



The Transparent Specialist

GOEL SCIENTIFIC GLASS WORKS LTD.



1<sup>st</sup> Prize - National Award Winner  
For Quality Products in Glass item/Product



[www.goelscientific.com](http://www.goelscientific.com)



GOEL SCIENTIFIC GLASS WORKS LTD. is one of the leading Scientific glass fabricator in the world, who has provided the Glass Industry of India a big leap in the Global Market. We have made presence in all the populated continents and are representing & supplying our product & service worldwide. At present, we have over 1100 satisfied customers across the globe in around 80 countries.

We fabricate glass parts from best raw material from various leading manufactures for its production. On request, we also produce glass parts from Leading European Borosilicate Glass 3.3 tubing supplier which fulfills all major standards of DIN ISO 3585 & ASTM E438 Type I, Class A and thus offering high accuracy & excellent optical properties which is at par to other leading manufactures across the globe.

Understanding the Glass at it's best, we forge Glass with the precise mixed combination of craftsmanship of Potter, Blacksmith & Goldsmith with a blend of engineering, being "The Transparent Specialist".

We specialize in design, fabrication, engineering, installation & commissioning of Pilot Plant/Mini-Plant & Standard Distillation Unit for Research & Development. All glass parts are designed, fabricated, tested & installed as per International Norms like ISO 3585, 3586, EN BS 1595, AD 2000 Merkblatt. On request, glass pilot plant parts are available with CE Marking & documentation with added monetary value.

We have been launching an entire range of glass equipments in the Indian & Global market. A few of our achievements are listed below:

# PROFILE

- 1989 : Developed the unique XTRONG RANGE, which possess a tightening strength as high as 3 times than earlier conventional ones and thus almost eliminates leakage and breakage problems while tightening.
- 1990 : Introduced Glass Shell & Tube Heat Exchangers for the first time in Indian market.
- 1994 : Started "Process Plant Division " for the development of New Products.
- 1998 : Started manufacturing Spherical Vessels from an entirely new technique very first time in the country, placing us at par with overseas manufacturers of such vessels.
- 2000 : Became the first ISO-9001 certified company in the "Glass Equipment Manufacturing "segment in India.
- 2002 : Successfully executed export order of 640,000 multi-necked flasks within a time period of 8 months.
- 2003 : Developed 300-Litre Spherical Vessel & participated as exhibitor in ACHEMA-2003, Frankfurt, Germany.
- 2004 : 800 DN pipe section manufacturing for the first time in India.
- 2005 : Manufactured 500 Ltr. Spherical Vessel.
- 2006 : Participated in ACHEMA-2006 for 2<sup>nd</sup> time & given seminar on "Jumbo Rotary" at Frankfurt, Germany.
- 2007 : Developed FLEX-HE<sup>®</sup> (Detachable coil type) heat exchangers.
- 2008 : Awarded for outstanding performance for the year 2006 - 07 by Govt. of Gujarat, Ministry of Ind. & Mines.
- 2009 : Manufactured for the first time 800 Ltr. Kettle and participated in ACHEMA -2009 at Frankfurt, Germany for the consecutive 3<sup>rd</sup> time.
- 2010 : Developed Flexi Double Jacketed Vessel (Triple Wall – Detachable Jacket)
- 2011 : Developed Assembled Jacketed Vessel up to 200L Capacity.
- 2012 : Participated in Achema-2012 for 4th time & presented Triple Walled Glass Reactor.
- 2013 : Successfully supplied, 1<sup>st</sup> time, Anhydrous HCL Gas Generator by Calcium Chloride Route & developed Graphite Shell & Tube Heat Exchanger.
- 2014 : Entered into Decorative Glass segment with brand **BORO<sup>®</sup>**
- 2015 : Awarded for outstanding export performance by Honorable CM of Gujarat, Smt. Anandiben Patel and manufactured 1000 DN Pipe for the first time in India. Participated in ACHEMA for the 5th time.
- 2016 : National Award for " Quality Products In glass items / product by Micro & Small Enterprises" by Kalraj Mishra Minister of MSME on behalf of PM Shree Narendra Modi.
- 2017 : started supplying CE certified kilo lab distillation units.



### Core Values :

- ✦ Trust and Transparency in everything we do.
- ✦ Customer Delight through innovation.
- ✦ Go Beyond Possible to make customer Happy.



### Core Purpose :

- ✦ Elevating India's image worldwide.
- ✦ Growth and Happiness for everyone connected.
- ✦ Making the world more beautiful.



### Corporate Vision :

We will strive to become a force in the global market & will see India in a leading position there.



### Corporate Mission :

We will maintain leading position in the industry by way of developing indigenously, newer products with higher value.

# Benchtop Lab Reactor

## Spares & Accessories on Pg. 25-26

In addition to range of glassware, we also supply Benchtop Lab Glass Reactors. This includes small vessels (single, double or triple walled) from 0.5 L to 5 L. In addition we have all the glass components you are likely to need such as condensers, receivers, addition funnels, reflux dividers etc.

Our Benchtop Lab Glass Reactors include easy accessibility through open support frame, manufactured from German made Borosilicate glass and a minimal dead space with many other standard and optional features.

### Key Specifications

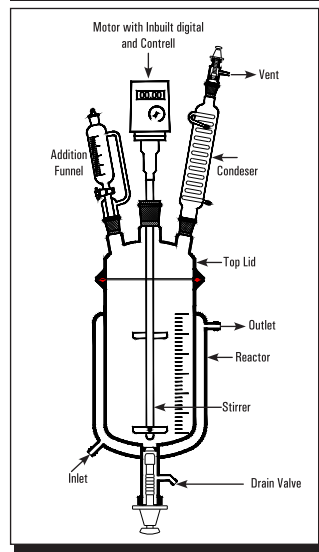
- ✓ Reactor Volume: 0.5 L to 5 L
- ✓ Reactor Type: Single Wall, Double Walled & Triple Walled
- ✓ Operating Pressure: Full Vacuum to 0.5 bar (g)
- ✓ Operating Temperature: -50°C to +180°C
- ✓ Gear Motor with Inbuilt Digital Indicator Speed Range 40 to 400 RPM
- ✓ Thermal Shock Resistance: (Dt): 60°C for Triple Walled and 110°C for Double Walled Reactors.
- ✓ Standard GL Threads for Inlet and Outlet. (Inlet and Outlet can be supplied with beaded process pipe.)

Unit Cat. Ref.	Addition Funnel (mL)	Condenser Length	LxBxH
BLR 0.5 (100DN)	250	300	250X250X900
BLR 1 (100DN)	250	300	250X250X900
BLR 2 (100DN)	500	300	250X250X1350
BLR 3 (150DN)	500	300	250X250X1450
BLR 5 (150DN)	500	400	350X350X1450



### SALIENT FEATURES:

- ✓ Reactors equipped with the flush bottom valve of the special type to ensure leak-free sealing over entire temperature range.
- ✓ All reactors are designed to keep L/ID Ratio within 1.5(max) for performance and easy scale up. L/ID ratio may be changed on request.
- ✓ All These Reactors are designed GMP.
- ✓ Manufacture from German Raw Material.
- ✓ Ideal for benchtop fume hoods.(SS/MS)
- ✓ Stirrer with suitable seal (Mechanical, Stuffing Box, Magnetic Seal, High Vacuum Stuffing Box).
- ✓ Skid mounted and quick release coupling for ease of installation and dismantling.
- ✓ Overhead stirrer motor with built-in speed controller and display.
- ✓ Interchangeable Stirrer (Anchor/Propeller/Turbine) as per your suitability.



