VEE GEE®

Laboratory Glassware

PRODUCT CATALOG

Laboratory Glassware

The Vee Gee line of glassware has continued to evolve over the last quarter century. VEE GEE®, SIBATA®, BOMEX® brands are recognized worldwide for their quality, durability, and value. We are continually looking into new markets and new products to further expand the line. Should you require something not found in this catalog, please feel free to contact us to discuss your application.

SIBATA Scientific Technology Ltd. Is a highly-respected manufacturer of scientific instruments and laboratory glassware. Based in Tokyo, the company was established in 1927 and has produced borosilicate glassware since 1940.

SIBATA is noted in Japan and the USA for its high-quality instruments for the measurement of air and water pollution. SIBATA laboratory glassware meets the highest US and Japanese government standards.

In 1974, SIBATA established a factory in Taiwan to produce laboratory glassware for the Japanese market. This glassware was not only of high quality and accuracy but was also available at competitive prices.

IN 1981, SIBATA developed the line of color-coded pipets, volumetric flasks, and graduated cylinders, which are contained in this catalog. This line met and continues to meet the appropriate US Federal, ASTM, ISO, and USP standards.

Schott AG glass tubing is used in SIBATA volumetric glassware. Schott's Durobax and Duran 50 brand borosilicate tubing is recognized worldwide for its superb quality. Duran 50, which is used to make SIBATA's volumetric flasks and laboratory glassware have essentially the same composition and properties as Pyrex 7740 and Kimble KG-33. Durobax is similar to Kimble N-51A and is used in the manufacturing of SIBATA's cylinders and pipets.

SIBATA is a certified ISO 9001 company.

BOMEX beakers, Erlenmeyer flasks, filtering flasks and VEE GEE burets and separatory funnels are manufactured for us in China in accordance with strict international standards. The glass used in their manufacture is BJTY, which is a hard borosilicate glass that is widely used to produce a comprehensive range of labware and science equipment throughout the world.

The BOMEX glassware we sell was designed by our company over 20 years ago to meet the demanding requirements of the US market. Only BOMEX glassware from VEE GEE is of USA Grade.

Atlas Glassworks is an authorized Vee Gee distributor. Please contact them for pricing, for your other laboratory glassware needs or to repair your current labware: 800-962-9397

Atlas Glassworks is located in Katy, Texas

Beakers

BOMEX® brand, Griffin, Low Form, Double Scale, Graduated, USA Grade

BOMEX 1500 Series Beakers meet ASTM E-960 Type I Specifications for Classification, Design, Capacity & Dimensions and Markings. Feature easy-pour spout; white, permanent graduations and a large marking square. Made form sturdy borosilicate glass with a low coefficient of expansion. Manufactured with uniform wall thickness which offers optimum balance between thermal shock resistance and mechanical strength. Cat. No.'s 1500-250 through 1500-2000 feature a double-graduated metric scale. Accuracy: ± 5% of full capacity.

Cat. No.	Capacity (ml)	Graduation Range (ml)	Graduation Interval (ml)	Approx O.D. x Height (mm)
1500-50	50	10-40	10	41x58
1500-100	100	20-80	10	50x69
1500-150	150	20-140	20	58x80
1500-250	250	25-200	25	68x95
1500-400	400	50-350	25	75x111
1500-600	600	100-50	50	88x123
1500-800	800	100-750	50	99x137
1500-100	1000	100-900	50	106x148
1500-2000	2000	200-1800	100	129x190

Burets

VEE GEE® brand, Class B, w/Teflon® Stopcock

Vee Gee 2420 Series Burets meet ASTM E-287 Class B Specifications; Made from accurate, uniform wall tubing to insure the stipulated capacity tolerances. Feature durable, permanent markings; fine, sharp lines and large, easy to read numbers. Supplied with Teflon® stopcocks to eliminate freezing and lubricant contamination and to provide a precision fit within the barrel. These burets are ideal for use in school and institutional laboratories not requiring the accuracy of Class A model. All sizes are supplied with a 2mm stopcock bore plug.

