Filtration

Glassco Brand sintered glassware is need for the filtration of liquids and gases in the laboratory it incorporates a porous glass disc as a filter media, which is non corrosive and reusable. It is also used for gas washing dispersion and adsorption.

Sintered disc is manufactured by crushing Borosilicate glass, powdering, cleaning, separating into various mesh size and then fusing together in the form of a disc. The sintered disc is graded into 5 grades-G1, G2, G3, G4, and G5. The grades are classified by maximum pore size, which is obtained by measuring pressure at which the first air bubble breaks away from filter under certain conditions. The pressure differential is then used to calculate the equivalent capillary diameters in microns. The desired pore size is obtained by suitable controlling the grain size, firing time, temperature and the thickness of the. Each disc is tested and graded individually.

The pore diameters are reasonably uniform, which ensures required flow rate through the filter.

the flow rate further depends on pressure differential between the two sides of the disc, free area of the discs, viscosity of the fluid being filtered etc. between different discs of same size and grade, there is a fair amount of uniformity in pore size and hence the results from two or more discs of the same size and grade will be uniform. This ensures reproducible analytical results.

The discs have maximum surface hardness and hence glass powder does not get scraped off during cleaning or with chemicals. Filters do not shed particles during usage.

The discs are sealed to tubing without blocking the pores. The they are annealed properly in automatically controlled lehrs.

POROSITY GRADES AND THEIR GENERAL USE

Porosity Grade	Pore Size (Microns)	General use
1	90-150	Filtration of coarse materials/percipitates, gas Dispersion, gas washing, extractor bed, support for other filter materials.
2.	40-90	Filtration of medium precipitates gas disperation, gas washing.
3.	15-40	Filtration of fine grain precipitates. Anayical work With medium precipitates mercury filtration.
4.	5-15	Analytical work with fine and very fine precipitates. Non return mercy valves.
5.	1-2	Bacteriological filtration.

Chemical Durability

Glassco Sintered ware is produced from the same high quality material from which all Glassco Brand borosilicate laboratory glassware are manufactured and thus, have excellent resistance to chemical attack.

Operating Pressure

The sintered discs and the glassco are incorporation them are mainly designed for the application of vacuum of for passage of gases at a relatively low pressure. In all cases the differential pressure must not exceed 100 KN/m2 (15psi).

Thermal Charactristics

The resistance to thermal shock of sintered ware is comparatively less as compared to standard Lab glassware. Therefore, articles of sintered ware should not be subjected to excessive temperature charges nor to direct flames.

Glassco Sintered crucibles are particularly suited for drying to constant weight. Dry sintered crucibles at room temperature can be placed directly into a drying oven at 150° C, although customary practice is to dry at 110° C. Sintered ware may safely be heated in furnace to 500° C without ill effect, provided that the cycle of heating and cooling is gradual strains caused by excessive temperature of apparatus.

Sintered ware of porosity grades 4 and 5 when cold and damp should never be subjected to a sudden temperature change since the evolution to steam my set up sufficient pressure within th filter, to crack it.

Filtration apparatus should be kept on its rim (stem upwards) in oven or sterilizer, A perforated support base is advantageous for air convection in case pipeline filters. Care should be taken by use of heat insulating material such as asbestos to avoid premature near filter seal. Apparatus should remain in the oven of sterilizer during cooling to avoid too fast cooling rate.

Cleaning of Sintered Ware

New sintered filters should be washed carefully with hot hydrochloric acid and then rinsed with distilled water before they are used. This treatment will ensure that all loose particles are removed from the filter.

It is recommended that all sintered filters are thoroughly cleaned ‘’immediately” after use. This is the most favorable time for ease of cleaning and will ensure less risk of contamination in subsequent use

Many precipitates can be removed from the filter by backflishing with water. However, great care must be taken with large diameters and fine filter, as positive pressures on the reverse side may break the filter.

Under no circumstances, should sintered apparatus be subjected to mains water pressure when back flushing as in most instances will a vacuum pump is also effective.

Filters clogged by dust and dirt dust and gas filtration can be restored by treatment with a warm detergent solution followed by blowing clean air from the clean side of the filter. Dirt particles are brought to the surface by the foam and removed by rinsing with water.

Some precipitates may clog filter which may be removed by chemical cleaning as given below.

Clean the porous glass fit of the filter support by back flushing with warm water & then soaking overnight in a chromic acid cleaning solution.

Follow the soaking with another back flushing. After cleaning throughly, rinse the components with clean water & air dry. Do not wipe with paper or cloth, which may leave traces of fibbers & lint