### OPTIONAL

- ❖ Vacuum Pump ❖ Digital Temp Indicator ❖ Chiller ❖ Heating/Cooling System ❖ Hot Water/Oil circulator
- ❖ Mobility Support



## WORD of WISDOM

### Respect of Intellectual Property

**Goel Scientific Glass Works Ltd.**, popularly known as , having its registered office at C-31/A, Sardar Estate, Ajwa Road, Vadodara – 390 019, Gujarat, India., is company registered under the **Companies Act 1956** through Registrar of Companies, Ministry of Corporate Affairs, Government of India.

We have following registered Trademarks:



- ☛ 2002 : Process of Manufacturing Flask  
*(Process of manufacturing flask from Glass tubes (50 Ltrs and above))*
- ☛ 2003 : Jumbo Rotary Evaporator  
*(Large sized rotary evaporators 200 Ltrs and above)*
- ☛ 2007 : A Coil type heat exchanger  
*(Detachable coil type heat exchanger)*
- ☛ 2009 : Transparent Double Jacketed Vessel  
*(Detachable double jacketed Vessel)*
- ☛ 2013 : Glass Decorative System  
*(Decoration concept with Borosilicate Glass)*
- ☛ 2013 : Motor Stirrer :  
*(Light weight handy stirrer for Laboratory)*
- ☛ 2014 : Whisky Glass with Baffles  
*(Glass for whisky lovers with baffles eliminating use of stirrer)*

Since inception, the above-mentioned Intellectual Properties (Trademarks and Proprietary products & processes - Patents) are used in market to sell and export a wide variety of glassware products and articles Domestically (across India) & Internationally (across the World) and has attained high reputation, respect, goodwill by virtue of assured quality. We have exclusive right to advertise, market and sell the goods with the above-mentioned intellectual properties. Notwithstanding anything, use of these trademarks in any manner and/or infringement of above-mentioned products and/or process whatsoever, without written consent is strictly prohibited and shall attract legal consequences (Civil and/or Criminal) by any means and/or remedies as deemed fit and necessary, which may be with or without intimation.

It is advisable to insist for original invoice(s) and/or certificate of authentication for every purchase, as spurious goods are harmful & dangerous to the user & nation and may adverse effects to the life or life-threatening to the user.

We indemnify your privacy and secrecy and solicit to bring in notice any such instance(s) of such villainous activities, which you may come across time-to-time.

Correspondence in this connection may please be made at registered office address of the Company.

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***Buyers from unauthorized sources will not be excused and prosecuted for Trespassing.***

## TECHNICAL INFORMATION

Laboratory works require apparatus made in a Borosilicate 3.3 expansion glass which offers maximum inertness to widest range of chemical substances, withstand thermal shock, high temperature without deforming and resilient enough to withstand the normal laboratory handling, washing and sterilizing processes.

Borosilicate glass represents unmatched standardized glass for construction of Laboratory Glasswares. Its steadily growing use is due to many advantages over conventional materials.

- \* Outstanding corrosion resistance
- \* Smooth pore and surface.
- \* Transparency
- \* Catalytic, inertness
- \* No effect on taste and odour
- \* Physiological inertness

Borosilicate glass is chosen for its unique chemical and physical properties. Borosilicate glass can be considered as being composed of Oxides. Silica ( $\text{SiO}_2$ ), Boron oxide ( $\text{B}_2\text{O}_3$ ) and Phosphorous Pentaoxide ( $\text{P}_2\text{O}_5$ ) are chief glass form Oxides. Soda ( $\text{Na}_2\text{O}$ ), Lime ( $\text{CaO}$ ), Alumina ( $\text{Al}_2\text{O}_3$ ), Potash ( $\text{K}_2\text{O}$ ), Magnesia ( $\text{MgO}$ ) and Lead Oxide ( $\text{PbO}$ ) are the principle modifiers/fluxes.

### CHEMICAL COMPOSITION

The composition of borosilicate glass used has following approximate composition.

$\text{SiO}_2$ - 80.6 %	$\text{B}_2\text{O}_3$ - 12.5%
$\text{Na}_2\text{O}$ - 4.5 %	$\text{Al}_2\text{O}_3$ - 2.2 %

### RESISTANCE TO CHEMICALS

Borosilicate glass is inert to almost all materials except hydrofluoric acid ( $\text{HF}$ ) phosphoric acid ( $\text{H}_3\text{PO}_4$ ) and hot strong caustic solutions. Of these, Hydrofluoric acid has the most serious effect, even when it is present in PPM (parts per million) in solutions, Whereas phosphoric acid and caustic solutions cause no problems when cold but at elevated temperature corrosion occurs. In case of caustic solutions upto 30% concentration can be handled safely at ambient temperature.

Under actual operating conditions, the effect of turbulence, and traces of other chemicals in the solution may increase or decrease the rate of attack. Thus, corrosion by caustic solutions can not be predefine.



## **THERMAL PROPERTIES**

Linear coefficient of thermal expansion of borosilicate glass over the temperature 0-300°C is  $3.3 \times 10^{-6}$  /°C. This is very low when compared with other glasses and metals. That is why borosilicate glass is often called low expansion borosilicate glass.

## **SPECIFIC HEAT**

Specific heat between 25°C and 300°C is average to be 0.233 Kcal/Kg°C.

## **THERMAL CONDUCTIVITY**

Thermal conductivity is 1.0 Kcal/hr. m°C over the permissible operating temperature range.

## **ANNEALING**

Annealing of glass is the process where the glass is heated and kept for a defined period of time to relieve internal stresses. Careful cooling under controlled conditions is essential to ensure that no stresses are reintroduced by chilling/cooling.

## **MECHANICAL PROPERTIES**

The lack of ductility of glass prevents the equalization of stresses at local irregularities or flaws and the breakage strength varies considerably about a mean value. This latter is found to occur at a tensile strength of about 700 kg/cm<sup>2</sup>.

In order to allow for the spread of breaking stress, a large factor of safety is applied when determining the wall thickness requirement to allow operation up to specified limit of working pressure.

## **OPTICAL PROPERTIES**

Borosilicate glass shows no appreciable absorption in the visible region of spectrum and therefore appears clear and colorless. In photo chemical process the transparency of ultra violet is of particular importance. It follows from the transmittance of material in UV region that photochemical reactions such as chlorination & sulphochlorination can be performed in it.

## CARE AND MAINTENANCE

### SAFE USE OF GLASSWARE

When heated with proper care Laboratory Glasswares will give long and satisfactory service. The following notes assist users in obtaining the maximum life and performance from their Laboratory Glassware.

### HEATING AND COOLING

Glass may suffer damage in three ways :

- \* It may break under thermal stress in the 'steady state'.
- \* It may break by thermal shock.
- \* Glass if heated beyond certain temperature, may acquire a permanent stress on cooling which could cause subsequent breakage.

The following suggestions will help in avoiding failures during heating and cooling procedures.

1. During evaporation, never leave vessel unattended. Lower the temperature gradually as the liquid level drops, to avoid dryness condition, otherwise glass vessel may crack or explode.
2. Always use caution when placing heated vessel on a cold or damp surface. Sudden temperature may cause the vessel to break.
3. Always cool vessels slowly to avoid thermal breakage.
4. Never apply heat to badly scratched or etched vessel to prevent chance of breakage.
5. Avoid point source of heating to a vessel and always diffuse it by using a metal gauze or air/water bath. Alternatively ensure uniform heating of the vessel by slow movement of the vessel in relation to the heat source.
6. Uniform heat is critical factor for some chemical reactions. For this adjust large soft flame of Bunsen burner to heat slowly but also more uniformly.
7. Adjust the flame contacts and heat the vessel below the liquid level to avoid breakage of the vessel.
8. Always use anti-bumping devices in the vessel, such as pumice or glass wool when rapid heating of the vessel and contents is required and to prevent internal abrasions of the vessels.
9. Thick walled glasswares are best heated with the use of an electric immersion heater and should not be subjected to direct flame or other localised heat source.
10. Do not heat glassware over electric heaters with open elements to avoid localised stress and chances of breakage.
11. Always ensure that the surface of the hot plate is larger in area than the base of the vessel being heated to prevent uneven heating and glassware breakage.
12. When using electrical appliances always ensure to follow manufacturer's instructions.



