SIO-597x Solvent-Free Epoxy Modified Silicone Resin

SIO-5971 Heavy Duty Anti-Corrosion
SIO-5972 Ultra-High Performance Heavy Duty Anti-Corrosion

Product Introduction:

SIO-597 is a solvent-free epoxy polysiloxane resin, a transparent resin combining epoxy and polysiloxane. Polysiloxane, also known as organic polysiloxane or siloxane polymer, is a type of polymer with a backbone mainly composed of repeated Si-O bonds, with organic groups directly bonded to silicon atoms. This resin can be used as a topcoat for substrates, as well as for producing colored coatings, and it can also be used as both a primer and topcoat in a single application.

SIO-597 exhibits excellent environmental compatibility, high electrical insulation, high adhesion, anti-contamination, antioxidant properties, yellowing resistance, stain resistance, solvent resistance, acid and alkali resistance, salt spray resistance, wash resistance, aging resistance, high-temperature and low-temperature resistance, high hardness, abrasion resistance, color and gloss retention, high gloss, boil resistance, and impact resistance. It has a hardness of 4H or higher and a gloss level of 9 gloss units or above (naturally cured).

This resin can be applied to a wide range of surfaces, including cement, mild steel, stainless steel, aluminum alloys, glass, coatings, painted surfaces, floor coatings, wood, bricks, tiles, stones, and other materials requiring heavy-duty corrosion protection, high insulation, high gloss, and high-temperature resistance. The protective coatings made from SIO-597 can last over 20 years under certain conditions.

SIO-5971 is used in general heavy-duty corrosion protection coatings, while SIO-5972 is a specialty epoxy-modified polysiloxane resin for high-performance heavy-duty corrosion protection coatings.

Product Advantages:

- **Exceptional Heat Resistance**: Maintains stable physical and chemical properties even under high-temperature environments (up to 800°C), suitable for extreme high-temperature applications.
- **High Residue Rate**: High-temperature sintering results in a high residue rate, ensuring the material's durability and reliability in high-temperature conditions.
- **Excellent Adhesion**: Strong bonding with inorganic materials such as mica and fiberglass, suitable for various composite materials.
- **High Hardness**: Forms a high-hardness structure after curing, offering excellent mechanical strength and abrasion resistance.
- **Versatility**: Not only suitable for mica board and fiberglass board lamination but also serves as a refractory adhesive, high-temperature adhesive, and sealant, making it widely applicable.
- **Good Chemical Stability**: Excellent resistance to acids, bases, and other chemicals, extending the material's service life.

Main Technical Indicators:

Item	Value
Appearance	Colorless Transparent Liquid
Viscosity (Brookfield, 25°C)	300-500 mPa.s
Comprehensive Hardness	>3H
Hardness after 2 days	1H
Hardness after 7 days	4H
Solid Content	≥99%

Technical Data for SIO-5972 High-Performance Heavy Duty Corrosion Protection
(Reference to National Standards HG/T 4755-2014):

Item		Value	Test Results
Container State		Uniform without lumps	Uniform without lumps
Fineness (μm)		Agreed	
Non-Volatile Content (%)		≥ 75	98
Drying Time (h)	Surface Dry	≤2	1
	Fully Dry	≤24	2
Coating Appearance		Normal	Normal
Silicon-Oxygen Bond in Base (Full Paint) (%)		≥ 15	18
VOC Content (g/L)		≤ 390	20
Heavy Metal Content (mg/kg)	Pb (Lead)	≤ 1000	0
	Cd (Cadmium)	≤ 100	0
	Cr6+ (Hexavalent Chromium)	≤ 1000	0
	Hg (Mercury)	≤ 1000	0
Test Duration (h)		Agreed	2
Gloss (60°)		Agreed	70
Pencil Hardness (Scratching)		≥ F	4H
Bend Test (mm)		≤ 3	3
Impact Resistance (cm)		50	50
Abrasion Resistance (500g, 500r)		≤ 0.04	0.03
Adhesion (Pull-off method) (MPa)		≥ 5	10
Acid Resistance (50g/L H_2SO_4, 240h)		No Abnormality	Qualified
Alkali Resistance (50g/L NaOH, 240h)		No Abnormality	Qualified
Wet Cold Cycle Resistance (10 times)		No Abnormality	Qualified
Wet Heat Resistance (3000h)		No Bubbling, No Rusting, No Peeling	Qualified
Salt Spray Resistance (3000h)		No Bubbling, No Rusting, No Peeling	Qualified
Artificial Weathering (3000h)		White and Light Colors: Color Change ≤ 2, Gloss Loss ≤ 2, Chalkiness ≤ 2, No Bubbling, No Peeling, No Cracking	Qualified
		Other Colors: Color Change ≤ 3, Gloss Loss ≤ 3, Chalkiness ≤ 2, No Bubbling, No Peeling, No Cracking	Qualified
Cycling Aging Test (25 times)		Chalkiness ≤ 2 or Agreed, No Bubbling, No Rusting, No Peeling, No Cracking	Qualified

Usage Range:

1. Color coatings can be applied on various substrates such as bamboo, wood, stone, cement, plastics, metals, painted surfaces, walls, floors, and more. Widely used in road bridges, tunnels, ships, automobiles, high-speed trains, airplanes, mobile phones, indoor and outdoor walls, displays, electrical appliances, and decorative finishes.
2. Heavy-duty corrosion protection for steel structures, pipelines, ships, storage tanks, special steel, alloy materials, etc.
3. Waterproof materials for concrete, exterior walls, elevated bridges, cross-sea bridges, and bamboo/wooden buildings.
4. Suitable for industrial floors, reservoirs, and waterproofing of roofs.
5. Wind turbine blade coatings.
6. Municipal engineering applications like highway bridges and outdoor landscape facilities.
7. Surface treatment for rubber, plastic, and other materials to enhance wear resistance, aging resistance, and waterproof properties.
8. Can be used as a high-performance waterproof filler.

Application Method:

1. This product comes in a two-component packaging: Mix component A and component B in a 1:1 weight ratio, stir well, and let it cure for about 20 minutes before use (can be diluted with butyl acetate).
2. Clean the substrate surface before application, use spray, brush, or roller methods. Apply in a crisscross pattern to avoid any gaps.
3. The mixed components A and B should be used within 4 hours.
4. Generally, the coating will dry to the touch within 2-3 hours; after surface drying, apply a second coat. To test performance, wait 7 days for the best results (at room temperature curing).
5. When preparing color coatings, mix component A and component B in a 2.5:1 ratio.

Precautions:

1. Construction Environment: Apply within the temperature range of 5°C to 40°C. Check the weather forecast before outdoor construction to avoid working before rain or snow.
2. The product should be applied to substrates that have not been treated with other coatings. If other products were previously applied, sanding is required before use.
3. There is a risk of combustion when exposed to high heat, open flames, or contact with oxidizers.
4. Seal component B tightly after use.
5. In case of accidental eye contact, flush immediately with plenty of water, and seek medical attention if discomfort persists.
6. Prior to large-scale application, it is recommended to conduct small-scale trials to:
    - Confirm that the product and substrate achieve optimal anti-corrosion results.
    - Confirm the optimal usage amount to avoid waste.

Packaging and Storage:

- Packaging: 10kg + 10kg and 25kg + 25kg sets.
- Store in a sealed container in a cool, dry place, away from direct sunlight. Store at room temperature and use within 12 months of unsealed storage.