



RIGIDIZER: COLLOIDAL SILICA

What is a rigidizer?

Rigidizers are inorganic liquid hardeners used to increase the surface hardness of ceramic fiber products, such as boards, blankets, and formed shapes. The coating compound forms a protective rigid surface and improves durability, and resistance to erosion or abrasion. Our office offers two variations depending on application and operating temperatures.

Colloidal Silica Rigidizer.

Used to increase surface hardness of ceramic fiber products up to 2600°F (1427°C). A clear low viscosity liquid with a 40% suspension of fine amorphous, nonporous, and spherical silica particles in a caustic aqueous liquid phase stabilized with Na.

Typical Applications

- Surface coating for ceramic products exposed to high velocity gases or flame impingement
- Adhesive for use in making composites and laminates
- Adhesive for ceramic fiber blanket and paper
- Catalytic converter mat protection
- Surface treatment for vacuum formed shapes to increase surface hardness
- Veneering modules over refractory
- Attaching boards to furnace shell
- Erosion-resistant coating
- Surface hardening

Material Benefits

- Increases surface hardness and durability of ceramic products promoting resistance to erosion.
- Easily applied by brushing, rolling, dipping, or spraying.
- Reflects heat and thermal shock resistant.
- Increase resistance to erosion of high velocity gases.
- Bond composites and laminates.
- Increase the durability and surface erosion resistance.
- Surface hardening and rigidizing other ceramic product forms
- Erosion-resistant coating for surfaces subject to high velocity hot gases.





| Properties | Unit | Colloidal Silica |
|-------------------------------|------------------------|------------------------|
| Appearance | Color | Clear |
| Max Temperature | °F °C | 2300 1260 |
| Recommended Temperature | °F °C | 2100 1149 |
| Mean coefficient of Expansion | in/in °F | 3.0 x 10 ⁻⁶ |
| Freezing Temperature | °F °C | 28 -2 |
| Solid content | % Silica | 20 - 25 |
| Density, wet | pcf kgm ³ | 75 1201 |
| Viscosity, centipose | @77°F 25°C | 4 |
| Specific gravity | @77°F 25°C | 1.2 |
| Shelf Life | Months | 12 |
| pH level | pH | 9.7 |
| Weight Per Gallon | lbs kg | 10 4.5 |
| Standard Packaging | Gallon Pails | 1, 4, 5, 55 |

Application Instructions.

1. Ensure that material surface is clean and free of any grease, oil, or another contaminate.
2. Rigidizer can easily be applied by brushing, dipping, rolling, and/ or spraying. If spraying material, suitable respiratory protection and ventilation should be used while spraying.
3. One gallon typically covers 25-35 square feet when brushed, or 70-100+ square feet if sprayed. (Please note coverage depends on dilution, application method, material being coated, and thickness of the desired coating).
4. Rigidizer can be cured by air-drying for approximately 24-48 hours or by heat. Please note that coating thickness, size, geometry, as well as humidity effect curing.
5. Final curing should be done at high temperatures such as > 1000°F, for a minimum of 30 minutes if able.
6. Regardless of cure method (ambient or heat), **it is important to allow enough time for all moisture to be evaporated from the material.**
7. This process will render a hard exterior without completely rigidizing the interior of the ceramic fiber body.