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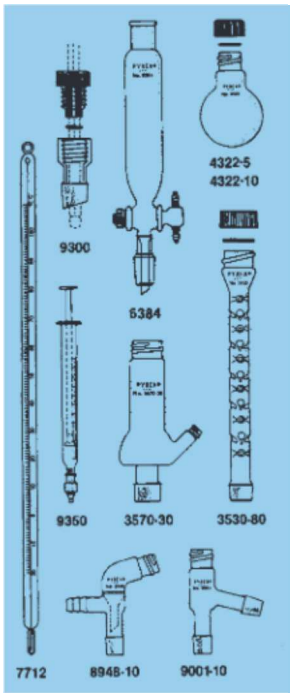
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6949M PYREX® Chemistry Kit, Accessories for Microscale

Listed are additional items most often used in conjunction with the 6949M series Microscale Organic Chemistry kits. Items include round bottom flasks, separatory funnels, distillation columns, Hickman still heads, thermometers, vacuum adaptors, connecting tubes, syringes, crystallizing dishes, GC adaptors, spin vanes, replacement vial caps, O-rings, and septa.

Cat. No.	Description	Qty/Pk	Qty/Cs
3140-70	3140 Dish 70 x 50	6	24
3140-80	3140 Dish 80 x 40	6	24
3140-90	3140 Dish 90 x 50	6	18
3140-100	3140 Dish 100 x 50	6	18
3140-125	3140 Dish 125 x 65	4	12
3140-150	3140 Dish 150 x 75	4	8
3530-80	3530 Distillation Column Vigreux with Cap 75 mm 14/10 Threaded	1	2
3570-30	3570 Hickman Still Head with Sidearm Port/Cap 14/10	1	2
4321A-5	4321A Flask 5 mL	2	12
4321A-10	4321A Flask 10 mL	2	12
4322-5	4322 Flask RB 5 mL 14/10 with Cap	2	12
4322-10	4322 Flask RB 10 mL 14/10 with Cap	2	12
6384-25	6384 Separatory Funnel Cylindrical 25 mL, 2 mm PTFE Stopcock, 14/10	1	2
6949M-CB	Clear Compartment Box	–	1
7095B-5X	Pipet, Pasteur 5 3/4"	50	1000
7095B-9	Pipet, Pasteur 9"	50	1000
7712	7712 Thermometer Bulb Immersion Micro	1	2
8948-10	8948 Vacuum Adapter with Hose Connection 14/10 Threaded	–	2
9001-10	9001 Connecting Tube 14/10 Threaded Top	1	2
9300-14	9300 Thermometer Adapter Assembly, 14/10 (Bushing, O-ring, Adapter)	–	2
9300-24	Vacuum Adapter with Sideport	–	1
9300-34	Sublimation Condenser Tube Only	–	1
9350-1	9350 Syringe 1 mL with TFE Tip Plunger, without Needle	1	2
9900-1C	9900-1C Cap for 0.1 mL Vial	–	12
9900-3C	9900-3C Cap for 0.3/1.0 mL Vial	–	12
9900-5C	9900-5C Cap for 3.0/5.0 mL Vial	–	12
9900-1R	9900-1R O-ring for 0.1 mL Vial	–	12
9900-2R	9900-2R O-ring for 0.3/1.0 mL Vial and Claisen Adapter	–	12
9900-3R	9900-3R O-ring for 3.0/5.0 mL Vial	–	12
9900-1S	9900-1S PTFE Silicone Septa for 0.1 mL Vial	–	12
9900-2S	9900-2S PTFE Silicone Septa for 0.3/1.0 mL Vial	–	12
9900-3S	9900-3S PTFE Silicone Septa for 3.0/5.0 mL Vial	–	12
9900-1V	9900-1V Spin Vane for 1.0 mL Vial	–	6
9900-3V	9900-3V Spin Vane for 3.0/5.0 mL Vial	–	6

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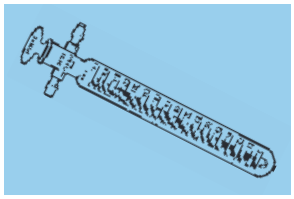
MANOMETERS



6950 PYREX® Manometer, Vacuum, Mercury, ¨ Stopper

The manometer tube is enclosed in a round bottom, graduated jacket and is sealed to a stopcock plug. In use, mercury is placed in the inner tube and in the jacket bottom to measure the pressure differential. Not recommended for positive pressure. The legible, red scale ranges from 0 mm to 160 mm. Mercury Àlling instructions are supplied with each instrument. Uses 5 mL to 6 mL mercury. Mercury not supplied.

Cat. No.	Description	Approx. O.D. x Height (mm)	Approx. Tubulation O.D. (mm)	Qty/ Pk	Qty/ Cs
6950-235	Complete	25 x 235	10	1	4



6952 PYREX Manometer, Vacuum, Mercury, T Connection, ¨ Stopper

The manometer tube is enclosed in a round bottom, graduated jacket and is sealed to a stopcock plug. T-sidearm permits drawing and venting the vacuum. In use, mercury is placed in the inner tube and in the jacket bottom to measure the pressure differential. The legible red scale ranges from 0 mm to 160 mm. Not recommended for positive pressure. Mercury Àlling instructions are supplied with each instrument. Uses 5 mL to 6 mL mercury. Mercury not supplied.

Cat. No.	Description	Approx. O.D. x Height (mm)	Approx. Tubulation O.D. (mm)	Qty/ Cs
6952-235	Complete	25 x 235	10	1

PIPETS



7065 PYREX Pipet, Reusable Glass, Measuring, Color-coded, with Colored Markings, To Deliver

These pipets are color-coded by size for easy identiÀcation and sorting. Colored graduations are enameled onto the glass. The top end of 5 mL to 25 mL sizes is constricted (Mohr type). They are calibrated “To Deliver” their total capacity without blow-out.

Cat. No.	Approx. Capacity (mL)	Tol. (± mL)	Grad. Increment (mL)	Approx. O.D. x Length (mm)	Qty/ Pk	Qty/ Cs
7065-1X	0.1	.005	.01	7 x 300	6	12
7065-1	1.0	.02	.1	7 x 325	6	12
7065-1C	1.0	.02	.01	7 x 350	6	12
7065-2	2.0	.02	.1	7 x 350	6	12
7065-5	5.0	.04	.1	8 x 350	6	12
7065-10	10.0	.06	.1	10 x 380	6	12
7065-25	25.0	.1	.1	14 x 440	–	12

Do not pipet by mouth. We suggest using a mechanical pipetting device.
Reference: ASTM E-1293.



7070 PYREX Pipet, Reusable Glass, Serialized/ Certi¿ed, Class A, Colored Markings, Measuring, Color-coded, To Deliver

Calibrated to Class A tolerances in accordance with ASTM E-542, ATSM E-694, and ASTM E-1293. Each pipet is individually serialized and supplied with a CertiÀcate of IdentiÀcation and Capacity, traceable to NIST standards. Calibrated “To Deliver” their total capacity without blow-out. Color-coded by size for easy identiÀcation. Colored graduations are enameled onto the glass. The top end of 5 mL to 25 mL sizes is constricted (Mohr type).

Cat. No.	Approx. Capacity (mL)	Grad. Increment (mL)	Tol. (± mL)	Approx. O.D. x Length (mm)	Qty/ Pk	Qty/ Cs
7070-1	1.0	0.1	.01	7 x 325	2	6
7070-2	2.0	0.1	.01	7 x 350	2	6
7070-5	5.0	0.1	.02	8 x 350	2	6
7070-10	10.0	0.1	.03	10 x 380	2	6
7070-25	25.0	0.1	.05	14 x 440	2	6

Do not pipet by mouth. We suggest using a mechanical pipetting device.

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7085 PYREX® Pipet, Reusable Glass Serological, Color-coded, Colored Markings, To Deliver

These pipets are color-coded by size for easy identiÀcation and sorting. Colored graduations are enameled onto the glass. Calibrated "To Deliver" pipets must be blown out to obtain total rated capacity.

Cat. No.	Approx. Capacity (mL)	Tolerance (± mL)	Grad. Increment (mL)	Approx. O.D. x Length (mm)	Qty/ Pk	Qty/ Cs
7085-1X	0.1	.005	.01	7 x 300	6	12
7085-2X	0.2	.008	.01	7 x 300	6	12
7085-1	1.0	.02	.1	7 x 350	6	12
7085-1C	1.0	.02	.01	7 x 350	6	12
7085-2	2.0	.02	.1	7 x 350	6	12
7085-2C	2.0	.02	.01	7 x 350	6	12
7085-5	5.0	.04	.1	8 x 350	6	12
7085-10	10.0	.06	.1	10 x 350	–	12

Do not pipet by mouth. We suggest using a mechanical pipetting device.
Reference: ASTM E-1044.



7086 PYREX Pipet, Reusable Glass Serological, Color-coded, Color Markings, To Deliver

These pipets are designed for cotton plugging. The uniform top-end openings permit performing of plugs and allow precise control of liquid column. Color-coded by size for easy identiÀcation and sorting. Colored graduations are enameled onto the glass. The two rings indicate the pipet is calibrated "To Deliver" its total capacity when the last drop is blown out. Reference: ASTM E-1044.

Cat. No.	Approx. Capacity (mL)	Tol. (± mL)	Grad. Increment (mL)	Approx. O.D. x Height (mm)	Qty/ Pk	Qty/ Cs
7086-5	5	0.04	0.1	8 x 350	6	12
7086-10	10	0.06	0.1	10 x 350	6	12

Do not pipet by mouth. We suggest using a mechanical pipetting device.



7087 PYREX Pipet, Reusable Glass Serological, Large Tip Opening, Color-coded, Colored Markings, To Deliver

Made with a large tip opening to allow more rapid intake and delivery of suspensions and viscous materials. Color-coded by size for easy identiÀcation and sorting. Colored graduations are enameled onto the glass. The two narrow bands or one wide band at the top indicate the pipet is calibrated "To Deliver" its total capacity when the last drop is blown out.

Cat. No.	Approx. Capacity (mL)	Grad. Range (mL)	Tol. (± mL)	Grad. Increment (mL)	Approx. O.D. x Length (mm)	Qty/ Pk	Qty/ Cs
7087-5	5.0	0-4.9	.1	.1	8 x 350	6	12
7087-10	10.0	0-9.5	.1	.1	10 x 350	–	12
7087-25	25.0	0-24	.2	.1	14 x 440	–	12

Do not pipet by mouth. We suggest using a mechanical pipetting device.

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7100 PYREX® Pipet, Reusable Glass Volumetric, Class A, Color-coded, Colored Markings

These pipets are manufactured to Class A capacity tolerances as indicated by ASTM E-542, ASTM E-694, and ASTM E-969. The rugged construction and colored enamel graduations and markings provide a durable pipet. Sizes 1 mL through 25 mL are color-coded.

Cat. No.	Color Code	Capacity (mL)	Tol. (± mL)	Approx. Length (mm)	Qty/Cs
7100-1	Blue	1.0	.006	313	12
7100-2	Orange	2.0	.006	333	12
7100-3	Black	3.0	.01	356	12
7100-4	Red	4.0	.01	370	12
7100-5	White	5.0	.01	392	12
7100-10	Red	10.0	.02	429	12
7100-15	Green	15.0	.03	400	12
7100-20	Yellow	20.0	.03	460	12
7100-25	Blue	25.0	.03	460	12
7100-50*	–	50.0	.05	516	12
7100-100	–	100.0	.08	565	12

*New design allows more complete and efficient drainage. Do not pipet by mouth. We suggest using a mechanical pipetting device.



7101 PYREX Pipet, Serialized/Certified, Class A, Volumetric, Color-coded, Colored Graduations

Calibrated to Class A tolerances in accordance with ASTM E-542, ASTM E-694 and ASTM E-969. Each pipet is individually serialized and supplied with a Certificate of Identification and Capacity, traceable to NIST standards. Sizes 1 mL through 25 mL are color-coded with colored graduations enameled onto the glass.

Cat. No.	Color Code	Capacity (mL)	Tol. (± mL)	Approx. Length (mm)	Qty/Pk	Qty/Cs
7101-1	Blue	1.0	.006	313	2	6
7101-2	Orange	2.0	.006	333	2	6
7101-3	Black	3.0	.01	356	2	6
7101-4	Red	4.0	.01	370	2	6
7101-5	White	5.0	.01	392	2	6
7101-10	Red	10.0	.02	429	2	6
7101-15	Green	15.0	.03	445	2	6
7101-20	Yellow	20.0	.03	516	2	6
7101-25	Blue	25.0	.03	521	2	6
7101-50	–	50.0	.05	516	2	6
7101-100	–	100.0	.08	565	2	6

Do not pipet by mouth. We suggest using a mechanical pipetting device.

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7102 PYREX® Pipet, Reusable Glass Volumetric, Color-coded

These pipets were designed primarily for schools and laboratories where the Class A tolerance of Cat. No. 7100 is not required. They are constructed to the same wall thickness and length as Cat. No. 7100, but have larger tip openings for faster delivery. It is primarily due to this faster delivery that accuracy tolerances are twice those specified for Class A volumetric ware. Sizes 0.5 mL through 25 mL are color-coded.

Cat. No.	Color Code	Capacity (mL)	Tol. (± mL)	Approx. Length (mm)	Qty/ Pk	Qty/ Cs
7102-1X	Black	.5	.012	318	6	12
7102-1	Blue	1.0	.012	313	6	12
7102-2	Orange	2.0	.012	333	6	12
7102-3	Black	3.0	.02	356	6	12
7102-5	White	5.0	.02	392	6	12
7102-10	Red	10.0	.04	429	6	12
7102-20	Yellow	20.0	.06	460	6	12
7102-25	Blue	25.0	.06	460	6	12
7102-50*	–	50.0	.10	516	6	12
7102-100	–	100.0	.16	565	6	12

Do not pipet by mouth. We suggest using a mechanical pipetting device.
*Design allows more complete and efficient drainage.
Reference: ASTM E-969.



7103 PYREX Pipet, Reusable Glass, Volumetric, To Contain, To Deliver, Class A

These precision pipets are manufactured and calibrated "to contain" (bottom line) and "to deliver" (top line) to specifications for Class A volumetric ware.

Cat. No.	Capacity (mL)	Tol. (± mL)	Approx. Length (mm)	Color Code	Qty/ Cs
7103-1	1	0.006	313	Blue	6
7103-2	2	0.006	333	Orange	6
7103-3	3	0.01	356	Black	6
7103-4	4	0.01	370	Red	6
7103-6	6	0.01	420	Orange	6
7103-7	7	0.01	420	Green	6
7103-8	8	0.02	425	Blue	6
7103-10	10	0.02	429	Red	6
7103-15	15	0.03	445	Green	6
7103-20	20	0.03	516	Yellow	6
7103-25	25	0.03	521	Blue	6

Do not pipet by mouth. We suggest using a mechanical pipetting device.

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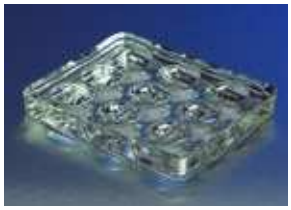
7103C PYREX® Pipet, Serialized/ Certi¿ed, Class A, Volumetric, Color-coded, Colored Graduations, To Contain, To Deliver

Calibrated to Class A tolerances in accordance with ASTM E-542 and ASTM E-969. Each pipet is individually serialized and supplied with a CertiÀcate of IdentiÀcation and Capacity, traceable to NIST standards. These precision pipets are manufactured and calibrated "To Contain" (bottom line) and "To Deliver" (top line) to speciÀcations for Class A volumetric ware. Sizes 1 mL through 25 mL are color-coded with colored graduations enameled onto the glass.

Cat. No.	Color Code	Capacity (mL)	Tol. (± mL)	Approx. Length (mm)	Qty/ Pk	Qty/ Cs
7103C-1	Blue	1.0	.006	313	2	6
7103C-2	Orange	2.0	.006	333	2	6
7103C-3	Black	3.0	.01	356	2	6
7103C-4	Red	4.0	.01	370	2	6
7103C-5	White	5.0	.01	392	2	6
7103C-6	Orange	6.0	.01	420	2	6
7103C-7	Green	7.0	.01	420	2	6
7103C-8	Blue	8.0	.02	425	2	6
7103C-9	Black	9.0	.02	425	2	6
7103C-10	Red	10.0	.02	429	2	6
7103C-15	Green	15.0	.03	445	2	6
7103C-20	Yellow	20.0	.03	516	2	6
7103C-25	Blue	25.0	.03	521	2	6

Do not pipet by mouth. We suggest using a mechanical pipetting device.

PLATES



7220 PYREX Spot Plates, Nine Depression

These pressed plates have concave depressions which are useful for soil chemistry, color reactions, microchemical applications, and microscopic observations. Nine concave depressions appoximately 22 mm O.D. x 7 mm deep.

Cat. No.	Approx. Size (mm)	Qty/ Pk	Qty/ Cs
7220-85	85 x 100	6	18

SETTLOMETER



7250 PYREX Mallory Direct Reading Settlometer

Used with oxidized sludge process for treatment of sewage and other wastes. 2000 mL heavy wall cylinder measures approximately 5 1/8" I.D. x 7 1/2" high and is graduated in cc per liter, and in hundredths of a foot.

Cat. No.	Description	Qty/ Cs
7250-2L	Direct Reading Settlometer	1

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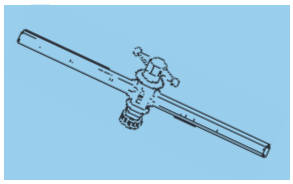
STOPCOCKS



7280 PYREX® Stopcock, Straight Bore, Solid

Closely controlled grinding techniques allow this general use stopcock to be used at pressures down to 10-4 torr (mm Hg) when correctly greased. For additional strength, sidearm seals are heavy and uniform.

Cat. No.	Description	Approx. Plug Bore (mm)	Stopcock Plug No.	Approx. O.D. x Length (mm)	Sidearms Retaining Clip No.	Qty/ Pk	Qty/ Cs
7280-2	Complete	2	2	8 x 250	1	2	8
7280-4	Complete	4	4	10 x 255	4	2	8
7280-1CO	Retaining Clip	–	–	–	1	–	6
7280-4CO	Retaining Clip	–	–	–	4	–	6



7282 PYREX PTFE Stopcock, Straight Bore

The taper PTFE plug ats into a micro-anish barrel. Freezing problems are reduced and greasing is eliminated. The very ane threads on the plug and nut let you "feel" the position of the plug. Sidearm seals are heavy and strong for greater durability and easier handling.

Cat. No.	Description	Approx. Plug Bore (mm)	Approx. O.D. x Length of Sidearms (mm)	Qty/ Pk	Qty/ Cs
7282-2	Complete	2	8 x 300	2	6
7282-4	Complete	4	10 x 300	2	6
7282-6	Complete	6	12 x 325	–	1



7470 PYREX Stopcock, Body, RotaAo® PTFE High Performance, Two-way, In-line, Plain Bore

Cat. No.	Approx. Plug Bore (mm)	Approx. Length (mm)	Approx. O.D. of Sidearms (mm)	Qty/ Cs
7470-3	0-3	210	8	1
7470-6	0-6	210	10	1
7470-10	0-10	224	13	1



7473 PYREX Stopcock, Body, RotaAo PTFE High Performance, Two-way, 90° Angle, Plain Bore

Cat. No.	Approx. Plug Bore (mm)	Approx. Height (mm)	Approx. Sidearm Length (mm)	Approx. O.D. of Sidearms (mm)	Qty/ Cs
7473-3	0-3	155	102	8	1
7473-6	0-6	160	102	10	1
7473-10	0-10	175	102	13	1



7475 PYREX Stopcock, Brand Body, RotaAo PTFE High Performance, Three-way, Plain Bore

Cat. No.	Approx. Plug Bore (mm)	Approx. Overall Length (mm)	Approx. O.D. of Sidearms (mm)	Qty/ Cs
7475-3	0-3	215	8	1
7475-6	0-6	220	10	1

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7680 PYREX® Stopcock, Plug, Solid, Straight Bore

Since several different bored sizes may be drilled through any given size of plug, the approved method of designating the size of a stopcock is by bore diameter only. Interchangeable ground glass stopcocks are not intended for high vacuum apparatus or for use with light liquids. When, by constant abrasion, a stopcock has become so worn that the shell is enlarged, or the plug is diminished in size, it is recommended that you replace the plug.

Cat. No.	Plug No.	Approx. Length of Ground Zone (mm)	Stopper Bore (mm)	Retaining Clip No.	Qty/Cs
7680-2	2	30	2	1	1
7680-4	4	40	4	4	1



7681 PYREX PTFE Stopcock, Plug Assembly, Straight Bore

Cat. No.	Approx. Plug Bore (mm)	O-ring Size	Qty/Cs
7681-2	2	A	1
7681-4	4	B	6
7681-8	8	C	1
7681-6	6	B	1

STOPPERS, CAPS, AND CLOSURES



7570N PYREX Stopper, Ground Joint

Hollow, full length stopper closed at the bottom. Interchangeable with standard taper joints.

Cat. No.	Ground Joint Size	Height Above Ground Joint (mm)	Qty/Pk	Qty/Cs
7570N-24	24/40	40	–	6
7570N-19	19/38	33	–	6



7575 PYREX Stopper, Combination Reagent Bottle/Ground Joint, Hollow

Cat. No.	Ground Joint Size	Height Above Ground Joint (mm)	Qty/Cs
7575-14*	14/20	28	6
7575-19**	19/22	32	6
7575-24	24/30	41	6
7575-29	29/35	41	6

*Cat. No. 7575-14 is a replacement part for organic chemistry kit Cat. No. 6949K.
**Cat. No. 7575-19 is a replacement part for organic chemistry kits Cat. Nos. 6949E, 6949F, and 6949G-2.



7624 PYREX Stopper, HDPE Polyethylene, Improved Form

These blue and white stoppers are made with closed bottoms, of linear high-density polyethylene to conform to stopper dimensions. The three unit rings on the base provide an efficient seal. The improved design fully protects the neck in the event of accidental tipping. These stoppers may be used in place of the conventional flask stoppers.

Cat. No.	Stopper No.	Qty/Cs
7624-8	8	6
7624-9	9	6
7624-13	13	6
7624-16	16	6
7624-19	19	6
7624-22	22	6
7624-27	27	6
7624-32	32	6
7624-38	38	6

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7630 PYREX® Stopper, PTFE, Key-hole, Color-coded

These stoppers are made to conform to stopper dimensions. The color-coded keys make sorting and selecting the correct size much faster and easier. These stoppers may be used in place of the conventional Áask stopper.

Cat. No.	Stopper No.	Color	Qty/Pk	Qty/Cs
7630-9	9	Black	2	6
7630-13	13	Orange	2	6
7630-16	16	Blue	2	6
7630-19	19	Green	2	6
7630-22	22	Yellow	2	6
7630-27	27	Red	2	6



7650 PYREX Stopper, Hollow

The hollow stopper is light in weight, yet very strong to reduce chipping and breakage, thus minimizing replacement costs. A barrel-shaped head means it is easy to clean and even easier to rotate in or out. Grooves in the sides help prevent slippage. The Áat top allows the stopper to stand on its head, which frees the user's hand and minimizes potential contamination. This stopper is interchangeable with other common Áask stoppers and Àts all standard labware of comparable size.

Cat. No.	Stopper No.	Approx. Length of Ground Zone (mm)	Height (mm)	Height Above Ground Joint (mm)	Qty/Cs
7650-8	8	10	32	25	6
7650-9	9	14	36	25	6
7650-13	13	14	36	25	6
7650-16	16	15	43	31	6
7650-19	19	17	46	32	6
7650-22	22	20.5	54	38	6
7650-27	27	21.5	54	37	6
7650-32	32	21.5	59.5	44	6
7650-38	38	30.0	77	52	6

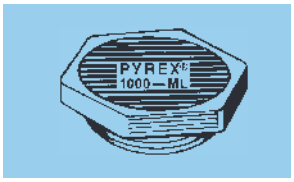


7661 PYREX Stopper, Solid, Pennyhead

Pennyhead stoppers are generally used in Áasks and separatory funnels.

