

***SINTERED FILTER***



**2022-2023**

**[www.sinteredglass.net](http://www.sinteredglass.net)**

# A wide selection of filtration rates - Screw filters with interchangeable Filter discs.

*An extensive range of applications, simple and safe to use.*

With just 3 filter sizes, each having 4 filter discs of varying porosity, it is possible to obtain 12 different filter rates, so that every application can be catered for.

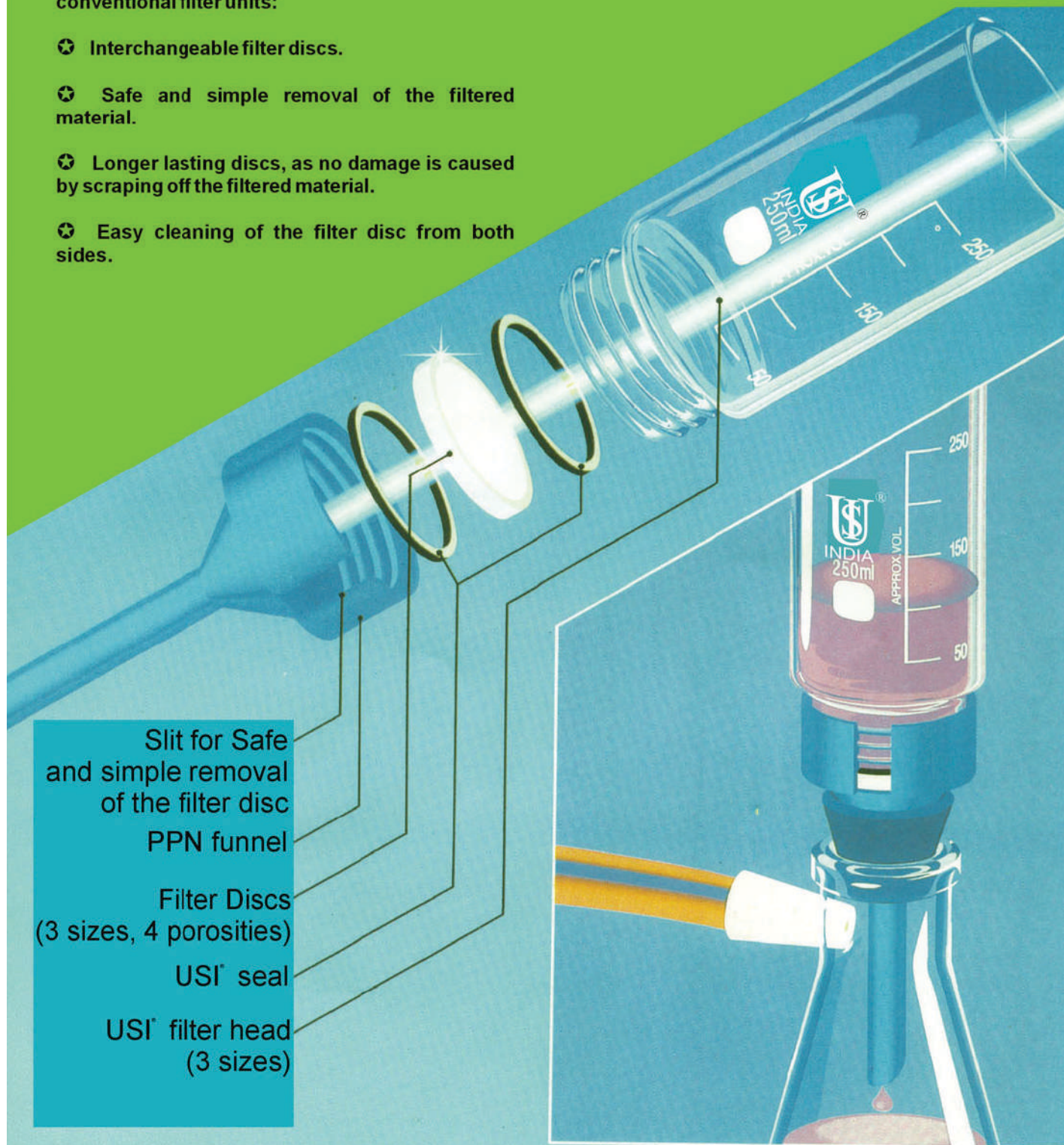
**USI** screw filters have many advantages over conventional filter units:

- ★ Interchangeable filter discs.
- ★ Safe and simple removal of the filtered material.
- ★ Longer lasting discs, as no damage is caused by scraping off the filtered material.
- ★ Easy cleaning of the filter disc from both sides.

★ Slit sieve can be used to support membrane filters and paper filters.

★ Space saving.

★ Economical. Both filter discs and units can be ordered individually as required.



Slit for Safe and simple removal of the filter disc  
PPN funnel  
Filter Discs (3 sizes, 4 porosities)  
USI seal  
USI filter head (3 sizes)

## Company Profile

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### Background

United Scientific Industries is amongst the most renowned manufacturers of sintered glasswares made from Borosilicate and stand first in India. The Company was started way back in 1961. Since 1961, the Company concentrated their business only in the domestic market. But with the opening of the Indian economy and liberalization policies started by the Govt. of India in 1990's, the company established its exports section. We have a highly expertise team of glass blowers.

*Founder*

*Ranendra Nath Gupta*





# SINTERED GLASSWARE

Porosity Grades and their General Use

Porosity Grade	Pore Size $\mu\text{m}$	General Use
Por.0	160-250	Coarse Filtration, Filtration, Gas dispersion and support for other filter material.
Por.1	100-160	Coarse Precipitate, Filtration, Gas dispersion, Coarse grain material filtration.
Por.2	40-100	Medium and Crystalline precipitate filtration, medium filtration and washing of glass.
Por.3	16-40	Fine Gas filtration and dispersion, mercury filtration, fine grain material filtration, collection of fine precipitates, Analytical work with medium precipitates.
Por.4	10-16	
Por.5	1-1.6	Valves for mercury collection of very fine precipitates. Analytical work with fine precipitates.



