Silfluo SILZ-HT21

Description:

SILZ-HT21 is a high-temperature anti-corrosion nano-ceramic coating formulated with polysilazane as the primary film-forming binder. It is compounded with advanced inorganic fillers such as sericite mica, chromium black pigment, phosphates, and inorganic silicon powders. After curing, the coating forms a dense, hard, and waterproof ceramic-like layer with excellent resistance to acids, salt spray, aging, and harsh environments.

The cured coating exhibits outstanding thermal stability and can withstand continuous service at temperatures up to 600 °C, making it suitable for long-term protection of metal substrates under extreme thermal and corrosive conditions.

As a novel organic–inorganic hybrid high-temperature coating system, SILZ-HT21 integrates high-temperature polymer materials, anti-corrosion pigments, ultrafine functional powders, and polymer dispersion technology. After curing, filler particles are densely packed and chemically bonded to the polysilazane matrix, resulting in a coating with uniform appearance, moderate gloss, and minimal macroscopic defects.

The formulation primarily utilizes ionic compounds that form covalent bonds with the substrate during curing, significantly enhancing mechanical strength and adhesion. Special acid- and alkali-resistant raw materials provide excellent chemical stability, while lamellar and rod-like filler structures improve UV resistance and crack resistance.

Applications

SILZ-HT21 has been widely applied in aerospace, petrochemical, metallurgy, power generation, and defense industries. Typical applications include chimneys and flue ducts, high-temperature steam pipelines, heat exchangers, high-temperature furnaces, desulfurization units, petrochemical cracking equipment, engine components, and exhaust systems.

Technical Specifications

Test Item	Specification	Test Method
Component A Appearance	Light yellow to colorless transparent liquid	Visual inspection
Component B Appearance	Black paste	Visual inspection
Mixed Viscosity (Ford Cup No.4)	22–26 s	GB/T 1723-1993
Mixed Density	1.70 ± 0.05 g/mL	GB/T 6750-2007
Solid Content (180±2 °C)	> 60%	GB/T 1725-2007
Pencil Hardness	≥ 4H	GB/T 6739-2006
Adhesion	Grade 0	GB/T 9286-1998
Neutral Salt Spray Resistance	30 days, no blistering, cracking, or rust	GB/T 10125-1997

Thermal Shock Resistance	600 °C (1 h) → water quench, >5 cycles, no visible cracking	GB/T 30873-2014
Chemical Resistance	5% NaCl / H_2SO_4 / HNO_3, 30 days, no corrosion	GB/T 9274-1988

Temperature		<175°C	180°C	200°C	250°C
Curing Conditions (DFT 20–30 μm, RH 50%)	Surface dry time	None	0.2h	0.2h	0.1h
	Full Cure Time	None	1.5h	1h	0.5h

Special Notes: This product is a two-component, high-temperature curing product. Once opened and mixed, please use within 12 hours. For extended application intervals, ensure application tools are thoroughly cleaned to prevent adhesion. It is recommended to apply in one coat, with a dry film thickness not exceeding 30μm; otherwise, coating performance may decrease.

Standard processing procedure:

Surface cleaning → Surface roughening → Cleaning and air drying → SILZ-HT21 application → Curing

Instruction Manual

1. Surface roughening: Prior to coating, grind or sandblast the substrate surface to remove rust, dust, and contaminants. Surface preparation significantly affects coating performance. Recommended surface cleanliness is Sa 2.5, minimum St 3 without mill scale (GB/T 30790.4-2014).
2. Cleaning: Remove residual oil and dust using a dedicated cleaning agent or degreaser.
3. Substrate drying: Ensure the substrate surface is clean and completely dry before application.
4. Coating preparation: SILZ-HT21 is a two-component, heat-curable system. After mixing, use within 12 hours. Shake thoroughly before use and filter through a 400-mesh filter.
5. Application: Laboratory spray coating using a 0.5–1.0 mm nozzle spray gun is recommended for optimal appearance and uniformity.
6. Curing: After spraying, allow to tack-free dry for 10 minutes, then cure at 180 °C for 90 minutes (for coatings used below 400 °C), or cure at 250 °C for 30 minutes (for coatings used above 400 °C).

Storage & Transportation

1. Store in accordance with national regulations. The storage environment should be dry, cool, and well-ventilated, away from heat and ignition sources. Containers must be tightly sealed and handled with care.
2. Recommended storage temperature: 5–30 °C. Shelf life: 6 months.
3. Reseal containers tightly after opening if not fully used.
4. Prepared but unused coating materials must not be recycled and should be disposed of in accordance with local regulations.
5. Products beyond shelf life may only be used after passing quality inspection.

Packaging

In 1kg, 2kg, 5kg, 25kg pail.