Cat. No.	Stopper No.	Approx. Length of Ground Zone (mm)	Height Above Ground Joint (mm)	Qty/Cs
7661-9	9	14	20	6
7661-13	13	14	25	6
7661-16	16	15	25	6
7661-22	22	20.5	30	6
7661-27	27	21.5	37	6

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7666 PYREX® Closure, LDPE Polyethylene, Snap Cap

These blue caps provide an economical closure for certain volumetric flasks. Refer to volumetric flask listings to determine sizes and whether the flask is designed to take such a cap.

Cat. No.	Snap Cap No.	Qty/Cs
7666-10	10	6
7666-25	25	6
7666-50	50	6
7666-100	100	6
7666-200	200	6
7666-250	250	6
7666-500	500	6
7666-1L	1000	6
7666-2L	2000	6



9998 Corning® Cap, Phenolic, PTFE Liner

This cap is fabricated of a resin specially formulated to resist the effects of temperature and steam in autoclaving. Caps are provided with a glued-in rubber liner over which is firmly bonded a PTFE interface which provides a highly inert sealing face.

Cat. No.	G.P.I. Thread Finish	Approx. Outside Height (mm)	Qty/Cs
9998-13	13-415	13.5	288
9998-15	15-415	16.0	288
9998-18	18-415	17.5	192
9998-24	24-400	12.5	12
9998-241	24-410	18.5	144



9999 Corning Cap, Phenolic, Rubber Liner

These caps are fabricated of a resin specially formulated to resist the effects of temperature and steam in autoclaving. Caps have a glued-in, white rubber liner.

Cat. No.	G.P.I. Thread Finish	Approx. Outside Height (mm)	Qty/Pk	Qty/Cs
9999-24	24-400	12.5	–	12
9999-28	28-400	12.5	–	144
9999-38	38-400	12.5	36	144
9999-40	40-400	12.5	–	72
9999-241	24-410	18.5	36	144
9999-281	28-410	20.0	–	12
9999-132	13-415	13.5	36	288
9999-152	15-415	16.0	–	288
9999-182	18-415	17.5	32	192
9999-381M	38-430 Deeper Threads	27.0	12	72

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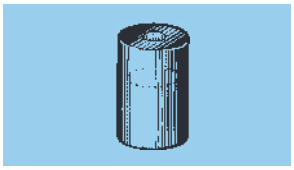
THERMOMETERS



7712 Corning® Thermometer, Mercury, White Back

Cat. No.	Range (°C)	Length (mm)	Qty/ Pk	Qty/ Cs
7712*	-10° to 150°	159	1	2

*This thermometer is a replacement part for organic chemistry kit Cat. No. 6949M.



7715 Corning Thermometer Holder, Rubber

Cat. No.	Approx. O.D. x I.D. (mm)	Qty/ Cs
7715	17 x 13	1

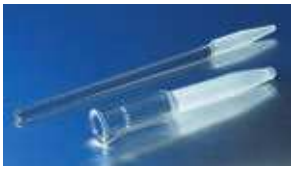
TISSUE GRINDERS



7722 PYREX® Tissue Grinder, Dounce, 2 Glass Pestles

Supplied with two pestles to ensure dissociation of cells into Àne particles with minimal damage to cell nuclei. Use the large clearance pestle for initial reduction of soft tissue. Complete the homogenization with the small clearance pestle. Particularly useful in enzyme studies where heat build-up must be avoided.

Cat. No.	Approx. Capacity (mL)	Approx. Body O.D. x Height (mm)	Qty/ Cs
7722-7	7	15 x 117	1
7722-15	15	20 x 145	1
7722-40	40	27 x 210	1



7724 PYREX Tissue Grinder, Glass Pestle

Designed to handle both initial grinding and Ànal homogenization in the same sequence of operations. The lower conical section is intended primarily for the initial grinding. To assist in this work the clearance between mortar and pestle can be adjusted at will by raising or lowering the pestle. The upper cylindrical section is for the Ànal homogenization.

Cat. No.	Approx. Capacity (mL)	Approx. Body O.D. x Height	Approx. Pestle O.D. x Height (mm)	Qty/ Cs
7724-1	1	19 x 83	7 x 155	1
7724-3	3	13 x 125	6 x 208	1
7724-5	5	25 x 150	11 x 225	1
7724-15	15	20 x 175	10 x 267	1
7724-30	30	27 x 220	10 x 305	1
7724-50	50	32 x 225	16 x 345	1

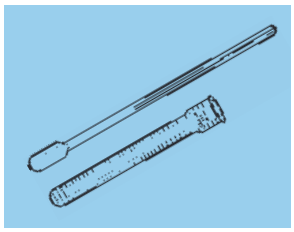


7724T PYREX Tissue Grinder, PTFE Pestle with Steel Shaft

Recommended for soft tissues found in the liver and brain. Designed to handle both initial grinding and Ànal homogenization in the same sequence of operations. Mortar is unground and the pestle contact surface is PTFE, threaded onto a stainless steel shaft.

Cat. No.	Approx. Capacity (mL)	Approx. Body O.D. x Height (mm)	Qty/ Cs
7724T-1	1	13 x 110	1
7724T-3	3	13 x 125	1
7724T-5	5	19 x 150	1
7724T-15	15	20 x 175	1
7724T-30	30	27 x 215	1
7724T-50	50	32 x 225	1

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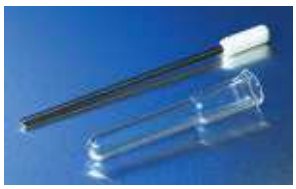


7725 PYREX® Tissue Grinder, Glass Pestle

These tissue grinders (homogenizers) are used in preparing small samples for pathological and biochemical studies. Designed to be motor-driven. Use a friction clutch to eliminate damage to the pestle from pieces of connective tissue or muscle. The clearance between the ground tube and pestle is approximately 0.15 mm. The parts are ground to a medium grind to insure adequate abrasive qualities, yet deliver a Àne homogenous sample.

Cat. No.	Description	Working Capacity (mL)	Approx. Body O.D. x Length (mm)	Qty/ Pk	Qty/ Cs
7725-13	Complete	3	16 x 100	1	4
7725-16	Complete	9	18 x 150	1	4
7725-19	Complete	16	21 x 150	1	4
7725-25	Complete	50	27 x 200	–	1

Caution: If used with a motor-driven device, the attachment must contain some form of friction release clutch to prevent damage to the apparatus. The user should wear a protective glove of sufÀcient thickness to prevent injury in the event of failure of the glass components.



7725T PYREX Tissue Grinder, Potter-Elvehjem, PTFE Pestle

Homogenization occurs as the sample and buffer are forced through the cylindrical portion of the mortar as the pestle is rotated downward. Mortar is unground and pestle contact surface is PTFE threaded onto a stainless steel shaft.

Cat. No.	Approx. Capacity (mL)	Approx. Body O.D. x Height (mm)	Qty/ Cs
7725T-5X	0.5	9x50	1
7725T-1	1	9 x 65	1
7725T-3	3	16 x 70	1
7725T-5	5	16 x 95	1
7725T-8	8	16 x 110	1
7725T-17	17	21 x 150	1
7725T-45	45	27 x 180	1

HOMOGENIZERS



7726 PYREX Homogenizer, Ten Broeck

These 40 mL capacity homogenizers are designed for grinding small samples for pathological and biochemical work. The catch basin bulb has a 55 mm outer diameter. Made in accordance with Federal SpeciÀcation DD-T-363a. It may be used manually but is adaptable for use with a slow speed stirrer by means of a rubber stopper and a connecting rod.

Cat. No.	Description	Size	Approx. Mortar Tube O.D. x Length (mm)	Approx. Pestle O.D. x Length (mm)	Ground Zone Length (mm)	Approx. Total Length (mm)	Qty/ Cs
7726-L	Complete	L	26 x 210	20 x 335	130	340	1

Caution: If used with a motor-driven device, the attachment must contain some form of friction release clutch to prevent damage to the apparatus. The user should wear a protective glove of sufÀcient thickness to prevent injury in the event of failure of the glass components.



7727 PYREX Homogenizer, Ten Broeck, Pour Spout

These grinders are designed for use in hand grinding small samples for pathological or biochemical studies. It may also be motor driven at low speed if some form of friction release is provided. The mortar tubes and pestles are ground to be interchangeable. Clearance between the two parts is approximately 0.15 mm. The medium grind provides the required abrasive action to deliver well homogenized samples. Made in accordance with Federal SpeciÀcation NNN-T-360B.

Cat. No.	Description	Size (mL)	Approx. Mortar Tube O.D. x Length (mm)	Approx. Pestle O.D. x Length (mm)	Approx. Bulb O.D. (mm)	Ground Zone Length (mm)	Pestle Opening Stopper No.	Approx. Total Length (mm)	Qty/ Pk	Qty/ Cs
7727-2	Complete	2	16 x 100	10.5 x 165	20	60	0	170	1	4
7727-7	Complete	7	18 x 130	12.6 x 195	25	80	0	200	1	4
7727-15	Complete	15	21 x 150	15.8 x 235	35	90	1	240	1	4
7727-40	Complete	40	27 x 210	22.1 x 335	50	130	3	340	1	2

Caution: If used with a motor-driven device, the attachment must contain some form of friction release clutch to prevent damage to the apparatus. The user should wear a protective glove of sufÀcient thickness to prevent injury in the event of failure of the glass components.

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TRAPS



7729 PYREX® Trap, Vacuum, Separable, Ground Joint

With a full length outer ground joint on the outer tube and an inner ground joint on the inner tube. The top and side tubulations are the same O.D. as the center tube and have a length of 75 mm.

Cat. No.	Description	Approx. O.D. x Length Below Joint (mm)	Approx. Outer O.D. x Length Below Joint (mm)	Inner Ground Joint Size	Qty/Pk	Qty/Cs
7729-28	Complete	28 x 200	10 x 175	29/42	1	4
7729-32	Complete	32 x 225	13 x 200	34/45	1	4
7729-38	Complete	38 x 250	16 x 225	40/50	1	2
7729-41	Complete	42 x 250	20 x 225	45/50	1	2
7729-48	Complete	48 x 250	20 x 225	50/50	–	1
7729-51	Complete	52 x 250	20 x 225	55/50	1	2

TUBES



6980 PYREX Tube, NMR, 5 mm Diameter

Precision NMR tubes made from quality PYREX borosilicate glass for compatibility with ground joints, valves, and vacuum racks. Made using precision bore tubing manufacturing techniques proven most reliable in NMR applications. Complete selection of tubes for all types of NMR spectrometers, from 60 to 600 MHz. All 5 mm NMR sample tubes have O.D. = 4.97 +0.000-0.013 mm I.D. of all except basic tubes are 4.20 +0.013-0.000 mm.

Cat. No.	Description	Length (inches)	For NMR MHz	Concentricity TIR* (inches)	Camber TIR* (inches)	Qty/Pk	Qty/Cs
6980A-7	Superior Plus	7	400-750	0.0005	0.00025	–	5
6980A-8	Superior Plus	8	400-750	0.0005	0.00035	–	5
6980B-7	Superior	7	300-500	0.0005	0.0005	–	5
6980B-8	Superior	8	300-500	0.0005	0.0006	–	5
6980C-7	Deluxe Plus	7	250-400	0.0010	0.0010	–	5
6980C-8	Deluxe Plus	8	250-400	0.001	0.0011	–	5
6980D-7	Deluxe	7	200-400	0.002	0.0005	–	5
6980D-8	Deluxe	8	200-400	0.002	0.0006	–	5
6980F-7	Regular	7	60-100	0.002	0.0020	5	10
6980F-8	Regular	8	60-100	0.002	0.0021	5	10
6980G-7	Basic	7	60	0.003	0.0020	5	10
6980G-8	Basic	8	60	0.003	0.0021	5	10

*TIR = Total Indicator Reading



7815 PYREX Tube, Bleed, Capillary Tip

For bleeding gases, steam, or liquids below the liquid surface of sidearm distillation flasks.

Cat. No.	Approx. O.D. x Length (mm)	Qty/Cs
7815-19	7 x 280	1

*This tube is also a replacement part for organic chemistry kits Cat. Nos. 6949E, 6949G, and 6949K.



7900 PYREX Tube, Digestion, Folin-Wu

Fabricated from specially selected tubing for product durability. Engraved white-filled graduations at 25 mL and 50 mL.

Cat. No.	Capacity (mL)	Tol. (± mL)	Approx. O.D. x Length (mm)	Qty/Cs
7900-25	50.0	0.4	25 x 200	1

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7952 PYREX® Tube, Lifetime Red™, Taylor, Universal, Graduated

This tube is for general hospital laboratory work. It was designed by Dr. F.N.L. Taylor, Boston City Hospital, for determinations involving multiple calibrations and for carrying out digestions. Graduated at 12.5, 25, 35, and 50 mL, and supplied with a durable, white enamel marking spot.

Cat. No.	Approx. Capacity (mL)	Tol. (± mL)	Approx. O.D. x Length (mm)	Qty/ Cs
7952-25	50.0	0.4	25 x 200	1



7995 PYREX Tube, Hybridization, Screw Cap, Graduated

35 mm I.D. tubes available in three standard lengths for use in hybridization incubators with rotators. A more convenient method requiring smaller probe solution volumes. Comes with Corning® standard GL 45 orange plug-seal cap incorporating a silicone O-ring to ensure a leak-resistant seal. The optional Corning vented membrane cap is available for low temperature assays.

Cat. No.	Description	Approx. I.D. x Length (mm)	Qty/ Cs
7995-100	Tube, Cap, O-ring	35 x 100	2
7995-150	Tube, Cap, O-ring	35 x 150	2
7995-300	Tube, Cap, O-ring	35 x 300	2
1395-OR	O-ring, Silicone	–	10
1395-45LTC	Cap for 7995 Tube	–	20



8060 PYREX Tube, Centrifuge, Conical, Beaded Rim

Uniform glass distribution in the wall, taper and bottom provides improved mechanical strength, prevents the formation of failure-causing stress regions during centrifuging, and insures the highest degree of accuracy.

Cat. No.	Approx. Capacity (mL)	Approx. O.D. x Length (mm)	Qty/ Pk	Qty/ Cs
8060-3	3.0	11 x 76	2	12
8060-5	5.0	13 x 101	2	12
8060-15	15.0	17 x 120	2	12
8060-50	50.0	28 x 135	2	12



8061 PYREX Tube, Centrifuge, Conical, Pennyhead ₹ Stopper

Uniform glass distribution in the wall, taper, and bottom provides improved mechanical strength, prevents the formation of failure-causing stress during centrifuging, and insures the highest degree of accuracy. This microcentrifuge tube conforms to ASTM E-237. Tubes are Àtted with a No. 9 Pennyhead stopper.

Cat. No.	Approx. Capacity (mL)	Approx. O.D. x Length (mm)	Stopper No.	Qty/ Cs
8061-3	3	11 x 90	9	1

For replacement stoppers, see Cat. No. 7660.



8080 PYREX Tube, Centrifuge, Conical, Beaded Rim, Graduated

These tubes have white enamel graduations. The 10 mL and 15 mL sizes are graduated upward from tip in 0.1 mL increments. The 50 mL size is graduated upward from tip to 10 mL in 0.5 mL increments, and from 10 mL to 50 mL in 1 mL increments.

Cat. No.	Approx. Capacity (mL)	Approx. O.D. x Length (mm)	Qty/ Pk	Qty/ Cs
8080-15	15.0	17 x 119	–	12
8080-50	50.0	28 x 135	6	12

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8082 PYREX® Tube, Centrifuge, Conical, Screw Cap, Graduated

These tubes have white enamel graduations. The 15 mL size is graduated upward from the tip in 0.1 mL increments. the 50 mL size is graduated upward from tip to 10 mL in 0.5 mL increments, and from 10 mL to 50 mL in 1 mL increments. The phenolic screw cap is fabricated of a resin which is specially formulated to resist the effects of temperature and steam. Caps have a glued-in, white rubber liner.

Cat. No.	Approx. Capacity (mL)	Approx. O.D. x Length (mm)	G.P.I. Thread Finish	Qty/ Cs
8082-15	15.0	17 x 134	15-415	12
8082-50	50.0	28 x 150	24-410	12

For phenolic caps, see Cat. No. 9999.



8084 PYREX Tube, Centrifuge, Conical, Pennyhead ₣ Stopper, Graduated

These tubes have white enamel graduations. The 5 mL and 15 mL sizes are graduated upward from the tip in 0.1 mL increments. The 50 mL size is graduated upward from tip to 10 mL in 0.5 mL increments, and from 10 mL to 50 in 1 mL increments. The pennyhead stopper is solid.

Cat. No.	Approx. Capacity (mL)	₣ Stopper No.	Approx. O.D. x Length (mm) (Exclusive of Stopper)	Qty/ Pk	Qty/ Cs
8084-5	5.0	9	13 x 120	1	12
8084-15	15.0	13	17 x 139	–	12
8084-50	50.0	16	28 x 151	1	12

For stopper only, see Cat. No. 7660.



8101 PYREX Tube, Centrifuge, Conical, Beaded Rim, Colored Graduations

These tubes have sharp, colored enamel graduations and markings. The tubes are the same size and shape as Cat. Nos. 8060 and 8080. They have precision formed tips and uniform walls throughout for a high degree of accuracy and mechanical strength.

Cat. No.	Approx. Capacity (mL)	Approx. O.D. x Length (mm)	Qty/ Cs
8101-15	15.0	17 x 120	12
8101-50	50.0	28 x 135	1



8120 PYREX Tube, Centrifuge, Conical, Heavy Duty, Beaded Rim

Made to the same O.D. and length speciÀcations as Cat. No. 8060, but of increased wall thickness for greater mechanical strength. In order to conform with outside diameter and overall length limitations imposed by shields, it has been necessary to reduce the capacity of all heavy duty tubes.

Cat. No.	Approx. Capacity (mL)	Approx. O.D. x Length (mm)	Qty/ Cs
8120-12	12.0	17 x 120	12



8140 PYREX Tube, Centrifuge, Conical, Heavy Duty, Beaded Rim, Graduated

Made of heavy wall construction, for greater mechanical strength, with durable, white enamel increments. The 12 mL size is graduated upward from tip in 0.1 mL increments. The 40 mL size is graduated in 0.5 mL increments to 10 mL, and from 10 mL to 40 mL in 1 mL increments.

Cat. No.	Approx. Capacity (mL)	Approx. O.D. x Length (mm)	Qty/ Pk	Qty/ Cs
8140-12	12.0	17 x 120	–	12
8140-40	40.0	28 x 135	6	12

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8142 PYREX® Tube, Centrifuge, Conical, Heavy Duty, Screw Cap, Graduated

Constructed of heavy wall glass for greater mechanical strength. Graduations are with durable white enamel. The 10 mL size is graduated upward from tip in 0.1 mL increments. The 40 mL size is graduated in 0.5 mL increments to 10 mL, and from 10 mL to 40 in 1 mL increments. Tubes are fitted with a phenolic screw cap.

Cat. No.	Approx. Capacity (mL)	Approx. O.D. x Length (mm)	G.P.I. Thread Finish	Qty/ Cs
8142-10	10	17 x 118	15-415	1
8142-40	40	28 x 147	24-400	1

For phenolic cap, see Cat. No. 9999.



8160 PYREX Tube, Centrifuge, Oil, Graduated

In accordance with standard methods of testing for water and sediment in petroleum products. White graduations upward to 0.5 mL in increments of 0.05 mL; from 0.5 mL to 2 mL in increments of 0.1 mL; from 2 mL to 3 mL in increments of 0.2 mL; from 3 mL to 5 mL in increments of 0.5 mL; from 5 mL to 10 mL in increments of 1 mL; from 10 mL to 25 mL in increments of 5 mL and at 50, 75, and 100 mL.

Cat. No.	Approx. Capacity (mL)	Approx. O.D. x Length (mm)	Qty/ Cs
8160-100	100.0	38 x 200	12

Reference: ASTM D-96, D-91, D-893, and D-1796.



8180 PYREX Tube, Lifetime Red™, Centrifuge, Oil, Graduated

In accordance with standard methods of testing for water and sediment in petroleum products. White graduations against a permanent red panel. Graduated upward to 0.5 mL in increments of 0.05 mL; from 0.5 mL to 2 mL in increments of 0.1 mL; from 2 mL to 3 mL in increments of 0.2 mL; from 3 mL to 5 mL in increments of 0.5 mL; from 5 mL to 10 mL in increments of 1 mL; from 10 mL to 25 mL in increments of 5mL and at 50, 75, and 100 mL.

Cat. No.	Approx. Capacity (mL)	Approx. O.D. x Length (mm)	Qty/ Cs
8180-100	100.0	38 x 200	12

Reference: ASTM D-96, D-91, D-893, and D-1796.



8190 PYREX Tube, Centrifuge, Oil, Graduated

In accordance with standard methods of testing for water and sediment in petroleum products. With white graduations as listed. Tube is calibrated "to contain," and the subdivisions and capacity tolerances are indicated.

Cat. No.	Approx. Capacity (mL)	Range (mL)	Grad. Increment (mL)	Tol. (± mL)	Approx. O.D. x Length (mm)	Qty/ Pk	Qty/ Cs
8190-100	100.0	0.0-0.5	0.05	0.02	45 x 165	2	12

Reference: ASTM D-96.



8200 PYREX Tube, Centrifuge, Oil, Pear-shaped, Graduated

For determination of water and sediment in petroleum products. Fabricated from mold-blown blanks to insure uniform shape and greater mechanical strength. The stem has white graduations from 0 to 1.5 mL in 0.1 mL increments. The body is graduated from 1.5 mL to 5 mL in 0.5mL increments; from 5 mL to 10 mL in 1 mL increments; and at 15, 20, 25, 50, and 100 mL.

Cat. No.	Approx. Capacity (mL)	Approx. O.D. x Length (mm)	Qty/ Cs
8200-100	100.0	58 x 158	12

Reference: ASTM D-96 and D-1966.

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8220 PYREX® Tube, Centrifuge, Goetz, Pear-shaped, Graduated

The lower stem is graduated upward to 1 mL in 0.05 mL increments. The body is graduated from 1 mL to 5 mL in 1 mL increments; from 5 mL to 50 mL in 5 mL increments; and from 50 mL to 100 mL in 10 mL increments.

Cat. No.	Approx. Capacity (mL)	Approx. O.D. x Length (mm)	Qty/ Cs
8220-100	100.0	58 x 159	12



8240 PYREX Tube, Centrifuge, Round Bottom, Pourout

Round bottom tube with pourout spout for easy decanting.

Cat. No.	Approx. Capacity (mL)	Approx. O.D. x Length (mm)	Qty/ Pk	Qty/ Cs
8240-50	50.0	29 x 116	–	12



8300 PYREX Tube, Centrifuge, Short Conical Bottom, Pourout, Graduated

The durable, white enamel scale is graduated from 0 to 10 mL in 0.5 mL increments, and from 10 mL to 50 mL in 1 mL increments.

Cat. No.	Approx. Capacity (mL)	Approx. O.D. x Length (mm)	Qty/ Cs
8300-50	50.0	29 x 118	12



8320 PYREX Tube, Centrifuge, Heavy Duty, Short Conical Bottom, Pourout

A heavy-walled, short conical bottom tube. With pourout spout for easy decanting.

