
CERAMIC POROUS
FILTER MEDIA
FROM
GRINDWELL NORTON
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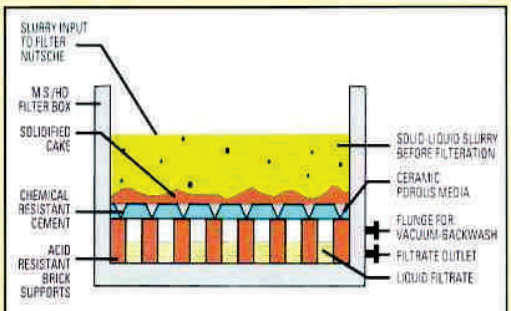
APPLICATIONS

For separation of suspended solids from acidic, alkaline, corrosive hot liquids and gases that cause a high degree of abrasion, Grindwell Norton has introduced a remarkable product to the Indian industry - Ceramic Porous Filter Media.

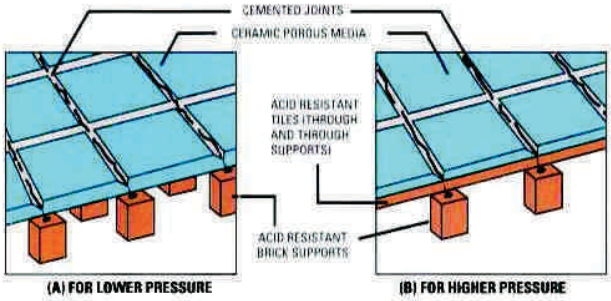
Ceramic Porous Filter Media is an inert body of fused alumina grains, bonded together with an aluminious glass bond at high temperature. The vital aspect of the homogeneity of "pores" in the body structure is attained by a special process, which in turn ensures optimum product performance during use. Ceramic Porous Filter Media is totally stable up to 900° C (due to the high refractoriness of alumina) and being chemically inert in nature, does not react with the majority of acids and alkalies.



APPLICATION OF CERAMIC POROUS MEDIA IN RECTANGULAR FILTER NUTSCHE (OPEN TYPE)

Separation of solids from acidic, alkaline, corrosive hot liquids and gases:

Grindwell's ceramic porous filter media has proved to be the most efficient and cost effective product for this critical application. This makes it ideal for use in a host of user industries like Chemical and Dyestuff, Fertilizer, Refineries, Petrochemicals, Pharmaceuticals, Cement, Distilleries etc. Grindwell has the capability to custom make various shapes and sizes in the required grade of permeability and porosity to suit the diverse applications of different customers.

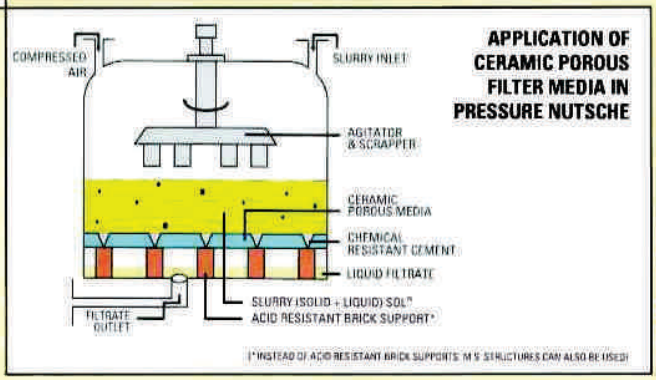


INSTALLATION IN FILTER NUTSCHES

How it works:

Filtration takes place in a nutsche. Ceramic Porous Media is placed inside at some distance above the nutsche bottom, supported by bricks and joined with acid proof cements.

Slurry is poured into the nutsche. Ceramic Porous Media allows the liquid (filtrate) to pass through to the bottom of the tank, while the solids (substrate) remain on its surface. The filtered liquid is then carried away by pipes.



APPLICATION OF CERAMIC POROUS FILTER MEDIA IN PRESSURE NUTSCHE

Filter media is equally effective in open type filter nutsches as well as pressure nutsches.

Besides, Ceramic Porous Media also finds application in aeration and neutralisation in Effluent Treatment Plants and Fluidisation in Boilers, Cement silos and Ash handling in thermal power plants.