**Cat No. 001.203.01**

**Filtering Apparatus witt's, Complete with flanged jar, flanged lid, funnel and 250 ml. Beaker.**

**Filtering Apparatus witt's, Complete with Filtering Flask, gooch crucible with sintered Disc of Porosity G-0 or G-1 or G-2 or G-3 or G-4, Glass adapter & rubber cone.**

Cat. No.	Flask Cap. (ml)	Crucible Cap. (ml)
002.203.01	250	30
002.203.02	500	30
002.203.03	1000	50



**Filter Apparatus, Complete with Filter Flask, with socket and buchner funnel with sintered Disc of Porosity G-0 or G-1 or G-3 or G-4, having cone.**



Cat. No.	Flask Cap. (ml)	Crucible Cap. (ml)	Joint
003.203.01	250	80	24/29
003.203.02	500	200	24/29
003.203.03	1000	500	29/32
003.203.04	2000	1000	29/32

**Note : Please mention Porosity of Sintered Disc, while placing order.**



**Crucible, Gooch type** with Sintered Disc of Porosity G-0 or G-1 or G-2 or G-3 or G-4.

Cat. No.	Capacity (ml)
004.203.01	15
004.203.02	30
004.203.03	50



**Buchner Funnel**, with Sintered Disc of Porosity G-0 or G-1 or G-2 or G-3 or G-4, Plain stem.

Cat. No.	Capacity (ml)	Disc Dia (mm)
005.203.01	35	30
005.203.02	80	40
005.203.03	200	65
005.203.04	500	90
005.203.05	1000	120

**Buchner Funnel**, with Sintered Disc of Porosity G-0 or G-1 or G-2 or G-3 or G-4, cone at stem.

Cat. No.	Capacity (ml)	Disc Dia (mm)	Cone
006.203.01	35	30	14/23 or 19/26
006.203.02	80	40	14/23 or 19/26
006.203.03	200	65	19/26 or 24/29
006.203.04	500	90	19/26 or 24/29 or 29/32
006.203.05	1000	120	19/26 or 24/29 or 29/32



# Millipore Type, Membrane Filter Hoder Assembly, with Membrane support base with IC Joints Vacuum Connection, Funnel, Filtering Flask with IC Joints and Aluminum Clump.



<u>Cat No.</u>	<u>Membrane support base</u>	<u>Funnel</u>	<u>Flask</u>
007.203.01	25 mm with B-29	30 ml	250 mm with B-29
007.203.02	25 mm with B-29	50 ml	500 mm with B-29
007.203.03	47 mm with B-40	300 ml	1000 mm with B-40
007.203.04	47 mm with B-40	500 ml	2000 mm with B-40
007.203.05	90 mm with B-55	1000 ml	5000 mm with B-55

**Note : Please mention Porosity of Sintered Disc, while placing order.**



# Millipore Type, Membrane Filter Hoder Assembly, with Membrane support base with Silicon Cork, Funnel, Filtering Flask with Hose Connection and Aluminum Clump.

<u>Cut No.</u>	<u>Membrane support base</u>	<u>Funnel</u>	<u>Flask</u>
007.203.06	25 mm with Silicon Cork	30 ml	125 mm with Hose Connection
007.203.07	47 mm with Silicon Cork	300 ml	1000 mm with Hose Connection
007.203.08	90 mm with Silicon Cork	1000 ml	5000 mm with Hose Connection



# Millipore Type, Membrane Filter Hoder Assembly, with Membrane support base with Silicon Cork, PP Adopter GL-45 Thread with hose connection, Funnel, Filtering Flask with GL-45 Thread and Aluminum Clump.

<u>Cut No.</u>	<u>Membrane support base</u>	<u>Funnel</u>	<u>Flask</u>
007.203.09	47 mm with Silicon Cork	300 ml	1000 mm with GL-45 Thread

**Tube Sealed** with reduced ends with Sintered Disc (Pipe line filter) Porosity G-0 or G-1 or G-2 or G-3 or G-4.

**Cat. No.(mm) Disc Dia**

008.203.01	30
008.203.02	40
008.203.03	50
008.203.04	65
008.203.05	90



**Conical Filter, (Hirsch type)** with sintered disc of porosity G-0 or G-1 or G-2 or G-3 or G-4.

<u>Cat. No.</u>	<u>Capactiy (ml)</u>	<u>Disc Dia</u>
009.203.01	20	20
009.203.02	60	30
009.203.03	175	30

**Sintered Glass Filter Tube**, with sintered Disc sealed in Centre, Porosity G-0 or G-1 or G-2 or G-3 or G-4.

**Cat. No. Disc Dia (mm)**

010.203.01	10
010.203.02	20
010.203.03	30
010.203.04	45
010.203.05	50
010.203.06	90





**Sintered Glass Gas Distribution Tube, (Filter Stick) Porosity G-0 or G-1 or G-2 or G-3 or G-4.**

Cat. No.	Disc Dia (mm)
011.203.01	10
011.203.02	20
011.203.03	30



**Chromatography Columns, with integral sintered disk and glass stopcock.**



Cat. No.	Extractor Length (cm)	Disc Dia (mm)
012.203.01	15	10
012.203.02	20	15
012.203.03	30	15
012.203.04	40	20
012.203.05	40	30
012.203.06	50	30
012.203.07	50	40
012.203.08	60	40
012.203.09	100	40

**Chromatography Columns, with integral sintered disc and screw type Rotaflow Stopcock.**

Cat. No.	Extractor Length (cm)	Disc Dia (mm)
013.203.01	15	10
013.203.02	20	15
013.203.03	30	15
013.203.04	40	20
013.203.05	40	30
013.203.06	50	30
013.203.07	50	40
013.203.08	60	40
013.203.09	100	40



**Chromatography Columns, with integral sintered disc and PTFE Key stopcock.**



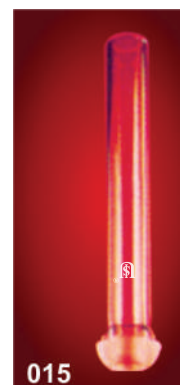
Cat. No.	Extractor Length (cm)	Disc Dia (mm)
014.203.01	15	10
014.203.02	30	10
014.203.03	30	20
014.203.04	45	20
014.203.05	45	30
014.203.06	60	30

**Note : Please mention Porosity of Sintered Disc, while placing order.**



## Spherical Joint, Ball

Cat. No.	Cup joint (male)	joint size	Minimum shank length mm.
015.203.01	S13	S13	100
015.203.02	S13	S13	100
015.203.03	S19	S19	100
015.203.04	S29	S29	100
015.203.05	S35	S35	100
015.203.06	S41	S41	100
015.203.07	S51	S51	100



## Spherical Joint, Cup



Cat. No.	Cup joint (female)	joint size	Minimum shank length mm.
016.203.01	S13	S13	100
016.203.02	S13	S13	100
016.203.03	S19	S19	100
016.203.04	S29	S29	100
016.203.05	S35	S35	100
016.203.06	S41	S41	100
016.203.07	S51	S51	100