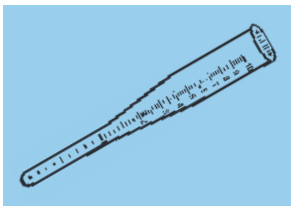
Cat. No.	Approx. Capacity (mL)	Approx. O.D. x Length (mm)	Qty/ Cs
8320-40	40.0	29 x 116	12



8340 PYREX Tube, Centrifuge, Heavy Duty, Short Conical Bottom, Pourout, Graduated

Heavy wall construction. Graduated to 10 mL in 0.5 mL increments, and from 10 to 40 mL in 1 mL increments. Graduations are in durable white enamel.

Cat. No.	Approx. Capacity (mL)	Approx. O.D. x Length (mm)	Qty/ Pk	Qty/ Cs
8340-40	40.0	29 x 118	4	12



8360 PYREX Tube, Kolmer, Centrifuge, Graduated, Beaded Rim

These tubes are used in connection with the Wasserman test and to measure H_2O content and potassium ions in oil muds. API RP 13B standard testing method. Graduated in 0.1 mL increments up to 4 mL, and 0.2 mL increments from 4 to 10 mL. Graduations are durable white enamel.
Note: Tubes should not be spun in excess of 650 x g.

Cat. No.	Approx. Capacity (mL)	Approx. O.D. x Length (mm)	Qyt/ Cs
8360-10	10.0	17 x 125	12



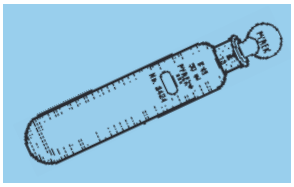
8422 PYREX Tube, Centrifuge, Heavy Duty, Round Bottom, Screw Cap

These tubes are useful for the handling of sputum specimens. Digestion, shaking, neutralizing, and centrifuging can be performed in one container. They are also useful for other clinical and micro-biological tests. Screw caps resist the effects of temperature and steam. The 50 mL tube has a black phenolic cap with a glued-in, white rubber liner. The 100 mL tube has a white polypropylene cap with a PTFE liner.

Cat. No.	Approx. Capacity (mL)	Approx. O.D. x Length (mm)	G.P.I. Thread Finish	Qty/ Cs
8422-50	50.0	29 x 122	24-410	12

For phenolic cap for 50 mL tube, see Cat. No. 9999.

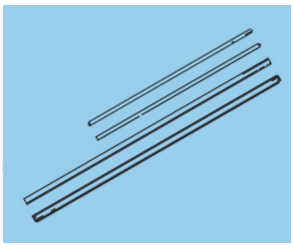
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8424 PYREX® Tube, Centrifuge, Round Bottom, Pennyhead Stoppers

Round bottom, non-graduated centrifuge tube with ¥ solid glass penny head stopper. Rockefeller Institute of Medical Research type.

Cat. No.	Description	Approx. Capacity (mL)	¥ Stopper No.	Approx. O.D. x Length (mm)	Qty/ Cs
8424-50	Complete	50.0	13	29 x 133	12



9530 PYREX Tube, Melting Point, Capillary

Made from Code 7740 borosilicate glass. The 100 and 90 mm sizes are available with both ends open or with one end open and one closed. All tubes have a 0.2 mm to 0.25 mm wall range.

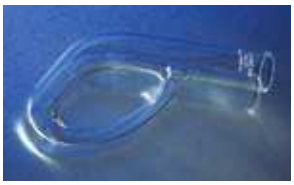
Cat. No.	Description	Approx. Length (mm)	Wall Range (mm)	Wall Tol. (± mm)	O.D. Range (mm)	I.D. Range (mm)	Qty/ Pk	Qty/ Cs
9530-1	Open Ends	100	0.20	0.02	1.5-1.8	-	20	2000
9530-2	Open Ends	100	0.25	0.03	-	0.8-1.1	20	2000
9530-3	1 Open/ 1 Closed End	90	0.20	0.02	1.5-1.8	-	20	2000
9530-4	1 Open/ 1 Closed End	90	0.25	0.03	-	0.8-1.1	20	2000



9540 PYREX Tube, Thiele, Melting Point

For melting point determination tests.

Cat. No.	Approx. O.D. x Length (mm)	Qty/ Pk	Qty/ Cs
9540-25	25 x 150	2	12



9560 PYREX Tube, Thiele-Dennis, Melting Point

ModiÀed in design to increase the rate of circulation.

Cat. No.	Approx. O.D. x Length (mm)	Qty/ Pk	Qty/ Cs
9560-25	25 x 165	2	12



9610 PYREX Tube, Weathering Test, Graduated

Graduated upward to 0.5 mL in increments of 0.05 mL, from 0.5 mL to 3 mL in 0.1 mL increments, from 3 mL to 5 mL in 0.5 mL increments and from 5 mL to 100 mL in 1 mL increments. Made with a 3 mm vent hole located 180° from the front of the tube. For testing propane, butane, and isobutane mixtures. Reference: California Natural Gasoline Association, SpeciÀcations TS-441-3, ASTM D-1837, D-2158.

Cat. No.	Approx. Capacity (mL)	Approx. O.D. x Height (mm)	Qty/ Cs
9610-100	100	37 x 200	1



9800 PYREX Tube, Test, Beaded Rim

These tubes are made from special tubing to give the optimum wall thickness. They are well annealed, resistant to heat, and chemically stable. Rims are Àre-polished.

Cat. No.	Approx. Capacity (mL)	Approx. O.D. x Length (mm)	Qty/ Pk	Qty/ Cs
9800-10	3	10 x 75	72	720
9800-12	5	12 x 75	72	720
9800-13	9	13 x 100	72	720
9800-15	14	15 x 125	72	720
9800-16	20	16 x 150	72	576
9800-18	27	18 x 150	72	576
9800-20	34	20 x 150	72	576
9800-25	50	25 x 150	72	288
9800-25X	70	25 x 200	48	192

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9820 PYREX® Tube, Culture, Rimless

Rimless for greater convenience in plugging and rack storage. Walls and bottoms are of uniform thickness. Ends are fire-polished.

Cat. No.	Approx. Capacity (mL)	Approx. O.D. x Length (mm)	Qty/Pk	Qty/Cs
9820-6	0.5	6 x 50	72	720
9820-10	3.0	10 x 75	72	720
9820-12*	5.0	12 x 75	72	720
9820-13**	9.0	13 x 100	72	720
9820-16	11.0	16 x 100	72	576
9820-16X	15.0	16 x 125	72	576
9820-16XX	20.0	16 x 150	72	576
9820-18	27.0	18 x 150	72	576
9820-20	34.0	20 x 150	72	576
9820-22	50.0	22 x 175	72	432
9820-25	50.0	25 x 150	72	288
9820-25X	70.0	25 x 200	48	192

*Kahn tubes.
**Wasserman tube.



9825 PYREX Tube, Culture, Screw Cap

Furnished with deep-form phenolic caps to facilitate handling and sealing after autoclaving. Caps are fabricated from a special formula resistant to the effects of temperature and steam in autoclaving. Caps are provided with a glued-in, white rubber liner. The white enamel marking spot gives an excellent surface for pencil notations. Pencil marks are easily erased.

Cat. No.	Approx. Capacity (mL)	Approx. O.D. x Length (mm)	G.P.I. Thread Finish	Qty/Pk	Qty/Cs
9825-13	9.0	13 x 100	13-415	144	288
9825-16	11.0	16 x 100	15-415	144	288
9825-16X	15.0	16x125	15-415	144	288
9825-16XX	20.0	16 x 150	15-415	144	288
9825-20	25.0	20 x 125	18-415	96	192
9825-20X	34.0	20 x 150	18-415	96	192
9825-22	50.0	22 x 175	18-415	48	192
9825-25	50.0	25 x 150	24-410	48	144
9825-25X	70.0	25 x 200	24-410	48	144
9825-38	170.0	38 x 200	38-430M	12	48

For phenolic caps, see Cat. No. 9999.

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9826 PYREX® Tube, Culture, Screw Cap with PTFE Liner

Similar to Cat. No. 9825, but phenolic cap has a PTFE interface firmly bonded to the glued-in rubber liner, providing a sure and highly inert sealing face.

Cat. No.	Approx. Capacity (mL)	Approx. O.D. x Length (mm)	G.P.I. Thread Finish	Qty/ Pk	Qty/ Cs
9826-13	9.0	13 x 100	13-415	144	288
9826-16	11.0	16 x 100	15-415	144	288
9826-16X	15.0	16 x 125	15-415	144	288
9826-16XX	20.0	16 x 150	15-415	144	288
9826-20	25.0	20 x 125	18-415	96	192
9826-20X	34.0	20 x 150	18-415	96	192
9826-25	50.0	25 x 150	24-410	48	144
9826-25X	70.0	25 x 200	24-410	48	144

For phenolic caps, see Cat. No. 9998.



9850 PYREX Tube, Culture, Flat Bottom, Rimless

These new culture tubes with flat bottoms are ideal for plant tissue culture and general culture work. The flat bottom facilitates use with agar slants. Walls and bottoms are of uniform thickness. The tubes are rimless for greater convenience in plugging and rack storage. Optional polypropylene two position closure. Position closure open for gas exchange or closed for humidified environment. Internal drip ring minimizes contamination.

Cat. No.	Description	Approx. Capacity (mL)	Approx. O.D. x Length (mm)	Qty/ Pk	Qty/ Cs
26796-38	Closure*	–	38	50	100
26797-38	Closure	–	38	50	100
9850-25	Tube	39.0	25 x 100	36	72
9850-25X	Tube	47.0	25 x 120	36	72
9850-25XX	Tube	59.0	25 x 150	50	100
26794-25	Closure*	–	25	50	100
26795-25	Closure	–	25	50	100
26798-40	Closure	–	40	50	100
26799-40	Closure*	–	40	50	100

*Orange closure.



9860 PYREX Tube, Ignition, Heavy Wall, Rimless

These ignition tubes are made from Code 7740 borosilicate glass and are satisfactory for most applications encountered in school work where temperatures above 600°C are not required. These tubes perform well when continually used at temperatures up to 500°C, or for short periods to 600°C.

Cat. No.	Approx. O.D. x Length (mm)	Qty/ Pk	Qty/ Cs
9860-14	14 x 100	72	288
9860-16	16 x 125	72	288
9860-25	25 x 200	24	120

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FRITTED WARE



32940 PYREX® Fritted Disc, Gooch Type, High Form

Particularly adapted to analytical work where precipitates are dried to constant weight at 110°C. Also suitable for higher temperatures, in which case it is advisable to heat in an electric furnace. Crucibles should not be subject to sudden temperature changes. In order to avoid strain, they should not be removed from the furnace until the temperature has dropped to 250°C. For low form, see Cat. No. 32960.

Cat. No.	Approx. Capacity (mL) and Porosity	Approx. Disc O.D. (mm)	Approx. O.D. x Height (mm)	Qty/ Pk	Qty/ Cs
32940-30C	30C	30	35 x 60	–	12
32940-30M	30M	30	35 x 60	–	12
32940-30F	30F	30	35 x 60	3	12
32940-50C	50C	40	45 x 60	–	9
32940-50M	50M	40	45 x 60	–	9
32940-50F	50F	40	45 x 60	–	1

For Àlter tube only, see Cat. No. 9480.



32960 PYREX Fritted Disc, Gooch Type, Low Form

Particularly adapted to analytical work where precipitates are dried to constant weight at 110°C. Also suitable for higher temperatures, in which case it is advisable to heat in an electric furnace. Crucibles should not be subjected to sudden temperature changes. In order to avoid strain, they should not be removed from the furnace until the temperature has dropped to 250°C. For high form, see Cat. No. 32940.

Cat. No.	Approx. Capacity (mL) and Porosity	Approx. Disc O.D. (mm)	Approx. O.D. x Height (mm)	Qty/ Pk	Qty/ Cs
32960-15C	15C	20	30 x 44	–	1
32960-15M	15M	20	30 x 44	–	1
32960-30C	30C	30	41 x 50	3	12
32960-30M	30M	30	41 x 50	–	12
32960-30F	30F	30	41 x 50	3	12

For Àlter tube only, see Cat. No. 9480.



33950 PYREX Fritted Thimble

Designed for use in PYREX brand extractors, where it is desirable to weigh the material extracted or where paper thimbles may be attacked by the chemicals used. For PYREX brand extractors and extraction apparatus, see Cat. Nos. 3740 through 3880.

Cat. No.	Approx. Body O.D. (mm)	Approx. Height (mm)	Qty/ Pk	Qty/ Cs
33950-SC	25	85	1	9
33950-MEC	35	90	–	1
33950-MC	35	90	1	6
33950-LEC	45	130	–	1
33950-LC	45	130	1	6

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33970 PYREX® 47 mm Micro¿ltration Glassware Apparatus

These microÀltration components are designed for the Àltration of aqueous liquids. They may be used for the Àltration of cell culture media, buffers, or for particulate analysis of water samples. Units have coarse porosity frits, and accommodate 47 mm Àlters. The components are interchangeable with competitive product offerings.

Cat. No.	Description	Funnel (mL)	Approx. O.D. x Height (mm)	Qty/Cs
33970-47	300 mL funnel, fritted glass support base, aluminum clamp, and No. 8 silicone stopper	300	75 x 230	1
Components				
33971-300	300 mL graduated funnel, 47 mm	300	75 x 115	1
33971-1L	1000 mL graduated funnel, 47 mm	1000	115 x 180	1
33972-B	47 mm fritted glass support base	–	58 x 125	1
33975-C	Aluminum clamp	–	–	1



33980 PYREX 47 mm Micro¿ltration All-Glass Assembly

These Àltration apparatus and components are designed for HPLC mobile phase Àltration, analysis of particulate or bacterial contamination and general laboratory microÀltration. Units have coarse porosity frits, and accommodate 47 mm Àlters. The all-glass design ensures chemical compatibility with most organic solvents. The components of this 47 mm glassware are interchangeable with competitive products.

Cat. No.	Description	Funnel (mL)	Approx. O.D. x Height (mm)	Qty/Cs
33980-300	Filtration assembly, 300 mL funnel, 1L flask, 47 mm fritted all-glass support base, aluminum clamp	300	140 x 430	1
33980-1L	Filtration assembly, 1000 mL funnel, 4L flask, 47 mm fritted all-glass support base, aluminum clamp	1000	210 x 600	1

Components

Cat. No.	Description	Funnel (mL)	Approx. O.D. x Height (mm)	Qty/Cs
33971-300	300 mL graduated funnel, 47 mm	300	75 x 115	1
33971-1L	1000 mL graduated funnel, 47 mm	1000	115 x 180	1
33982-B	47 mm fritted glass support base with tubulation	–	58 x 120	1
33985-1L	Flask, 1L, 40/35	–	–	1
33985-4L	Flask, 4L, 40/35	–	–	1
33975-C	Aluminum clamp	–	–	1



33990 PYREX Fritted Disc, Morton, Bacteria

Designed by Dr. H.E. Morton of the University of Pennsylvania, this convenient glass bacteria-Àltering assembly with an ultra-Àne fritted disc eliminates the need for rubber stoppers and the usual difÀculties encountered when sterilizing rubber. Contamination-free solutions are obtained as a result of the following design features:

- The 10 mm sidearm on the apparatus permits the insertion of a plug.
- A recess at the bottom of the outer ground joint also allows a plug.
- The inverted ȿ 29/26 ground joint provides further assurance of sterile solutions since nonsterile solutions are prevented from entering the flask when disassembling the unit. The unit will withstand the repeated sterilizations usually employed in laboratories.

Cat. No.	Description	Approx. Capacity (mL)	Approx. Disc O.D. (mm)	Approx. Overall Height (mm)	Qty/Cs
33990-250	Complete	250	40	282	1

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39525 PYREX® Fritted Disc, Gas Dispersion

These tubes, with a fritted disc at an angle of 90°, are used to disperse or scrub gas in liquids. The size of gas bubbles depends upon the porosity of the fritted disc and the liquid used. The Àner porosity discs give smaller bubbles; however, greater gas pressure is required. The approximate overall dimension across the disc and stem is 35 mm for a 20 mm disc, and 45 mm for a 30 mm disc.

Cat. No.	Approx. Disc O.D. (mm) and Porosity	Approx. Length (mm)	Qty/ Cs
39525-20C	20 C	250	1
39525-30C	30 C	250	1



39530 PYREX Fritted Disc Gas Dispersion, Vertical Type

Tube has a fritted disc at an angle of approximately 15°. This permits the small gas bubbles to rise from the disc surface without excessive formation of large bubbles. Its performance is comparable to that of a horizontal disc. These tubes can be used in test tubes or Áasks since a large opening is not required.

Cat. No.	Approx. Disc O.D. (mm) and Porosity	Approx. Length (mm)	Approx. Stem O.D. (mm)	Qty/ Cs
39530-20C	20 C	250	6	1
39530-30C	30 C	250	6	1
39530-40C	40 C	250	8	1



39533 PYREX Fritted Cylinder, Gas Dispersion

Tube is used to disperse or scrub gas in liquids. The size of gas bubbles depends upon the porosity of the fritted disc and the liquid used. The Àner porosity discs give smaller bubbles. However, greater gas pressure is required. The 12 mm. O.D. fritted cylinder permits insertion through small openings.

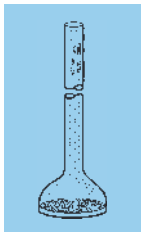
Cat. No.	Approx. Disc O.D. (mm) and Porosity	Approx. Length (mm)	Approx. Stem O.D. (mm)	Qty/ Cs
39533-12C	12 C	250	8	6
39533-12EC	12 EC	250	8	6



39534 PYREX Fritted Disc, Gas Dispersion, Horizontal Type

Tube is used to disperse or scrub gas in liquids. The size of gas bubbles depends upon the porosity of the fritted disc and the liquid used. The Àner porosity discs give smaller bubbles. However, greater gas pressure is required. Centrally located stem permits insertion through small openings.

Cat. No.	Approx. Disc O.D. (mm) and Porosity	Approx. Length (mm)	Approx. Stem O.D. (mm)	Qty/ Cs
39534-30C	30 C	250	6	1
39534-30EC	30 EC	250	6	1



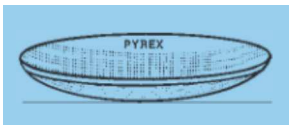
39535 PYREX Fritted Disc Immersion Tube, 30 mm Diameter, Medium Porosity

These immersion tubes have a 30 mm diameter medium porosity (10 µm to 15 µm) fritted disc and are particularly useful for drawing off the supernatant liquid from a precipitate. They are made from Code 7740 borosilicate glass. Any precipitate which might be disturbed will be held on the Àlter. Solid chemicals, made in a beaker or Áask, can be Àltered and washed without being transferred.

Cat. No.	Approx. Stem O.D. (mm)	Porosity	Approx. Height (mm)	Approx. Disc O.D. (mm)	Qty/ Pk	Qty/ Cs
39535-30M	8	Medium	183	30	1	1

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WATCH GLASS



9985 PYREX® Watch Glass

These watch glasses possess high chemical durability, thus preventing contamination of solutions. They are molded to the same radius of curvature for convenient stacking. The heavy wall and uniform Àre-polished edge provide mechanical strength. The outside diameter cannot be controlled within close limits and a slight degree of out-of-round can be expected to occur.

Cat. No.	Approx. O.D. (mm)	Fits Beaker Size (mL)	Qty/ Pk	Qty/ Cs
9985-65	65	150	12	144
9985-75	75	250	12	144
9985-90	90	400	12	144
9985-100	100	600	12	144
9985-125	125	1000	12	72
9985-150	150	2000	12	72



9990 PYREX Watch Glass/ Beaker Cover, Ribbed

Designed for use as a beaker cover. Ribs are molded into the glass so that they can't pop off as they do when cane is sealed to standard watch glasses. Permits reÁux of digestate and escape of excess vapor. Eliminates risk of contamination from dropped hooks or props. Meets EPA requirements for methods 3005, 3010, and 3020.

Cat. No.	Description	Fits Beaker Size (mL)	Approx. O.D. (mm)	Qty/ Cs
9990-75	Ribbed	250	75	12
9990-100	Ribbed	600	100	12
9990-125	Ribbed	1000	125	12

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SPINNER FLASKS





4500, 4502, 4504 ProCulture® Glass Spinner Flasks, Angled Sidearms

- Baffles enhance aeration and agitation of contents of the flask.
- Unique impeller design ensures optimal stirring.
- Sidearm designs permit easy access of 25 mL and 50 mL pipets.
- Visit www.corning.com/lifesciences to view additional Corning® spinner flask accessories

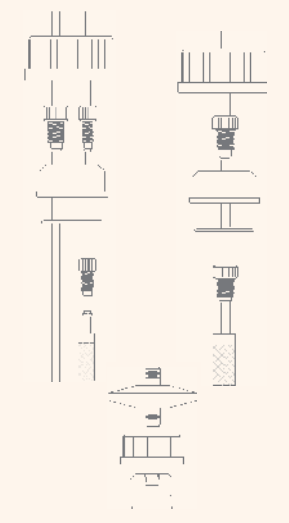
Cat. No.	Description	Capacity	Center Neck (mm)	Sidearm Neck (mm)	Qty/Cs
4500-125	Spinner	125 mL	70	32	1
4500-250	Spinner	250 mL	70	32	1
4500-500	Spinner	500 mL	100	45	1
4500-1L	Spinner	1L	100	45	1
4500-3L	Spinner	3L	100	45	1
4500-6L	Spinner	6L	100	45	1
4500-8L	Spinner	8L	100	45	1
4500-15L	Spinner	15L	100	45	1
4500-36L	Spinner	36L	100	45	1
4502-3L	Spinner	3L	120	45	1
4502-6L	Spinner	6L	120	45	1
4502-8L	Spinner	8L	120	45	1
4502-15L	Spinner	15L	120	45	1
4502-36L	Spinner	36L	120	45	1
4504-3L	Spinner	3L	140	45	1
4504-6L	Spinner	6L	140	45	1
4504-8L	Spinner	8L	140	45	1
4504-15L	Spinner	15L	140	45	1
4504-36L	Spinner	36L	140	45	1

RetroFit Kits are available for converting older Corning ProCulture spinner flasks to fit newer dual-bearing impellers.

4510, 4512, 4514 ProCulture Spinner Flasks, Vertical Sidearms

Cat. No.	Capacity	Center Neck (mm)	Number of Vertical Sidearms	Sidearm Neck (mm)	Qty/Cs
4510-8L	8L	100	4	45	1
4510-15L	15L	100	4	45	1
4510-36L	36L	100	6	45	1
4512-8L	8L	120	4	45	1
4512-15L	15L	120	4	45	1
4512-36L	36L	120	6	45	1
4514-15L	15L	140	4	45	1
4514-36L	36L	140	6	45	1

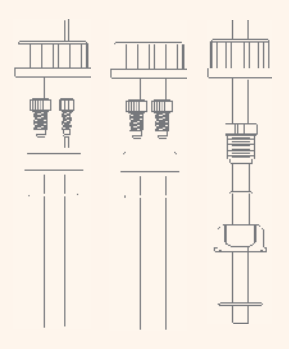
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4519 Gas Handling Fittings, Vertical Sidearm Flasks

- Used to provide gases into larger spinner flasks with vertical sidearms
- Fittings are comprised of a PET insert with a fluorocarbon O-ring and a polypropylene sealing cap.
- Gas filters are PTFE, 0.2 µm porosity.
- The 316 stainless steel tubes are held in place by modified polyphenylene oxide thermoplastic nuts with integrated ferrules.
- The fittings are completely autoclavable.