BENEFITS OF CERAMIC POROUS FILTER MEDIA

Features	Conventional Filter Media (Filter Cloth)	Ceramic Porous Filter Media
1) Filtration Rate	Webs of filter cloth block 60% of the total area available. The supports holding the cloth further block about 60% of this available area. This means that only 18-20% of the total surface area of the cloth can actually be utilised for filtration.	Ceramic Filter Media is highly porous. Only 20% of the available surface is covered by supports and joints. Therefore nearly 30-50% of the total surface area can actually be used for filtration. This leads to a very significant increase in the filtration rate.
2) Material Loss	Cloth has a tendency to tear during use (due to chemical & mechanical reasons) - which results in high value/cost products being carried away with the filtrate. This can amount to a 2-3% material loss per batch of filtrate. There is also a further material loss caused due to the washing of cloth between batches.	The multilayer closed structure of ceramic media results in the solid residue (substrate) being deposited on the surface of the media. The material is hence recoverable. Moreover, the uniformity of pores in terms of size and distribution also ensures the retention of a particular size of solid. Material loss is therefore almost negligible.
3) Maintenance	Cloth regularly wears and tears during use (specially so in case of corrosive acidic materials) and needs to be changed very frequently. It has also to be manually washed after every few batches. Both washing and changing lead to loss of man hours and hence money.	Ceramic media is not affected by most chemicals. It therefore requires only an automatic wash by water or suitable solvents over much longer time intervals. Even a backwash with clean water is possible in the case of a proper installation. This substantially saves the loss in man hours and enables smooth production with lesser running cost.
4) Life	Cloth has a very limited life. Depending on the type of chemical being filtered, cloth can have a maximum working life of between 15 days to 6 months. Particularly in case of acidic materials, cloth shows very poor life. Secondly, the mechanical wearing is much more as cloth cannot withstand for long, scrubbing action of shovels required during discharge of the solidified cake.	Ceramic media shows significantly longer life due to its chemical inertness. Having been fused at a high temperature, ceramic media is intrinsically more resistant to mechanical shocks and abrasion. The working life of ceramic filter media ranges from 3 to 10 years depending on the chemical filtered and varied working conditions, which is much in contrast to the extremely short life offered by cloth.
5) Resistance to Heat	Cloth offers almost nil resistance to heat. Hence, it can be used only within a very moderate range of temperatures.	Ceramic media is highly refractory in nature and fully stable upto 900°C temperature. Another advantage that accrues from its refractoriness is that clogged organic particles can be removed by heating the ceramic media - something which cannot be done with any other type of filter media (either plastic or cloth).
6) Pressure Loss	Cloth can never be fully sealed inside a nutsche. This results in reduction in the filtration rate because vacuum/pressure cannot be applied effectively.	There is no pressure loss in the nutsche during filtration because ceramic porous media is sealed with cement. Secondly, due to its high mechanical strength, additional pressure can be applied for even faster filtration.

PRODUCT INFORMATION

	Blue Porous Media	White Porous Media
Material	Fused Alumina	Aluminosilicate
Chemical Nature	Amphoteric	Amphoteric
Al_2O_3 Content (Typical)	82%	-
Bulk Density (Max)	2.3 gm/cm³	2.2 gm/cm³
Max. use Temperature	900° C	900° C
Oxidation/Reduction Effect	Nil	Nil
Reaction with Acids	Mild attack by aqua regia/or HF	Mild attack by aqua regia/or HF
Reaction with Alkalies	Very slight with very strong hot solution	Very slight with very strong hot solution
Permeability	15-18 cfm/ft²/inch. flow of air at 75° F & 25% humidity	15-18 cfm/ft²/inch. flow of air at 75° F & 25% humidity
Porosity	30% - 40%	25% - 35%
Max. Particle Retention	>25µ	> 25µ
Modulus of Rupture		
Dry	150 Kgs/cm²	90 Kgs/cm²
Wet	120 Kgs/cm²	75 Kgs/cm²
Resistance to heat	Excellent	Excellent

Engineering Support

Grindwell Norton can provide assistance in the selection of the proper size, shape, permeability of ceramic porous filter media to help improve the efficiency of your operations. We recommend different designs according to the operational conditions prevalent, as also different materials (cements, supports) essential for proper installation to ensure smooth, hazardless and quality productio

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