## Joints Clips, Metal



Cat. No.	To fit spherical joint size	To fit flat flange joint size
017.203.01	S13	—
017.203.02	S19	—
017.203.03	S29	—
017.203.04	S35	—
017.203.05	S41	—
017.203.06	S51	—





**Sintered Disc**  
**PLAIN SINTERED DISC G-0 TO G-5**

Cat. No.	Disc Dia (MM)	Thickness (MM)
018.203.01	5	2
018.203.02	10	2
018.203.03	15	2.5
018.203.04	20	2.5
018.203.05	25	2.5
018.203.06	30	3
018.203.07	35	3
018.203.08	40	3.5
★018.203.09	45	4
018.203.10	50	3.8
018.203.11	55	4
018.203.12	60	4
018.203.13	65	4.5
018.203.14	70	4.5
018.203.15	75	5
018.203.16	80	5
018.203.17	90	5.5
018.203.18	100	6.8
018.203.19	110	7
018.203.20	120	7.5



Cat. No.	Disc Dia (MM)	Thickness (MM)
018.203.21	125	7.5
018.203.22	130	8
018.203.23	140	8.5
018.203.24	150	8.5
018.203.25	160	9
018.203.26	170	9.5
018.203.27	180	10
018.203.28	190	11
018.203.29	200	12
018.203.30	210	13
018.203.31	220	14
018.203.32	230	15
018.203.33	240	16
018.203.34	250	17
018.203.35	260	18
018.203.36	270	19
018.203.37	280	20
018.203.38	290	20
018.203.39	300	20



**Sintered Disc With Side Firepolish**

Cat. No.	Disc Dia Portion (mm)	Thickness (mm)	Plain Sintered (mm)
019.203.01	50	10	40
019.203.02	90	14	60
019.203.03	100	15	70
019.203.04	110	16	80
019.203.05	120	17	90
019.203.06	130	18	100
019.203.07	140	19	110
019.203.08	150	20	120

N.B. Please Mention The Porosity

**Twin sintered disc :**

Cat. No.	Porosity	Pore Size Coarse	Fine
020.203.01	G-0/G-2	160-250μ	40-100μ
020.203.02	G-1/G-3	100-160μ	16-40μ
020.203.03	G-2/G-4	40-100μ	10-16μ
020.203.04	G-3/G-5	16-40μ	1-1.6μ



**Note : Please mention porosity of sintered disc, while placing order**



# Millipore Type, Membrane Filter Hoder Assembly, with Membrane support base blank base with Silicon cork and Stainless Steel Screen Teflon Coated, Teflon O Ring, Filtering Flask with Hose Connection and Aluminum Clump.

<u>Cut No.</u>	<u>Membrane support base</u>	<u>Funnel</u>	<u>Flask</u>
021.203.01	25 mm with Silicon Cork	15 ml	125 ml with Hose Connection
021.203.02	47 mm with Silicon Cork	300 ml	1000 ml with Hose Connection
021.203.03	90 mm with Silicon Cork	1000 ml	5000 ml with Hose Connection
021.203.04	150 mm with Silicon Cork	2000 ml	10000 ml with Hose Connection (Bottle)



# Millipore Type, Membrane Filter Hoder Assembly, with Membrane support blank base with IC Joint and Stainless Steel Screen Teflon Coated, Teflon O Ring, Funnel, Filtering Flask with IC Joint and Aluminum Clump.

<u>Cut No.</u>	<u>Membrane support base</u>	<u>Funnel</u>	<u>Flask</u>
021.203.05	25 mm with B-29	15 ml	125 ml with B-29
021.203.06	47 mm with B-40	300 ml	1000 ml with B-29
021.203.07	90 mm with B-55	1000 ml	5000 ml with B-29
021.203.08	150 mm with B-55	2000 ml	10000 ml with B-29 (Bottle)

#### Filter candles and thimbles

<u>Cat. No.</u>	<u>Sintered (mm)</u>
022.203.01	25
022.203.02	34



#### Jacketed sintered funnel

<u>Cat. No.</u>	<u>Porosity</u>	<u>Disc Dia (mm)</u>	<u>Capacity (ml)</u>	<u>Cone Size</u>	<u>Socket Size</u>	<u>Effective length (mm)</u>
023.203.01	G-0 to G-4	30	50	29/32	29/32	280
023.203.02	G-0 to G-4	50	250	29/32	29/32	330
023.203.03	G-0 to G-4	70	500	40/45	40/45	310
023.203.04	G-0 to G-4	90	1000	45/40	45/40	380

#### Salt Bridge

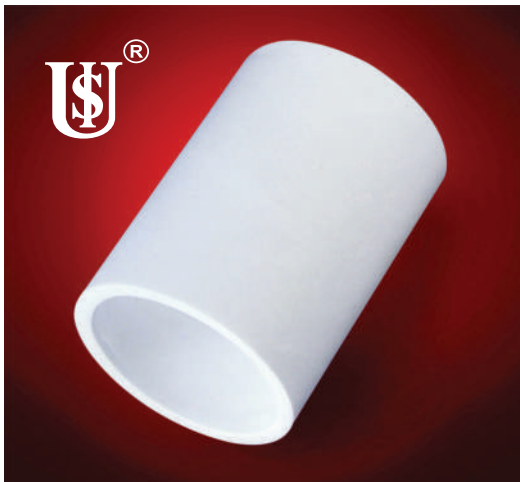
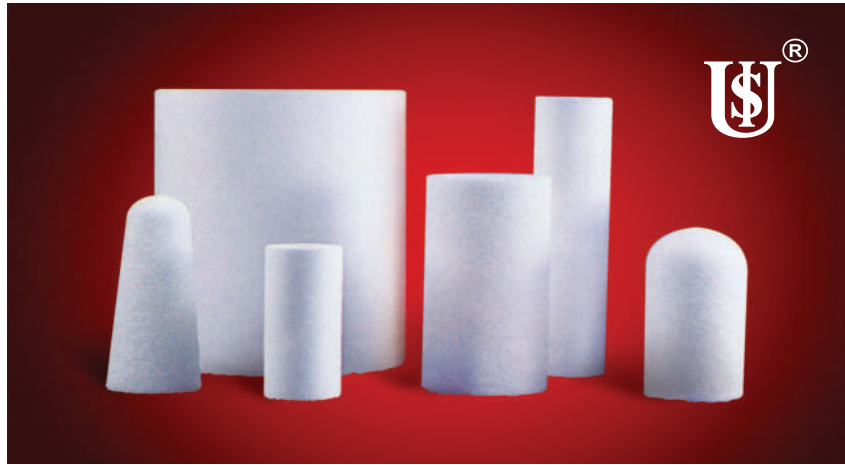
<u>Cat. No.</u>	<u>Disc Dia (MM)</u>	<u>Tube Dia/ Length/ Breath/Stem Dia (MM)</u>
024.203.01	10	13/100/80/8



Note : Please mention porosity of sintered disc, while placing order



We manufacture these Products & other Customized Products





# MANIFOLD VACUUM FILTRATION



Cat. No.  
025.203.01



1-Branch

Cat. No.  
025.203.02



3-Branch

Cat. No.  
025.203.03



6-Branch

No. 8 Rubber Stopper



B-40 Socket

Cat. No.  
025.203.04





## Manifold Vacuum Filtration

Multi-Branch Manifolds filter is a solvent filtration equipment of laboratory. Compared with the glass sand core, it is more convenient, efficient for the operator who needs to filtrate several samples at the same time. Because each filter holder have individual control valve, only one set vacuum pump can sustain the single or multi-bench manifold filter operate together.

