	D	D	D	A	A
Dichloromethane (DCM)	A	C	D	D	C	—	D	D	D	D	D	A	D	C	C	B	D	D	D	D	A	B
Diethylamine	A	C	D	—	B	—	A	D	D	B	B	A	—	—	B	—	B	B	B	B	A	C
Dimethyl Formamide (DMF)	A	A	A	B	A	A	A	A	D	D	B	A	—	A	A	—	D	B	D	B	A	D
Dimethyl Sulfoxide (DMSO)	A	A	A	B	A	A	A	A	D	D	D	A	—	—	A	—	D	A	D	D	A	D
Dioxane	A	B	B	A	D	—	D	B	D	D	D	A	B	A	D	—	B	B	D	D	A	D
Ether	A	C	D	A	D	D	B	D	D	D	D	A	—	B	D	B	D	C	D	D	A	C
Ethyl Acetate	A	B	B	B	C	D	B	B	D	D	C	A	C	A	C	B	C	C	D	C	A	D
Ethyl Alcohol	A	A	A	A	A	A	B	A	B	A	B	A	A	B	A	A	A	A	A	B	A	A
Ethylene Glycol	A	A	A	A	A	—	B	A	A	A	A	A	A	B	A	B	A	A	A	A	A	A
Formaldehyde	A	A	A	B	A	D	A	A	C	B	B	A	—	B	A	A	A	A	C	B	A	C
Formic Acid 50%	A	A	B	—	A	C	C	B	B	B	C	A	A	C	A	D	A	A	B	C	A	C
Gasoline	A	C	D	B	C	D	A	D	D	D	D	A	A	B	C	A	D	D	D	D	A	A
Glycerine	A	A	A	—	A	A	A	A	C	A	B	A	—	A	A	—	A	A	A	B	A	A
Heptane	A	C	D	B	C	D	A	D	C	D	D	A	A	A	C	A	D	D	D	D	A	A
Hexane	A	B	D	C	B	—	A	D	D	D	D	A	A	B	B	—	D	D	D	D	A	A
Hydrochloric Acid (HCL) 50%	A	A	A	B	A	D	D	A	B	D	D	A	C	A	A	D	A	D	B	D	A	A
Hydrofluoric Acid (HF) 50%	D	A	A	C	A	—	D	A	C	D	D	A	C	D	A	D	C	D	C	D	A	A
Hydrogen Peroxide 50%	B	A	A	B	A	B	A	A	C	C	B	A	B	D	A	D	B	B	B	B	A	A
Iodine	A	C	D	A	C	—	A	D	C	B	A	A	—	—	C	—	B	B	D	A	A	A
Isopropyl Alcohol	A	A	A	A	A	B	A	A	B	B	A	A	A	A	A	—	A	A	A	A	A	A
Methyl Alcohol	A	A	A	B	A	C	A	A	C	A	A	A	B	B	A	A	A	A	A	A	A	D
Methyl Ethyl Ketone (MEK)	A	D	D	B	B	D	A	D	D	D	D	A	C	A	B	—	A	B	D	D	A	D
Methylene Chloride	A	C	D	D	C	D	D	D	D	D	D	A	D	C	C	B	D	D	D	D	A	B
Nitric Acid 50%	A	C	B	C	C	—	D	B	B	D	D	A	C	B	C	D	C	D	C	D	A	B
Pentane	A	C	C	—	D	—	A	C	D	D	D	A	—	—	D	—	D	D	D	D	A	A
Perchloric Acid 50%	B	B	B	B	B	—	D	B	D	D	D	B	—	—	B	—	B	B	D	D	B	A
Phenol 50%	A	D	D	D	D	D	A	D	C	D	D	A	D	A	D	—	D	C	D	D	A	A
Phosphoric Acid 50%	A	A	A	B	A	A	B	A	B	D	D	A	B	B	A	D	B	B	D	D	A	A
Picric Acid	A	D	D	B	D	—	A	D	D	B	D	A	—	A	D	D	B	B	B	D	A	A
Potassium Hydroxide	D	A	A	D	A	—	D	A	A	B	C	A	C	D	A	—	A	A	B	C	A	B
Sodium Hydroxide 50%	D	A	B	D	A	A	D	B	C	A	B	A	C	D	A	C	A	A	A	B	A	B
Sodium Peroxide	A	B	B	—	B	—	C	B	A	B	D	A	—	B	B	D	A	A	B	D	A	A
Sodium Thiosulfate	A	A	A	B	A	A	A	A	A	B	A	A	—	A	A	B	A	A	B	A	A	A
Sulfuric Acid 50%	A	A	A	B	B	B	C	A	C	D	D	A	B	C	B	D	D	C	D	D	A	A
Tetrahydrofuran (THF)	A	C	C	A	B	D	A	C	D	D	D	A	D	A	B	—	C	C	D	D	A	D
Toluene	A	C	C	C	C	D	A	C	C	D	D	A	D	A	C	—	D	D	D	D	A	B
Trifluroacetic acid (TFA) 50%	A	A	A	B	A	D	—	A	A	—	D	—	—	—	A	—	—	A	—	D	—	—
Vegetable Oil	A	B	B	A	A	A	A	B	A	D	A	A	A	A	A	A	C	C	D	A	A	A
Xylene	A	C	D	C	D	D	A	D	D	D	D	A	C	A	D	B	D	D	D	D	A	A

(Tests conducted at room temp) **A** - Resistant **B** - Limited Resistance **C** - Poor Resistance **D** - Not Resistant **—** - Unknown

Al Foil ... aluminum foil **EPDM** ... ethylene propylene diene monomer **FMK** ... fluoroelastomer **HDPE** ... high density polyethylene **LDPE** ... low density polyethylene **PBT** ... polybutylene terephthalate
PET ... poyethylene terephthalate **PP** ... polypropylene **PS** ... polystyrene **PTFE** ... polytetrafluoroethylene **SBR** ... styrene butadiene rubber **Urea** ... urea

Although the information in this chart was acquired from reputable sources, it should only be used as a guide in selecting a container and closure system. Because so many factors can affect the chemical resistance of a material, in-house testing under actual conditions should be performed. WHEATON accepts no responsibility for the accuracy of this data or for any consequences resulting from its use.

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