### **MIXING AND STIRRING**

1. To prevent scratching inside the vessel always use a 'policemen' or similar device on stirring rods.
2. When using a glass vessel with a magnetic stirrer always uses a covered follower to prevent abrasion the on inside wall of the vessel.
3. Before using glass or metal mechanical stirrer in a glass vessel, predetermine the height of the stirrer to ensure there is no contact between the stirrer blades and the bottom or sides of the vessel.
4. Never mix sulphuric acid and water inside a glass-measuring cylinder. The heat of reaction can break the base of the cylinder.

### **VACUUM AND PRESSURE**

1. Always follow safety measures when working with glassware subjected to pressure or vacuum.
2. Never use glassware beyond the recommended safe limit.
3. Gradually apply and release positive and negative pressures and avoid sudden pressure changes.

### **JOINING AND SEPARATING GLASS APPARATUS**

1. When storing glass stopcocks and joints insert a thin strip of paper between joint surfaces to prevent sticking.
2. Never store stopcocks for long periods with lubricant still on the ground surfaces.
3. Glass stopcocks on Burettes and Separating Funnels should be lubricated frequently to prevent sticking.
4. If a ground joint sticks, the use of penetrating oil will often prove useful in helping separation. Carefully rocking the cone in the socket or gently tapping the socket flange on a wooden surface can generally achieve separation.
5. In using lubricants it is advisable to apply a light coat of grease completely around the upper part of the joint and avoid greasing that part of the joint, which contacts the inner part of the apparatus.
6. (a) Hydrocarbon grease are commonly used on standard taper joints. Most laboratory solvents, including acetone, can easily remove grease.  
(b) For higher temperature or high vacuum applications, silicon grease is often preferred and it can be removed readily with chloroform.  
(c) For long term reflux or extraction reactions, glycerin grease is suitable and it is soluble in water.
7. Wear heavy protective gloves when inserting glass tubing into a bung. The use of water, oil or glycerol is recommended on both tubing and rubber bung while carrying this operation.



## PERSONAL SAFETY

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1. To prevent accidents use tongs or asbestos gloves to remove all glassware from heat source.
2. Follow safety measures.
3. Before opening Acid bottle, always resin outer surface of bottle with water.
4. Mercury shall be store in sealed containers as its toxicity. Toxicity is cumulative and element's ability to amalgamate with a number of metals is well known.
5. Never taste or smell or drink chemicals for identification and never drink from a beaker.
6. When using concentrated acids, alkalies or potentially hazardous materials use mechanical means or pipeting. Avoid pipeting by mouth.
7. Label all containers before filling. Never fill unlabeled containers or throw away contents of unlabeled containers.
8. Do not look down into a test-tube to avoid any type of accident while test tube being heated or containing chemicals.
9. Do not permit glass-to-metal contact when clamping glassware, and do not excessively tighten the clamps to avoid breakages.
10. Splattering from acids, caustic materials and strong oxidizing solutions on the skin or clothing should be washed off immediately with large quantities of water.
11. When working with chlorine, hydrogen, sulphide, carbon monoxide, hydrogen cyanide and other very toxic substances, always use a protective mask or perform these experiments under a fume hood in a designated area.
12. In working with volatile materials, remember that heat causes expansion and confinement of expansion results in explosion.
13. 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 (ceramic) trays having enough volume to hold all the acid in case the bottle breaks. When using perchloric acid, always wear protective clothing.
14. When using hot plates and other electrical equipments, ensure the wire and plugs are in good condition. Never handle electrical connection with damp hands.



## CLEANING

Successful experimental results can only be achieved by using a clean apparatus. In all instances laboratory glassware must be physically clean, in nearly all cases it must be chemically clean and in specific cases it must be bacteriological clean or sterile. There must be no trace of grease and safest criteria of cleanliness are the uniform wetting of the glass surface by distilled water. Any prevention of uniform wetting of the surface will introduce errors such as distortion of the meniscus and accuracy of volume.

### GENERAL CLEANING

1. Experienced personnel must solely undertake cleaning of glassware, which contain hazardous materials.
2. Most new glassware is slightly alkaline in reaction. For precision chemical tests, new glassware should be soaked several hours in acid water (1% solution hydrochloric acid or nitric acid) before washing.
3. Glassware, which is contaminated with blood clots, culture media, etc., must be sterilized before cleaning.
4. If glassware becomes unduly clouded or dirty or contains coagulated organic matter, it must be cleaned with chromic acid as cleaning agent. The dichromate should be handled with extreme care as it is highly corrosive
5. Wash glassware, as quickly as possible after use but if delays are unavoidable, the articles should be allowed to soak in water.
6. Grease shall be removed by weak sodium carbonate solution or acetone or fat solvents and use of strong alkalis shall be avoided.
7. Hot water with recommended detergents should be used and if glass is exceptionally dirty a cleaning powder with a mild abrasive action may be applied - provided the surface is not scratched.
8. During the washing all parts of the article should be thoroughly scrubbed with a brush selected for the shape and size of the glassware. Brushes should always be in good condition to avoid any abrasion of the glassware.
9. 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 amount of time depending on amount of contamination on the glassware.
10. Special types of precipitate material may require removal with nitric acid, aqua regia or fuming sulphuric acid. These are very corrosive substances and should be used only when required.
11. It is imperative that all soap detergents and other cleaning fluids be removed from glassware before use. This is especially important with the detergents, slightly traces of which will interfere with serological and culture reactions. After cleaning, thoroughly rinse with tap water ensuring that containers are partly filled water, shaken and emptied several times. Finally rinse with demonized or distilled water.



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## TERMS & CONDITIONS

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The following terms & conditions of sales and payment shall apply. Any dimensional or design deviation shall attract price revision.

- All the Govt. statutory and levies shall be applicable extra.
- Shipment / Courier charges Extra.
- Case packing as per our standard. We reserve the right to change in case lot as & when required.
- Order shall be place as per quantity specified in master packing.
- Delivery schedule specified is tentative. Request for confirm schedule.
- Insurance in your scope.
- We accept Bulk orders at special prices. Please share your requirement.

### Delivery Schedule Chart

Group A	Items available in Ex. Stock
Group B	Can be manufactured in 2 days
Group C	Can be manufactured in 4 days
Group D	Can be manufactured in 8 days
Group E	Can be manufactured in 16 days
Unspecified	On Request

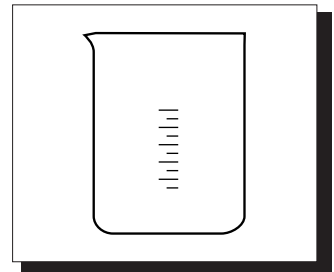
*Days specified above are estimated actual may differ.*



## BEAKERS

### 2111 BEAKERS GRIFFIN, LOW FORM, WITH SPOUT, GRADUATED

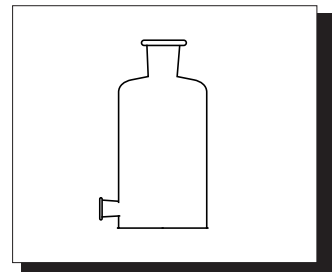
CAT. REF	CAP. ML.	APPROX. O.D. MM	APPROX. HEIGHT MM	PACKING I/C/M	GROUP
2111/32	5000	170	270	0/3/9	A
2111/35	10000	220	322	0/1/6	A
2111/40	20000	290	400	0/1/2	A