Cat. No.	Capacity (ml)	Graduation Interval (ml)	Tolerance (± ml)	Approx, O.D. x Height (mm)	Stopcock Bore (mm)
2420-25	25	0.10	0.06	11x600	2
2420-50	50	0.10	0.10	13x780	2
2420-100	100	0.20	0.20	17x780	2

Crucibles

SIBATA® brand, Gooch Type, High Form, w/ Fritted Disc

SIBATA 1305 Series Gooch Crucibles, with fritted disc filters, meet ISO 4793 Specifications. Suitable for analytical work where precipitates are dried to a constant weight at 110ºC. 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 250ºC. Crucibles are available in 6 different porosities.

Cat. No.	Capacity (ml)	Type	Porosity	Pore Size (pm)	Disc Diameter (mm)	Approx. O.D. x Height (mm)
1305-1250A	30	1G	EC	250	34	38X60
1305-1100A	30	1G	C	100	34	38X60
1305-140A	30	1G	PC	40	34	38X60
1305-116A	30	1G	M	16	34	38X60
1305-15A	30	1G	F	5.5	34	38X60
1305-2250A	50	2G	EC	250	41	46X60
1305-2160A	50	2G	SEC	160	41	46X60
1305-2100A	50	2G	C	100	41	46X60
1305-240A	50	2G	PC	40	41	46X60
1305-216A	50	2G	M	16	41	46X60
1305-25A	50	2G	F	5.5	41	46X60

EXTRA COARSE (160 – 250pm) (liquid and gas dispersion, coarse filtration; SEMI EXTRA COARSE (100 – 160pm) (liquid and gas dispersion, semi coarse filtration); COARSE (40 – 100 pm) preparative fine filtration and work with crystalline products; memory filtration; PARTLY COARSE (16 – 40 pm) (analytical work with fine precipitates, fine gas filtration); MEDIUM (10 – 16 pm) (analytical fine filtration preparative work with the finest precipitates); FINE (4 – 5.5 pm) (filtration of fine precipitates, mercury valve, extraction sapparatus.)

Cylinders

SIBATA® brand, Class A, Double Metric Scale, Graduated, To Contain
SIBATA 2351A Series Graduated Cylinders meet ASTM E-1272 Class A, Style 1 Specifications & USP Standards for Volumetric Glassware. Feature hexagonal bases for added stability. All cylinders with the exception of the 2000ml size feature protective, polyethylene, hexagonal bumper guards. All markings are in durable, white enamel.

Cat. No.	Capacity (ml)	Graduation Range (ml)	Graduation Interval (ml)	Tolerance (±ml)	Approx. O.D. x Height (mm)
2351A-5	5	0.5	0.1	0.05	7x126
2351A-10	10	0.7 to 10.0	0.1	0.05	8x182
2351A-25	25	14.0 to 25.0	0.2	0.15	17x210
2351A-50	50	3.5 to 50.0	0.5	0.25	24x218
2351A-100	100	5.0 to 100.0	1.0	0.40	30x236
2351A-250	250	10.0 to 250.0	2.0	1.00	41x301
2351A-500	500	25.0 to 500.0	5.0	2.00	53x362
2351A-1000	1000	50.0 to 1000.0	10.0	3.00	70x422
2351A-2000	2000	100.0 to 2000.0	20.0	6.00	90x478

Cylinders

SIBATA® brand, Class B, Double Metric Scale, Graduated, To Contain
SIBATA 2351 Series Graduated Cylinders meet ASTM E-1272 Class B, Style 1 Specifications. Features hexagonal bases for added stability. All cylinders with the exception of the 200ml size feature protective, polyethylene, hexagonal bumper guards. All markings are in durable, white enamel.