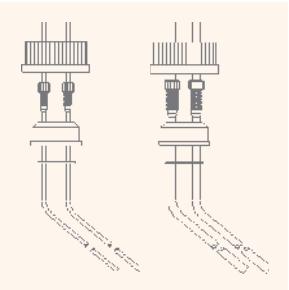
Cat. No.	Description	Dimensions	Qty/Cs
4519-100	Sidearm Fitting, Gas Delivery	1/8" Inlet	1
4519-102	Sidearm Fitting, Gas Delivery	1/4" Inlet	1
4519-104	Sidearm Fitting, Delivery znd Vent	1/8" and 1/4"	1
4519-106	Sidearm Fitting, Vent Cap, 0.2 µm	50 mm Filter	1
4519-177	Sidearm Fitting, Vent Cap, 0.2 µm, Sanitary	50 mm Filter	1



4519 Media Handling Fittings, Vertical Sidearm Flasks

- Used to introduce medium aseptically into large spinner flasks with vertical sidearms
- Fittings are comprised of a PET insert with a fluorocarbon O-ring and a polypropylene sealing cap.
- Gas filters are PTFE, 0.2 µm porosity.
- The 316 stainless steel tubes are held in place by modified polyphenylene oxide thermoplastic nuts with integrated ferrules.
- The fittings are completely autoclavable.

Cat. No.	Description	Fits Flask Size (L)	Tubing O.D. (inches)	Qty/Cs
4519-112	Sidearm Fitting, Dual, Media Handling	8, 15	1/8	1
4519-114	Sidearm Fitting, Dual, Media Handling	36	1/8	1
4519-116	Sidearm Fitting, Dual, Media Handling	8, 15	1/4	1
4519-118	Sidearm Fitting, Dual, Media Handling	36	1/4	1
4519-120	Sidearm Fitting, Combo, Media Handling	8, 15	1/8, 1/4	1
4519-122	Sidearm Fitting, Combo, Media Handling	36	1/8, 1/4	1
4519-124	Sidearm Fitting, Single, Media Handling	8, 15	1/2	1
4519-126	Sidearm Fitting, Single, Media Handling	36	1/2	1
4519-176	Sidearm Fitting, Dual, Media Handling, EPDM	8, 15	1/4	1

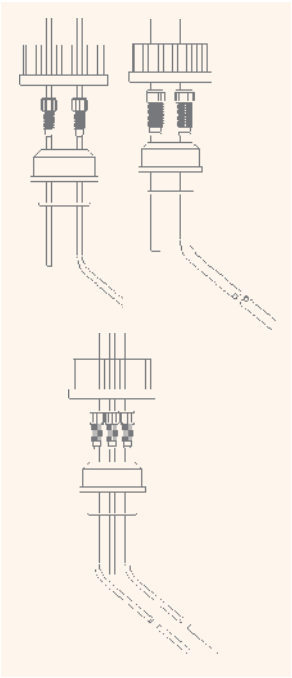


4519 Gas or Media Handling Fittings, Angled Sidearm Flasks, Dual Style

- Dual angled sidearm fittings can be used for aseptically transferring medium into or out of angled sidearm spinner flasks or for sparging the medium with gases.
- Fittings are comprised of a PET insert with a fluorocarbon O-ring and a polypropylene sealing cap.
- Two 316 stainless steel tubes, which extend to the bottom of the flask, are held in place by modified polyphenylene oxide thermoplastic nuts with integrated ferrules.
- The fittings are completely autoclavable.

Cat. No.	Description	Flask Size	Tubing O.D. (inches)	Qty/Cs
4519-150	Sidearm Fitting, Dual	1L	1/8	1
4519-151	Sidearm Fitting, Dual	3L	1/8	1
4519-152	Sidearm Fitting, Dual	6L	1/8	1
4519-153	Sidearm Fitting, Dual	8L	1/8	1
4519-173	Sidearm Fitting, Dual	1L	1/8, 1/4	1
4519-121	Sidearm Fitting, Dual	8L	1/8, 1/4	1
4519-174	Sidearm Fitting, Dual	500 mL	1/8" Angled to 125 mL Level, 1/4"	1
4519-154	Sidearm Fitting, Dual	1L	1/4	1
4519-155	Sidearm Fitting, Dual	3L	1/4	1
4519-156	Sidearm Fitting, Dual	6L	1/4	1
4519-157	Sidearm Fitting, Dual	8L	1/4	1
4519-170	Sidearm Fitting, Dual	15L	1/4	1

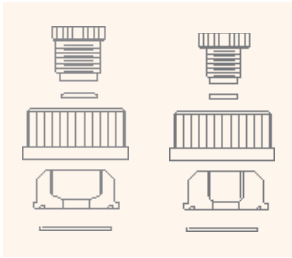
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4519 Gas or Media Handling Fittings, Angled Sidearm Flasks, Combination Style

- Used to aseptically transfer medium, sparge the cell culture medium directly or add gases to the head space above the cell culture medium
- Fittings are comprised of a PET insert with a fluorocarbon O-ring and a polypropylene sealing cap.
- One or two 316 stainless steel tubes extend to the bottom of the flask; the other is a shorter 6" length.
- Both tubes are held in place by modified polyphenylene oxide thermoplastic nuts with integrated ferrules.
- The fittings are completely autoclavable.

Cat. No.	Description	Flask Size (L)	Tubing O.D. (inches)	Qty/Cs
4519-158	Sidearm Fitting, Combination	1	1/8	1
4519-159	Sidearm Fitting, Combination	3	1/8	1
4519-160	Sidearm Fitting, Combination	6	1/8	1
4519-161	Sidearm Fitting, Combination	8	1/8	1
4519-162	Sidearm Fitting, Combination	1	1/4	1
4519-163	Sidearm Fitting, Combination	3	1/4	1
4519-164	Sidearm Fitting, Combination	6	1/4	1
4519-165	Sidearm Fitting, Combination	8	1/4	1
4519-171	Sidearm Fitting, Combination	15	1/4	1
4519-166	Sidearm Fitting, Combination, Triple	1	1/8	1
4519-167	Sidearm Fitting, Combination, Triple	3	1/8	1
4519-168	Sidearm Fitting, Combination, Triple	6	1/8	1
4519-169	Sidearm Fitting, Combination, Triple	8	1/8	1



4519 Fittings for Insertion Probes, Vertical Sidearm Flasks

- Used to secure pH, O_2, or temperature sensors in large spinner flasks with vertical sidearms
- Fittings are comprised of a PET insert with a fluorocarbon O-ring and a polypropylene sealing cap.
- The 316 sensors are held in place by modified polyphenylene oxide thermoplastic nuts with integrated ferrules.
- The fittings are completely autoclavable.

Cat. No.	Description	Sensor O.D. (mm)	Qty/Cs
4519-108	Sidearm Fitting, Sensor, O_2 Probes	12	1
4519-128	Sidearm Fitting, Sensor, Temperature Probes	12	1
4519-110	Sidearm Fitting, Sensor, pH Probes	12	1
4519-172	Sidearm Fitting, Sensor, pH or O_2	18	1

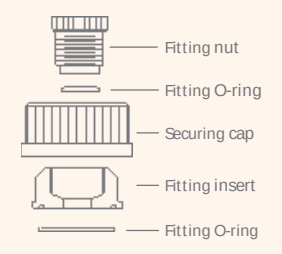


Impeller Assembly for Magnetically Driven Bioreactor

Stainless steel impeller shaft with modified impeller blade for use with probes to create a small bioreactor.

Cat.No.	Description	Qty/Cs
402648	Impeller Assembly, Stainless Steel, Dual Bearing, Modified for Probes, 3L	1
401392	Impeller Assembly, Stainless Steel, Dual Bearing, Modified for Probes, 8L	1
401661	Impeller Assembly, Stainless Steel, Dual Bearing, Modified for Probes, 15L	1

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Cap Assembly for Magnetically-Driven Bioreactor

Cap assembly for small biorecator with various Àtting arrangements

Cat. No.	Description	Qty/ Cs
402579	Cap assembly, 120 mm, Glass Filled PBT, 3 (3/ 8"), 1 (1/ 4") Fittings	1
402576	Cap Assembly, 120 mm, Glass Filled PBT, 2 (12 mm), 2 (1/ 4") Fittings	1
402577	Cap Assembly, 120 mm, Glass Filled PBT, 2 (12 mm), 2 (1/ 4"), 1 (3/ 8") Fittings	1

1395 Spare Parts for Sidearm Fittings

Cat. No.	Description	Qty/ Cs
1395-32LTC	Securing Cap, solid, 32 mm, Orange	1
1395-45LTC	Securing Cap, Solid, 45 mm, Orange	1
1395-45LTR	Drip Ring, 45 mm, Clear	1
1395-45LTMC	Securing Cap, Vented, 45 mm, .22 PTFE, Grey	10



Direct Drive Motors

- High torque, low rpm stirrer designed to maintain constant low speed
- Gearhead stirrer delivers 14.5 in-lbs of torque.
- Maximum speed is 350 rpm.
- Weight of motor is 9 lbs (4.1kg).
- Available with 120VAC 60 Hz or 230VAC 50Hz

Cat. No.	Description	Qty/ Cs
400640	120VAC, 60 Hz Motor	1
402645	230VAC, 50 Hz Motor	1



Direct Drive Shaft/ Cap Assemblies

- For 8L, 15L, or 36L paddle assemblies
- Used on all series 4510 and 4512 Spinner Áasks

Cat. No.	Description	Qty/ Cs
402614	For 100 mm Neck Flasks	1
400649	For 120 mm Neck Flasks	1



4515 Direct Drive Paddle Assemblies

- For series 4510, 4512, and 4514 spinner Áasks when coupled to a direct drive motor
- Paddle assemblies will couple to 100 mm and 120 mm cap assemblies.

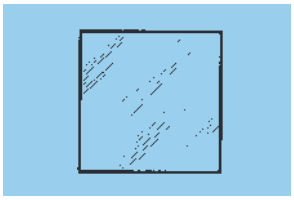
Cat. No.	Description	Qty/ Cs
4515-8L	Paddle Assembly Only for 8L Flask	1
4515-15L	Paddle Assembly Only for 15L Flask	1
4515-36L	Paddle Assembly Only for 36L Flask	1

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Disposable Glassware

COVER GLASS

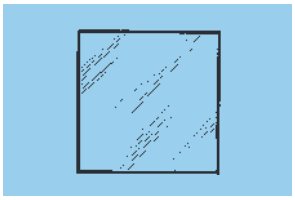
Corning's special, optically clear, water-white, borosilicate cover glass is resistant to surface attach or weathering and will remain clear for extended periods of time. Packed one ounce per pack and 10 packs per case.



2845 Corning® Cover Glass, No. 1, Square

The thickness of No. 1 squares is 0.12 mm to 0.16 mm.

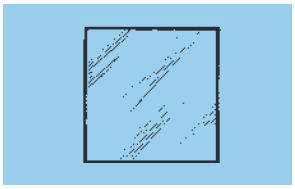
Cat. No.	Approx. Size (mm)	Qty/ Pk	Qty/ Cs
2845-18	18 x 18	200	2000
2845-22	22 x 22	200	2000
2845-25	25 x 25	200	2000



2850 Corning Cover Glass, No. 1½, Square

The thickness of No. 1½ squares is 0.16 mm to 0.19 mm.

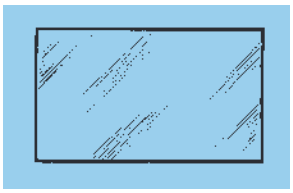
Cat. No.	Approx. Size (mm)	Qty/ Pk	Qty/ Cs
2850-18	18 x 18	200	2000
2850-22	22 x 22	200	2000
2850-25	25 x 25	200	2000



2855 Corning Cover Glass, No. 2, Square

The thickness of No. 2 squares is 0.19 to 0.25 mm.

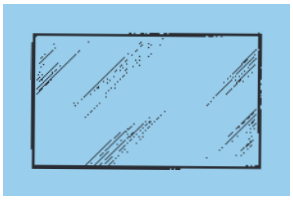
Cat. No.	Approx. Size (mm)	Qty/ Cs	
2855-18	18 x 18	100	1000
2855-22	22 x 22	100	1000
2855-25	25 x 25	100	1000



2975 Corning Cover Glass, No. 1, Rectangle

The thickness of No. 1 rectangles is 0.12 mm to 0.16 mm.

Cat. No.	Approx. Size (mm)	Qty/ Pk	Qty/ Cs
2975-223	22 x 30	100	1000
2975-224	22 x 40	100	1000
2975-225	22 x 50	100	1000
2975-243	24 x 30	100	1000
2975-244	24 x 40	100	1000
2975-245	24 x 50	100	1000
2975-246	24 x 60	100	1000



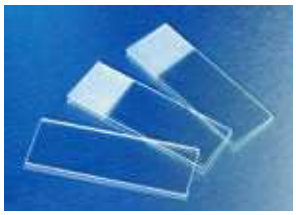
2980 Corning Cover Glass, No. 1½, Rectangle

The thickness of No. 1½ rectangles is 0.16 mm to 0.19 mm.

Cat. No.	Approx. Size (mm)	Qty/ Cs	
2980-223	22 x 30	100	1000
2980-224	22 x 40	100	1000
2980-225	22 x 50	100	1000
2980-243	24 x 30	100	1000
2980-244	24 x 40	100	1000
2980-245	24 x 50	100	1000
2980-246	24 x 60	100	1000

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MICROSCOPE SLIDES



2947 Corning® Microscope Slide, Plain

Cat. No.	Approx. Size (mm)	Thickness (mm)	Qty/ Pk	Qty/ Cs
2947-75x25	75 x 25	0.90-1.10	1/2 GR	10 gross
2947-75x38	75 x 38	0.90-1.10	1/2 GR	5 gross
2947-75x50	75 x 50	0.90-1.10	1/2 GR	5 gross

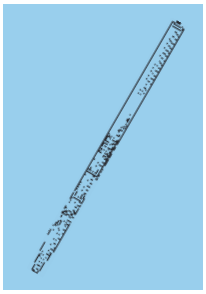
2948 Corning Microscope Slide, Frosted One Side, One End

Cat. No.	Approx. Size (mm)	Thickness (mm)	Qty/ Pk	Qty/ Cs
2948-75x25	75 x 25	0.90-1.10	1/2 GR	10 GR

2949 Corning Microscope Slide, Frosted Two Sides, One End

Cat. No.	Approx. Size (mm)	Thickness (mm)	Qty/ Pk	Qty/ Cs
2949-75x25	75 x 25	0.90-1.10	1/2 GR	10 GR

PIPETS



7058 PYREX® Pipet, Disposable Glass, Bacteriological Multi-pack, Sterile, Plugged, Graduated

These pipets meet the requirements recommended by the American Public Health Association as shown in "Standard Methods for the Examination of Dairy Products." This pipet is very convenient when duplicate platings are to be made on the same medium or for plating differential medium for the determination of gram-negative bacteria, mold and yeast, or total plate count. Both sizes are designed for gravity feed (blow-out is not required). These cotton-plugged pipets are packaged in sterile bags. This allows the use of several pipets at a time without contamination of the entire case. New ISO color-coding is printed directly on the tear strip for easy identiÀcation by size.

Cat. No.	Approx. Capacity (mL)	Qty/ Bag	Bags/ Pk	Pk/ Cs	Qty/ Cs
7058-2X	2.2	25	10	2	500



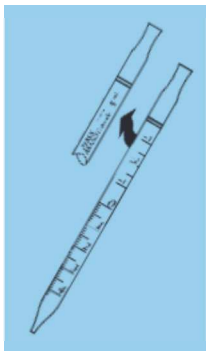
7077 PYREX Pipet, Disposable Glass, Serological, Individually Wrapped, Sterile, Plugged, To Deliver

These pipets, calibrated "to deliver" with blow-out, offer long, slender, tapered tips to make pipetting go faster and easier. All pipets have negative graduations and Àre-polished tips for burr-free, even Áow rates. Easy-open Steri-View™ wrappers (one side paper, one side plastic) have color-coded sizes printed directly on the paper for easy identiÀcation by size. Colors conform to ISO standards. Reference: ASTM E-714.

Cat. No.	Approx. Capacity (mL)	Negative Grad. (mL)	Grad. Increment (mL)	Total Length (mm)	Qty/ Pk	Pk/ Cs	Qty/ Cs
7077-1N	1.0	0.2	.01	274	200	4	800
7077-2N	2.0	0.2	.01	274	180	4	720
7077-5N	5.0	1.0	.1	300	120	6	720
7077-10N	10.0	2.0	.1	300	120	6	720

Do not pipet by mouth. We suggest using a mechanical pipetting device.

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7077B PYREX® Pipet, Disposable Glass, Serological, Shorty, Individually Wrapped, Sterile, Plugged, To Deliver

These shorty pipets, calibrated "to deliver" with blow-out, are ideal for use in conÀned areas. The 5 mL, 10 mL, and 25 mL sizes have tooled tops. Negative graduations on each pipet make it applicable for both serological and measuring procedures. ISO color coding is printed directly on the Steri-View™ wrapper.

Cat. No.	Approx. Capacity (mL)	Negative Grad. (mL)	Grad. Increment (mL)	Total Length (mm)	Qty/Pk	Pk/Cs	Qty/Cs
7077B-1	1.0	0.5	.01	220	250	2	500
7077B-5	5.0	3.0	.1	221	200	2	400
7077B-10	10.0	2.0	.2	224	200	2	400
7077B-25	25.0	5.0	.2	271	100	3	300
7077B-50*	50.0	3.0	.5	345	25	2	50

Do not pipet by mouth. We suggest using a mechanical pipetting device.
*50 mL size features negative and reverse graduations.

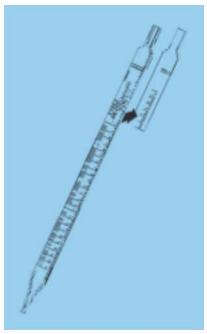


7078 PYREX Pipet, Disposable Glass, Serological, Multi-Pack, Sterile, Plugged, To Deliver

Designed for the larger-volume user, these pipets are calibrated "to deliver" with blow-out, and are packed to permit easy access to several pipets at a time without contaminating the entire case. Similar to Cat. No. 7077, except multi-packed in plastic bags. New ISO color-coding is printed directly on the tear strip for easy identiÀcation by size. Reference: ASTM E-714.

Cat. No.	Approx. Capacity (mL)	Negative Grad. (mL)	Grad. Increment (mL)	Total Length (mm)	Qty/ Bag	Bags/ Pk	Pk/ Cs	Qty/ Cs
7078-1N	1.0	0.2	.1	274	50	5	4	1000
7078-1CN	1.0	0.2	.01	274	50	5	4	1000
7078-2N	2.0	0.2	.01	274	35	5	4	700
7078-5N	5.0	1.0	.1	300	30	8	4	960
7078-10N	10.0	2.0	.1	300	20	6	6	720

Do not pipet by mouth. We suggest using a mechanical pipetting device.



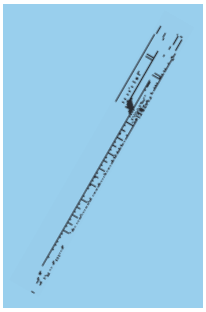
7078B PYREX Pipet, Disposable Glass, Serological, Shorty, Multi-Pack, Sterile, Plugged, To Deliver

These shorty pipets, calibrated "to deliver" with blow-out, are ideal for use in conÀned areas. The 5, 10, and 25 mL sizes have tooled tops. Negative graduations on each pipet make it applicable for both serological and measuring procedures. Packaged in plastic bags so several can be removed without contaminating the entire pack. ISO color-coding is printed directly on the tear strip.

Cat. No.	Approx. Capacity (mL)	Negative Grad. (mL)	Grad. Increment (mL)	Total Length (mm)	Qty/ Bag	Bags/ Pk	Pk/ Cs	Qty/ Cs
7078B-1	1.0	0.5	.01	220	10	25	2	500
7078B-5	5.0	3.0	.1	221	10	20	2	400
7078B-10	10.0	2.0	.2	224	10	20	2	400
7078B-25	25.0	5.0	.2	271	5	20	4	400
7078B-50*	50.0	3.0	.5	345	5	–	10	50

Do not pipet by mouth. We suggest using a mechanical pipetting device.
*50 mL size features negative and reverse graduations.

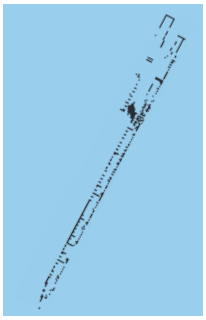
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7078D PYREX® Pipet, Disposable Glass, Serological, Flip-Top Canister Pack, Sterile, Plugged, To Deliver

These pipets are calibrated "to deliver" with blow-out. They are packed in a flip-top canister to keep the pipets racked. These pipet canisters come sealed in polyethylene bags for sterility. ISO color-coding is printed directly on the tear strip for easy identification by size. Reference: ASTM E-714.

Cat. No.	Approx. Capacity (mL)	Negative Grad. (mL)	Grad. Increment (mL)	Qty/ Canister	Pk/ Cs	Qty/ Cs
7078D-1	1.0	0.2	.01	50	10	500
7078D-5	5.0	1.0	.1	25	16	400
7078D-10	10.0	2.0	.1	25	16	400



7079 PYREX Pipet, Disposable Glass, Serological, Bulk Pack, Nonsterile, Unplugged, To Deliver

These disposable glass pipets are calibrated "to deliver" with blow-out and offer long, slender, tapered tips to make pipetting go faster and easier. All pipets have negative graduations and fire-polished tips for burr-free, even flow rates. Nonsterile, unplugged, and bulk packed. Reference: ASTM E-714.

Cat. No.	Approx. Capacity (mL)	Negative Grad. (mL)	Grad. Increment (mL)	Qty/ Bag	Bags/ Pk	Pk/ Cs	Qty/ Cs
7079-1N	1.0	0.2	.01	50	5	4	1000
7079-2N	2.0	0.2	.01	700	–	1	700
7079-5N	5.0	1.0	.1	30	8	4	960
7079-10N	10.0	2.0	.1	20	6	6	720



7095B and 7095D Corning® Pipet, Bulk Pack, Nonsterile, Unplugged

Corning disposable glass Pasteur pipets are available in convenient Packages. One-time use eliminates the danger of cross-contamination of valuable specimens or laboratory reagents. These pipets feature a constriction one inch below the top to facilitate plugging. They are ideal for rapid non-volumetric transfer work in bacteriology, immunology, hematology, and serology studies, as well as blood bank and clinical chemistry procedures.

Cat. No.	Size (Inches)	Qty/ Pk	Qty/ Cs
7095B-5X	5.75	5	1000
7095B-9	9	5	1000
7095B-NMR	Long Tip	–	100
7095D-5X	5.75	5	1000
7095D-9	9	5	1000

"B" series pipets are soda lime glass. "D" series are borosilicate glass.

TUBES, CULTURE



99445 PYREX Tube, Culture, Disposable, Rimless, Dispenser Pack, and Bulk Pack

These one-use culture tubes are packaged for your convenience in easy-to-open, easy-to-use packs. The three small sizes come in a dispenser arrangement, and the larger sizes are bulk-packed. Made of borosilicate glass to reduce pH changes and contaminants potentially leached from soda-lime glass.

Cat. No.	Approx. Volume (mL)	Approx. O.D. x Length (mm)	Qty/ Pk	Qty/ Cs
99445-10	4.0	10 x 75	250	1000
99445-12	6.0	12 x 75	250	1000
99445-13	10.0	13 x 100	250	1000
99445-15	11.0	15 x 85	250	1000
99445-16	15.0	16 x 100	250	1000
99445-16X	15.0	16 x 125	250	1000
99445-16XX	23.0	16 x 150	250	1000
99445-18	28.5	18 x 150	250	500
99445-20	36.0	20 x 150	250	500

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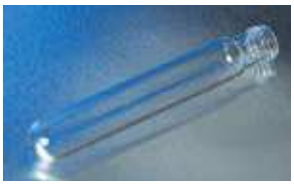


99447 PYREX® Tube, Culture, Disposable, Round Bottom, White Marking Spot, Screw Cap Style, Bulk Pack

Designed for both tissue culture and general bacteriological work. Tubes are made of borosilicate glass and are sold without caps.

