

Zircon Sands

Product Information

Chemours zircon sands are naturally occurring rounded to sub-rounded mineral grains that are mined from mineral sand deposits in the southeastern United States. The zircon sands are washed to ensure a clean product free of dirt, dust, and ultrafines, and are then calcined to reduce water and other volatile content. The zircon grains are separated from other sands by physical processes to produce uniform, high-quality products.

Physical and Chemical Properties

Chemours offers five grades of zircon sands that vary in the level of zircon (zirconium silicate) and other mineral content as outlined in Table 1.

Solubility and Reactivity Information

Chemours zircon sands are:

- Insoluble in water, dilute acids, and hot, concentrated sulfuric acid
- Very slight solubility in hydrofluoric acid
- Reactive with hot, concentrated alkali solutions
- Nonreactive with cold, dilute alkali solutions

Zircon Applications

- Precision investment casting
- Zirconium metal and chemicals
- Foundry specialty sand
- Refractories and refractory coatings
- Ceramics
- Abrasives

Personal Safety

For safety information, please visit the product Safety Data Sheet (SDS).

Packaging

Chemours zircon sand is available in 50-pound multiwall paper bags, semi-bulk (1-ton and 2-ton) bags, bulk hopper rail cars, and bulk pneumatic trucks. Department of Transportation (DOT) Hazard Classification: NOT REGULATED.

* Due to changing governmental regulations, such as those of the Department of Transportation, Department of Labor, U.S. Environmental Protection Agency, and the Food and Drug Administration, references herein to governmental requirements may be superseded. Each user should consult and follow the current governmental regulations, such as Hazard Classifications, Labeling, Food Use Clearances, Worker Exposure Limitations, and Waste Disposal Procedures for the products described in this literature.

Figure 1. Thermal Expansion Coefficients of Mineral Sands

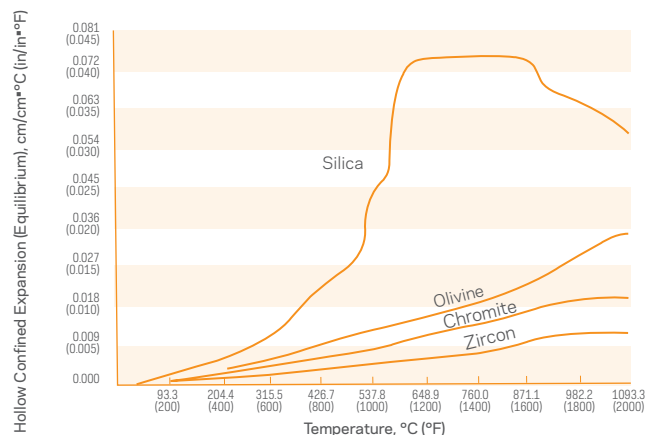


Table 1. Chemical, Mineral, and Physical Properties

Typical Screen Analysis**											
U.S. Sieve No.*	Sieve Opening, μm	% Retained on Sieve									
		Premium Zircon		Low Alumina Zircon		Standard Zircon		Zircon T		Zircon M	
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
50	300	<1		<1		<1		<1		<1	
70	212	<1		1	1.0	1	1.0	1	1.0	<1	
100	150	13	5.8	17	4.7	19	4.5	17	5.1	13	5.0
140	106	61	4.7	58	4.9	53	5.1	54	4.9	52	6.0
200	75	24	4.1	23	3.3	24	3.7	24	4.3	30	5.0
270	53	1	1.0	2	0.9	3	1.6	2	1.3	3	2.0
PAN	<53	<1		<1		<1		<1		<1	
AFS Grain Fineness Number		107	3.9	105	3.1	106	4.2	106	5.1	112	5.0
D50 (Mean)		120 Mesh (125 μm)		120 Mesh (125 μm)		120 Mesh (125 μm)		121 Mesh (124 μm)		125 Mesh (120 μm)	
Chemical Composition											
	Premium Zircon		Low Alumina Zircon		Standard Zircon		Zircon T		Zircon M		
	Spec. %	Typ. %**	Spec. %	Typ. %**	Spec. %	Typ. %**	Spec. %	Typ. %**	Spec. %	Typ. %**	
ZrO ₂ ***	66.5 min.	66.7	66.3 min.	66.5	65.0 min.	65.9	64.0 min.	65.2	60.5 min.	62.5	
TiO ₂	0.15 max.	0.13	0.25 max.	0.21	0.35 max.	0.27	2.0 max.	1.00		2.6	
Al ₂ O ₃	0.50 max.	0.24	0.80 max.	0.50	2.00 max.	1.15	2.5 max.	1.10		0.8	
Fe ₂ O ₃	0.05 max.	0.02	0.05 max.	0.04	0.05 max.	0.04	0.5 max.	0.07		0.5	
Free Silica***	0.05 max.	0.01	0.10 max.	0.05	0.20 max.	0.10	0.5 max.	0.10		0.1	
Mineral Composition (Typical %)**											
	Premium Zircon		Low Alumina Zircon		Standard Zircon		Zircon T		Zircon M		
Zircon	99.3		99.1		98.5		97.6		94.9		
Kyanite and Sillimanite	0.5		0.8		2.0		1.5		1.3		
Rutile	0.1		0.2		0.3		0.7		0.8		
Other	<0.1		<0.1		<1.0		<1.0		<1.0		
Physical Properties											
Range											
Bulk Density (Uncompacted)	2643–2804 kg/m ³ (165–175 lb/ft ³)										
Specific Gravity	4.62–4.67										
Hardness (Mohs)	7.5										
Melting Point	2100–2300 °C (3810–4170 °F)										
Coefficient of Linear Expansion	7.2×10^{-6} cm/cm·°C (4.0×10^{-6} in/in·°F)										
pH	6.0–8.5										

*U.S. Sieve Series according to ASTM E-11-70.

**These columns give typical values based on historical production performance. Chemours does not make any express or implied warranty that future production will conform to these typical values.

***Values calculated based on concentrations of other elements.

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C-10404-2 (1/19)