Cat. No.	Capacity (ml)	Graduation Range (ml)	Graduation Interval (ml)	Tolerance (±ml)	Approx. O.D. x Height (mm)
2351-10	10	0.7 to 10.0	.01	0.10	8x182
2351-25	25	14.0 to 25.0	0.2	0.30	17x210
2351-50	50	3.5 to 50.0	0.5	0.40	24x218
2351-100	100	5.0 to 100.0	1.0	0.60	30x236
2351-250	250	10.0 to 250.0	2.0	1.40	41x301
2351-500	500	25.0 to 500.0	5.0	2.60	53x362
2351-1000	1000	50.0 to 1000.0	10.0	5.00	70x422
2351-2000	2000	100.0 to 2000.0	20.0	10.00	90x478

Cylinders

SIBATA® brand, Student, Plastic, Graduated, To Contain
SIBATA 2355 Series Student Graduated Cylinders Meet ASTME-1272 Class B, Style 1 Specifications for Classification and Tolerances. These cylinders are made of two parts; a strong, accurate glass graduate and a detachable, sturdy plastic hexagonal base which absorbs impacts and reduces breakage. All cylinders feature protective hexagonal bumper guards.

Cat. No.	Capacity (ml)	Graduation Range (ml)	Graduation Interval (ml)	Tolerance (±ml)	Approx. O.D. x Height (mm)
2355-10	10	0.4 to 10.0	0.1	0.10	13x177
2355-25	25	1.4 to 25.0	0.2	0.30	16x210
2355-50	50	2.0 to 50.0	1.0	0.40	24x212
2355-100	100	5.0 to 100.0	1.0	0.60	30x232

Filter Holders

SIBATA® brand, Glass Microanalysis, 47mm
SIBATA 6168 Series Filter Holders are offered with a wide variety of components for different applications. Available with fritted glass support base for general and biological applications, or with removable stainless steel screen support base and PTFE gasket for ultraclean filtrate or proteinaceous solutions. The 300ml borosilicate glass funnel is graduated from 75 to 300ml in 25ml subdivisions. The anodized aluminum clamp features a tension screw to firmly lock the clamp in place.

Filter Diameter: 47mm

Prefilter Diameter: 35mm

Effective Filtration Area: 9.6cm²

Maximum Capacity: 350ml

Graduation Volume: 300ml

Connection: Silicone Stopper (No. 8)

Sterilization: Autoclavavle (at 121ºC / 250ºF for 20 minutes

Cat. No.	Description
6168-4711	Funnel, 47mm, 300ml
6168-4721	Glass Support Base, for Stainless Steel Screen, 47mm
6168-4722	Glass Support Base, Fritted, 160-250pm Pore Size, 47mm
6168-4731	Stainless Steel Screen (SUS316)
6168-4741	PTFE Gasket (pack of 10)
6168-4751	No. 8 Silicone Stopper (fits 500ml flask)
6168-4762	Anodized Aluminum Clamp

Package One (Cat. No. 6168-0001)

General & Biological Applications
Funnel (cat. No. 6168-4711
Glass Support Base (Fritted) cat. No. 6168-4722
Silicone Stopper (cat. no. 6168-4751)
Anodized Aluminum Clamp (cat. no. 6168-4762)

Package Two (Cat. No. 6168-0002)

Ultraclean Filtrate or Proteinaceous Solutions
Funnel (cat. no. 6168-4711)
Glass Support Base (SS Screen) (cat. no. 6168-4731)
PTFE Gasket (Pk/10) (cat. no. 6168-4751)
Anodized Aluminum Clamp (cat. no. 6168-4762)

Flasks

BOMEX® brand, Erlenmeyer, Narrow Mouth, Heavy-Duty Rim, Graduated, USA Grade
BOMEX 1800 Series Erlenmeyer Flasks meet ASTM E-1404 Type I, Class 1 Specifications for Classification, Design, Capacity & Dimensions, and Markings. Feature heavy-duty rims to reduce chipping; white, permanent graduations and a large marking square. Made from sturdy borosilicate glass with a low coefficient of expansion. Manufactured with uniform wall thickness which offers optimum balance between thermal shock resistance and mechanical strength. Accuracy: ± 5% of full capacity.