Cat. No.	Approx. Volume (mL)	Approx. O.D. x Length (mm)	G.P.I. Thread Finish	Qty/Pk	Qty/Cs
99447-13	7.5	13 x 100	13-415	250	1000
99447-16	15.5	16 x 125	15-415	250	1000
99447-16X	19.0	16 x 150	15-415	250	1000
99447-161	11.5	16 x 100	15-415	250	1000
99447-20	24.0	20 x 125	18-415	250	500
99447-20X	30.0	20 x 150	18-415	250	500

For caps, see Cat. No. 99999.



99448 PYREX Tube, Culture, Disposable, Flat Bottom, Screw Cap Style, Bulk Pack

Tube has flat bottom and comes without marking spot. Tubes are made of borosilicate glass and are sold without caps.

Cat. No.	Approx. Volume (mL)	Approx. O.D. x Length (mm)	G.P.I. Thread Finish	Qty/Pk	Qty/Cs
99448-16	17.0	16 x 125	15-415	250	1000
99448-16X	11.5	16 x 100	15-415	250	1000
99448-19	29.5	19.5 x 145	18-415	250	500

For caps, see Cat. No. 99999.



99449 PYREX Tube, Culture, Disposable, Round Bottom, Screw Cap Style, Bulk Pack

A round bottom tube without marking spot. Tubes are made of borosilicate glass and are sold without caps.

Cat. No.	Approx. Volume (mL)	Approx. O.D. x Length (mm)	G.P.I. Thread Finish	Qty/Pk	Qty/Cs
99449-13	7.5	13 x 100	13-415	250	1000
99449-16	11.5	16 x 100	15-415	250	1000
99449-16X	15.0	16 x 125	15-415	250	1000
99449-16XX	19.0	16 x 150	15-415	250	1000
99449-20	24.0	20 x 125	18-415	250	500
99449-20X	30.0	20 x 150	18-415	250	500

For caps, see Cat. No. 99999.

TUBES, CENTRIFUGE

These tubes feature more consistent uniform wall thickness, a well formed conical tapered tip, and durable tip radius. The tubes are designed to withstand centrifugation up to 3000 RCF.



99502 PYREX Tube, Centrifuge, Disposable Glass, Ungraduated, Screw Cap Closure

Cat. No.	Approx. Volume (mL)	Approx. O.D. x Length (mm)	Thread Finish	Cap Style	Screw Cap	Qty/Cs
99502-5	5	13 x 110	13-415	Screw	9998-13, 99999-13	125
99502-10	10	16 x 114	15-415	Screw	9998-15, 99999-15	125
99502-15	15	17 x 126	15-415	Screw	9998-15, 99999-15	125
99502-50	50	29 x 137	24-400	Screw	9999-24	72

Screw caps are sold separately. Product is supplied nonsterile.

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CAPS



99999 Corning® Cap, Phenolic, Disposable, Bulk Pack

Made of a phenolic compound. These caps have a white rubber liner.

Cat. No.	G.P.I. Thread Finish	Approx. Outside Height	Qty/ Cs
99999-13	13-415	13.5	1000
99999-15	15-415	16.0	1000
99999-18	18-415	17.5	1000

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PYREX® VISTA™ Glassware



70000 PYREX VISTA Beaker, Standard Low Grif¿n

These beakers with spout are manufactured to provide balance between thermal shock resistance and mechanical strength. For convenience, the 250 through 1000 mL beakers have a double graduated metric scale to indicate approximate content. All sizes have blue graduations and an extra large blue marking spot. The 10 mL size is not graduated. The beakers are designed to ASTM E-960.

Cat. No.	Approx. Capacity (mL)	Qty/ Pk	Qty/ Cs
70000-10	10	12	24
70000-20	20	12	24
70000-30	30	12	24
70000-50	50	12	24
70000-100	100	12	24
70000-150	150	12	24
70000-250	250	12	24
70000-400	400	12	12
70000-600	600	12	12
70000-1L	1000	12	12



70022 PYREX VISTA Cylinder, Single Metric Scale, Class A, To Contain

These Class A graduated cylinders are calibrated “to contain” and have blue enamel graduations. The cylinder capacity is in accordance with ASTM E-1272. The 10 mL size has a funnel top. For bumper guard only, see Cat. No. 3066.

Cat. No.	Capacity (mL)	Qty/ Pk	Qty/ Cs
70022-10	10	1	24
70022-25	25	1	18
70022-50	50	1	18
70022-100	100	1	12
70022-250	250	1	12
70022-500	500	1	8



70024 PYREX VISTA Cylinder, Single Metric Scale, Class A, To Deliver

These Class A graduated cylinders are calibrated “to deliver” and have blue enamel graduations. The cylinder capacity is in accordance with ASTM E-1272. The 10 mL size has a funnel top for easier À lling.

Cat. No.	Capacity (mL)	Qty/ Pk	Qty/ Cs
70024-10	10	1	24
70024-25	25	1	18
70024-50	50	1	18
70024-100	100	1	12
70024-250	250	1	12
70024-500	500	1	8

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70075 PYREX® VISTA™ Cylinder, Plastic Base with Blue Graduations, To Contain, Economy

These cylinders are calibrated "to contain". They are supplied in two parts – a strong, accurate glass graduate and a detachable, sturdy plastic base which absorbs impacts and reduces breakage. Tolerances are ±5% of total at any point. By removing the base, the graduate can be conveniently stacked. Bumper guards are supplied with 25 mL through 100 mL inclusive. The 10 mL has a funnel top for careful pouring.

Cat. No.	Capacity (mL)	Qty/ Pk	Qty/ Cs
70075-10	10	12	12
70075-25	25	12	12
70075-50	50	12	12
70075-100	100	12	12



70100 PYREX VISTA Flask, Boiling, Flat Bottom, Short Neck

These Áat bottom boiling Áasks have full length outer 24/ 40 $ joints, but with shorter necks. Wall thicknesses are controlled to provide balance between thermal expansion and mechanical strength for greater shock resistance. The Áat bottom boiling Áasks are designed to ASTM E-1403. Adapter Cat. Nos. 8800, 8820, and 8825 are used to connect Áasks with different size joints, thus allowing numerous combinations for diverse assemblies.

Cat. No.	Approx. Capacity (mL)	$ Joint Size	Qty/ Pk	Qty/ Cs
70100-125	125	24/ 40	12	12
70100-250	250	24/ 40	6	12
70100-500	500	24/ 40	6	12
70100-1L	1000	24/ 40	1	2



70165 Corning® Dish, Culture, Petri, Soda Lime

These Áat, clear dishes are made from soda lime silica glass and will withstand repeated sterilization (wet or dry). The edges are beaded to provide greater mechanical strength. The bead also provides a means to equally space the side walls of the bottom and cover, thereby reducing the capillary action of the condensed moisture on the sides. They are not affected chemically or thermally by any of the methods commonly employed in laboratories where sterilization is routinely used. The covered dish is not airtight. Bottoms also have a triangular enamel reference point for serial dilutions.

Cat. No.	Size (mm)	Qty/ Pk	Qty/ Cs
70165-60	60 x 15	12	24
70165-100	100 x 10	12	24
70165-101	100 x 15	12	24
70165-102	100 x 20	12	24
70165-152	150 x 20	12	24



70320 PYREX VISTA Flask, Boiling, Round Bottom, Short Neck

These round bottom boiling Áasks have full length outer $ joints, but with shorter necks. They are manufactured from Code 7740 borosilicate glass. Wall thicknesses are controlled to provide balance between thermal expansion and mechanical strength for greater shock resistance. The round bottom boiling Áasks are designed to ASTM E-1403. Adapter Cat. Nos. 8800, 8820, and 8825 are used to connect Áasks with different size joints, thus allowing numerous combinations for diverse assemblies.

Cat. No.	Approx. Capacity (mL)	$ Joint Size	Qty/ Pk	Qty/ Cs
70320A-50	50	19/ 38	2	4
70320-100	100	24/ 40	2	4
70320-250	250	24/ 40	2	4
70320-500	500	24/ 40	2	4
70320-1L	1000	24/ 40	1	2
70320-2L	2000	24/ 40	1	2

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70980 PYREX® VISTA™ Flask, Narrow Mouth, Erlenmeyer

These narrow mouth Erlenmeyer flasks have uniform wall thickness which provide the proper balance between mechanical strength and thermal shock resistance. Approximate graduations are in durable blue enamel. An extra large blue marking space is also provided. The Erlenmeyer flasks are designed to ASTM E-1404 Type 1.

Cat. No.	Approx. Capacity (mL)	Qty/ Pk	Qty/ Cs
70980-25	25	12	24
70980-50	50	12	24
70980-125	125	12	24
70980-250	250	12	24
70980-500	500	6	12
70980-1L	1000	6	12



70340 PYREX VISTA Flask, Filtering

These filtering flasks have sidearm tubulations and have blue gradations to show approximate capacity. The neck finish affords a fit for rubber stoppers. Tubulation O.D. on sizes up to 1000 mL is approximately 10 mm. The filtering flasks are designed to ASTM E-1406 Type 2.

Cat. No.	Approx. Capacity (mL)	Qty/ Pk	Qty/ Cs
70340-250	250	6	12
70340-500	500	6	12
70340-1L	1000	6	12



70360 PYREX VISTA Flask, Micro Filtering, with Tubulation

These small filtering flasks are recommended for microchemical use. All flasks have permanent blue enamel marking spots. The filtering flasks are designed to ASTM E-1406 Type 2.

Cat. No.	Approx. Capacity (mL)	Qty/ Pk	Qty/ Cs
70360-25	25	6	12
70360-50	50	6	12
70360-125	125	6	12



70640 PYREX VISTA Flask, Volumetric, Class A, Glass ¶ Stopper

These volumetric flasks provide precise volume measurement. The necks are tooled for ¶ glass stoppers. The graduation line is sharp and permanent and large blue block letters make the inscription easy to read. These Class A volumetric flasks have been manufactured to Class A tolerances as established by ASTM E-694 for volumetric ware, ASTM E-542 for calibration of volumetric ware and ASTM E-288 for volumetric flasks.

Cat. No.	Capacity (mL)	Stopper	Qty/ Pk	Qty/ Cs
70640-10	10	9	12	12
70640-25	25	9	6	12
70640-50	50	9	6	12
70640-100	100	13	6	12
70640-200	200	13	6	12
70640-250	250	16	6	12
70640-500	500	19	6	12
70640-1L	1000	22	1	2
70640-2L	2000	27	1	2

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70581 PYREX® VISTA™ Flask, Volumetric, Class B, Polyethylene Snap Cap

These Class B volumetric flasks have capacity tolerances are twice those specified for Class A volumetric ware. The graduation line is sharp and permanent; large blue block letters make inscriptions easy to read. Snap caps are supplied with all sizes.

Cat. No.	Capacity (mL)	Qty/ Pk	Qty/ Cs
70581-10	10	6	12
70581-25	25	6	12
70581-50	50	6	12
70581-100	100	6	12
70581-250	250	6	12
70581-500	500	6	12
70581-1L	1000	1	6
70581-2L	2000	1	4



70710 PYREX VISTA Pipet, Volumetric, Class A, Reusable

These volumetric pipets are manufactured to Class A capacity tolerances as indicated by ASTM E-969. Sizes 1 mL through 10 mL are color-coded.

Cat. No.	Approx. Capacity (mL)	Color Code	Qty/ Pk	Qty/ Cs
70710-1	1	Blue	12	12
70710-2	2	Orange	12	12
70710-5	5	White	12	12
70710-10	10	Red	12	12



70800 PYREX VISTA Tube, Test, Beaded Rim

These test tubes are annealed, resistant to heat and chemically stable. Rims are fire-polished. The 25 mm diameter tubes do not have a marking spot.

Cat. No.	Approx. Volume (mL)	Approx. O.D. x Length (mm)	Qty/ Pk	Qty/ Cs
70800-10	3	10 x 75 mm	50	200
70800-12	5	12 x 75 mm	50	200
70800-13	9	13 x 100 mm	50	200
70800-15	14	15 x 125 mm	50	200
70800-16	20	16 x 150 mm	50	200
70800-18	27	18 x 150 mm	50	200
70800-20	34	20 x 150 mm	50	200
70800-25	50	25 x 150 mm	50	200
70800-25X	70	25 x 200 mm	50	200

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70820 PYREX® VISTA™ Tube, Rimless Culture

These reusable rimless culture tubes offer greater convenience in plugging and rack storage. Ends are Àre-polished.

Cat. No.	Approx. Volume (mL)	Approx. O.D. x Length (mm)	Qty/ Pk	Qty/ Cs
70820-6	0.5	6 x 50 mm	50	200
70820-10	3	10 x 75 mm	50	200
70820-12	5	12 x 75 mm	50	200
70820-13	9	13 x 100 mm	50	200
70820-16	11	16 x 100 mm	50	200
70820-16X	15	16 x 125 mm	50	200
70820-16XX	20	16 x 150 mm	50	200
70820-18	27	18 x 150 mm	50	200
70820-20	34	20 x 150 mm	50	200
70820-22	50	22 x 175 mm	50	200
70820-25	55	25 x 150 mm	50	200
70820-25X	70	25 x 200 mm	50	200



70825 PYREX VISTA Tube, Culture, Screw Cap, Phenolic Cap

These culture tubes are supplied with deep-form phenolic caps with a rubber liner to facilitate handling and sealing after autoclaving. The blue enamel marking spot gives an excellent surface for pencil notations. Pencil marks are easily erased. For replacement phenolic caps, see Cat. No. 9999.

Cat. No.	Approx. Volume (mL)	Approx. O.D. x Length (mm)	Qty/ Pk	Qty/ Cs
70825-13	9	13 x 100	50	200
70825-16	11	16 x 100	50	200
70825-16X	15	16 x 125	50	200
70825-16XX	20	16 x 150	50	200
70825-20	25	20 x 125	50	200
70825-20X	34	20 x 150	50	200
70825-25	55	25 x 150	50	200

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Reusable Plasticware



1000P Corning® Low Form Beakers, PP

Translucent polypropylene beakers printed with blue graduations.

Cat. No.	Approx. Capacity (mL)	Grad. Increment (mL)	Approx. O.D. x Height (mm)	Qty/Cs
1000P-25	25	5	32 x 47	24
1000P-50	50	10	41 x 60	12
1000P-100	100	20	50 x 71	12
1000P-150	150	20	56 x 80	12
1000P-250	250	50	67 x 94	6
1000P-400	400	100	77 x 109	6
1000P-600	600	100	89 x 125	6
1000P-1L	1000	100	106 x 148	6
1000P-2L	2000	200	132 x 185	6
1000P-3L	3000	500	156 x 210	4
1000P-5L	5000	500	181 x 247	4



1003P Corning Low Form Beakers, PFA

These beakers are translucent with a raised graduation scale. They feature high temperature and chemical resistance.

Cat. No.	Approx. Capacity (mL)	Grad. Increment (mL)	Approx. O.D. x Height (mm)	Qty/Cs
1003P-25	25	5	32 x 50	12
1003P-50	50	10	39 x 59	12
1003P-100	100	20	51 x 72	12
1003P-250	250	50	67 x 95	6
1003P-500	500	100	82 x 120	6
1003P-1L	1000	100	104 x 140	6



1015P Corning Graduated Beakers with Handle and Spout, PP

Translucent polypropylene beakers printed with blue graduations.

Cat. No.	Approx. Capacity (mL)	Grad. Increment (mL)	Approx. O.D. x Height (mm)	Qty/Cs
1015P-250	250	5	77 x 115	12
1015P-500	500	10	95 x 136	12
1015P-1L	1000	10	125 x 167	12
1015P-2L	2000	20	152 x 217	8
1015P-3L	3000	50	170 x 243	6



1300P Corning Wash Bottles, LDPE/PP Caps

These bottles are manufactured from low density polyethylene and are offered with a narrow or wide-mouth. The cap and dispensing tube are manufactured from PP to optimize backÁow of the solution. The design allows minimal turbulence of the liquid in the bottle.

Cat. No.	Approx. Capacity (mL)	Thread Finish	Approx. Height (mm)	Approx. Diam. (mm)	Qty/Cs
1300P-250	250	GL25	135	58	12
1300P-250W	250	GL45	146	58	12
1300P-500	500	GL25	180	74	12
1300P-500W	500	GL45	166	76	12
1300P-1L	1000	GL32	221	92	12
1300P-1LW	1000	GL63	226	91	12

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1500P Corning® Reagent Bottles, PP

These bottles are manufactured from translucent polypropylene. They are wide-mouth and supplied with PP screw top caps.

Cat. No.	Approx. Capacity (mL)	Thread Finish	Approx. Height (mm)	Approx. Diam. (mm)	Qty/Cs
1500P-250	250	GL45	132	73	20
1500P-500	500	GL45	172	87	10
1500P-1L	1000	GL63	204	108	10
1500P-2L	2000	GL63	243	131	6



3022P Corning Single Metric Scale, Graduated Cylinder, PP, with Funnel Top, To Contain

Translucent polypropylene graduated cylinders are manufactured with raised graduations at the primary scale points. Cylinders have a hexagonal base and are calibrated "To Contain". Tolerances according to ISO 6706. Exposure to temperatures above 60°C may affect accuracy.

Cat. No.	Capacity (mL)	Tol. (± mL)	Grad. Increment (mL)	Approx. O.D. x Height (mm)	Qty/Cs
3022P-10	10	0.20	0.20	14 x 145	12
3022P-25	25	0.50	0.50	20 x 170	12
3022P-50	50	1.00	1.00	26 x 200	12
3022P-100	100	1.00	1.00	31 x 250	12
3022P-250	250	2.00	2.00	42 x 315	6
3022P-500	500	5.00	5.00	54 x 360	6
3022P-1L	1000	10.00	10.00	65 x 440	6
3022P-2L	2000	20.00	20.00	84 x 482	3



4985P Corning Erlenmeyer Flasks, PP

Translucent polypropylene flasks are manufactured with blue graduations for reference. The flasks have a screw neck and are supplied with a PP cap.

Cat. No.	Approx. Capacity (mL)	Grad. Increment (mL)	Thread Finish	Qty/Cs
4985P-50	50	10	GL40	6
4985P-100	100	20	GL40	6
4985P-250	250	50	GL52	6
4985P-500	500	100	GL52	6
4985P-1L	1000	200	GL52	4



4990P Corning Erlenmeyer Flasks, PMP

Translucent polymethylpentene flasks are manufactured with red graduations for reference. The flasks have a screw neck and are supplied with a PP cap.

Cat. No.	Approx. Capacity (mL)	Grad. Increment (mL)	Thread Finish	Qty/Cs
4990P-50	50	10	GL40	6
4990P-100	100	20	GL40	6
4990P-250	250	50	GL52	6
4990P-500	500	100	GL52	6
4990P-1L	1000	200	GL52	4

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5640P Corning® Volumetric Flasks, PMP, Class A

Translucent flask is supplied with tapered polypropylene stopper with an individually calibrated graduation line. The product is manufactured to Class A tolerances as defined by ISO 1042. They are supplied with an imprinted lot number and certificate. These flasks may be autoclaved to 121°C without affecting the graduation tolerance. Recommended routine cleaning up to 60°C will preserve graduation markings. Height dimension is for flask only, without stopper.

Cat. No.	Capacity (mL)	Tol. (± mL)	Approx. O.D. x Height (mm)	Tapered Stopper	Qty/Cs
5640P-10	10	0.04	33 x 90	10/19	6
5640P-25	25	0.04	41 x 108	10/19	6
5640P-50	50	0.06	51 x 140	12/21	6
5640P-100	100	0.10	64 x 170	14/23	6
5640P-250	250	0.15	84 x 225	19/26	5
5640P-500	500	0.25	104 x 260	19/26	4
5640P-1L	1000	0.40	127 x 300	24/29	3



5641P Corning Volumetric Flasks, PP, Class B

Translucent flask is supplied with tapered polypropylene stopper with an individually calibrated graduation line. The product is manufactured to Class B tolerances as defined by ISO 1042. Exposure to temperatures above 60°C may affect accuracy. Recommended routine cleaning up to 60°C will preserve graduations. Height dimension is for flask only, without stopper.

Cat. No.	Capacity (mL)	Tol. (± mL)	Approx. O.D. x Height (mm)	Tapered Stopper	Qty/Cs
5641P-10	10	0.08	33 x 90	10/19	6
5641P-25	25	0.08	41 x 108	10/19	6
5641P-50	50	0.12	51 x 140	12/21	6
5641P-100	100	0.20	64 x 170	14/23	6
5641P-250	250	0.30	84 x 225	19/26	5
5641P-500	500	0.50	104 x 260	19/26	4
5641P-1L	1000	0.80	127 x 300	24/29	3



5650P Corning Volumetric Flasks, PFA, Class A

Translucent flask is supplied with a perfluoroalkoxy-copolymer screw cap. Screw caps provide hermetic seals and help reduce the possibility of outside contamination. The product is manufactured to Class A tolerances as defined by ISO 1042 and flasks have individually calibrated graduation lines. They withstand high temperatures and are resistant to a variety of aqueous solutions and organic solvents. These flasks may be autoclaved to 121°C without affecting the graduation tolerance. Recommended routine cleaning up to 60°C will preserve graduations. Height dimension is flask only, without screw cap.

Cat. No.	Capacity (mL)	Tol. (± mL)	Approx. O.D. x Height (mm)	Thread Finish	Qty/Cs
5650P-10	10	0.04	33 x 90	GL18	6
5650P-25	25	0.04	41 x 108	GL18	6
5650P-50	50	0.06	49 x 143	GL18	6
5650P-100	100	0.10	63 x 165	GL18	6
5650P-250	250	0.15	83 x 220	GL25	5
5650P-500	500	0.25	103 x 255	GL25	4

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6120P Corning® Funnel, PP

Durable polypropylene funnels are translucent and allow safe and easy transfers of solids or liquids from one vessel to another.

Cat. No.	Diam. (mm)	Length (mm)	Stem Diam. (mm)	Stem Length (mm)	Qty/Cs
6120P-30	30	45	1.5	25	24
6120P-40	40	65	4	35	24
6120P-50	50	85	7	43	24
6120P-75	75	110	6	55	12
6120P-100	100	155	8	77	12
6120P-120	120	180	11	90	12
6120P-150	150	220	15	95	12

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Technical Information

Warnings and Suggestions for the Safe Use of PYREX® and PYREXPLUS® Brand Labware

Personal Safety in the Lab

Lab safety is one of the most critical concerns of any lab. To help improve lab safety, Corning has compiled these common sense suggestions concerning the safe use of labware.

General Precautions

Never Drink From a Beaker

A standard beaker or other laboratory vessel used speciÀcally for drinking is a personal health hazard in the laboratory. Use disposable or recyclable cups. Never drink from any standard laboratory product to avoid any possibility of personal injury or health hazard.

Chemicals

Use Chemicals Carefully

When working with volatile materials, remember that heat causes expansion, and conÀnement of expansion results in explosion. Remember also that danger exists, even though external heat is not applied.

Do not mix sulfuric acid with water inside a cylinder. The heat from the reaction can break the base of the vessel because of the thickness of the base and the seal.

Perchloric acid is especially dangerous because it explodes on contact with organic materials. Do not use perchloric acid around wooden benches or tables. Keep perchloric acid bottles on glass or ceramic trays having enough volume to hold all the acid in case the bottle breaks. Always wear protective clothing when working with perchloric acid.

Glass will be chemically attacked by hydroÁuoric acid, hot phosphoric acid, and strong hot alkalis, so it should never be used to contain or to process these materials.

Always Áush the outside of acid bottles with water before opening. Do not put the stopper on the counter top where someone else may come in contact with acid residue.

Mercury is highly toxic. Special care is needed when dealing with mercury. Even a small amount of mercury in the bottom of a drawer can poison the room atmosphere. Mercury toxicity is cumulative, and the element's ability to amalgamate with a number of metals is well known. After an accident involving mercury, the area should be cleaned carefully until there are no globules remaining. All mercury containers should be well labeled and kept tightly closed.

