

3M Advanced Materials Division

3M™ Fused Silica Grains

Introduction

3M Technical Ceramics, Inc., offers high-purity ceramic sands (stuccos) used in the investment casting shelling process and refractory applications. 3M™ Fused Silica Grains are available in a variety of standard particle sizes, and can also be customized to your specifications.

3M fused silica grains are available in 55 lbs. (25 kg) paper bags or 2,200 lbs. (1,000 kg) tote sacks.

Fused Silica for Investment Casting Shells

We supply high-purity fused silica for the slurries and stuccos used to make investment casting shells. Our revolutionary furnace design helps prevent the raw silica sand from becoming contaminated during processing – resulting in a finished product that is 99.7% pure, while increasing productivity tenfold over conventional furnaces. 3M™ Fused Silica Flours and Grains are optimized

Chemical Analysis

(Not for specification purposes)

Chemical	3M™ Fused Silica Flours
SiO ₂	>99.7 %
Al ₂ O ₃	<1700 ppm
Fe ₂ O ₃	<280 ppm
TiO ₂	<250 ppm
K ₂ O	<120 ppm
CaO	<75 ppm
Na ₂ O	<50 ppm

for consistency from batch to batch, to help you produce components with a high degree of dimensional accuracy. 3M fused silica products are available in both standard and custom particle sizes and distributions, and our experts will work with you to optimize your application. In addition, we can provide traceability data throughout our process, from the arrival of the high-purity sand at our facility to each bag of finished fused silica in your inventory.

Fused Silica Custom Lab Equipment and Capabilities

In order to ensure the purity and consistency of our fused silica products, we utilize state-of-the-art particle analysis systems, enhanced



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grinding and blending processes, and extensive high-intensity magnetic separation methods. Our lab facilities are equipped with a complete set of mixers, pumps, slurry pots, a drying room, ovens and furnaces for advanced slurry research and development. Our labs are also capable of performing a wide variety

Particle Size Distribution, % Retained

(Not for specification purposes)

U.S. Mesh (ASTM No.)	Microns	10/20	30/50	50/100	F100
8	2360	<2	-	-	-
12	1700	6–25	-	-	-
16	1180	33–50	-	-	-
20	850	25–45	<1	-	-
30	600	<13	15–30	-	-
40	425	-	38–50	<0.3	-
50	300	<4	20–35	0.5–13	-
70	212	-	-	30–60	-
80	180	-	<10	-	-
100	150	-	-	28–51	1–15
140	106	-	-	4–16	17–40
200	75	-	-	<2	19–34
325	45	-	-	-	14–30
Pan		<2.5	<0.5	<0.8	4–20
Magnetics ppm		<50	<50	<50	<50

of tests, including BET surface area analysis; shell permeability; Green or Hot Wet MOR/MOE; shell crush strength; bacteria testing; % binder silica; and accelerated gel testing. To determine shell drying characteristics we use data loggers, loss-in-weight scales and capillary absorption equipment. 3M Technical Ceramics technical personnel can design and perform additional custom tests according to your specifications.

Product Storage, Handling and Safety

Storage: Store in a dry location and protect from the elements. Store away from oxidizing agents. See product Safety Data Sheet (SDS) for additional information.

Handling: Product may contain respirable quartz silica at $\leq 0.2\%$. Avoid skin contact with hot material. Avoid breathing dust/fume/gas/mist/vapors/spray. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Avoid contact with oxidizing agents (eg. chlorine, chromic acid etc.). See product SDS for additional information.

Safety: See product SDS for additional information.

Product is manufactured and sold by 3M Technical Ceramics Inc.

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