Cat. No.	Capacity (ml)	Graduation Range (ml)	Graduation Interval (ml)	Rubber Stopper No.	Approx. O.D. x Height (mm)
1800-125	125	50-125	25	5	65x107
1800-250	250	50-225	25	6	79x133
1800-500	500	100-500	50	7	100x173
1800-1000	1000	250-1000	50	9	124x214

Flasks

BOMEX® brand, Filtering, Heavy Wall, Tubulation, Graduated, USA Grade
BOMEX 1870 Series Filtering Flasks meet ASTM E-1406 Type II, Class 1 Specifications for Classification, Design, Capacity & Dimensions, and Markings. Feature heavy-duty rims to reduce chipping; white, permanent graduations and a large marking square. Made from sturdy borosilicate glass with a low coefficient of expansion. Manufactured with uniform wall thickness which offers optimum balance between thermal shock resistance and mechanical strength. Tubulation outside diameter is 10mm. Accuracy: ± 5% of full capacity.

Cat. No.	Capacity (ml)	Graduation Range (ml)	Graduation Interval (ml)	Rubber Stopper No.	Approx. O.D. x Height (mm)
1870-250	250	75-250	25	6	85x142
1870-500	500	150-500	50	7	104x184
1870-1000	1000	300-1000	50	9	137x238

Flasks

SIBATA® brand, Volumetric, Class A, Snap-Cap, To Contain
SIBATA 2303A Series Volumetric Flasks meet ASTM E-288 Class A Specifications & UPS Standards for Volumetric Glassware. Feature machine-blown bodies and heavy-beaded, heavy-tubing necks, tooled for snap-cap fit. The graduation line is sharp and permanent; large, white, block-letters allow the labeling to be easily read. Features a large marking square. All sizes are supplied with a snap cap.

Cat. No.	Capacity (ml)	Tolerance (±ml)	Snap Cap No.	Approx. O.D. x Height (mm)
2303A-5	5	0.02	1	21x59
2303A-10	10	0.02	1	26x85
2303A-25	25	0.03	2	37x110
2303A-50	50	0.05	3	49x136
2303A-100	100	0.8	3	58x164
2303A-200	200	0.10	4	74x205
2303A-250	250	0.12	4	78x225
2303A-500	500	0.20	5	96x260
2303A-1000	1000	0.30	6	122x300

Flasks

SIBATA® brand, Volumetric, Class A. Micro, Hexagonal Base, Stopper, To Contain
SIBATA 2306A Series Micro Volumetric Flasks meet ASTME-237 Specifications. Feature machine-blown bodies and heavy-beaded, heavy-tubing necks, tooled for stoppers. The graduation line is sharp and permanent; large, white, block –letters allow the labeling to be easily read. Both sizes feature hexagonal bases for added stability and are supplied with a glass stopper.

Cat. No.	Capacity (ml)	Tolerance (±ml)	Stopper No.	Approx. O.D. x Height (mm)
2306A-1	1	0.01	9	10x79
2306A-2	2	0.015	9	12x90

Flasks

SIBATA® brand, Volumetric, Class A, Stopper, To Contain
SIBATA 2306A Series Volumetric Flasks meet ASTM E-288 Class A Specifications & USP Standards for Volumetric Glassware. Feature machine-blown bodies and heavy-beaded, heavy-tubing necks, tooled for stoppers. The graduation line is sharp and permanent; large, white, block-letters allow the labeling to be easily read. Features a large marking square. All sizes supplied with glass stopper.

Cat. No.	Capacity (ml)	Tolerance (±ml)	Stopper No.	Approx. O.D. x Height (mm)
2306A-5	5	0.02	9	21x72
2306A-10	10	0.02	9	26x96
2306A-25	25	0.03	9	37x123
2306A-50	50	0.05	13	49x152
2306A-100	100	0.08	13	58x181
2306A-200	200	0.10	16	74x220
2306A-250	250	0.12	16	78x239
2306A-500	500	0.20	19	96x279
2306A-1000	1000	0.30	22	122x327
2306A-2000	2000	0.50	27	157x396

Flasks

SIBATA® brand, Low-Actinic Amber, Volumetric, Class A Stopper, To Contain

SIBATA 2307A Series Low-Actinic Amber Volumetric Flasks meet ASTME-288 Class A Specifications & USP Standards for Volumetric Glassware. Feature machine-blown bodies and heavy-beaded, heavy-tubing necks, tooled for stoppers. The graduation line is sharp and permanent; large, white, block-letters allow the labeling to be easily read. Features a large marking square. The low-actinic amber stained glass provides protection for materials sensitive to light. All sizes are supplied with a glass stopper.