Material use sanitary stainless steel, acid and alkaline resistance, corrosion resistance, high temperature resistance, can tolerate the high temperature of 180°C, easy to sterilization in high temperature. Under the strict quality control, production process make the product more superior quality guarantee. Advanced production equipment, high-quality production of raw materials, perfect production technology and technical support is the guarantee of excellent products.

### Components:

1. Glass funnel (300ml) / Stainless steel funnel(300ml) SS316L
2. Borosilicate glass filter head / Stainless steel filter head SS316L
3. Stainless steel holder SS316L
4. PTFE valve
5. Clamp of aluminum alloy
6. Lid

### Classification:

1. 1-branch
2. 3-branch
3. 6-branch

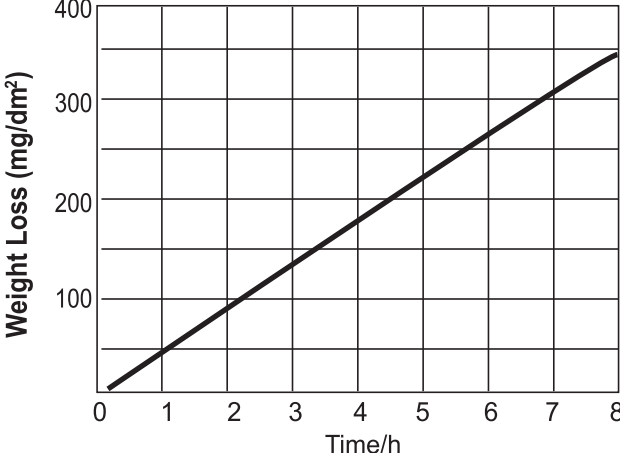
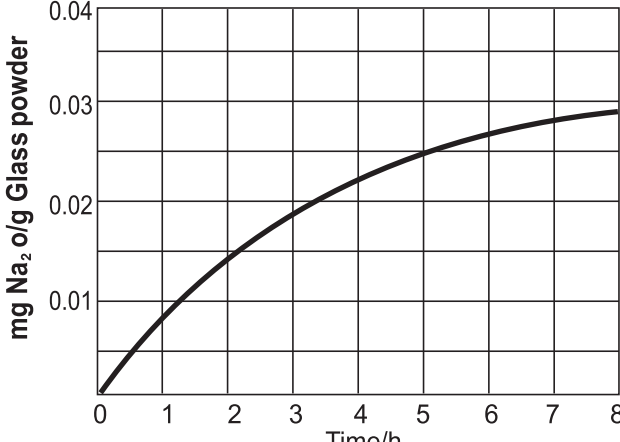
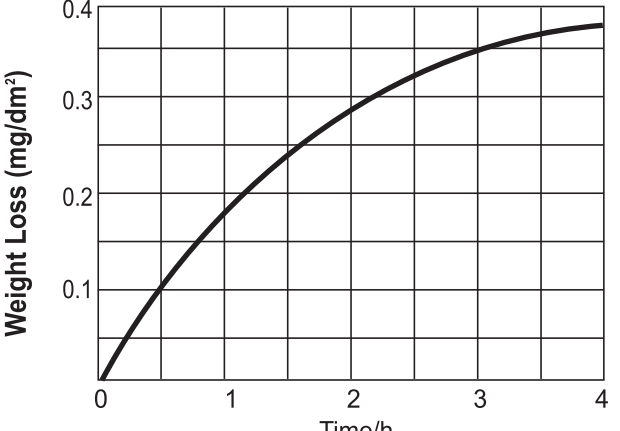
### Application:

Widely used for chemistry analyses, biochemical, pharmaceutical, sanitation test, environment test, water quality analyze, food, beverage and science research and so on. The product conforms to the United State pharmacopoeia standards, can test three or six samples at the same time, high sensitivity, and simple operation, according to the needs of the operator, choose different material of membrane filter, filtering of different sample, such as suspended solids, bacteria, chlorophyll etc. suitable for solids filtration of laboratory.

**BOROSILICATAE 3.3 ISO 3585**

Chemical Resistance

Borosilicate Glass 3.3 is highly resistant to water, acid solution, concentrated acids, chlorine, bromine, iodine and organic substances. Only hydrofluoric acid, solutions, hot phosphoric acid and alkaline solutions attack the surface of the glass. The degree of attack is increasing as the concentration and temperature rise.