## BOTTLES

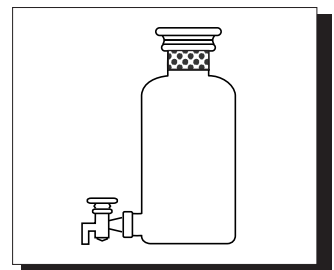
### 2351 BOTTLES, ASPIRATOR WITH OUTLET FOR STOPPER

CAT. REF.	CAP. ML.	APPROX. O.D. MM	APPROX. HEIGHT MM	APPROX. NECK I.D. MM	APPROX. OUTLET I.D. MM	QTY PER CASE	Group
2351/32	5000	190	320	44	28	1	D
2351/35	10000	220	420	54	28	1	D
2351/40	20000	300	535	54	28	1	D



### 2356 BOTTLES, ASPIRATOR, WITH INTERCHANGEABLE STOPPER AND STOPCOCK

CAT. REF.	CAP. ML.	APPROX. O.D. MM	APPROX. HEIGHT MM	APPROX. NECK I.D. MM	APPROX. OUTLET I.D. MM	Qty Per Case	Group
2356/32	5000	190	320	45/40	29/32	1	D
2356/35	10000	220	420	55/44	29/32	1	D
2356/40	20000	300	535	55/44	29/32	1	D



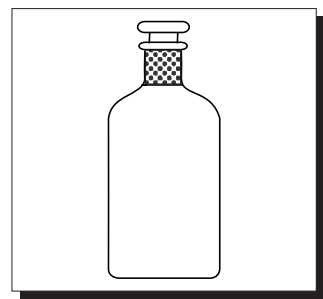
**2610**  
**BOTTLES, REAGENT, AMBER, NARROW MOUTH WITH**  
**INTERCHANGEABLE FLAT HEAD STOPPER**

CAT. REF.	CAP. ML.	APPROX O.D. MM	APPROX HEIGHT MM	SIZE OF INTERCHANGEABLE STOPPER	PACKING I/C/M	Group
2610/32	5000	190	320	45/40	1/0/9	E
2610/35	10000	220	420	55/44	0/1/2	E
2610/40	20000	300	535	55/44	0/1/2	E



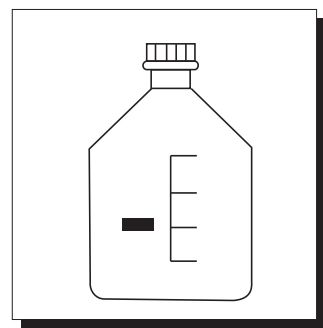
**2611**  
**BOTTLES, REAGENT, PLAIN NARROW MOUTH, WITH**  
**INTERCHANGEABLE FLAT HEAD STOPPER**

CAT. REF.	CAP. ML.	APPROX O.D. MM	APPROX HEIGHT MM	SIZE OF INTERCHANGEABLE STOPPER	PACKING I/C/M	Group
2611/32	5000	190	320	45/40	1/0/9	D
2611/35	10000	220	420	55/44	0/1/2	D
2611/40	20000	300	535	55/44	0/1/2	D



**2612**  
**BOTTLES, REAGENT, SCREW CAP, PLAIN -WITH GL45**  
**(WITH CLASS-A CERTIFICATE)**

CAT. REF.	CAP. ML.	APPROX. O.D. MM	APPROX. HEIGHT MM	APPROX. NACK I.D. MM	PACKING I/C/M	Group
2612/32/45	5000	190	320	44	1/2/12	D
2612/35/45	10000	220	420	54	0/1/2	D
2612/40/45	20000	300	535	54	0/1/2	D
2612/45/45	50000	-	-	54	0/1/1	D

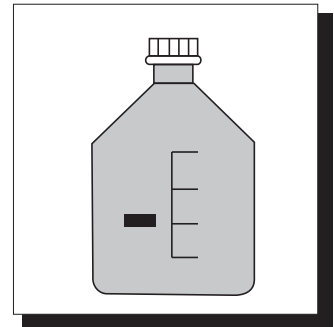




**2613**

**BOTTLES, REAGENT , SCREW CAP , AMBER -WITH GL45  
(WITH CLASS-A CERTIFICATE)**

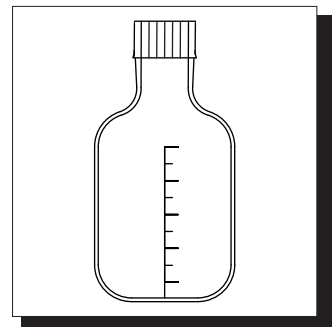
CAT. REF.	CAP. ML.	APPROX. O.D. MM	APPROX. HEIGHT MM	APPROX. NACK I.D. MM	PACKING I/C/M	Group
2613/32/45	5000	190	320	44	1/2/12	D
2613/35/45	10000	220	420	54	0/1/2	D
2613/40/45	20000	300	535	54	0/1/2	D
2613/45/45	50000	-	-	54	0/1/1	D



**2614**

**BOTTLES, REAGENT , SCREW CAP , PLAIN -WITH GL80  
(WITH CLASS-A CERTIFICATE)**

CAT. REF.	CAP. ML.	APPROX. O.D. MM	APPROX. HEIGHT MM	APPROX. NACK I.D. MM	PACKING I/C/M	Group
2614/32/80	5000	190	380	44	1/2/12	D
2614/35/80	10000	220	465	54	0/1/2	D
2614/40/80	20000	300	580	54	0/1/2	D
2614/45/80	50000	400	600	54	0/1/1	D



**2615**

**BOTTLES, REAGENT , SCREW CAP , AMBER -WITH GL80  
(WITH CLASS-A CERTIFICATE)**

CAT. REF.	CAP. ML.	APPROX. O.D. MM	APPROX. HEIGHT MM	APPROX. NACK I.D. MM	PACKING I/C/M	Group
2615/32/80	5000	190	380	44	1/2/12	D
2615/35/80	10000	220	465	54	0/1/2	D
2615/40/80	20000	300	580	54	0/1/2	D
2615/45/80	50000	400	600	54	0/1/1	D





**2690**

**BOTTLES, SOLUTION , AMBER, TOOLED NECK**

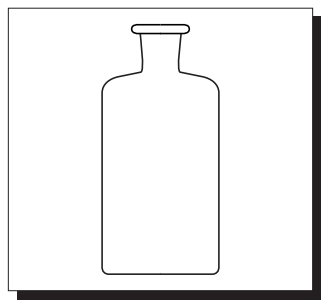
CAT. REF.	CAP. ML.	APPROX. O.D. MM	APPROX. HEIGHT MM	APPROX. NACK I.D. MM	PACKING I/C/M	Group
2690/32	5000	190	320	44	1/2/12	D
2690/35	10000	220	420	54	0/1/2	D
2690/40	20000	300	535	54	0/1/2	D



**2696**

**BOTTLES, SOLUTION, PLAIN TOOLED NECK**

CAT. REF.	CAP. ML.	APPROX. O.D. MM	APPROX. HEIGHT MM	APPROX. NACK I.D. MM	PACKING I/C/M	Group
2696/32	5000	190	320	44	1/2/12	D
2696/35	10000	220	420	54	0/1/2	D
2696/40	20000	300	535	54	0/1/2	D



**MYTH**

Glass is Fragile and shall be avoided.

**FACT**

Glass being fragile cannot be eliminated from the use and is mainly used for its characteristics like (Purity, Non-Corrosive, non-reactivity, transparency, rich look, appearance, etc.).



Fragility of glass depends on physical impact force.