Cat. No.	Capacity (ml)	Tolerance (±ml)	Stopper No.	Approx. O.D. x Height (mm)
2307A-10	10	0.02	9	28x95
2307A-20	20	0.03	9	36x115
2307A-25	25	0.03	9	39x122
2307A-50	50	0.05	13	49x150
2307A-100	100	0.08	13	60x180
2307A-500	200	0.10	16	75x220

Funnels

SIBATA® brand, Buchner, w/Fritted Disc

Sibata 1311 Series Buchner Funnels, with Fritted Disc filters, meet ISO 4793 Specifications. Used for applications when filter paper and membranes cannot withstand the chemical attack of the filtrate. Funnels are constructed with heavy-walled stems; top rims are beaded for extra strength.

Cat. No.	Capacity (ml)	Type	Porosity	Pore Size (pm)	Disc Diameter (mm)	Approx. Height above Disc (mm)	Approx. Stem Length x O.D. (mm)
1311-3205A	30	3G	EC	250	34	45	55x8
1311-3100A	30	3G	C	100	34	45	55x8
1311-340A	30	3G	PC	40	34	45	55x8
1311-316A	30	3G	M	16	34	45	55x8
1311-35A	30	3G	F	5.5	34	45	55x8
1311-11250A	60	11G	EC	250	39	60	70x9
1311-11100A	60	11G	C	100	39	60	70x9
1311-1140A	60	11G	PC	40	39	60	70x9
1311-1116A	60	11G	M	16	39	60	70x9
1311-115A	60	11G	F	5.5	39	60	70x9
1311-17250	140	17G	EC	250	65	55	85x12
1311-17100	140	17G	C	100	65	55	85x12
1311-1740	140	17G	PC	40	65	55	85x12
1311-1716	140	17G	M	16	65	55	85x12
1311-175	140	17G	F	5.5	65	55	85x12

EXTRA COARSE [160-250pm] [liquid and gas dispersion, coarse filtration]; COARSE [40-100pm] [preparative fine filtration and work with crystalline products, mercury filtration]; PARTLY COARSE [16-40pm] [analytical work with medium-fine precipitates, fine gas filtration]; MEDIUM [10-16pm] [analytical fine filtration preparation work with the finest precipitates]; FINE [4-5.5pm] [filtration of fine precipitates, mercury valve, extraction apparatus.]

Funnels

VEE GEE® brand, Squibb, Separatory, Pear –Shaped, Stopper, Teflon® Stopcock

VEE GEE 1530 Series Separatory Funnels meet ASTME-1096 Type 4 Specifications for Classification, Design & Markings. Feature smooth tooled tips, large, white, block-letters which allow the labeling to be easily read, and a large marking square. Supplied with Teflon® stopcocks to eliminate freezing and lubricant contamination and to provide a precision fit within the barrel. The stopcock bores, body openings and stems are carefully aligned for even liquid flow with fast cut-off. All sizes are supplied with a glass stopper.

Cat. No.	Capacity (ml)	Stopper #	Stopcock Plug Size	Approx. O.D. x Stem Length (mm)	Approx. Total Length (mm)
1530-100	100	22	2	8x50	230
1530-250	250	22	2	10x60	285
1530-500	500	27	4	12x70	340
1530-1000	1000	27	4	12x70	395

Pipets

SIBATA® brand, Reusable Glass, Measuring (Mohr), Class A, Color-Coded, w/Colored Markings, To Deliver
Sibata2010A Series Measuring Pipets meet ASTME-1293 Style 1, Class A Specifications & USP Standards for Volumetric Glassware. They are graduated to the baseline above the tip (tempered) and are also calibrated to deliver. Feature permanent amber markings and color-codings which are enameled onto the glass. The top end of sizes 5 to 25ml is constricted.