NOTE: Broken glassware should be disposed of as sharps. When disposing of sharps, or sharps that have been in contact with potentially infectious materials, ensure compliance with your facility guidelines, as well as local, state, and federal regulations.

Identifying Chemicals

DO NOT taste chemicals for identiÀcation. Smell chemicals only when necessary and only by wafting a small amount of vapor toward the nose.

Label with Care

Never Àll a receptacle with material other than that speciÀed by the label. Label all containers before Àlling. Dispose of the contents of unlabeled containers properly.

Handling Glassware

Handle Glassware Carefully

Hold beakers, bottles, and Áasks by the sides and bottoms rather than by the tops. The rims of beakers or necks of bottles and Áasks may break if used as lifting points. Be especially careful with multiple neck Áasks.

Avoid Over Tightening Clamps

To avoid breakage while clamping glassware, use coated clamps to prevent glass-to-metal contact, and do not use excessive force to tighten clamps.

Heating

Safe Heat Sources

Be sure to check laboratory or instruction manuals when working with heat sources.

Bunsen Burners

Adjust the Bunsen burner to get a large soft Áame. It will heat slowly but also more uniformly. Uniform heat is a critical factor for some chemical reactions.

Adjust the ring or clamp holding the glassware so that the Áame touches the glass below the liquid level. Heating above the liquid level does nothing to promote even heating of the solution and could cause thermal shock and breakage of the vessel. A ceramic-centered wire gauze on the ring will diffuse the burner Áame to provide more even heat.

Rotate test tubes to avoid overheating one particular area. Uniform heating may be critical to your experiment.

Heat all liquids slowly. Fast heating may cause bumping, which in turn may cause the solution to splatter.

Do not heat glassware directly on electrical heating elements. Excessive stress will be induced in the glass, and this can result in vessel breakage.

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Hot Plates

There are several types of hot plates. Some are electrical; some are water heated. They may be ceramic or metal topped. You should consult your instruction manual before using a hot plate for the Àrst time.

Always use a hot plate larger than the vessel being heated.

Thick-walled items, such as jars, bottles, cylinders, and ¿lter Àasks, should never be heated on hot plates.

For information on Corning brand hot plates and hot plate stirrers, see the Equipment section.

Evaporation

Evaporation work should be observed carefully. Be careful when handling a vessel that has been heated after evaporation has occurred. It may crack unexpectedly.

Heating Thick-walled Vessels

Glassware with thick walls such as bottles and jars should not be heated over a direct Áame or comparable heat source.

Scratched Glassware

Do not heat glassware that is etched, cracked, nicked, or scratched. It is more prone to break.

For additional information, see Temperature section.

Mixing and Stirring

Use a rubber policeman on glass, or use PTFE rods to prevent scratching the inside of a vessel.

Do not look down into any vessel being heated or containing chemicals. Do not point a vessel's open end at another person.

A reaction may cause the contents to be ejected.

Spattering from acids, caustic materials and strong oxidizing solutions on the skin or clothing should be washed off immediately with large quantities of water.

Pipetting

Do Not Pipet by Mouth

For your safety, we suggest using a mechanical pipetting device, such as a rubber bulb or other pipetting aids available from laboratory suppliers. Do not draw any liquids into a pipet by mouth. Serious injury could result.

Temperature and Temperature Extremes

Avoid Extremes

Although PYREX® brand products can take extreme temperatures, always use caution.

Do not put hot glassware on cold or wet surfaces, or cold glassware on hot surfaces. It may break with temperature change. Cool all labware slowly to prevent breakage.

Protection from Temperature Extremes

Burns are caused by heat, ultraviolet, or infrared rays and also by extremely cold materials. Use goggles and limit your exposure time when working with extra-visual radiation. Never touch dry ice or liquid gases with your bare hands. Use tongs or gloves to remove all glassware from heat. Hot glass can cause severe burns. Protective gloves, safety shoes, aprons, and goggles should be worn in case of chemical accidents, spilling, or splattering.

Exposure to Heat

The recommended temperature use range for PYREXPLUS® labware is 10°C to 80°C. PYREXPLUS labware is designed to withstand the temperatures associated with steam sterilization. Do not place over direct heat or an open Áame. Prolonged exposure to dry heat above 80°C may cause the coating to become brittle and thus reduce the useful life of the vessel. A brown appearance or hardness to the touch are signs that the coating has become brittle and the product should be disposed of.

The upper dry heat temperature limit for PYREXPLUS labware is 110°C (230°F). PYREXPLUS labware should not be exposed to elevated temperature in a vacuum greater than 5 inches Hg (127 mm Hg).

Vacuum and Pressure Warning

Because of variations in conditions, Corning cannot guarantee any glassware against breakage under vacuum or pressure. Adequate precautions should be taken to protect personnel doing such work. We have included suggestions on personal safety in the lab, see the Safety section.

Ventilation

Work In A Well-ventilated Area

When working with chlorine, hydrogen sulÀde, carbon monoxide, hydrogen cyanide, and other very toxic substances, always use a protective mask or perform these experiments under a fume hood in a well-ventilated area.

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Safety Features and Bene¿ts of PYREX® and PYREXPLUS® Brand Labware

This section provides product information for the various types of glass labware products made by Coming. In addition, we have provided tips and additional suggestions on the safe use and care of your lab products.

PYREX® Labware

PYREX glass has proven itself to be tough and reliable for over 100 years of demanding use in the laboratory environment. The PYREX name is associated with high quality, corrosion- and heat-resistant laboratory glassware throughout the world.

Corning products are designed and produced with safety in mind. It is important to remember that most labware products are designed for speciÀc applications. Be sure you have the right piece of ware for the use you have in mind. Using a laboratory glassware product for applications other than those it was designed for can be dangerous.

Beakers

PYREX brand beakers are manufactured with uniform wall thickness, and offer an optimum balance between thermal shock resistance and mechanical strength.

Large, permanent marking spots on PYREX beakers allow the user to record more data on the vessel to help identify the contents quickly and easily.

Most impact breakage occurs on a beaker's rim. PYREX brand beakers have extra glass in the rim for added strength. The pour spout is gently sloped rather than hooked, minimizing breakage. The low-Áare spout allows controlled pouring.

Centrifuge Tubes

PYREX brand centrifuge tubes are made from durable Code No. 7740 borosilicate glass with special design consideration given to stress points caused by centrifugal forces. Before centrifuging hazardous chemicals or expensive samples, consult the nomogram on page 121 for computing relative centrifugal forces (RCF) to determine safe centrifugation rates.

Cylinders

The most important speciÀcation for graduated cylinders is tolerance. Selected tubing and careful calibrations assure meeting tolerances in PYREX brand cylinders. In addition, Corning was the Àrst to put hexagonal bases on cylinders to keep them from rolling off a lab bench. Legibility was improved by designing Lifetime Red™ panel cylinders.

Two cylinders of special safety interest are the 3046 and 3050 graduated cylinders. Both feature a reinforced bead of glass near the top of the rim. The reinforced bead helps to reduce breakage if the cylinder is upset. These cylinders are available in 10 mL, 25 mL, 50 mL, 100 mL, and 250 mL capacities.

Flasks

Uniform wall thickness, characteristic of all round bottom PYREX Áasks, allows the vessels to satisfy various mixing, heating, and boiling requirements commonly encountered in most laboratory work.

The thick walls of Corning ÀlterÁasks provide the mechanical strength needed for vacuum work. Consequently, ÀlterÁasks should never be heated. For this reason, the words "Filter Flask" appear on the product.

Standard Erlenmeyer Áasks are suitable for moderate heating, though they are primarily intended for mixing applications.

Stopcocks and Joints

PYREX Brand All Glass Stopcocks

General purpose PYREX brand glass stopcocks with the ¶ symbol are manufactured with 1:10 tapers and Ànishes as speciÀed in ASTM E-675. They feature interchangeable solid glass plugs. PYREX brand glass stopcocks with hollow, blown-glass plugs are lapped to the outer shell, thus insuring uniformity between mating surfaces. They can function safely to 10^4 torr. (mm of Hg) of vacuum with minimal leakage.

PYREX Glass-bodied Stopcocks with PTFE Plugs

These general purpose stopcocks are marked with the ¶ symbol and manufactured with 1:5 tapers and Ànishes as speciÀed by ASTM. Because no lubricant is needed, they are ideal for applications where grease contamination is a factor.

RotaÀo® Stopcocks

The RotaÁo stopcock can be used under varying conditions, ranging from general purpose to high vacuum applications. These stopcocks are ideal for applications where contamination is a factor; only PTFE and borosilicate glass come in contact with liquids or gases.

The Hi-Vac RotaÁo stopcock is designed to function safely to 10^3 torr. (mm of Hg) of vacuum with minimal leakage. They can be used at temperatures ranging from -20°C to 200°C and autoclaved at 20 psi and 126°C.

Joining and Separating Glass Apparatus

When pieces are not to be used for an extended period of time, take apart stopcocks, ground joints, Áask stoppers, and joints to prevent sticking. Remove the grease from the joints. PTFE stoppers and stopcocks should be loosened slightly.

For easy storage and reuse, put a strip of thin paper between ground joint surfaces.

Freeing Seized Ground Joints

If a ground joint sticks, this procedure will generally free it. Immerse the joint in a glass container of freshly poured carbonated liquid. You will be able to see the liquid penetrate between the ground surfaces. When the surfaces are wet (allow 5 to 10 minutes submersion), remove the joint and rinse with tap water. Wipe away excess water.

Then gently warm the wall of the outer joint by rotating it for 15 to 20 seconds over a low Bunsen burner Áame. Wear heat-resistant gloves to avoid burns. Be sure that 50% of the inner

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surface is wet before inserting the joint in the Áame. Remove from the Áame and gently twist the two members apart. If they do not come apart, repeat the procedure. Never use force when separating joints by this method.

Lubricating Stopcocks and Stoppers

Glass stopcocks on burets and separatory funnels should be lubricated frequently to prevent sticking. If one does stick, a stopcock plug remover, available from laboratory supply houses, should be used.

Wet both tubing and stopper with glycerin or water when trying to insert glass tubing into a rubber stopper. Wear a protective glove and wrap glass in a towel to prevent injury.

Fire polish rough ends of glass tubing before inserting into Áexible tubing or through a stopper.

If it becomes impossible to remove a thermometer from a rubber stopper, it is best to cut away the stopper rather than to risk breaking the thermometer.

In using lubricants, it is advisable to apply a light coat of grease completely around the upper part of the joint. Use only a small amount and avoid greasing that part of the joint that contacts the inner part of the apparatus.

Types of Lubricants

Three types of lubricant are commonly used on standard taper joints. (a) A hydrocarbon grease is the most widely used. It can be easily removed by most laboratory solvents, including acetone. (b) Because hydrocarbon grease is so easily removable, silicone grease is often preferred for higher temperature or high vacuum applications. It can be removed readily with chlorinated solvents. (c) For long-term reÁux or extraction reactions, a water-soluble, organic-insoluble grease, such as glycerin is suitable. Water will clean glycerin.

Volumetric Ware

The accuracy of volumetric ware depends on the care used in calibrating it, using the correct type of ware for the application, handling the ware properly, and insuring the ware is clean. Calibration of volumetric ware is usually done at 20°C, and the ware should be used at approximately this temperature. Refrigerated liquids should be allowed to come to room temperature before measuring them. Under normal use and care, the calibration of volumetric ware will not change. Do not expose volumetric ware to excessive heat, approaching PYREX® upper service limit.

Types of Ware

Serialized/ Certi¿ed Ware: CertiÀed Ware is calibrated to Class A speciÀcations. Each piece is individually serialized and furnished with a CertiÀcate of IdentiÀcation and Capacity, traceable to NIST standards, guaranteeing its calibration.

Class A Ware: Class A Ware is manufactured to tolerances established by ASTM E-694 for volumetric ware, ASTM E-542 for calibration of volumetric ware, and ASTM E-288 for volumetric Áasks. Utilizes the same tolerances as certiÀed ware but is not certiÀed and has no certiÀcate.

Class B Ware: Class B Ware is generally calibrated to twice the tolerance of Class A Ware.

Other Types: There are also some speciÀcations for other calibrated glassware, set by various federal bureaus or professional societies. Tolerances for these and references to the speciÀcations are found in this catalog under individual product descriptions.

Calibrated Ware Markings

Lines on graduated ware may be acid etched, wheel engraved, abrasive blasted, enameled, or permanently stained into the glass. Etched or engraved lines are usually colored by Àred-in enamels. The width of the lines should not exceed 0.4 mm for subdivided ware or 0.6 mm for single-line ware. In addition to the lines, the ware should be marked with its capacity, the temperature at which it should be used, and whether the piece was calibrated T.C. (“to contain”) or T.D. (“to deliver”) the stated volume. T.C. means that the ware is calibrated so that the the mark indicates the volume held in the container. T.D. means the mark indicates the amount of air-free distilled water at 20°C that is delivered when it is poured out. Numbers indicating volume at certain lines are placed immediately above the line. Volumetric Áask markings must cover at least 90% of the neck circumference.

Reading Volumetric Ware

ASTM E-542 details the method of reading the meniscus as follows: For all apparatus calibrated by this procedure, the reading or setting is made on the lowest point of the meniscus. In order that the lowest point be observed, it is necessary to place a shade of some dark material immediately below the meniscus, which renders the proÀle of the meniscus dark and clearly visible against a light background. A convenient device for this purpose is a collar-shaped section of this thick black rubber tubing cut open at one side and of such size as to clasp the tube Àrmly. Alternatively, black paper may be used.

Coming laboratory products are calibrated in accordance with clause 7.3.2.1 of ASTM E-542, which states: The position of fhe lowest point of the meniscus with reference to the graduation line is horizontally tangent to the plane of the upper edge of the graduation line. The position of the meniscus is obtained by having the eye in the same plane of the upper edge of the graduation line.

PYREXPLUS® Labware

PYREXPLUS laboratory glassware is PYREX brand borosilicate glass labware which has been coated with a tough, transparent plastic vinyl. The coating, which is applied to the outside of the vessel, helps prevent exterior surface abrasion. It also helps minimize the loss of contents and helps contain glass fragments if the glass vessel is broken. The recommended temperature use range for PYREXPLUS labware is 10°C to 80°C.

See page 123 for additional information on the use and care of PYREXPLUS labware.

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Suggestions for Cleaning

Good laboratory technique demands clean glassware, because the most carefully executed piece of work may give an erroneous result if dirty glassware is used. In all instances, glassware must be physically clean, chemically clean, and in many cases, bacteriologically clean or sterile.

All glassware must be absolutely grease-free. The safest criteria of cleanliness is uniform wetting of the surface by distilled water. This is especially important in glassware used for measuring the volume of liquids. Grease and other contaminating materials will prevent the glass from becoming uniformly wetted. This in turn will alter the volume of residue adhering to the walls of the glass container and thus affect the volume of liquid delivered. Furthermore, in pipets and burets, the meniscus will be distorted and the correct adjustments cannot be made. The presence of small amounts of impurities may also alter the meniscus.

Cleaning

Wash labware as quickly as possible after use. If a thorough cleaning is not possible immediately, put glassware to soak in water. If labware is not cleaned immediately, it may become impossible to remove the residue.

Most new glassware is slightly alkaline in reaction. For precision chemical tests, new glassware should be soaked several hours in acid water (a 1% solution of hydrochloric or nitric acid) before washing.

Brushes with wooden or plastic handles are recommended, as they will not scratch or abrade the glass surface.

Glassware Cleaners

When washing, soap, detergent, or cleaning powder (with or without an abrasive) may be used. Cleaners for glassware include Alconox, Tide, and Fab. The water should be hot. For glassware that is exceptionally dirty, a cleaning powder with a mild abrasive action will give more satisfactory results. The abrasive should not scratch the glass. During the washing, all parts of the glassware should be thoroughly scrubbed with a brush. This means that a full set of brushes must be at hand—brushes to fit large and small test tubes, burets, funnels, graduates, and various sizes of flasks and bottles. Motor-driven revolving brushes are valuable when a large number of tubes or bottles are processed. Do not use cleaning brushes that are so worn that the spine hits the glass. Serious scratches may result. Scratched glass is more prone to break during experiments. Any mark in the uniform surface of glassware is a potential breaking point, especially when the piece is heated. Do not allow acid to come into contact with a piece of glassware before the detergent (or soap) is thoroughly removed. If this happens, a film of grease may be formed.

Safe Use of Chromic Acid

If glassware becomes unduly clouded or dirty or contains coagulated organic matter, it must be cleansed with chromic acid cleaning solution.[1] The dichromate should be handled with extreme care, because it is a powerful corrosive and carcinogen.

When chromic acid solution is used, the item may be rinsed with the cleaning solution or it may be filled and allowed to stand. The length of time it is allowed to stand depends on the amount of contamination on the glassware. Relatively clean glassware may require only a few minutes of exposure; if debris is present, such as blood clots, it may be necessary to let the glassware stand all night. Due to the intense corrosive action of the chromic acid solution, it is good practice to place the stock bottle, as well as the glassware being treated, in flat glass pans or pans made from lead or coated with lead, or plastic polymer pans determined compatible with the concentration of chromic acid you are using. Extra care must be taken to be sure chromic acid solution is disposed of properly.

Special types of precipitates may require removal with nitric acid, aqua regia, or fuming sulfuric acid. These are very corrosive substances and should be used only when required.

Removing Grease

Grease is best removed by boiling in a weak solution of sodium carbonate. Acetone or any other fat solvent may be used. Strong alkalis should not be used. Silicone grease is mast easily removed by soaking the stopcock plug or barrel for 2 hours in warm decahydronaphthalene.

Drain and rinse with acetone or use fuming sulfuric acid for 30 minutes. Be sure to rinse off all of the cleaning agents.

Rinsing

It is imperative that all soap, detergents, and other cleaning fluids be removed from glassware before use. This is especially important with the detergents, slight traces of which will interfere with serologic and cultural reactions.

After cleaning, rinse the glassware with running tap water. When test tubes, graduates, flasks, and similar containers are rinsed with tap water, allow the water to run into and over them for a short time, then partially fill each piece with water, thoroughly shake, and empty, and repeat at least six times. Pipets and burets are best rinsed by attaching a piece of rubber tubing to the faucet and then attaching the delivery end of the pipets or burets to a hose, allowing the water to run through

[1] Chromic acid cleaning solution: Use powdered commercial or technical grade sodium dichromate or potassium dichromate. If the compound is in the form of crystals, grind to a fine powder in a mortar. To 20 grams of the powder in a liter beaker, add a little water, sufficient to make a thin paste. Slowly add approximately 300 mL of commercial concentrated sulfuric acid, stirring well. Transfer to a glass-stoppered bottle.

Larger amounts can be made in the same proportions. Use the clear supernatant solution. Chromic acid solution can be used repeatedly until it begins to turn a greenish color. Dispose of in accordance with appropriate regulations. Dilute with large volumes of water before discarding, or carefully neutralize the diluted solution with sodium hydroxide. Chromic acid solution is strongly acidic and will burn the skin severely. Use care in handling it.

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them. If the tap water is very hard, it is best to run it through a deionizer before using.

Rinse the glassware in a large bath of distilled water. Rinse with distilled water. To conserve distilled water, use a five gallon bottle as a reservoir. Store it on a shelf near your clean up area. Attach a siphon to it and use it for replenishing the reservoir with used distilled water.

For sensitive microbiologic assays, meticulous cleaning must be followed by rinsing 12 times in distilled water.

Sterilizing Contaminated Glassware

Glassware which is contaminated with blood clots, such as serology tubes, culture media, petri dishes, etc., must be sterilized before cleaning. It can best be processed in the laboratory by placing it in a large bucket or boiler filled with water, to which 1% to 2% soft soap or detergent has been added, and boiled for 30 minutes. The glassware can then be rinsed in tap water, scrubbed with detergent, rinsed again.

You may autoclave glassware or sterilize it in large steam ovens or similar apparatus. If viruses or spore-bearing bacteria are present, autoclaving is absolutely necessary.

Handling and Storing

To prevent breakage when rinsing or washing pipets, cylinders, or burets, be careful not to let tips hit the sink or the water tap.

Dry test tubes, culture tubes, flasks, and other labware by hanging them on wooden pegs or placing them in baskets with their mouths downward and allowing them to dry in the air; or place them in baskets to dry in an oven.[2] Drying temperatures should not exceed 140°C. Line the drying basket with a clean cloth to keep the vessel mouths clean.

Dry burets, pipets, and cylinders by standing them on a folded towel. Protect clean glassware from dust. This is done best by plugging with cotton, corking, taping a heavy piece of paper over the mouth, or placing the glassware in a dust-free cabinet.

Store glassware in specially designed racks. Avoid breakage by keeping pieces separated.

Do not store alkaline liquids in volumetric flasks or burets. Stoppers or stopcocks may stick.

Cleaning Specific Types of Glass Labware

Proper care and handling of PYREX® and PYREXPLUS® labware will greatly increase its life and increase the safety of your workplace.

PYREXPLUS Labware

Autoclaving

PYREXPLUS labware can be successfully sterilized using liquids or dry cycle sterilization which involves no vacuum or low vacuum (<5 inches Hg).

Recommended cycles for automated autoclaves are:

	Autoclave Type	
Autoclave Cycle	Gravity	Prevacuum
Liquid	Yes	Yes
Dry	Yes	No
Prevac	–	No

CAUTION: Always autoclave vessels with loose caps or closures.

Steam sterilization time should not exceed 15 minutes at 121°C (250°F). Drying time should not exceed 15 minutes at 110°C (230°F). The actual cavity temperature of the autoclave should be checked to be sure the autoclave temperature does not exceed the recommended sterilization and drying temperature.

Autoclaving – Cloudiness

Should the coating appear clouded due to dissolved moisture, simply let dry overnight at room temperature or briefly heat to 110°C (230°F).

Cleaning

As is common practice, clean all glassware before use. Any non-abrasive glassware detergent may be used for hand or automatic dishwasher cleaning. If using a dishwasher or glassware dryer, care should be taken to be sure the drying temperature does not exceed 110°C (230°F). Exposure to dry heat should be minimized.

Avoid brushes and cleaning pads which could abrade the glass or damage the coating. If using a chromic acid cleaning solution minimize contact of the solution with the coating.

Labeling and Marking

Use water-based markers for temporary marking or labeling of the PYREXPLUS labware coating. Solvent-based markers, dyes, and stains cannot be removed from the coating.

NOTE: A slight "plastic" odor may be detected when handling PYREXPLUS labware. This is due to additives in the plastic coating which are responsible for its superior performance. The odor is normal and will not affect the inertness of the inside borosilicate glass surface.

For additional information on the use and care of PYREXPLUS labware, see page 123.

Burets

Remove the stopcock or rubber tip and wash the buret with detergent and water. Rinse with tap water until all the dirt is removed. Then rinse with distilled water and dry. Wash the stopcock or rubber tip separately. Before a glass stopcock is placed in the buret, lubricate the joint with stopcock lubricant. Use only a small amount of lubricant. Burets should always be covered when not in use.

[2] Do not apply heat directly to empty glassware which is used in volumetric measurements. Such glassware should be dried at temperatures of no more than 80°C to 90°C.

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Culture Tubes

Culture tubes which have been used previously must be sterilized before cleaning. The best method for sterilizing culture tubes is by autoclaving for 30 minutes at 121°C (15 p.s.i. pressure). Media which solidiÀes on cooling should be poured out while the tubes are hot. After the tubes are emptied, brush with detergent and water, rinse thoroughly with tap water, rinse with distilled water, place in a basket, and dry.

If tubes are to be Àlled with a media which is sterilized by autoclaving, do not plug until the media is added. Thus, both media and tubes are sterilized with one autoclaving.