<p><b>Alkali Resistance</b></p>  <table border="1"> <caption>Data for Alkali Resistance</caption> <thead> <tr> <th>Time/h</th> <th>Weight Loss (mg/dm<sup>2</sup>)</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td></tr> <tr><td>1</td><td>43.75</td></tr> <tr><td>2</td><td>87.5</td></tr> <tr><td>3</td><td>131.25</td></tr> <tr><td>4</td><td>175</td></tr> <tr><td>5</td><td>218.75</td></tr> <tr><td>6</td><td>262.5</td></tr> <tr><td>7</td><td>306.25</td></tr> <tr><td>8</td><td>350</td></tr> </tbody> </table>	Time/h	Weight Loss (mg/dm <sup>2</sup> )	0	0	1	43.75	2	87.5	3	131.25	4	175	5	218.75	6	262.5	7	306.25	8	350	<p>Borosilicatae Glass 3.3 is specified as alkali resistant acc. to ISO 695, in class: ISO 695-A2.</p> <p>After boiling the fire-polished surface in a mixture of 1:1 of sodium hydroxide solution (1 mol/l) and sodium carbonate solution for 3 hours, a weight loss of 134mg/dm<sup>2</sup> is measured.</p>
Time/h	Weight Loss (mg/dm <sup>2</sup> )																				
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<p><b>Hydrolytic Resistance</b></p>  <table border="1"> <caption>Data for Hydrolytic Resistance</caption> <thead> <tr> <th>Time/h</th> <th>mg Na<sub>2</sub>O/g Glass powder</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td></tr> <tr><td>1</td><td>0.008</td></tr> <tr><td>2</td><td>0.015</td></tr> <tr><td>3</td><td>0.020</td></tr> <tr><td>4</td><td>0.023</td></tr> <tr><td>5</td><td>0.025</td></tr> <tr><td>6</td><td>0.027</td></tr> <tr><td>7</td><td>0.028</td></tr> <tr><td>8</td><td>0.029</td></tr> </tbody> </table>	Time/h	mg Na <sub>2</sub> O/g Glass powder	0	0	1	0.008	2	0.015	3	0.020	4	0.023	5	0.025	6	0.027	7	0.028	8	0.029	<p>Borosilicaae Glass 3.3 is specified as resistant to water acc. to ISO 719, in hydrolytic class ISO 719-HGB 1. In the test only 0.026 ml HCl (0,01 mol/l) is dissipated from 1g of Glass Powder after being held in water at 98°C for one hour. This corresponds to an alkali weight loss of 0.008mgNa O.</p>
Time/h	mg Na <sub>2</sub> O/g Glass powder																				
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7	0.028																				
8	0.029																				
<p><b>Acid Resistance</b></p>  <table border="1"> <caption>Data for Acid Resistance</caption> <thead> <tr> <th>Time/h</th> <th>Weight Loss (mg/dm<sup>2</sup>)</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td></tr> <tr><td>1</td><td>0.18</td></tr> <tr><td>2</td><td>0.28</td></tr> <tr><td>3</td><td>0.34</td></tr> <tr><td>4</td><td>0.38</td></tr> </tbody> </table>	Time/h	Weight Loss (mg/dm <sup>2</sup> )	0	0	1	0.18	2	0.28	3	0.34	4	0.38	<p>Borosilicate glass 3.3 is s pecified as acid resistant acc. to 12116 in acid class 1. In the test on the fire polished surface,a weight loss of only 0.3 mg/dm is measured after boiling for three hours in hydrochloric acid (18%).</p>								
Time/h	Weight Loss (mg/dm <sup>2</sup> )																				
0	0																				
1	0.18																				
2	0.28																				
3	0.34																				
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## BOROSILICATE GLASS 3.3

### Physical and chemical properties

#### Introduction

Borosilicate glass 3.3 is specified as a standard glass - it contains mainly sand, calcium carbonate and sodium carbonate. High quality sand, dehydrate borate boric acid, alumina and salt are used in its manufacture and strict control is applied to ensure the specifications for purity and consistency of these materials are maintained. Because of its resistance to heat, corrosion and thermal shock borosilicate glass 3.3 is used extensively in science and industry.

#### Chemical Composition

The following is a typical analysis of borosilicate glass 3.3 (Element % by weight)

SiO <sub>2</sub>	80.60%	MgO	0.05%
B <sub>2</sub> O <sub>3</sub>	2.60%	Fe <sub>2</sub> O <sub>3</sub>	0.04%
Na <sub>2</sub> O	14.20%	CaO	0.10%
Al <sub>2</sub> O <sub>3</sub>	2.20%	C	0.10%

#### Physical Properties

Coefficient of Expansion	3 x 10 <sup>-7</sup> / K (20°C - 300°C)
Specific Heat	0.8 x 10 <sup>3</sup> J/Kg K (20°C)
Specific Heat	750 960 1090 J/kg K
Thermal Conductivity	1.13 x W/mk <sup>4</sup> (20°C)
Density	2.23 x 10 <sup>3</sup> Kg/m <sup>3</sup>
Vickers Hardness (DPH)	580 Kg/mm <sup>2</sup> (50gr Gew.)
Refractive Index	1.474 Sodium D-Line
Dielectric Constant	4.6 (1 MHz und 20°C)
Specific Heat	750 960 1090 J.Kg. K
Transformation Point (t <sub>2</sub> )	525°C

#### Annealing

The annealing of glass is the process by which it is heated to and held at a controlled temperature 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.

#### Pharmaceutical Properties

Borosilicate glass 3.3 meets the pharmaceutical resistance classifications Class and Type according to international standard.

#### Thermal Expansion

The coefficient of linear thermal expansion is one of the characteristic properties of borosilicate glass & is defined as the change in unit length per degree rise in temperature. The thermal expansion is 33 x 10<sup>-7</sup> K<sup>-1</sup> (20°C - 300°C) and is controlled to a tolerance of ±0.1 x 10 K.

#### Temperature Shock Resistance

if a temperature gradient is applied to the glass, stresses are set up - the hotter glass being under compression and the cooler under tension. The magnitude of stress depends on the temperature difference which in turn depends on the glass thickness. ATTENTION : Abrasions greatly reduce the temperature shock resistance.

#### Viscosity

Although borosilicate glass 3.3 has no defined softening point, there are four points in; the viscosity-/ temperature relation which have accepted definitions according to (ISO 7884 - 2/-3-4) :

Strain Point 515°C (Viscosity (n))	10 <sup>14.5</sup> dPa -s
Annealing Point 565°C (Viscosity (n))	10 <sup>12.0</sup> dPa -s
Softening Point 820°C (Viscosity (n))	10 <sup>7.6</sup> dPa -s
Working Point 1250°C (Viscosity (n))	10 <sup>4.9</sup> dPa -s



### Chemical Resistance

The chemical resistance of borosilicate glass is better than that of many other materials . It shows resistance to water, acids and alkalis , salt, organic substances as well as chlorine and bromine. Hydrofluoric acid , concentrated phosphoric acid and strong alkalis attack the glass surface at higher concentrations and temperatures. The following are typical :