Cat No.	Capacity (ml)	Tolerance (±ml)	Graduation Interval (ml)	Approx. O.D. x Height (mm)	Color Code
2010A-01-c	0.1	0.0025	0.01	6x300	White
2010A-02-c	0.2	0.004	0.01	6x300	Black
2010A-1-d	1.0	0.01	0.1	7x360	Red
2010A-1-c	1.0	0.01	0.01	7x360	Yellow
2010A-2-d	2.0	0.01	0.1	7x360	Green
2010A-5	5.0	0.02	0.1	8x365	Blue
2010A-10	10.0	0.03	0.1	10x370	Orange
2010A-25	25.0	0.05	0.1	13x455	White

Pipets

SIBATA® brand, Reusable Glass, Serological, Class A, Color-Coded, w/Colored Markings, To Deliver
SIBATA 2100A Series Serological Pipets meet ASTME-1044 Style 1 Specifications. They are graduated to the tip (tempered) and are also calibrated to deliver. Feature permanent amber markings and color-codings which are enameled onto the glass. The top end of sizes 5 to 25ml is constricted.

Cat. No.	Capacity (ml)	Tolerance (±ml)	Graduation Interval (ml)	Approx. O.D. x Height (mm)	Color Code
2011A-01-c	0.1	0.0025	0.01	6x300	White
2011A-02-c	0.2	0.004	0.01	6x300	Black
2011A-1-d	1.0	0.01	0.1	7x360	Red
2011A-1-c	1.0	0.01	0.01	7x360	Yellow
2011A-2-d	2.0	0.01	0.1	7x360	Green
2011A-5	5.0	0.02	0.1	8x365	Blue
2011A-10	10.0	0.03	0.1	10x370	Orange
2011A-25	25.0	0.05	0.1	13x455	White

Pipets

Sibata® brand, Reusable Glass, Volumetric, Class A, Color-Coded, w/Colored Markings, To Deliver
SIBATA 2040A Series Volumetric Pipets meet ASTM E-969 Class A Specifications & USP Standards for Volumetric Glassware. The graduation line is sharp and permanent. They are calibrated to deliver. Feature permanent amber markings and color-codings which are enameled onto the glass.

Cat. No.	Capacity (ml)	Tolerance (±ml)	Approx. Length (mm)	Color Code
2040A-02	0.5	0.005	300	2-Black
2040A-1	1.0	0.006	345	Blue
2040A-2	2.0	0.006	355	Orange
2040A-3	3.0	0.01	360	Black
2040A-4	4.0	0.01	365	2-Red
2040A-5	5.0	0.01	375	White
2040A-6	6.0	0.01	390	2-Orange
2040A-7	7.0	0.01	410	2-Green
2040A-8	8.0	0.02	430	Blue
2040A-9	9.0	0.02	436	Black
2040A-10	10.0	0.02	440	Red
2040A-13	13.0	0.03	460	White
2040A-15	15.0	0.03	460	Green
2040A-20	20.0	0.03	475	Yellow
2040A-25	25.0	0.03	480	Blue
2040A-50	50.0	0.05	540	Red
2040A-100	100.0	0.08	600	Yellow

Pipets

SIBATA® brand, Reusable Glass, Volumetric, Wide-Tip Opening, To Deliver
SIBATA 2040 Series Wide-Tip Volumetric Pipets meet ASTM E-969 Class B Specifications for Tolerance. The wide-tip opening facilitates rapid fill and drain of viscous liquids, slurries, and suspensions. The graduation line is sharp and permanent. They are calibrated to deliver. Feature permanent amber markings which are enameled onto the glass. Sizes 1, 2, & 5ml do not have drawn tips, while sizes 10ml through 100ml feature standard drawn tips.