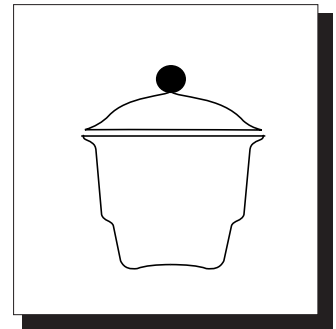
- i) Physical Impact force is dependent on the handling and a little care can nullify it.
- ii) Tensile strength of glass is weak. This can be enhanced by increasing the thickness of the item and thermal/chemical toughening process.
- iii) Glass has magnificent compressive strength. If a glass is given compressive pressure in between two metallic flanges, under extreme pressure, the glass will remain intact and the metallic flange or the studs may break due to repulsive force. (Request for Demo).



## DESICCATORS

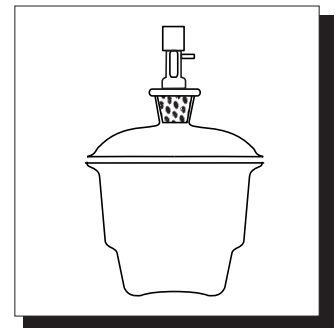
### 4192 DESICCATORS WITH COVER, KNOB TOP

CAT. REF.	SIZE MM	GROUND FLANGE APPROX. I.D. MM	PACKING I/C/M
4192/01	100mm	105	0/1/-
4192/02	150mm	154	1/2/12
4192/03	200mm	202	0/1/6
4192/04	250mm	260	-1/-
4192/05	300mm	300	-1/-
4192/06	500mm	500	-1/-



### 4220\* DESICCATORS VACUUM, WITH TABULATED COVER, STOPPER, WITH PTFE SPINDLE

CAT. REF.	SIZE. MM	GROUND FLANGE APPROX. ID MM	INTER-CHANGABLE JOINT SIZE	PACKING I/C/M
4220/01	100mm	105	29/32	0/1/-
4220/02	150mm	154	29/32	1/2/12
4220/03	200mm	202	29/32	0/1/6
4220/04	250mm	260	29/32	-1/-
4220/05	300mm	300	29/32	-1/-
4220/06	500mm	500	34/35	-1/-



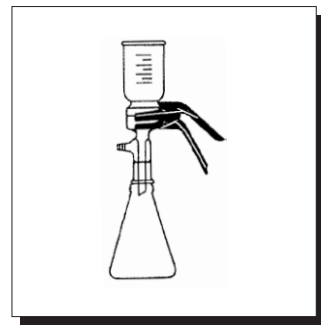
\*Vacuum type Desiccators, when ground surface is cleaned & greased, will hold a vacuum of 500 mm of Mercury (Hg) over a 24 hours period.

## MICRO FILTER ASSEMBLY

**4399**

**MICRO FILTER HOLDER ASSEMBLY, WITH GROUND GLASS JOINT**

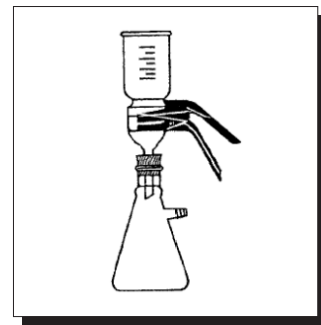
CAT. REF.	COMPONENTS	Qty Per Case
4399/47	Funnel for 47 size filter base with sintered disc for 34/35 size socket in the stem for 47 size filter spring clamp, 47 size 1000 ml. buchner flask with 34/35 cone	1



**4396**

**MICRO FILTER HOLDER ASSEMBLY, WITH RUBBER CORK**

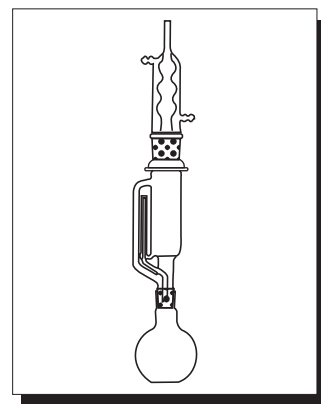
CAT. REF.	COMPONENTS	QTY. PER CASE
4396/13	Funnel for 13 & 25 size filter base with sintered disc for 13 size filter spring clamp, 13 & 25 size 100 ml. buchner flask with cork	1
4396/25	Funnel for 13 & 25 size filter base with sintered disc for 25 size filter spring clamp, 13 & 25 size 100 ml. buchner flask with cork	1
4396/47	Funnel for 47 size filter base with sintered disc for 47 size filter spring clamp, 47 size 1000 ml. buchner flask with cork	1



**4951**

**COMPLETE EXTRACTION APPARATUS**

CAT. REF.	CAP. ML.	FLASH SIZE ML	QTY. PER CASE
4951/29	2000	5000	1
4951/32	5000	10000	1
4951/35	10000	20000	1

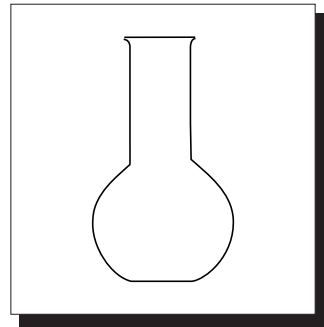




## FLASKS

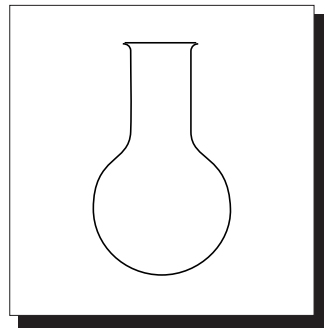
### 5171 FLASKS, BOILING, FLORENCE, FLAT BOTTOM

CAT. REF.	CAP. ML.	APPROX. O.D. MM	APPROX. HEIGHT MM	APPROX. NECK O.D. MM	PACKING I/C/M
5171/32	5000	223	340	60	1/0/9
5171/35	10000	285	400	60	0/2/4
5171/40	20000	350	505	70	0/1/4



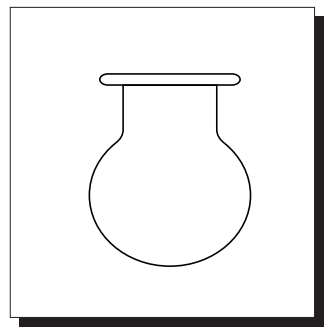
### 5371 FLASKS, BOILING, ROUND BOTTOM

CAT. REF.	CAP. ML.	APPROX. O.D. MM	APPROX. HEIGHT MM	APPROX. NECK O.D. MM	PACKING I/C/M
5371/32	5000	223	350	60	1/0/9
5371/35	10000	285	420	60	0/2/4
5371/40	20000	350	505	70	0/1/4



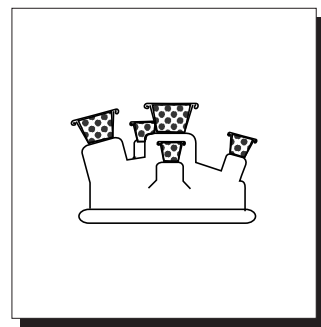
### 5441 (VESSELS) REACTION, WIDE MOUTH, FLAT FLANGE 100mm I.D., 150 mm O.D.