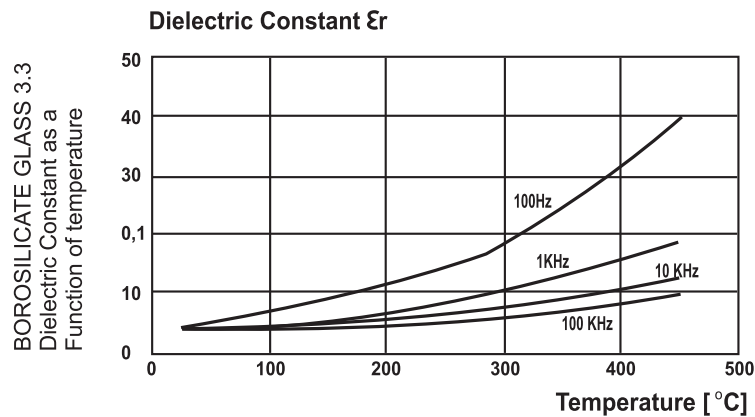
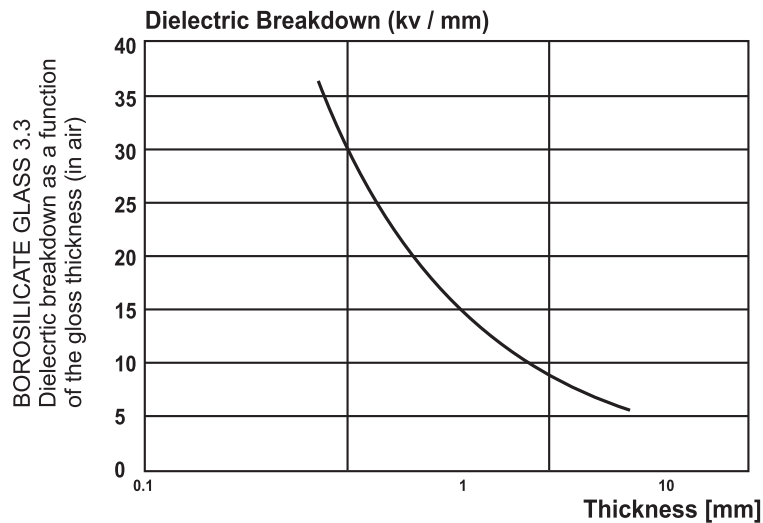
### Resistance -Classifications

Hydrolytic Class	HGB1	(ISO 719 )
*Na O- weight loss	S0.01 pg	(9Grain 300-500: at 98 °C)
Hydrolytic Class	HGA 1	(ISO 720, Grain at 121 °C)
Pharmac Glass type	1	(USP23, DAB 10)
Acid Class*	1	( DN 12116 )
*Na O- Weight loss	S 0, 01 : g	( ISO 1776 )
Alkali Glass	A2	( ISO 695 )

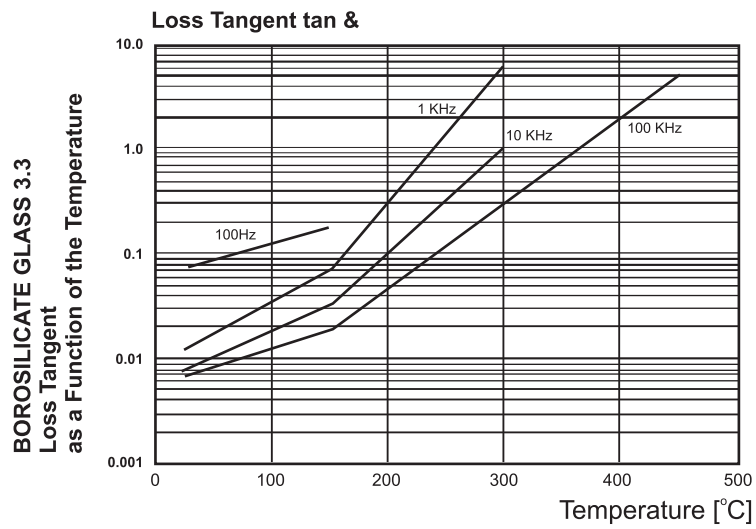
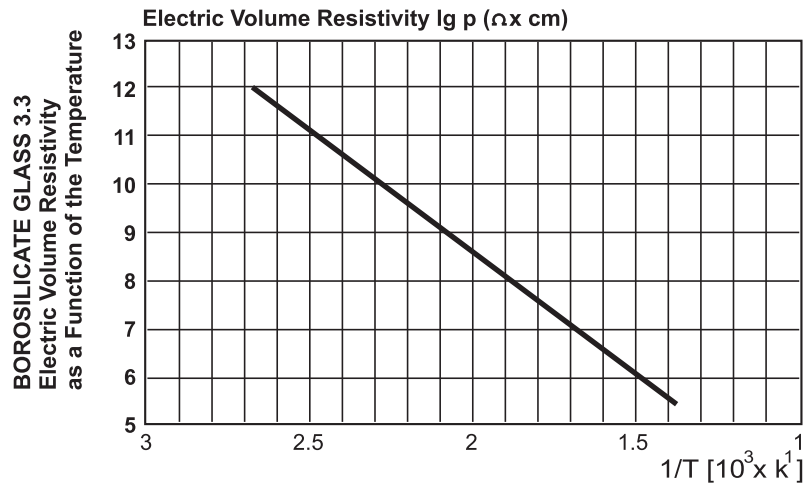
### Safety Advice

Borosilicate glass 3.3 is technically and ecologically not harmful and not health - endangering . Working with glass requires protected from broken fragments . It is advisable to wear protective glasses and gloves to avoid injuries.

### Borosilicate 3.3 ISO 3585



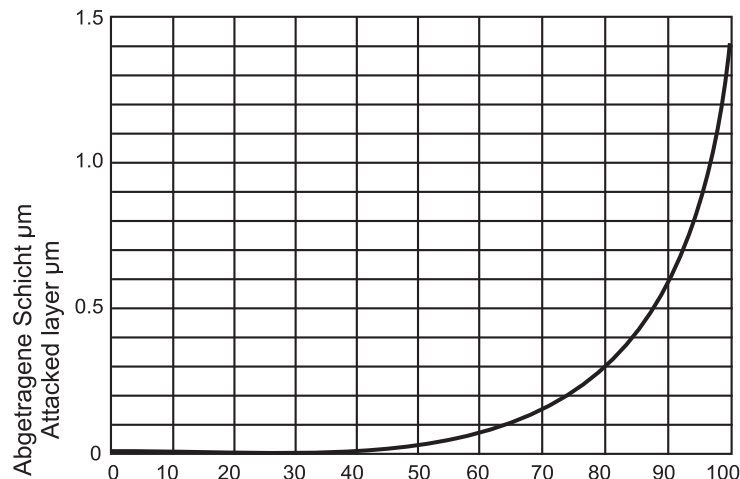




## BOROSILICATE GLASS 3.3 ISO 3585

### Alkali Resistance of sinterfilters

Borosilicate Glass 3.3 is highly resistant to water, acid solution, concentrated acids, chlorine, bromine, iodine and organic substances. Only hydrofluoric acid, solutions, hot phosphoric acid and alkaline solutions attack the surface of the glass. The degree of attack is increasing as the concentration and temperature rise. Due to their large inner surface, sintered filters with fine porosities are considerably attacked by alkaline solutions. To avoid the deterioration of the glass filters' sintered structure, it is recommendable to keep the temperature of the alkali lower than 50 °C.