Cat. No.	Capacity (ml)	Tolerance (±ml)	Approx. Length (mm)	Approx. Tip I.D. (mm)
2040-1-1.9MM	1.0	0.01	320	1.9
2040-2-2.4MM	2.0	0.01	330	2.4
2040-5-3MM	5.0	0.02	346	3.0
2040-10-3MM	10.0	0.02	440	3.0
2040-20-3MM	20.0	0.03	478	3.0
2040-25-3MM	25.0	0.03	475	3.0
2040-50-3MM	50.0	0.05	538	3.0
2040-100-3MM	100.0	0.10	605	3.0

Stoppers

SIBATA Glass Stoppers meet ASTM E-675 Specifications. These stoppers are lightweight yet very strong to reduce chipping and breakage, thus minimizing replacement costs. The flat top design allows the stopper to stand in its head, which frees the user's hand and minimizes potential contamination. Interchangeable with other common flask stoppers and fit all standard labware of comparable size.

Cat. No.	Stopper No.	Tinting	Approx. Length of Ground Zone (mm)	Height Above Ground Joint (mm)
03081	9	Clear	14	10
03082	13	Clear	14	13
03083	16	Clear	16.5	18
03084	19	Clear	19	18
03085	22	Clear	20.5	20
03087	27	Clear	21	21
03081-A	9	Amber	14	10
03082-A	13	Amber	14	13
03083-A	16	Amber	16.5	18

Stoppers

SIBATA® brand, Stopper, Polyethylene
SIBATA Polyethylene Stoppers meet ASTM E-675 Specifications. These stoppers are made with closed bottoms and polyethylene, which conform to stopper dimensions. The three unit rings on the base provide an efficient seal. Can be used in place of conventional flask stoppers.

Cat. No.	Stopper No.
009	9
013	13
016	16
019	19

Glassware Properties

Care of Glassware: Good laboratory technique demands clean glassware, because the most carefully executed piece of work may give an erroneous result if dirty glass is used. IN all instances, glassware must be physically clean; it must be chemically clean; and in many cases it must be 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 being 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.

Washing: Wash glassware as quickly as possible after use. If a thorough cleaning is not possible immediately, soak the glassware in water. If labware is not cleaned immediately, it may become impossible to remove the residue. When washing, soap, detergent, or cleaning powder (with or without an abrasive) may be used. The water should be hot. For glassware that is exceptionally dirty, a cleaning powder with a mild abrasive reaction will give more satisfactory results. However, the abrasive should not scratch the glass. During the washing, all parts of the glassware should be thoroughly scrubbed with a brush. 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 or grease may be formed.

Rinsing: It is imperative that all soap, detergents, and other cleaning fluids be removed from glassware before use. After cleaning, rinse the glassware with running tap water. When graduates, flasks, and similar containers are rinsed with tap water, allow the water to run into and over them for a short time, then partly fill each piece with water, thoroughly shake and empty 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 water to run through 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 prevent breakage when rinsing or washing pipets, cylinders, or burets, be careful not to let tips hit the sink or the water tap.

Drying & Storing: Dry beakers, 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. 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, or 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.

Freeing Seized Ground Joints: If a ground joint sticks, the following 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 any excess water. Then gently warm the wall of the outer joint by rotating it for 15 to 20 seconds over a low Bunsen burner flame. Wear heat-resistant gloves to avoid burns. Be sure that 50% of the inner surface is wet before inserting the joint in the flame. Remove from the flame 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.

Heating: When heating glassware, refer to the laboratory or instruction manual for the given heat source for additional information.

Bunsen Burners: Adjust the Bunsen burner to get a large soft flame. It will heat slowly but more uniformly. Uniform heat is a critical factor for some chemical reactions. Adjust the ring or clamp holding the glassware so that the flame 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 flame to provide more even heat. Heal all liquids slowly. Fast heating may cause bumping, which in turn may cause the solution to splatter.

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

Hot Plates: There are several types of hot plates. Some are electrical, some are water heated. They may be ceramic or metal-topped. Refer to the instruction manual before using a hot plate for the first time. Always use a hot plate larger than the vessel being heated.