CAT. REF.	CAP. ML.	APPROX. HEIGHT MM	PACKING I/C/M
5441/32	5000	260	1/0/9
5441/35	10000	320	0/2/4
5441/40	20000	400	0/1/4

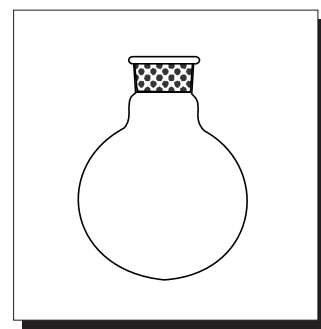


**5442**
**LIDS, FOR FLASKS REACTION CAT. NO.5441. FLAT FLANGE AND INTERCHANGEABLE JOINT**

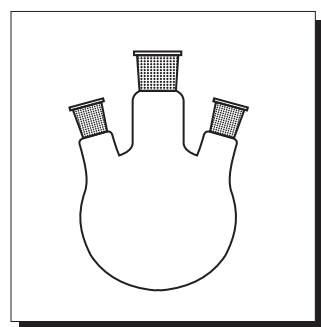
CAT. REF.	INTERCHANGEABLE JOINT SIZE		SIDE 5°	SIDE 10°	SIDE 15°	QTY. PER CASE
	CENTER	PARALLEL				
	5442/1924	19/26	19/26	24/29	19/26	
5442/1914	19/26	14/23	14/23	14/23	29/32	2
5442/2914	29/32	14/23	14/23	14/23	29/32	2
5442/1934	19/26	19/26	19/26	19/26	34/35	2
5442/2434	24/29	19/26	19/26	19/26	34/35	2


**5491**
**FLASKS, BOILING, ROUND BOTTOM, SHORT NECK WITH INTERCHANGEABLE JOINT**

CAT. REF.	CAP. ML.	INTER CHANGE-ABLE JOINT	APPROX. O.D. MM	APPROX. HEIGHT MM	PACKING I/C/M	GROUP
5491/32	5000	34/35	223	300	1/0/9	B
5491/35	10000	55/44	285	385	0/2/4	B
5491/40	20000	55/44	350	435	0/1/4	B


**5494**
**FLASKS, ROUND BOTTOM, THREE NECKS, CENTRE NECK AND TWO ANGLED SIDE NECKS WITH INTERCHANGEABLE JOINT**

CAT. REF.	CAP. ML.	INTERCHANGEABLE JOINT SIZE			APPROX. HEIGHT MM	Qty. Per Case	GROUP
		CENTRE NECK	SIDE NECK	SIDE NECK			
		5494/32	5000	34/35	24/29		
5494/35	10000	34/35	24/29	24/29	420	1	E
5494/40	20000	55/44	24/29	24/29	500	1	E

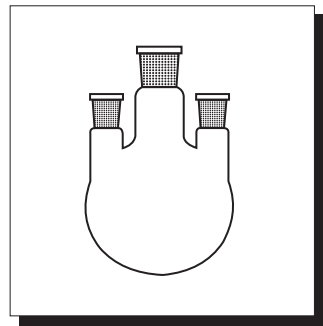




**5495**

**FLASKS, ROUND BOTTOM, THREE NECKS, CENTRE NECK AND TWO PARALLEL SIDE NECKS WITH INTERCHANGEABLE JOINT**

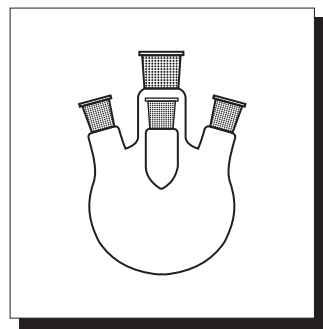
CAT. REF.	CAP. ML.	INTERCHANGEABLE JOINT SIZE			APPROX. HEIGHT MM	Qty. Per Case	GROUP
		CENTRE NECK	SIDE NECK	SIDE NECK			
5495/32	5000	34/35	24/29	24/29	350	1	E
5495/35	10000	34/35	24/29	24/29	420	1	E
5495/40	20000	55/44	24/29	24/29	500	1	E



**5496**

**FLASKS, ROUND BOTTOM, FOUR NECKS, CENTRE NECK AND THREE ANGLED SIDE NECKS WITH INTERCHANGEABLE JOINT**

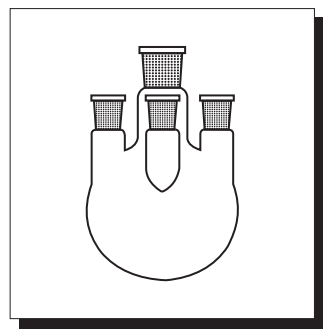
CAT. Case REF.	CAP. MRP/ ML.	INTERCHANGEABLE JOINT SIZE				APPROX. HEIGHT MM	Qty Per Pack.	GROUP
		CENTRE NECK	SIDE NECK	SIDE NECK	SIDE NECK			
5496/32	5000	34/35	24/29	24/29	24/29	350	1	B
5496/35	10000	34/35	24/29	24/29	24/29	420	1	B
5496/40	20000	55/44	24/29	24/29	24/29	500	1	B



**5497**

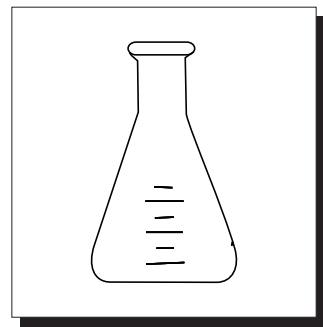
**FLASKS, ROUND BOTTOM, FOUR NECKS, CENTRE NECK AND THREE PARALLEL SIDE NECKS WITH INTERCHANGEABLE JOINT**

CAT. Case REF.	CAP. MRP/ ML.	INTERCHANGEABLE JOINT SIZE				APPROX. HEIGHT MM	Qty Per Pack.	GROUP
		CENTRE NECK	SIDE NECK	SIDE NECK	SIDE NECK			
5497/32	5000	34/35	24/29	24/29	24/29	350	1	B
5497/35	10000	34/35	24/29	24/29	24/29	420	1	B
5497/40	20000	55/44	24/29	24/29	24/29	500	1	B



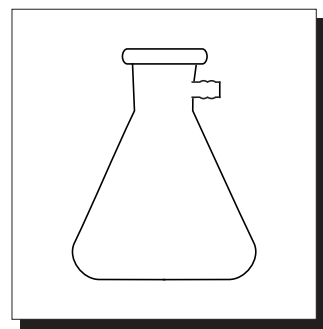
**5091  
FLASKS, ERLLENMEYER, GRADUATED, CONICAL, NARROW MOUTH**

CAT. REF.	CAP. ML.	APPROX. O.D. MM.	APPROX. HEIGHT MM	APPROX. O.D. NECK MM	PACKING I/C/M
5091/32	5000	220	377	50	0/2/4
5091/35	10000	280	450	60	0/1/2
5091/40	20000	-	-	-	0/1/1



**6451  
FLASKS, FILTERING, HEAVY WALL, BOLT NECK WITH TUBULATION**

CAT. REF.	CAP. ML.	APPROX. O.D. MM.	APPROX. HEIGHT MM	PACKING I/C/M
6451/32	5000	237	450	0/1/2
6451/35*	**10000	220	500	0/1/2
6451/40*	**20000	300	560	0/1/2



**MYTH**

Glass is just for windows:

**FACT**

There is so much more to glass with endless possibilities. There are different types of glass that have various uses in all fields from Technology to Architecture.

While windows are still a primary application for glass in your home, scientists are currently manipulating glass at the molecular level in the hopes of increasing the total capabilities of glass products. In addition, expanding glass' capabilities helps to solve some of the world's toughest issues.

Scientists have experimented with glass that makes high-speed communication possible through optical fibre.

Innovations in glass products also help turn solar energy into electricity and enable thinner, lighter, and more durable display devices.





# FILTER FLASK

## (Improvised Design)

Goel Scientific Glass Works Ltd. is a leading Industrial and Laboratory Glassware manufacturing company in India. Since inception, our moto has been to go beyond possible to delight customer through innovation.

Under vacuum environment, the filtration flask are prone to collapse and thus we are proud to introduce new design of Filter Flask. These filtration flasks are manufactured as per Japanese design and are more suitable and stronger as compared to existing conventional/traditional available designs.