The graphic shows the surface attack on borosilicate glass 3.3 by 4% sodium Hydroxide Solution with pH 14 (1.0 mol/l NaOH) after one hour as a function of temperature .

### Pharmaceutical Properties

USI Sinterelements and Glass filter -Apparatus are made of pure, clear Borosilicate Glass 3.3. The material meets the ISO 3585 : 1999-10 standard .

#### Glass type

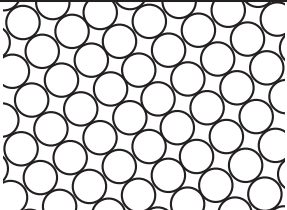
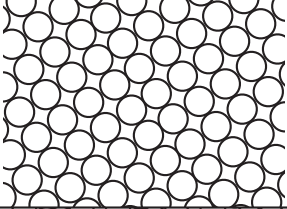
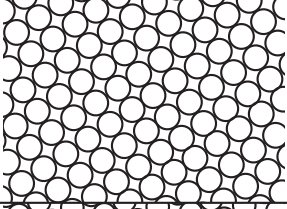
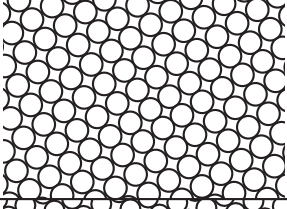
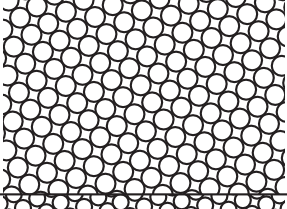
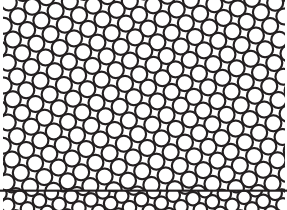
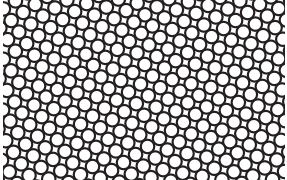
All products , unless otherwise stated, are made of clear Type Borosilicate Glass 3.3 , which meet following pharmaceutical resistance classifications according to German and European Pharmacopoeia:

Hydrolytic Res.	HGB1	acc. ISO 719
Hydrolytic Res.	HGA1	acc. ISO 720
Glass type	1	acc. USP 23, DAB 10
Acid Res. Class	1	acc. ISO 1776
Alkali Res. Class	A2	acc. ISO 695

#### Chemical Composition

Element	SiO <sub>2</sub>	80.60 %
	B <sub>2</sub> O <sub>3</sub>	12.60 %
	Na <sub>2</sub> O	4.20 %
	Al <sub>2</sub> O <sub>3</sub>	2.20 %
	MgO	0.05 %
	Fe <sub>2</sub> O <sub>3</sub>	0.04 %
	CaO	0.10 %
	Cl	0.10 %

**PORESIZES OF USI SINTERED GLASS FILTERS**

<b>Designation</b>	<b>Microscopic view</b>	<b>ISO 4793</b>
		<b>Poresize in <math>\mu\text{m}</math></b>
<b>Por.00</b>		250 - 500
<b>Por.0</b>		160 - 250
<b>Por. 1</b>		100 - 160
<b>Por. 2</b>		40 - 100
<b>Por. 3</b>		16 - 40
<b>Por. 4</b>		10 - 16
<b>Por. 5</b>		1 - 1.6

### Safety Instructions for Borosilicate 3.3. Glassware

#### **Cleaning**

Before the first use of glass-filters, they should be cleaned with diluted, warm hydrochloric acid, followed by several rinses with distilled water to remove dust loose particles. Glass filters should be cleaned immediately after their use. The surfaces can be wiped with a soft squeegee or brush. Surface rinsing with a wash bottle or back - flushing under the water tap is often sufficient.

#### **Pressure and Vacuum**

Even small scratches or internal abrasions of the glass surface can greatly reduce the vacuum or pressure resistance. Filter pores may clog during filtration and cause a pressure drop. In any case 1kp/cm<sup>2</sup> may not be exceeded. Never subject glassware to sudden pressure changes.

#### **Temperature Resistance**

The maximum allowable service temperature is approx. 500 degrees Centigrade. To avoid permanent stress, the heating and cooling rate should not exceed 5 C/min. Wet glass-filters should slowly be heated up to 80 degrees C and dried for one hour, before temperature is increased. permanent stress can reduce the mechanical and thermal resistance. Never subject glassware to sudden temperature changes.

#### **Chemical Resistance**

High concentrations of hydrofluoric acid or hot alkali solutions attack the glass with increasing temperature and can cause a deterioration in the filter and a destruction of the pore size.

#### **Safety Advice**

When working with glassware always wear protective glasses and protective gloves to avoid injuries. Use a safety screen, -hood or similar protection when working with glassware subject to pressure or vacuum. Be prepared, that reagents may leak from a broken vessel, Please heed these guidelines in combination with the respective state-specific regulations for the use of glassware in the laboratory.

### ANNEALING SCHEDULE, BOROSILICATE GLASS 3.3

#### **Maximum Temperatures**

In general it is recommended that the strain point ( 515 °C ) be regarded as the maximum safe operating temperature of borosilicate glassware 3.3. For some shapes and for a relatively time this limit can be exceeded, but at 580 °C there is danger of deformation and in case of sintered glassware the porous structure may be changed. At high temperatures the glass may acquire permanent stress on cooling and this may result in subsequent breakage. If it is suspected that permanent stress has occurred, the article should be annealed making referances to the annealing process explained below. Permanent stress can greatly reduce the mechanical and thermal resistance.

#### **Annealing**

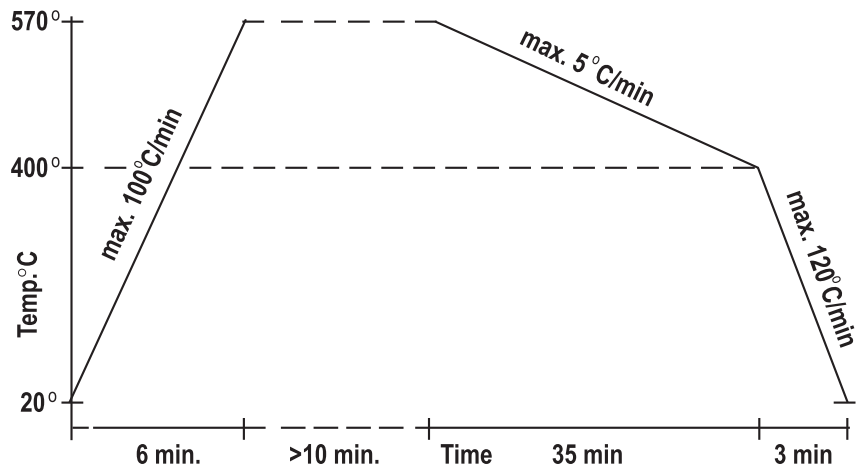
The annealing of glass is the process by which it is heated to and held at a controlled temperature for a defined period to relieve internal stresses. Careful cooling under controlled conditions is essential to ensure that no stresses are reintroduced by chilling.