Damaged Glassware: Do not heat glassware that is etched, cracked, nicked, or scratched. It is more prone to break and should be replaced.

Mixing & Stirring: Use a rubber policeman on glass stirring rods 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. Splattering 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. Use a mechanical pipetting device, such as a rubber bulb or other pipetting aids available from laboratory suppliers. Do not draw liquids into a pipet by mouth. Serious injury could result.

Temperature & Temperature Extremes: Avoid temperature extremes and always use caution. Do not put 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.

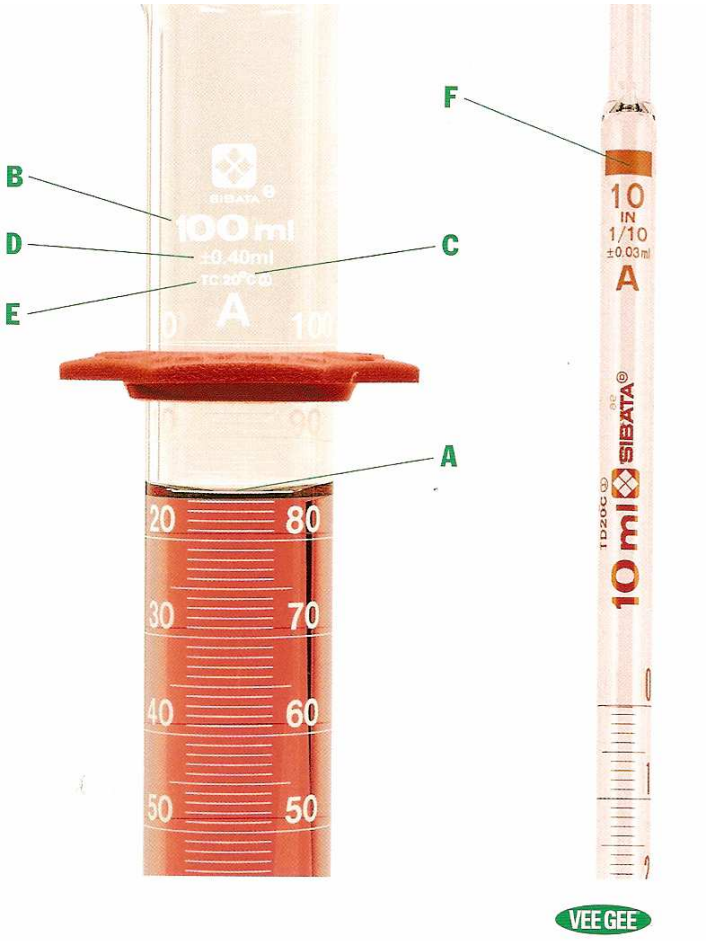
Vacuum and Pressure Warning: Because of various conditions, laboratory glassware cannot be guaranteed against breakage under vacuum or pressure. Adequate precaution should be taken to protect personnel doing such work.

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

Volumetric Ware: Glass volumetric ware comprises a class of objects used to measure volume. 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 20ºC, 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.

Type of Ware: Class A ware is manufactured to tolerances established by ASTM E-694 for volumetric ware, ASTME-542 for calibration of volumetric ware, and the specific ASTM specification for the given piece of glassware. Class B ware is generally calibrated to twice the tolerance of Class A ware.

Calibrated Ware Markings (refer to images): Volumetric ware is marked with lines to indicate the volume at the point of reading (A). In addition to the lines, the ware should be marked with its capacity (B), the temperature at which it should be used (C), its tolerance (D), and whether the piece was calibrated TC ("to contain") or TD ("to deliver") the stated volume (E). TC means that the ware is calibrated so that the mark indicates the volume held in the container. TD means the mark indicates the amount of air-free distilled water at 20ºC that is delivered when it is poured out. Numbers indicating volume at certain lines are place immediately above the line. Pipets have an additional marking, a color-coded size identity band is found just below the top end of the pipet (F). This band is to aid in sorting and selection of the pipet.



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