### Application :

- \* Filtering solutions.
- \* Removing solvent under reduced pressure.
- \* Provides buffer/trap to secure pump or vacuum line.

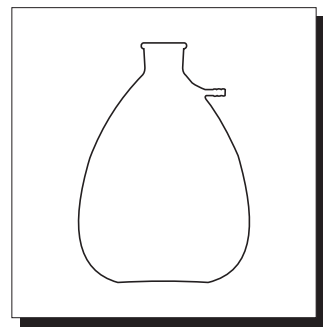
### Salient Features :

- \* Thick wall of the flask provides it the strength to withstand the pressure difference while holding a vacuum inside.
- \* Side arm/nozzle to connect to a vacuum pump or aspirator, to create/lower vacuum/pressure inside the flask.
- \* Made from Borosilicate glass 3.3, to provide visibility, strength, heating and chemical resistance.

6451 / J

JAPAN FLASKS, FILTERING, HEAVY WALL

CAT. REF.	CAP. ML.	APPROX O.D. MM.	APPROX HEIGHT MM	PACKING I/C/M	GROUP
6451/29/J	2000	170	240	0/6/24	E
6451/30/J	3000	200	295	0/1/6	E
6451/32/J	5000	240	340	0/1/2	E
6451/35/J	10000	300	420	0/1/2	E
6451/40/J	20000	350	530	0/1/16	E

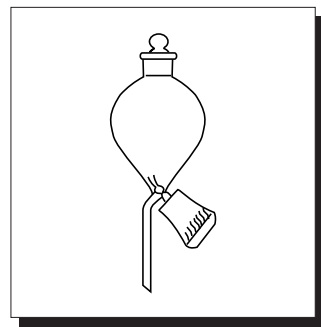




## FUNNELS

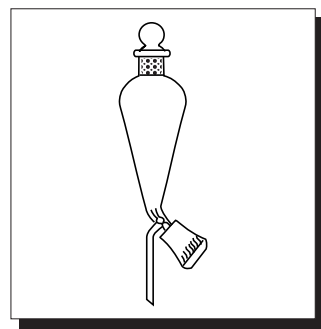
**7451**  
**FUNNELS, SEPARATING, GLOBE SHAPE, WITH ROTOFLOW**  
**STOPCOCK WITH HOLLOW INTERCHANGEABLE STOPPER**

CAT. REF.	CAP. ML	I / C STOPPER SIZE	PACKING I/C/M
7451/32	5000	34/25	-1/-
7451/35	10000	34/25	-1/-
7451/40	20000	45/40	-1/-



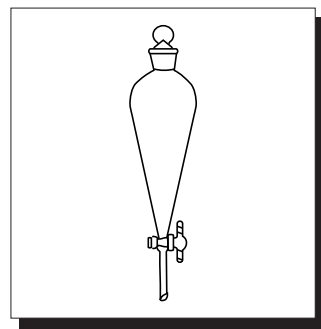
**7513**  
**FUNNELS, SEPARATING, PEAR SHAPE, WITH ROTOFLOW**  
**STOPCOCK HOLLOW INTERCHANGEABLE STOPPER**

CAT. REF.	CAP. ML	I / C STOPPER SIZE	PACKING I/C/M
7513/32	5000	34/25	-1/-
7513/35	10000	34/25	-1/-
7513/40	20000	45/40	-1/-



**7514**  
**FUNNELS SEPARATING, PEAR SHAPE, FITTED WITH PTFE KEY**  
**STOPCOCK WITH INTERCHANGEABLE HOLLOW STOPPER**

CAT. REF.	CAP. ML	I / C STOPPER SIZE	PACKING I/C/M
7514/32	5000	34/25	-1/-
7514/35	10000	34/25	-1/-
7514/40	20000	45/40	-1/-

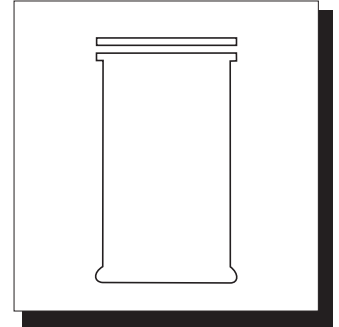




# JARS

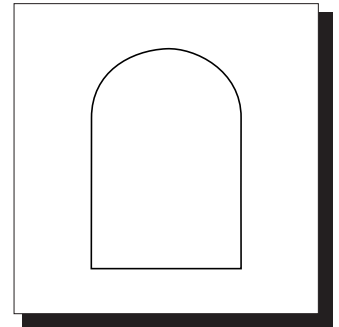
## 7900 MUSEUM JARS

CAT. REF.	O.D. X HEIGHT MM	QTY. PER CASE	GROUP
7900/1	80 x 200	4	E
7900/2	80 x 250	4	E
7900/3	100 x 200	4	E
7900/4	100 x 250	4	E
7900/5	100 x 300	4	E
7900/6	150 x 200	2	E
7900/7	150 x 250	2	E
7900/8	150 x 300	2	E
7900/9	225 x 250	1	D
7900/10	225 x 300	1	D
7900/11	225 x 375	1	D
7900/12	300 x 300	1	D
7900/13	300 x 375	1	D
7900/14	300 x 450	1	D



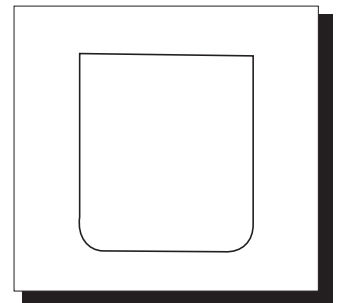
## 7997 JARS, BELL, ROUND BOTTOM, EDGE GROUND

CAT. REF.	APPROX CAP. LTR	APPROX HEIGHT MM	APPROX O.D. MM	QTY. PER CASE	GROUP
7997/39	19	450	315	1	D
7997/38	17	400	315	1	D
7997/33	6	350	230	1	D



## 7016 JARS, CYLINDRICAL, FERMENTATION

CAT. REF.	APPROX CAP. LTR	APPROX HEIGHT MM	APPROX O.D. MM	QTY. PER CASE	GROUP
7016/35	10	320	230	1	D
7016/37	14	455	230	1	D





