

Biasill™

Foundry Sand

Product Information

Biasill™, a staurolite sand, is mined from Chemours' mineral deposits in the southeastern United States. These naturally occurring, sub-rounded to sub-angular sands are washed to ensure freedom from dust, dirt, and ultrafines. The staurolite sand is screened and magnetically separated from other heavy minerals to produce a highly uniform product. Readily available in packages and in bulk, Biasill™ is the solution for your nonferrous foundry needs.

Foundry Applications

Biasill™ is used as a foundry mold sand where its low coefficient of thermal expansion and high thermal conductivity reduce casting defects and produce improved metal surfaces.

Nonferrous Applications

Biasill™ is used most extensively in nonferrous foundry applications. Biasill is suitable for most foundry mold applications involving the following metals:

- Aluminum
- Magnesium
- Brass
- Bronze

The low melting points of Biasill™ (1370-1540 °C [2500-2800 °F]) limits its use to small, thin-sectioned castings.

Ferrous Applications

Casting of ferrous metals is limited to specialized applications where Biasill™ is blended with silica sand to produce small iron castings. Blending Biasill™ with silica sand offers the following benefits:

- Lower binder demand (approximately 25% less), less gas evolution, and easier sand reclamation
- Lower thermal expansion; very good control over expansion defects, rattle tails, veining; and good casting definition and dimensional accuracy



- More dense structure, which reduces strip times, improves cure times, and improves casting detail through less compaction around the pattern
- More dense metal structure, which varies with the amount of silica sand used in the sand blend
- Promotes chill for metal solidification

Personal Safety

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

Packaging

Biasill™ is available in 50-pound multiwall paper bags, semi-bulk (1-ton and 2-ton) bags, bulk pneumatic trucks and bulk hopper rail cars. 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Protection Agency, and the Food and Drug Administration, references herein to governmental requirements may be superseded.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.

Table 1. Biasill™ Advantages as a Foundry Mold Sand

Staurolite Property	Benefits
Low thermal expansion versus silica sand (see Figure 1)	Reduces thermal cracking and warpage. Improves dimensional accuracy.
High thermal conductivity	Finer grained castings. Reduces shell and hot box cure cycles. Improves shakeout because binder burnout is more complete.
Clean, round grains; free of fines	Reduces binder demand. Less gas evolution. No clay; low Acid Demand Value (ADV).
Hard, durable grains	Less fracture in mulling and reclamation. High recovery for recycle.
Useful in sand blends, (20–50%) with silica	Low thermal expansion at minimum cost.

As a flour, Biasill™ is adequate for many mold washes and offers a significant cost savings. It provides foundries with low thermal expansion and refractoriness at a much lower cost than zircon and other flours used in wash applications.

Table 2. Physical, Mineral, and Chemical Properties of Chemours Biasill™ Foundry Sand

Typical Screen Analysis			
U.S. Sieve No.*	Sieve Opening, µm	Retained on Sieve, %	
		Mean	Std. Dev.
40	420	<1	—
50	300	6	1.5
70	212	26	2.3
100	150	43	1.8
140	106	19	2.0
200	75	4	1.2
270	53	1	0.6
PAN	<53	Trace	—
Grit #70/90			

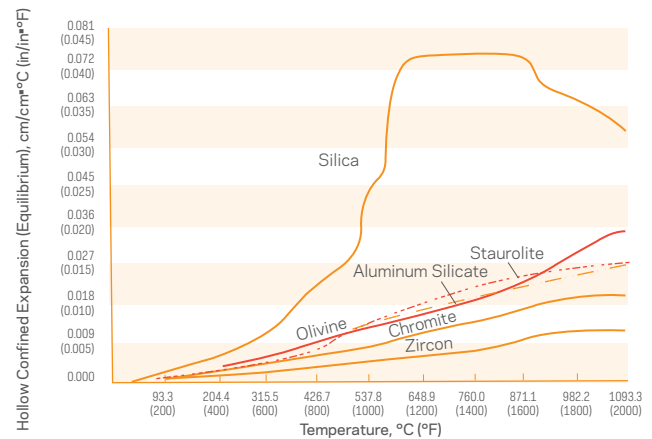
* U.S. Sieve Series according to ASTM E-11-70

Mineral Composition	
	Typical, %**
Staurolite	84
Tourmaline	9
Zircon	1
Kyanite and Sillimanite	1
Quartz (Free Silica)	0.7
Titanium Minerals	0.3
Other	4

**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.

Physical Properties	
	Range**
Bulk Density (loose)	136 lb/ft ³ (2179 kg/m ³)
Specific Gravity	3.7–3.85
Hardness (Mohs)	7.0–7.5
Melting Point	1370–1540 °C (2500–2800 °F)
Coefficient of Linear Expansion	14.2 x 10 ⁻⁶ cm/cm °C (7.9 x 10 ⁻⁶ in/in °F)
pH	6.0–8.5

Figure 1. Thermal Expansion Coefficients of Mineral Sands



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