If the tubes are to be Àlled with sterile media, plug and sterilize the tubes in the autoclave or dry air sterilizer before adding the media.

Dishes and Culture Bottles

Sterilize and clean as detailed under Culture Tubes. Wrap in heavy paper or place in a Petri dish can. Sterilize in the autoclave or dry air sterilizer.

Pipets

Place pipets, tips down, in a cylinder or tall jar of water immediately after use. Do not drop them into the jar. This may break or chip the tips and render the pipets useless for accurate measurements. A pad of cotton or glass wool at the bottom of the jar will help to prevent breaking of the tips. Be certain that the water level is high enough to immerse the greater portion or all of each pipet. The pipets may then be drained and placed in a cylinder or jar of dissolved detergent or, if exceptionally dirty, in a jar of chromic acid cleaning solution. After soaking for several hours or overnight, drain the pipets and run tap water over and through them until all traces of dirt are removed. Soak the pipets in distilled water for at least 1 hour. Remove from the distilled water, rinse, dry the outside with a cloth, shake the water out, and dry.

Blood Cell Count Diluting Pipets

After use, rinse thoroughly with cool tap water, distilled water, alcohol, or acetone, and then ether.

Dry by suction. Do not blow into the pipets, as this will cause moisture to condense on the inside of the pipet.

To remove particles of coagulated blood or dirt, a cleaning solution should be used. One type of solution will sufÀce in one case, whereas a stronger solution may be required in another. It is best to Àll the pipet with the cleaning solution and allow to stand overnight. Sodium hypochlorite (laundry bleach) or a detergent may be used. Hydrogen peroxide is also useful. In difÀcult cases, use concentrated nitric acid. Some particles may require loosening with a horse hair or piece of Àne wire. Take care not to scratch the inside of the pipet.

Automatic Pipet Washers

Where a large number of pipets are used daily, it is convenient to use an automatic pipet washer. Some of these, such as those made of metal, can be connected directly by permanent Àxtures to the hot and cold water supplies. Others, such as those made with polyethylene, can be attached to the water supplies by a rubber hose. Polyethylene baskets and jars may be used for soaking and rinsing pipets in chromic acid cleaning solution. Electrically heated metallic pipet dryers are also available.

After drying, place pipets in a dust-free drawer. Wrap serologic and bacteriologic pipets in paper or place in pipet cans and sterilize in the dry air sterilizer. Pipets used for transferring infectious material should have a cotton plug placed in the top end of the pipet before sterilizing. The plug will prevent the material being measured from being drawn accidentally into the pipetting device.

Serological Tubes

Serological tubes should be chemically clean but need not be sterile. However, specimens of blood which are to be kept for some time at room temperature should be collected in a sterile container. It may be expedient to sterilize all tubes.

To clean and sterilize tubes containing blood, discard the clots in a waste container and place the tubes in a large basket. Put the basket, with others, in a large bucket or boiler. Cover with water, add a fair quantity of soft soap or detergent, and boil for 30 minutes. Rinse the tubes, clean with a brush, rinse, and dry with the usual precautions.

It is imperative when washing serological glassware that all acids, alkali, and detergents be completely removed. Acids, alkalis, and detergents in small amounts interfere with serologic reactions.

Serologic tubes and glassware should be kept separate from all other glassware and used only for serologic procedures.

Slides and Cover Glass

It is especially important that microscope slides and cover glass used for the preparation of blood Àlms or bacteriologic smears be perfectly clean and free from scratches.

Slides should be washed, placed in glacial acetic acid for 10 minutes, rinsed with distilled water, and wiped dry with clean paper towels or cloth. Once the slides have been washed, place them in a wide jar of alcohol. As needed, remove from the jar and wipe dry. If the slides are dry stored, wash them with alcohol before use.

NOTE: Broken glassware should be disposed of as sharps. When disposing of sharps, or sharps that have been in contact with potentially infectious materials, ensure compliance with your facility guidelines, as well as local, state, and federal regulations.

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Glass Technical Data

The products in this catalog are made from different glass compositions or composite materials which are sold under a variety of brand names. The following pages summarize some of the properties of these glasses.

PYREX® Brand Labware

Code No. 7740 Glass

Of the hundreds of commercial glasses produced, Code No. 7740 borosilicate glass comes closest to being the ideal glass for most laboratory applications.

With proper care, it will withstand nearly all temperatures used in normal laboratory use. It is highly resistant to chemical attack. Its low coefficient of expansion allows it to be manufactured with heavy walls, giving it mechanical strength while retaining reasonable heat resistance. And, it is a glass that can be fabricated more easily than most other glasses, thus making it more economical.

PYREX Brand Low Actinic Labware

Code No. 7740 Glass with a Red Ultraviolet Shielding Stain

PYREX Low Actinic Labware is made from Code. No. 7740 glass with copper replacing the sodium in the glass matrix at the surface. The resulting product is as durable as the base glass. PYREX Low Actinic Labware was originally developed for work in the vitamin field, but it has found other uses in applications with chemicals sensitive to light in the 3,000 to 5,000 Angstrom range.

PYREXPLUS® Brand Labware

Code No. 7740 Glass with a Vinyl Coating

PYREXPLUS brand labware is Code No. 7740 PYREX brand borosilicate glass labware with a tough transparent vinyl coating. It is designed to resist exterior surface abrasion. It also helps minimize loss of contents if the glass vessel is accidentally broken.

Chemical Properties, Light Transmittance, and Pressure Data

Chemical Durability

The resistance to attack of different glasses by various chemicals may vary depending to a great extent upon temperature and pH values. The best way to determine which glass is most satisfactory is by simultaneous testing. Table 1 gives some representative figures for the glasses in this catalog.

The coating of PYREXPLUS brand labware is designed to resist leakage resulting from a brief chemical exposure that might occur if the vessel is broken. Prolonged and/or repeated chemical exposure of the coating to aldehydes, ketones, chlorinated solvents, and concentrated acids should be avoided.

Table 1. Relative Chemical Durability

Weight loss in milligrams of glass removed per cm^2 surface area exposed to reagent (mg/cm^2) in 24 hours at 95°C.

Glass Code No.	5% NaOH	5% HCl
7740	5.0	0.005

Chemical Composition

The chemical composition of glasses is probably of interest only to those who are concerned with extremely precise determinations.

Transmittance Data

The transmittance of low actinic glassware is as follows:

Wave Length A	% Transmittance
3,000	0
4,000	0-1
5,000	2-4

The visible light transmittance (400 to 760 nm) of Code No. 7740 glass is 92% at 2 mm thickness.

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Code No. 7740
Corning Trademark: PYREX®

Common Names

Borosilicate, low expansion, Type I Glass

Standards

Type I, Class A borosilicate conforming to federal speciÀcation DD-G-54 Ib and ASTM E-438. Also meets the U.S. Pharmacopoeia speciÀcations for Type I borosilicate glass.

Composition

Compound	Approx. Amount (%)
SiO_2	80.6
B_2O_3	13.0
Na_2O	4.1
Al_2O_3	2.3

Properties

CoefÀcient of Expansion	32.5×10^{-7} cm/cm/°C
Strain Point	510°C
Anneal Point	560°C
Soften Point	821°C
Density	2.53 g/cm^3
Youngs Modulus	76 X 10^3 Kg/mm^2
Refraction Index	1.474 @ Sodium D Line
Temperature Limits	490°C (Extreme Service) 230°C (Normal Service)
Maximum Thermal Shock	160°C

Applications

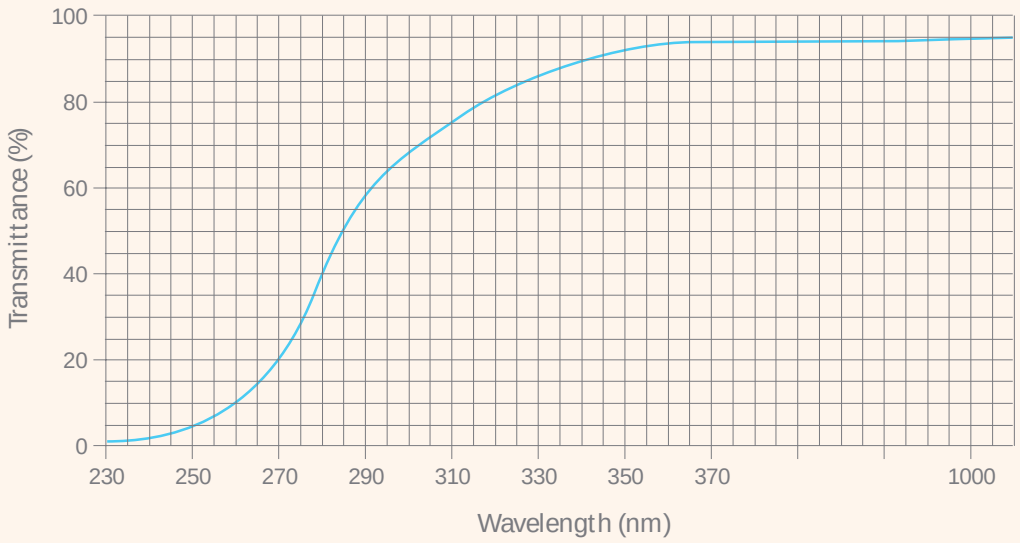
Designed for use in all products requiring very high resistance to strong acids, alkalis, and products intended for use in heat applications such as autoclaves, hot plates, and open Áame.

Products

Beakers, burets, bottles, centrifuge tubes, condensers, cylinders, desiccators, dishes, Áasks, fritted ware, funnels, ground joints, jars, stopcocks, tubing, and other assorted products.

Warnings

1. Thick-walled ware, such as bottles, jars, and desiccators, should not be heated over a Áame, a hot plate, or other comparable source of heat.
2. Do not use hydroÁuoric or hot phosphoric acid in glass.
3. Do not use scratched or abraded glassware.
4. Hot alkalis will etch glass.



Code No. 7740 Transmittance
Approximately 1 mm thick

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Code No. 7789
Corning Trademark: PYREX®

Common Names

Borosilicate, low expansion, Type I Glass

Standards

Type I, Class A Borosilicate conforming to federal speciÀcation DD-G-54 Ib and ASTM E-438 (except for K_2O content). This glass also meets the U.S. Pharmacopoeia speciÀcations for Type I Borosilicate Glass.

Composition

Compound	Approx. Amount (%)
SiO_2	81
B_2O_3	13
Na_2O	4
Al_2O_3	2

Properties

CoefÀcient of Expansion	32.5 x 10^{-7} cm/ cm/ °C
Strain Point	510°C
Anneal Point	560°C
Soften Point	815°C
Density	2.22 g/ cm^3
Youngs Modulus	6.4 X 10^3 Kg/ mm^2
Refraction Index	1.474 @ Sodium D Line
Temperature Limits	Not Available
Maximum Thermal Shock	160°C

Applications

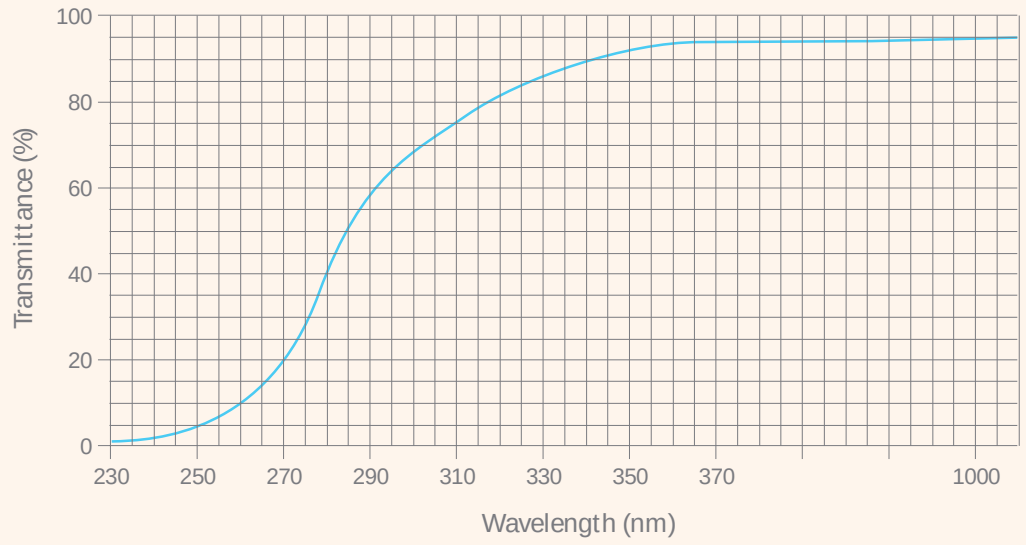
Designed for use in all products requiring very high resistance to strong acids and alkalis. Products may be autoclaved. Code No. 7740 glass can be sealed to this glass.

Products

Reagent bottles in sizes 125 mL through 2000 mL. Also used in Cat. No. 1395 series media bottles.

Warnings

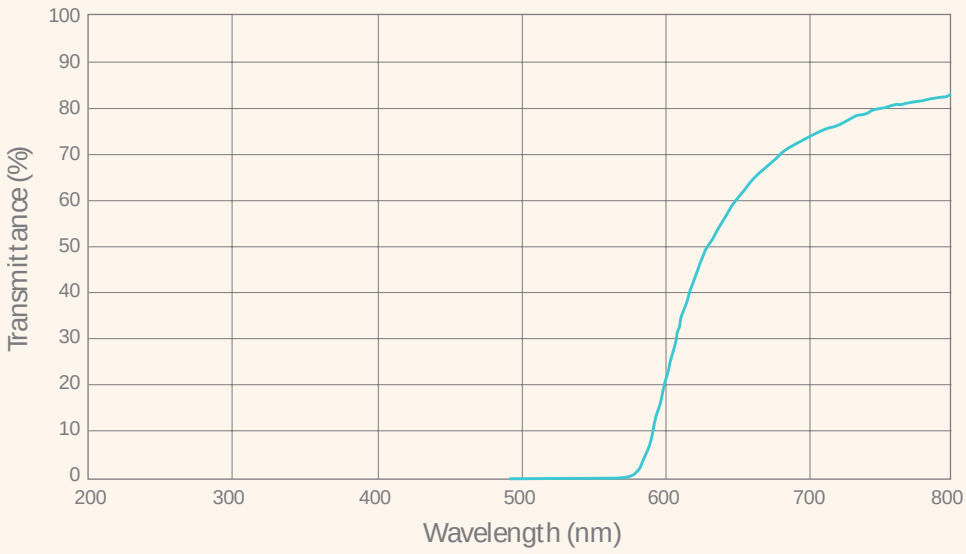
1. Not recommended for use on hot plates.
2. Do not use hydroÁuoric or hot phosphoric acid in glass.
3. Do not use scratched or abraded glassware.
4. Hot alkalis will etch glass.



Code No. 7789 Transmittance
Approximately 1 mm thick

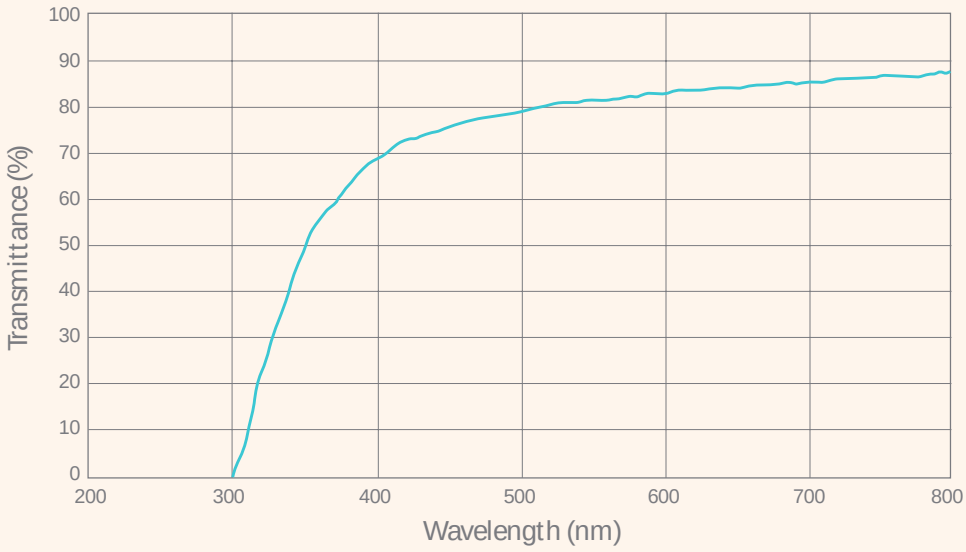
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Transmission/ Wavelength for PYREX® Brand Low Actinic Labware



Transmittance data for low actinic product
Approximately 2.80 mm thick

Transmission/ Wavelength for PYREXPLUS® Brand Labware



Transmittance data for PYREXPLUS product
Approximately 3.15 mm thick

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Properties of Corning® Glasses

For the convenience of those interested in the properties of glasses manufactured by Corning, data on some representative glasses are listed on this page.

				7740	7800	0071
1.	Glass Code					
2.	Type			Borosilicate	Borosilicate	Soda Lime
3.	Color			Clear	Clear	Clear
4.	Principal Use			General	Pharmaceutical	Jar
5.	Forms Usually Available			BPSTU	T	
6.	Corrosion Resistance		Class Weathering Water Acid	1 1 1 1	 1 1 1	
7.	Thermal Expansion (Multiply by 10^{-7} cm/cm/°C)		0°C-300°C 25°C to Setting Point	32.5 35	55 53	90
8.	Upper Working Temperatures (mechanical considerations only)	Annealed Tempered	Normal Service (°C) Extreme Service (°C) Normal Service (°C) Extreme Service (°C)	230 490 260 290	200 460	
9.	Thermal Shock Resistance Plates 15 x 15 cm Annealed		3.2 mm Thick (°C) 6.4 mm Thick (°C) 12.7 mm Thick (°C)	160 130 90		
10.	Thermal Stress Resistance (°C)			54	33	
11.	Viscosity Data		Strain Point (°C) Annealing Point (°C) Softening Point (°C) Working Point (°C)	510 560 821 1252	521 565 785 1189	495 537 726
12.	Knoop Hardness KHN_{100}				487	
13.	Density g/cm³			2.23	2.34	2.47
14.	Young's Modulus (Multiply by 10^3 Kg/mm²) Poison's Ratio			6.4 .20		
15.	$\log_{10}$ of Volume Resistivity (ohm-cm)		25°C 250°C 350°C	15.0 8.1 6.6	 7.0 5.7	
16.	Dielectric Properties at 1 MHz 20°C		Power Factor (%) Dielectric Constant Loss Factor (%)	0.50 4.6 2.6		
17.	Refractive index Stress-Optical Coefficient, nm/cm Kg/mm²			1.474 394	1.491 319	1.512 273

Refer to next page for footnote references (Thermal Properties).

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Thermal Properties

The table on the previous page indicates the thermal properties for various Corning® glasses. The strain point represents the extreme upper limit of serviceability for annealed glass. A practical maximum service temperature will always be below this point.

The annealing point is the temperature, at the upper end of the annealing range, at which the internal stress is reduced to a commercially acceptable value over a short period of time.

In an annealing operation, the glass is slowly cooled from above the annealing point to somewhat below the strain point.

The softening point is the temperature at which a small diameter fiber of the glass will elongate under its own weight. As one moves above this temperature, the glass becomes more workable. As a general rule, the coefficient of expansion indicates the thermal shock resistance of the glass. The lower the expansion, the greater the resistance of the glass to sudden temperature changes.

Footnote References for "Properties of Corning Glasses"

(See previous page.)

Line 5

B-Blown Ware
S-Plate Glass
U-Panels
T-Tubing and Rod
P-Pressed Ware

Line 6

These borosilicate glasses may rate differently, if subjected to excessive heat treatment.

Line 8

Normal service no breakage from excessive thermal shock is assumed. Extreme limits glass will be very vulnerable to thermal shock. Recommendations in this range are based on mechanical stability considerations only. Tests should be made before adopting final designs. These data are approximate only.

Line 9

These data are approximate only. Based on plunging sample into cold water after oven heating resistance of 100°C (212°F), which means no breakage if heated to 100°C (212°F) and plunged into water at 10°C (50°F). Tempered samples have over twice the resistance of annealed glass.

Line 10

Resistance in °C (°F) is the temperature differential between the two surfaces of a tube or a constrained place that will cause a tensile stress of 0.7 kg/mm (1000 psi) on the cooler surface.

Line 11

These data are subject to normal manufacturing variations.

Line 12

Determined by revised ASTM standard.

Line 17

Refractive index may be at either the sodium yellow line (589.3 nm) or helium yellow line (587.6 nm). Values at these wavelengths do not vary in the first three places beyond the decimal point.

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Glossary of Glass Tubing

1. I.D.

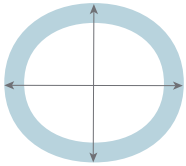
Inside diameter of tubing.

2. O.D.

Outside diameter of tubing.

3. Wall

The normal thickness of the glass between the inside and outside surfaces of the tubing.



4. O.O.R.

The difference between the minimum and maximum O.D. measurements made at one point along a piece of tubing.

5. Siding

This is the difference between the minimum and the maximum wall thickness as measured at the end of the tube.

6. Airlines

These are elongated air bubbles within the tubing or rod. They may be buried within the glass or open on the surface.

7. Chips

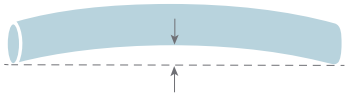
A depression on the glass surface of tubing or rod caused by Áaking of the glass.

8. Stones

A piece of undissolved or crystallized refractory material or glass batch appearing in the glass as an opaque lump.

9. Bow

Bow is measured as the maximum deviation from a straight line connecting any two points on the tube.



10. Taper

The maximum gradual dimensional change in the O.D. of one end of the tubing or rod to the opposite end.



11. Check

A Àssure extending into the wall of tubing or rod.

12. Scuff scratch

Abrasion which might occur during the manufacturing process, shipping, storage, or use.

13. Cord

An optical or surface effect usually in a narrow band caused by non-homogeneous glass.

14. Stress

A condition of tension or compression existing within the glass.

15. End Finishes

a. Cut at Draw – Raw ends not Àre-polished or glazed.

b. Cut and Fire-polished – Cut at draw. Ends Àre-polished to heal sharp edges.