## BLR - Accessories & Spares

Sr.	Description	MOC	Unit Size	CAT REF.
<b>Single Wall Vessel</b>				
1	Jacketed Vessel - 0.5 L	Duran	0.5 L	VZ0.5/J
2	Jacketed Vessel - 1.0 L	Duran	1.0 L	VZ1/J
3	Jacketed Vessel - 2.0 L	Duran	2.0 L	VZ2/J
4	Jacketed Vessel - 3.0 L	Duran	3.0 L	VZ3/J
5	Jacketed Vessel - 5.0 L	Duran	5.0 L	VZ5/J
<b>Flexi - Double Wall Jacketed Vessel</b>				
1	Jacketed Vessel - 0.5 L	Duran	0.5 L	VZD0.5/J
2	Jacketed Vessel - 1.0 L	Duran	1.0 L	VZD1/J
3	Jacketed Vessel - 2.0 L	Duran	2.0 L	VZD2/J
4	Jacketed Vessel - 3.0 L	Duran	3.0 L	VZD3/J
5	Jacketed Vessel - 5.0 L	Duran	5.0 L	VZD5/J
<b>Flexi - Tripple Wall Jacketed Vessel</b>				
1	Jacketed Vessel - 0.5 L	Duran	0.5 L	VZT0.5/J
2	Jacketed Vessel - 1.0 L	Duran	1.0 L	VZT1/J
3	Jacketed Vessel - 2.0 L	Duran	2.0 L	VZT2/J
4	Jacketed Vessel - 3.0 L	Duran	3.0 L	VZT3/J
5	Jacketed Vessel - 5.0 L	Duran	5.0 L	VZT5/J
<b>Vessel Cover</b>				
1	Vessel Cover - 4" C -B24, S-B24 X B24 at 10°, S-B19 X B19 at 10°	Duran	0.5 L ~ 2.0 L	VZA4/J
2	Vessel Cover - 6",C -B34, S-B24 X B24 at 10°, S-B19 X B19 at 10°	Duran	3.0 L ~ 5.0 L	VZA6/J
<b>Coupling &amp; Gasket</b>				
1	Quick Release Coupling 4"	SS304	0.5 L ~ 2.0 L	QCT4/J
2	Quick Release Coupling 6"	SS304	3.0 L ~ 5.0 L	QCT6/J
3	SS 304 Coupling 1" with SS 304 Nuts & Bolts	SS304	0.5 L ~ 2.0 L	CT1/SS
4	PTFE 'O' Ring for 1"	PTFE	3.0 L ~ 5.0 L	TR1
5	SS 304 Coupling 1.5" with SS 304 Nuts & Bolts	SS304	3.0 L ~ 5.0 L	CT1.5/SS
6	PTFE 'O' Ring for 1.5"	PTFE	0.5 L ~ 5.0 L	TR1.5
<b>Valve</b>				
1	Flush Bottom Valve - 1"	Duran	0.5 L ~ 2.0 L	BAL1/J
2	Flush Bottom Valve - 1.5"	Duran	3.0 L ~ 5.0 L	BAL1.5/J
<b>PTFE Stirrer (Blade)</b>				
1	SR - A (Blade/Propeller/Turbine)	400 mm	0.5 L ~ 2.0 L	STB4
2	SR - B (Blade/Propeller/Turbine/Anchor)	550 mm	3.0 L ~ 5.0 L	STB5



Sr.	Description	MOC	Unit Size	CAT REF.
<b>Sealing</b>				
1	High Vacuum Stuffing Box	PTFE	0.5 L ~ 2.0 L	HSB24
2	High Vacuum Stuffing Box	PTFE	0.3 L ~ 5.0 L	HSB34
<b>Stirrer Drive</b>				
1	Lab Strirere Drive Speed 40 to 400 RPM with dig. Indicator	MS	0.5 L ~ 5.0 L	LSD
<b>Sensor</b>				
1	Temperature Indiacator senser -40° to 250° c	MS	0.5 L ~ 5.0 L	LTI
<b>Glass Accessories</b>				
1	Double Coil Condensor with Cone B24, socket B24, 300 mm long	Borosilicate 3.3	0.5 L ~ 3.0 L	HES24
2	Double Coil Condensor with Cone B24, socket B24, 400 mm long	Borosilicate 3.3	5.0 L	HEC4S
3	250 ml Funnel, Additional /Dropping, with socket B19/24 cylindrical, St bore PTFE stop cock, graduated pressure equalizing	Borosilicate 3.3	0.5 L ~ 1.0 L	AEF25
4	500 ml Funnel, Additional / Dropping,with socket B24/25 cylindrical, St bore PTFE stop cock, graduated pressure equalizing	Borosilicate 3.3	2.0 L ~ 5.0 L	AEF50
5	Thermometer Pocket B19	Borosilicate 3.3	0.5 L	TP0.5
6	Thermometer Pocket B19	Borosilicate 3.3	1.0 L	TP1
7	Thermometer Pocket B19	Borosilicate 3.3	2.0 L	TP2
8	Thermometer Pocket B24	Borosilicate 3.3	3.0 L	TP3
9	Thermometer Pocket B24	Borosilicate 3.3	5.0 L	TP5
<b>Scaffolding / Stand</b>				
1	SS 304 Scaffolding / Stand for 0.5 L to 2 L	SS 304	0.5 L ~ 2.0 L	TBG/ SS/ 0.5-2/J
2	SS 304 Scaffolding / Stand for 3 L to 5 L	SS 304	3.0 L ~ 5.0 L	TBG/ SS/ 3-5/J

## MYTH

It is often considered that, glass articles are easy to manufacture. Melt the glass and cast.

## FACT

At Goel, we manufacture glass articles and equipment from glass tubes of various sizes and thicknesses.

The glass tubes are heated to the temperature of 800-1200 deg. C like Blacksmith, shaped it like Potter with precision like Goldsmith.

We are visited by many students and guest every year.





**Shri Hemant H. Goel**  
*Chairman & Managing Director*

Goel Scientific Glass Works Ltd. popularly known as “GOEL” and is known for innovation & being leader in scientific glass industry. Shri Hemant Goel, director of the company with 30 years of floor experience, the glass blowing has become his core competency and provided preview to make anything and everything in glass. We define our work as **“We forge glass with the Craftsmanship of Potter, Blacksmith and Goldsmith with the blend of Engineering making us Transparent Specialist”**.

Goel scientific Glass Works Ltd., popularly known by its brand name GOEL has remained in leading position since past 3 decades in the Indian scientific glass industries. It has always remained focused to indigenously develop new products to maintain leading position.

The promoter Shri Hemant Goel has experience of over 5 decades in the glass field including experience of shop-floor level of about 3 decades. This rich experience has made him a Glass blowing expert with a vision to fabricate any product to cater customer's requirement.

Goel has been manufacturing the suppling multiple glass components to many OEM across the globe. Presently we have presence over 75 countries across the globe.

Quality has always remained major priority and in the year 2000 became the first ISO certified company in glass industry. Our efforts was recognised in the year 2016 when we were awarded on national level 1<sup>st</sup> Prize for **“Quality Products in Glass Items/Products”** by Ministry of Micro Small & Medium Enterprise, Government of India for the year 2014.

We follow international standard (i.e DIN ISO-3585, 3586, 3587, 4704, 718 and BSEN-1595). Furthermore, we have granted CE certification since 2017.

Since inception, our moto has been

**“Go Beyond Possible to Delight Customer through Innovation”**.



## KEY CONTACT PERSONS

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ISO 9001:2015

## CERTIFICATE OF REGISTRATION

THIS IS TO CERTIFY THAT THE  
QUALITY MANAGEMENT SYSTEM OF

**Goel Scientific Glass Works Limited**

C/31-A, Sardar Estate,  
Ajwa Road, Vadodara,  
Gujarat - 390 019  
INDIA

Has been assessed and registered as complying with the requirements of the International Standard shown above for the following Scope. Further clarifications regarding the scope of this certificate and the applicability of ISO 9001:2015 requirements may be obtained by consulting the organisation.

**Design, Development, Marketing, Manufacturing and Erection of  
Scientific and Industrial Glass Equipments and Lab Wares.**



[www.jas-anz.org/register](http://www.jas-anz.org/register)

Tony Wilde  
Group Chairman  
ISC (Global), License #1150/2011 CC

Registration Number:	QAC/R91/0146
Original Registration Date:	30-Oct-2009
Re-certification Date:	31-May-2018
Expiry Date:	13-May-2021

ISC (Global), Building 11, 7<sup>th</sup> Floor, Bay Square, Business Bay, Dubai, UAE.



This certificate is valid until the Expiry Date on the condition that audits are conducted and paid for as per the Certification Agreement. Should this condition not be met, cancellation procedures will be initiated and the client will be removed from the JAS-ANZ register. This Certificate remains the property of International Standards Certifications (Global) FZ LLC and must be returned upon request. It must not be altered in any way. Intentional misuse of this certificate will result in cancellation without prior notification.



The Transparent Specialist

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Our Brands **FLEX-HE<sup>®</sup>** **D' BORO<sup>®</sup>** **HanSter<sup>®</sup>** **Swiffter<sup>®</sup>** **XTRONG**

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