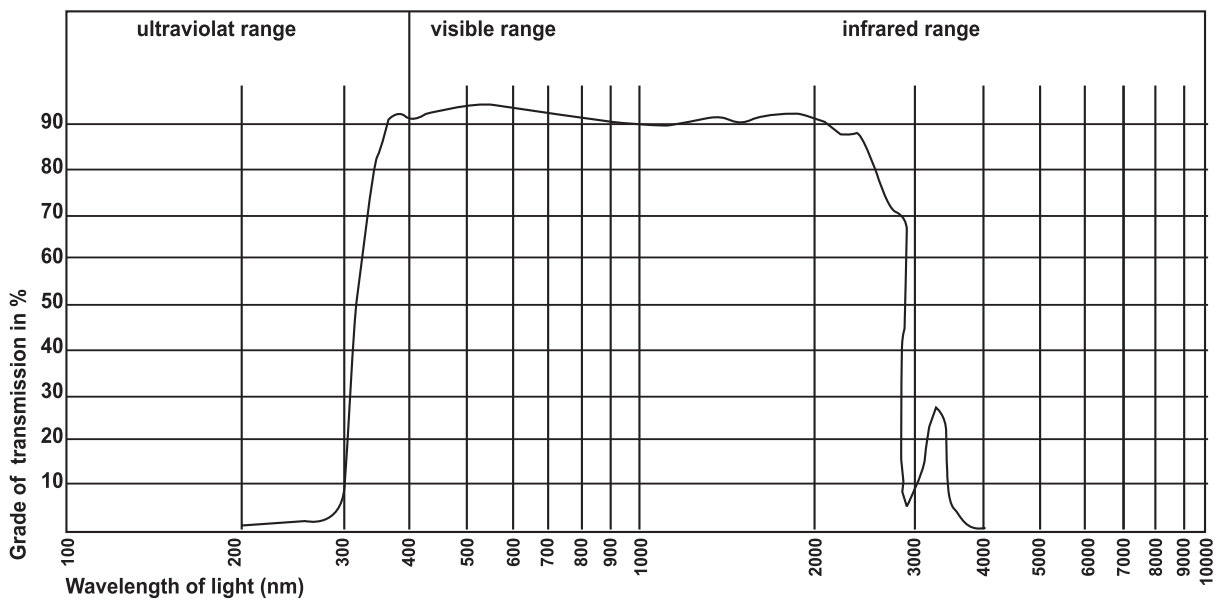
Annealing Schedule (Glass with wall thickness - 3.0 mm)

Annealing Schedule (Glass with wall thickness - 3.0 mm)



LIGHT TRANSMISSION - CLEAR BOROSILICATE GLASS 3.3

(For Wall thickness approx 4.0 mm)



**WE CAN SUPPLY THESE PRODUCTS**

# **DIAPHRAGM TYPE VACUUM PUMPS CUM COMPRESSORS**



**USI-15**



**USI-15-RD**



**USI-25-P**



**USI-25-S**



**USI-15-DC-1500**



**USI-75-P**



**USI-45**



**USI-75-S**



**USI-45-CRP**



**USI-75-CRP**



**USI-45-FM**



**USI-25-AX**

# DIAPHRAGM TYPE VACUUM PUMPS CUM COMPRESSORS

## Salient Features :

- No Lubrication required
  - Noiseless performance
  - Absolutely Portable
  - Totally Oil - free construction
  - Practically maintenance free
  - Built - in micro suction filter
  - Special diaphragms available (TEFLON / VITON etc.)
  - Extra large bearings for trouble - free and smooth running
  - Pump available with flame - proof motor (Model USI - 45 - FM)
  - Pump available with 24 V / 48 V DC (Model USI - 15 - DC - 1500)
  - Pump available with chemical resistive parts (PP / PVC / TEFLON / SS contact parts) (Model USI - 45 - CRP)
  - Pump available for gas charging in Air - conditioners (Model USI - 25 - AX)
  - Motors available in single as well as three phase construction
  - Motors available in 110 V AC also
- Ideally suited for original equipment manufacturers.

## TECHNICAL SPECIFICATIONS :

MODEL	MAX. FLOW (Ltrs/min)	MAX. VACUUM (Inches Hg)	MAX. PRESS. (PSIg)	APPROX. Weight (Kg)	MOTOR HP	APPROX. Dimentions (mm)
USI-15	15	22"	25	3.0	1/20	175X110X150
USI-15-RD	15	22"	25	2.7	1/20	150X100X150
USI-25-S	15	27"	35	5.5	1/16	220X110X150
USI-25-P	25	22"	25	5.5	1/16	220X110X150
USI-45	45	22"	40	7.0	1/8	200X125X200
USI-75-S	45	27"	60	12.5	1/4	300X130X200
USI-75-P	75	22"	45	12.5	1/4	300X130X200
USI-15-DC-1500	15	22"	25	3.5	1/20	230X110X150
USI-45-FM	45	22"	30	15.0	1/4	400X150X220
USI-45-CRP	30	22"	20	7.0	1/8	220X150X220

### Application for use as Vacuum Pump :

- \* Laboratories
- \* Pollution Control Equipments
- \* Material Handling Equipments
- \* Labeling machines
- \* Desoldering station
- \* Glass forming
- \* Medical Instruments
- \* Dentists
- \* Chemical analysers
- \* Gas charging in A/c
- \* Suction machines
- \* Photographic developing machines

### Application for use as compressor :

- \* Flame photometer
- \* Atomic Absorption Spectrophotometer
- \* Agitation of chemicals in electro-plating
- \* Agitation of film in drying tank
- \* Wave Soldering machines for forming of flux
- \* Cement Aeration
- \* Oil-free spray painting
- \* Artist Air brush
- \* Operating small pneumatic tools
- \* Laminating press
- \* Nebuliser
- \* Plastic Welding



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