

FUSED SILICA



Description

Fused silica is an amorphous siliceous glass produced by high temperature fusion of high quality crystalline silica (quartz). This fusion produces a substance characterized by very low thermal expansion and a high resistance to temperature and thermal shock.

Fused silica is employed in a variety of industrial applications including foundry (investment casting slurry and stucco, and mould release agent), refractory and ceramic (crucibles, saggars, rollers, pouring cups, ceramic cores, gas fire radiants and items for steel, non-ferrous metal and glass industries), and filler (electronic and adhesives).

Dupré Minerals realized early on that the secret of manufacturing investment powder lay in the quality of the raw materials available.

The company has carried out an extensive global sourcing project and has located what it considers to be some of the highest quality refractories so far made available to investment foundries. These include Fused Silica produced from quartz of exceptional purity with a SiO₂ content of 99.9%. The source also has particularly low iron, potassium and sodium oxides and such a low trace element content to fall well within Aerospace specifications.



CHEMICAL ANALYSIS BY XRF*					
SiO ₂	>99.8%	Na ₂ O	<0.03%	ZnO	<0.01%
TiO ₂	<0.01%	P ₂ O ₅	<0.02%	BaO	<0.01%
Al ₂ O ₃	<0.02%	Cr ₂ O ₃	<0.01%	SrO	<0.01%
Fe ₂ O ₃	<0.01%	MnO ₂	<0.01%	SnO ₂	<0.01%
CaO	<0.01%	ZrO ₂	<0.02%	CuO	<0.01%
MgO	<0.02%	HfO ₂	<0.01%	LOI (1025 °C)	<0.10%
K ₂ O	<0.01%	PbO	<0.02%		
Approx. SO ₃ (after LOI and Fusion)			<0.05%		

*Elemental Analysis expressed as the given oxide of the element.

TRACE ELEMENTS					
Silver	<20 ppm	Bismuth	<1 ppm	Iron	<50 ppm
Tin	<20 ppm	Lead	<10 ppm	Antimony	<10 ppm
Zinc	<25 ppm				



Information presented above is given in good faith as accurate and reliable but is not to be taken as a guarantee. The figures provided are intended to be a guide to expected average values and should not be interpreted as a specification. Any potential applications referred to are not to be construed as recommendations. It is the responsibility of the user to determine suitability for any specific purpose.

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TYPICAL PARTICLE SIZE – GRAIN GRADES

4/10 Grade (4 – 1.7 mm)			10/20 Grade (1.7 – 0.85 mm)			30/50 Grade (0.5 – 0.3 mm)		
BSS Mesh	Aperture (mm)	%	BSS Mesh	Aperture (mm)	%	BSS Mesh	Aperture (mm)	%
3/8	9.5	0	7	2.36	0-1	25	0.6	20-35
1/4	6.3	0	10	1.7	0-15	36	0.425	20-40
3/16	4.75	0-5	14	1.18	30-60	52	0.3	15-30
5	3.35	25-50	18	0.85	20-50	85	0.18	0-20
10	1.70	45-70	25	0.6	10-30	-350		0-0.5
16	1.0	0-15	52	0.3	0-5			
30	0.5	0-1	-52		0-1			
60	0.25	0						
-60		0						

20/50 Grade (0.85 – 0.3 mm)			50/100 Grade (0.3 – 0.15 mm)			-30 Grade (0.5 mm)		
BSS Mesh	Aperture (mm)	%	BSS Mesh	Aperture (mm)	%	BSS	Aperture (mm)	%
10	1.7	0	36	0.425	0-5%	30	0.5	0.5 – 5
16	1.0	0-5	52	0.3	0-1%	-70	<0.212	15 – 35
30	0.5	35-70	70	0.212	15-50%	-200	<0.075	0 – 1
60	0.25	25-60	100	0.15	25-55%			
100	0.15	0-5	150	0.106	10-35%			
200	0.075	0-1	200	0.075	0-10%			
-200		0-1	-200		0-2%			

TYPICAL PARTICLE SIZE – FLOUR GRADES

-120 Grade (125 µm)		-200 Grade (75 µm)		-350 Grade (45 µm)	
d10	5.07 µm	d10	4.82 µm	d10	2.84 µm
d50	34.23 µm	d50	26.55 µm	d50	15.19 µm
d90	97.50 µm	d90	88.60 µm	d90	55.4 µm

BSS Mesh	Aperture (mm)	%	BSS Mesh	Aperture (mm)	%	BSS Mesh	Aperture (mm)	%
100	0.15	0-1	150	0.106	0 – 2	350	0.045	0 – 5
150	0.106	0-10	200	0.075	2 – 10	-350	<0.045	95 – 100
200	0.075	0-20	350	0.045	15 – 22			
350	0.045	20-40						
-350		45-65						