

Optimizing Thermal Expansion in Dissimilar Materials

Technical Datasheet

Saint-Gobain Lithafrax[®] powders are compounds with thermal expansion coefficients lower than any other known inorganic filler. They are manufactured from lithium, aluminum, and silicate which is fired and ground into fine powder forming $LiAlSi_xO_x$. Lithafrax[®] is added as a filler for critical bonding of controlled expansion materials. Applications include resins, sealing glass, encapsulants, coatings, glazes and metal pastes. Saint-Gobain's Lithafrax[®] fillers provide specific advantages over other fillers, including greater expansion range manipulation, less filler per/lb, increased hardness, & abrasion resistance.

Typical Chemical Analysis (weight %)

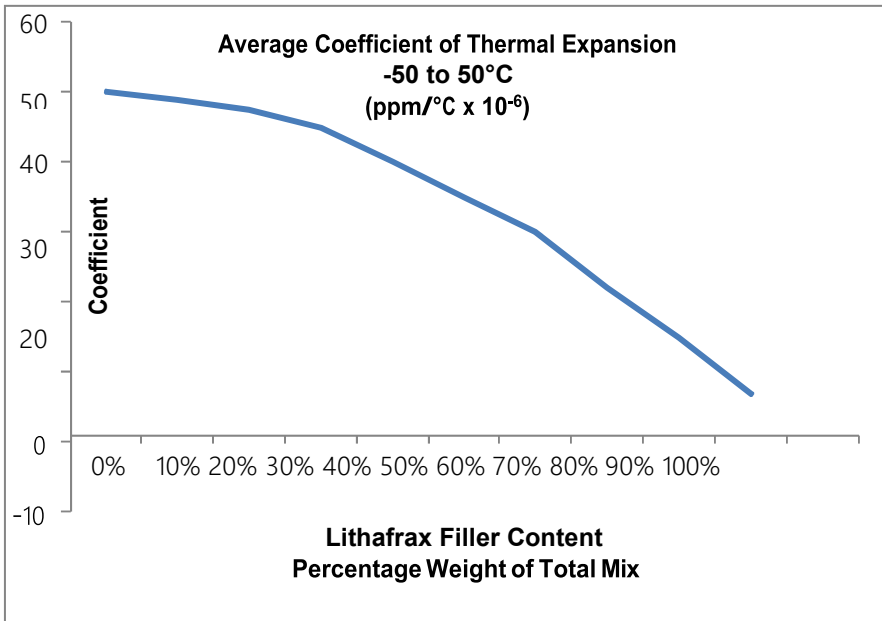
Chemical	Grade 2121	Grade 2122
Li ₂ O	11-13	3-5
Al ₂ O ₃	35-40	15-20
SiO ₂	45-50	75-80

Physical Properties

	Cream	White
Sieve	-140 mesh	-140 mesh
Particle Size	95% 325 mesh (-)	95% 325 mesh(-)
Horiba PSA D ₅₀ (light scattering)	2.8 +/- 1.0µm	2.8 +/- 1.0µm
Bulk Density (lbs./cu.ft.)		
Free Fall	40	42
Tapped	48	50
True Density (g/cc)	2.37 to 2.43	2.40 to 2.47
Thermal Stability	to 2300°F	to 2300°F
Coefficient of Thermal Expansion (ppm/°C)		
50°-200°C	-2.2 x 10 ⁻⁶	1.2 x 10 ⁻⁶
50°-500°C	-3.6 x 10 ⁻⁶	N/A
pH	9.0 -10.5	7.5 -8.0

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The following graph shows the expansion reduction in Epon 828 resin cured with 15^{phr} Shell curing agent CL when using increasing amounts of Lithafrax fillers.



To learn more about our Lithafrax powders, contact your Saint-Gobain representative or email us at ceramics.refractories@saint-gobain.com

We Sell Solutions

Saint-Gobain design engineers specialize in analyzing your situations and specifying systems to suit your operational environment. Material properties, engineering tolerances, attachment methods, and material costs are all considered in a Saint-Gobain solution

Applications

- Resins
- Plastics
- Urethanes
- Sealing Glass
- Coatings
- Glazes
- Encapsulants
- Other critical bond/controlled expansion materials

Markets

- Aerospace
- Automotive
- Building/ Habitat
- Electronics
- Lab ware
- Military

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