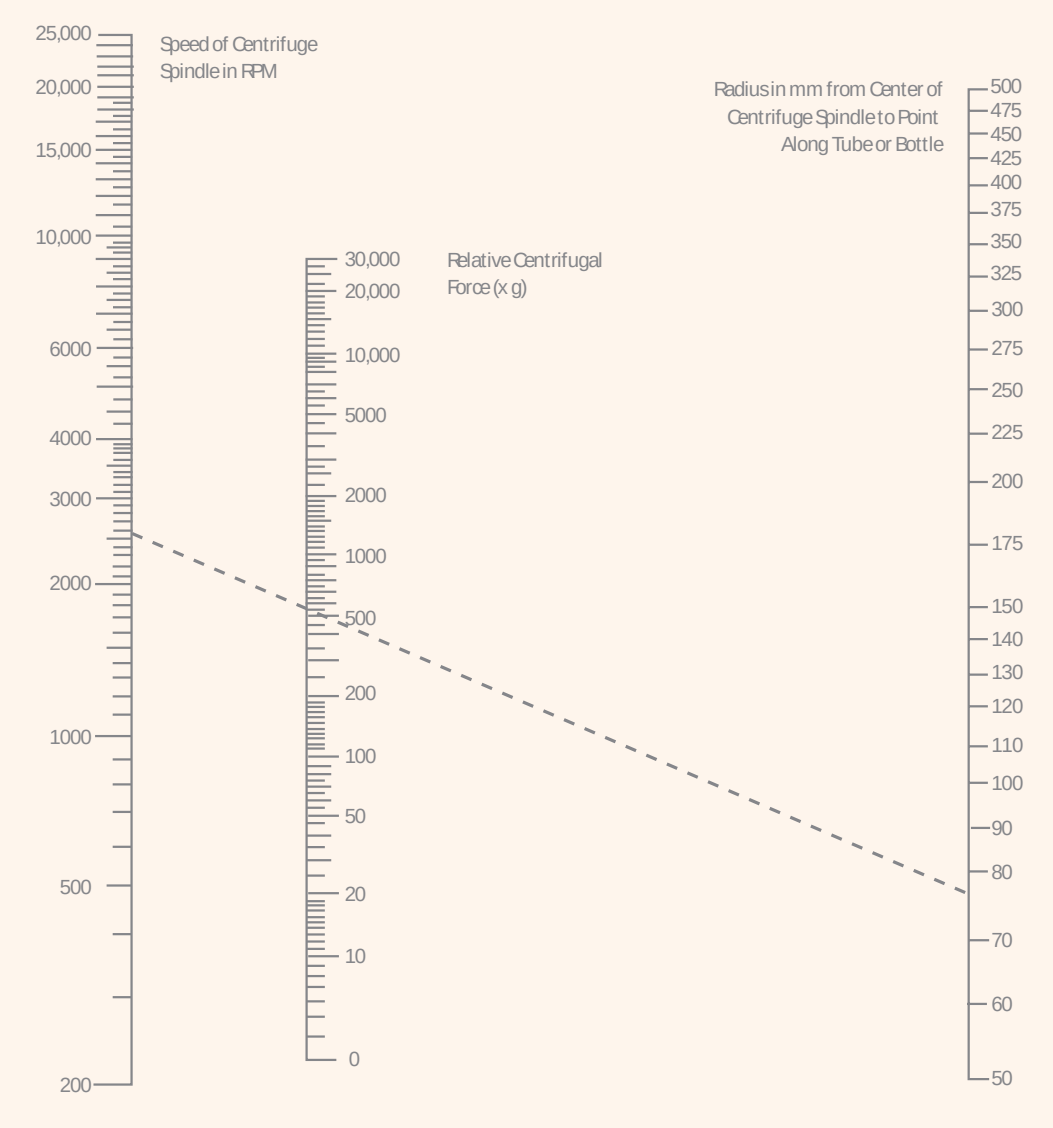
c. Trimmed – Tubing cut to speciÀc length.

d. Trimmed and Glazed – Tubing cut to length and Àre-polished to heal sharp edges.

e. Cut and Ground – Tubing cut to length and ends ground.

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Nomogram for Computing Relative Centrifugal Force (RCF)



All data subject to normal manufacturing variations

To calculate the RCF value at any point along the tube or bottle, measure the radius, in mm, from the center of the centrifuge spindle to the particular point. Draw a line from the radius value on the right-hand column to the appropriate centrifuge speed on the left-hand column.

The RCF value is the point where the line crosses the center column. The nomogram is based on the formula:

$RCF = (11.17 \times 10^{-7}) RN^2$

where:

R = Radius in mm from centrifuge spindle to point in tube bottom

N = Speed of spindle in RPM 125

NOTE: Tubes should not be spun in excess of 1500 x g.

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Guide to Fritted Ware

Porosity

There are four different porosities of PYREX® brand fritted ware available, so that precipitates varying in size can be filtered at maximum speed with no sacrifice of retention. Porosity is controlled in manufacture, and discs are individually tested and graded into these classifications. The extra coarse and coarse porosities are held toward the maximum pore diameter as listed. The medium and fine are held toward the minimum pore diameter as listed.

The porosity for the pore diameter of the filter is determined in the same manner as specified in ASTM E-128 Maximum Pore Diameter and Permeability of Rigid Porous Filters for Laboratory Use.

Also, where the size of the piece permits, it is marked with the ASTM designation followed by the pore range in microns as shown in the column Nominal Maximum Pore Size (µm) (Table 1).

Coloration

The "whiteness" of various fritted products may vary slightly from piece to piece due to minor color variations in the batch mix. This color variation does not affect product filtration performance nor is it frit contamination.

Proper Care of Fritted Ware

Cleaning

A new fritted filter should be washed by suction with hot hydrochloric acid and then rinsed with water before it is used. This treatment will remove loose particles of foreign matter such as dust. It is advisable to clean all PYREX brand fritted filters as soon as possible after use. This will prolong their life.

Many precipitates can be removed from the filter surface simply by rinsing from the reverse side with water under pressure not exceeding 15 lbs/sq. in. Drawing water through the filter from the reverse side with a vacuum pump is also effective. Some precipitates tend to clog the pores of a fritted filter. Treatment here must be by chemical means. A few suggestions generally found to be useful are listed in Table 2.

Operating Pressures

Fritted glassware is designed primarily for vacuum filtration or for gas flow at relatively low pressures. If used for pressure work, the MAXIMUM differential on the disc should not exceed 15 pounds per square inch. Care should be taken when preparing sample solutions to avoid trapping air. If dissolved air is present, the flow rate may be reduced by up to 50%.

Thermal Limitations

The resistance to thermal shock of fritted ware is less than that of non-porous PYREX brand labware. Therefore, articles of fritted ware should not be subjected to excessive temperature changes or to direct flame.

Dry fritted crucibles at room temperature may be placed into a drying oven operating at 150°C.

Fritted ware may be safely heated in a furnace to 500°C without ill effect, provided that the cycle of heating and cooling is gradual.

Table 2. Cleaning Materials

Material	Cleaning Solution
Fatty materials	Carbon tetrachloride
Organic matter	Hot concentrated cleaning solution or hot concentrated sulfuric acid plus a few drops of sodium or potassium nitrite
Albumen	Hot ammonia or hot hydrochloric acid
Glucose	Hot mixed acid; $H_2SO_4 + HNO_3$
Copper or Iron Oxides	Hot hydrochloric acid plus potassium chlorate
Mercury Residue	Hot nitric acid
Silver Chloride	Ammonia or sodium hyposulfite
Viscose	5%-10% NaOH followed by cleaning solution
Aluminous and Siliceous Residues	2% hydrofluoric acid followed by concentrated sulfuric acid; rinse immediately with distilled water followed by a few mL of acetone. Repeat rinsing until all traces of acid are removed.

Table 1. Available Porosities

Porosity	Catalog Abbreviation	Nominal Maximum Pore Size (µm)	Principal Uses
Extra Coarse	EC	170-220	Filtration of very coarse materials. Gas dispersion, gas washing, extractor beds, support of other filter materials.
Coarse	C	40-60	Filtration of coarse materials. Gas dispersion, gas washing, gas absorption. Mercury filtration. Extraction apparatus.
Medium	M	10-15	Filtration of crystalline precipitates. Extraction apparatus. Removal of "floaters" from distilled water.
Fine	F	4-5.5	Filtration of fine precipitates. Mercury valve. Extraction apparatus.

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The Use and Care of PYREXPLUS® Laboratory Glassware

PYREXPLUS® labware is designed to offer you additional safety and protection, plus extended product life, by coating the exterior surface with a PVC polymer.

Autoclaving

PYREXPLUS labware can be successfully sterilized using liquid or dry cycle sterilization which involves no vacuum or low vacuum (5 inches Hg).

Recommended cycles for automated autoclaves are:

	Autoclave Type	
Autoclave Cycle	Gravity	Pre-vacuum
Liquid	Yes	Yes
Dry	Yes	No
Pre-vac	–	No

CAUTION: Always autoclave vessels with loose caps or closures.

Sterilization time should not exceed 15 minutes at 121°C (250°F). Drying time should not exceed 15 minutes at 110°C (230°F). The actual cavity temperature of the autoclave should be checked to be sure the autoclave temperature does not exceed the recommended sterilization and drying temperature.

Autoclaving-Cloudiness

Should the coating appear clouded due to dissolved moisture, simply let dry overnight at room temperature or briefly heat to 110°C (230°F).

Cleaning

As is common practice, clean all glassware before use. Any non-abrasive glassware detergent may be used for hand or automatic dishwasher cleaning. If using a dishwasher or glassware dryer, care should be taken to be sure the drying temperature does not exceed 110°C (230°F). Exposure to dry heat should be minimized.

Avoid brushes and cleaning pads which could abrade the glass or damage the coating. If using a chromic acid cleaning solution, minimize contact of the solution with the coating.

Exposure to Chemicals

As with all PYREX® brand borosilicate glass labware, the PYREXPLUS vessel has excellent chemical inertness. The coating, however, is designed to resist leakage resulting from a brief chemical exposure that might occur if the vessel is broken. Prolonged and/or repeated chemical exposure of the coating to aldehydes, ketones, chlorinated solvents, and concentrated acids should be avoided.

Exposure to Cold

PYREXPLUS labware should not be exposed to temperatures below -20°C (-4°F). Extremely low temperatures may result in the coating becoming cracked. Exposure to temperatures below room temperature (23°C or 73°F) can temporarily reduce the ability of the coating to contain its contents if the vessel is broken.

Exposure to Heat

PYREXPLUS labware is designed to withstand the temperatures associated with steam sterilization. However, it should not be placed over direct heat or an open flame. Prolonged exposure to dry heat may also cause the coating to become brittle and thereby reduce the useful life of the vessel. A brown appearance or hardness to the touch are signs that the coating has become brittle.

The upper temperature limit for PYREXPLUS labware is 110°C (230°F). PYREXPLUS labware should not be exposed to elevated temperature in a vacuum greater than 5 inches Hg (127 mm Hg).

Exposure to Microwave

PYREXPLUS labware is completely microwave safe. However, as with any microwave vessel, be sure there is a load (water or other microwave absorbing material) in the microwave oven. Also, be sure all caps and closures are loosened.

Exposure to Ultraviolet

Prolonged and/or repeated exposure of the PYREXPLUS labware coating to direct sunlight or ultraviolet sources (such as sterilizaton lamps) is not recommended.

Exposure to Vacuum

PYREXPLUS containers (such as filter flasks and aspirator bottles) have demonstrated the ability to contain glass fragments upon implosion at room temperature. However, in keeping with safe laboratory practice, always use a safety shield around evacuated containers.

Labeling and Marking

Use water-based markers for temporary marking or labeling of the PYREXPLUS labware coating. Solvent-based markers, dyes, and stains cannot be removed from the coating.

NOTE: A slight "plastic" odor may be detected when handling PYREXPLUS labware. This is due to additives in the plastic coating which are responsible for its superior performance. The odor is normal and will not affect the inertness of the inside borosilicate glass surface.

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General Use and Care Recommendations

- Proper care and handling of PYREXPLUS® labware or any labware will greatly increase its life and increase the safety of your work place.
- Do not place PYREXPLUS labware over direct heat or open flame.
- The recommended temperature use range for PYREXPLUS labware is 10°C to 80°C. Do not continuously expose PYREXPLUS labware to heat above 80°C.
- Do not expose to dry heat in a dishwasher above 110°C (230°F). Drying time should not exceed 15 minutes at 110°C (230°F).
- Do not autoclave above 121°C (250°F). Sterilizing time should not exceed 15 minutes.
- Do not refrigerate below -20°C (-4°F).
- Do not remove the protective coating. Do not use a vessel on which the coating is hardened, darkened or otherwise damaged.
- Do not use PYREXPLUS® labware to store hazardous chemicals below room temperature.
- Do not allow prolonged or repeated exposure of the coating to strong acids or solvents.
- Do not use a vessel once the glass is broken. Immediately transfer the contents of a broken vessel to an approved container and properly dispose of the broken vessel.
- Do not incinerate discarded vessels. Place in proper disposal containers.

Glass Terminology

Anneal: To prevent or remove objectionable stresses in glassware by controlled cooling.

Binder (Fibrous Glass): Substances employed to bond or hold the fibers together.

Blister: An imperfection, a relatively large bubble or gaseous inclusion.

Check: An imperfection. a surface crack in a glass article.

Chill Mark: A wrinkled surface condition on glassware, resulting from uneven contact in the mold prior to forming.

Chip: An imperfection due to breakage of a small fragment from an otherwise regular surface.

Cord: An unattenuated glass inclusion, possessing optical and other properties differing from those of the surrounding glass.

Cullet: Waste or broken glass, usually suitable as an addition to raw batch.

Devitri¿cation: Crystallization in glass.

Dice: The more or less cubical fracture of tempered glass.

Fiber: An individual filament made by attenuating molten glass. A continuous filament is a glass fiber of great or indefinite length. A staple fiber is a glass fiber of relatively short length (generally less than 44 cm).

Fusion: Joining by heating.

Glass Ceramic: A material melted and formed as a glass, then converted largely to a crystalline form by processes of controlled devitrification.

I.D.: Inside diameter.

Lampworking: Forming glass articles from tubing and rod by heating in gas flame.

Lap: (1) An imperfection, a fold in the surface of a glass article caused by incorrect flaw during forming. (2) A process used for mating ground surfaces.

Liquidus Temperature: The maximum temperature at which an equilibrium exists between the molten glass and its primary crystalline phase.

Mat (Fibrous Glass): A layer of intertwined fibers bonded with some resinous material or other adhesive.

O.D.: Outside diameter.

Out-of-Round: Asymmetry in round glass articles.

Sealing: See Fusion.

Seed: An extremely small gaseous inclusion in glass.

Softening Point: The temperature at which a uniform fiber 0.5 mm to 1.0 mm in diameter and 22.9 cm in length elongates under its own weight at a rate of 1 mm per minute when the upper 10 cm of its length is heated in a prescribed furnace at the rate of approximately 5°C per minute. For a glass of density near 2.5, this temperature corresponds to viscosity of $10^{7.6}$ poises.

Standard Taper: ℸ is the symbol used to designate interchangeable glass joints, stoppers, and stopcocks complying with the requirements of ASTM E-676 and ASTM E-675. All mating parts are finished to a 1:10 taper.

ℒ is the designation for spherical (semi-ball) joints complying with ASTM E-677.

ℱ is the designation for tapered stopcocks using a fluorocarbon plug complying with ASTM E-911. All mating parts are finished to a 1:15 taper. The size of a particular piece appears after the appropriate symbol. Due primarily to the greater variety of apparatus equipped with fittings, a number of different types of identifications are used as follows:

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- Joints: A two-part number, § 24/40, with 24 being the approximate diameter in mm at the large end of the taper, and 40 being the axial length of taper, also in mm.
- Stopcocks: A single number, § 2, with 2 being the approximate diameter in mm of the hole or holes through the plug.
- Bottles: A single number, § 19, with 19 being the approximate diameter in mm of the opening at the top of neck.
- Flasks: (Other than most boiling flasks) a single number, § 19, with 19 again being the approximate diameter in mm at top of neck. For dimensional details of the various stoppers, see the individual listings in Corning's general catalog of laboratory products.

The complete designation of a spherical joint also consists of a two-part number, § 12/2, with 12 being the approximate diameter in mm of the ball and 2 the bore in mm of the ball and the socket.

Finally, for the fluorocarbon plug, a single number is used as with § stopcocks. Thus §2 means a stopcock with a hole of approximately 2 mm in the plug.

Stone: An imperfection; crystalline contaminations in glass.

Stria: A cord of low intensity, generally of interest only in optical glass.

Tempered Glass: Glass that has been rapidly cooled from near the softening point, under rigorous control, to increase its mechanical and thermal strength.

Thermal Endurance: The relative ability of glassware to withstand thermal shock.

Weathering: Attack of a glass surface by atmospheric elements.

Working Range: The range of surface temperature in which glass is formed into ware in a specific process. The "upper end" refers to the temperature at which the glass is ready for working generally corresponding to a viscosity of 10^3 to 10^4 poises. The "lower end" refers to the temperature at which it is sufficiently viscous to hold its formed shape, generally corresponding to a viscosity greater than 10^6 poises. For comparative purposes and when no specific process is considered, the working range of glass is assumed to correspond to a viscosity range from 10^4 to $10^{7.6}$ poises.

Glass Material Terms

Standards

Three organizations currently publish standards covering the composition properties and/or testing of glasses used in the laboratory. All are similar and in some cases identical. These standards and Corning glasses are listed below:

- Federal Specification DD-G-541b and ASTM Standard E-438
- Type I, Class A Borosilicate – Code Nos. 7740 and 7789* Glass
- Type I, Class B Borosilicate – Code No. 7800 Glass
- *Type II, Soda Lime – Code No. 0071 Glass
- U.S. Pharmacopoeia Chemical Resistance – Glass Containers
- Type I highly resistant borosilicate – Code Nos. 7740, 7800, 7789, and 7799

Compositions

The information on composition is approximate percent by weight unless otherwise noted.

Properties

Annealing Point (Viscosity 10^{13} poises): The temperature at which the internal strains in glass are reduced to an acceptable limit in 15 minutes per ASTM C-336.

Coefficient of Expansion: ASTM E-228 measurement of average linear expansion for temperature changes between 0° and 300°C.

Density: Weight in grams of one cubic centimeter of glass.

Refractive Index: Measurement of the ratio between the velocity of light in air to velocity in glass.

Softening Point (Viscosity $10^{7.5}$ to 10^8 poises): The temperature at which glass will elongate under its own weight per ASTM C-338.

Strain Point (Viscosity $10^{14.5}$ poises): The temperature at which the internal stresses in glass are reduced to low values in approximately 4 hours.

Temperature Limits: Normal service is the temperature at which no breakage should occur. Extreme service is the maximum temperature limit of the glass. It will be prone to thermal failure if not in perfect condition.

Thermal Shock Limit: The maximum allowable difference in temperature between the temperature of the glass and the air, liquid or solid in contact with the glass. This figure is based on plunging an oven-heated 3.2 mm thick sample into cold water.

Transmittance: Graph showing the percent transmittance for wavelengths in the ultra-violet and visible ranges. Values are for thickness shown.

Youngs Modulus: The ASTM C-623 measurement of stress to strain ratio.

NOTE: The warnings which appear in this text apply only to specific products made from the glass compositions noted. These warnings are not all-inclusive. It is assumed that the user takes normal care and precautions while using the products.

*See Code. No. 7789 glass spec sheet for exception.

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Properties of Components Used in Corning Products

Use and Care of Phenolic Caps

In order to minimize the likelihood of the liners coming out of caps, it is recommended that:

a. They be cleaned with hot water only, because detergents can attack the special nontoxic adhesive that holds them to the phenolic.

b. They not be applied to hot bottles, because a vacuum forms inside as the bottles cool and will pull the liners loose.

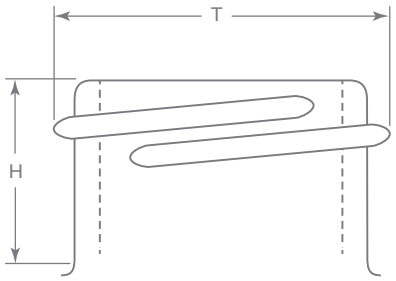
c. They not be subjected to dry heat which can destroy the liners; only steam autoclaving should be used and then not above 121°C.

Threaded Cap Information

Corning designed these screw caps for autoclaving, with heat-steam resistant resin. They are available with PTFE or white rubber liners. Disposable phenolic caps are available in bulk case pack quantities.

The Corning® cap(s) thread conÀguration complies with the current G.P.I. industry standard. G.P.I. refers to the "Glass Packaging Institute" which is responsible for maintaining current standards and issuing new uniform glass Ànishing standards to the market. G.P.I. formally replaced G.C.M.I. as the industry recognized standard.

IdentiÀcation examples: 38-400 means that the diameter across the threads of the glass container are approximately 38 millimeters. The second number, 400 in this case, denotes the particular style of cap. All dimensions are approximate.



	"T" Dimension (mm)	"H" Measurements (mm)			
	400	410	415	430
13			11.20	
15			13.90	
18	9.00	13.00	15.40	
20	9.50	13.80	18.50	
24	10.25	16.15	24.00	
28	10.25	17.75	27.20	
33	9.85			
38	9.85			
38*				22.0
40	10.25			

*ModiÀed.

All caps should be closed "Ànger tight," gently compressing the inner liner for a leak-resistant Àt. DO NOT over tighten; the glass threads on your applicable container may break if over-torqued.

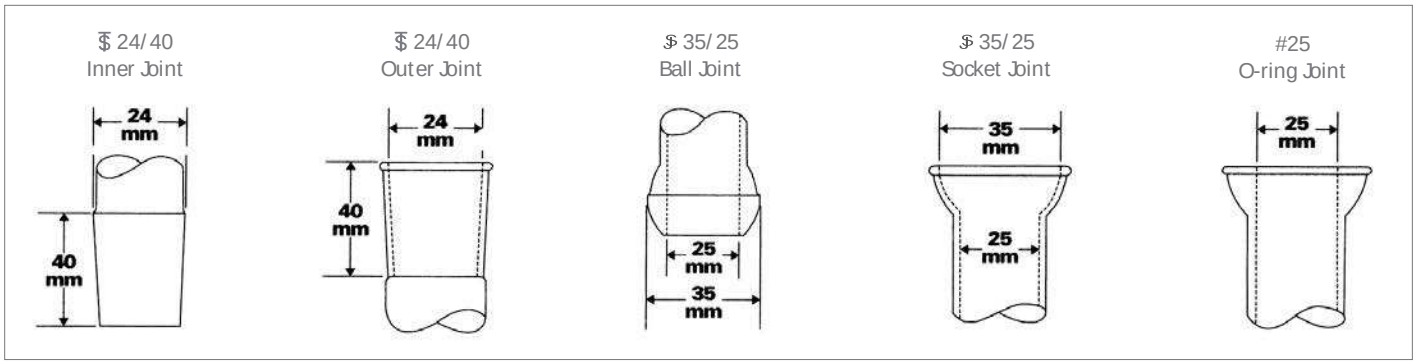
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Specifications for Joints, Threads, and Stopcocks

Standard Taper
Symbol used to designate interchangeable joints, stoppers, and stopcocks that comply with the requirements of Commercial Standard CS-21 published by N.I.S.T.

Spherical Joint
Symbol designates spherical joints that comply with CS-21.

Product Standard
Symbol designates stopcock plugs made of PTFE that meet requirements of N.I.S.T. Voluntary Product Standard PS 28-70.



Common Standard Laboratory Conversion Factors

Length

1 millimeter (mm)	0.1 centimeter (cm)
1 centimeter	0.01 meter (M)
1 centimeter	0.394 inch
1 inch	2.540 centimeters
1 meter	3.2808 feet
1 foot	0.305 meter

Area

1 square centimeter (cm)	0.1550 square inch
1 square inch	6.452 square centimeters
1 square meter (M)	10.764 square feet
1 square foot	0.09290 square meter

Mass

1 gram	0.03527 ounce (Avoirdupois)
1 ounce (Avoirdupois)	28.3495 grams
1 kilogram	2.20462 pound (Avoirdupois)
1 pound (Avoirdupois)	0.45359 kilogram

Volume

1 cubic centimeter	0.001 liter (L)
1 cubic centimeter	0.0610 cubic inch
1 cubic inch	16.3872 cubic centimeter
1 cubic meter	35.314 cubic feet
1 cubic foot	0.02832 cubic meter

Capacity

1 milliliter (mL)	0.03382 ounce (U.S. liquid)
1 ounce (U.S. liquid)	29.573 milliliters
1 liter (L)	1.05671 quarts (U.S. liquid)
1 quart (U.S. liquid)	0.94633 liter
1 liter	0.26418 gallon (U.S. liquid)
1 gallon (U.S. liquid)	3.78533 liter
1 lambda	0.001 cc/1 microliter

Power

1 watt	0.73756 foot-pound per second
1 foot-pound per second	1.3582 watts
1 watt	0.056884 BTU per minute
1 BTU per minute	17.580 watt
1 watt	0.001341 horsepower (U.S.)
1 horsepower (U.S.)	754.7 watts
1 watt	0.01433 kilogram-calorie per minute
1 kilogram-calorie per minute	69.767 watts

Temperature

°C = (°F – 32) x 5/9
°F = 9/5 x °C + 32

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