SIO-714 Waterborne Pure Silicone Resin Emulsion

Product Overview

SIO-714 is a waterborne pure silicone resin emulsion designed for high-temperature applications. This product is based on a specially designed molecular structure of solid silicone resin, processed using nano-ball milling emulsification technology, and is suitable for high-temperature, salt spray-resistant coatings. It overcomes the common limitations of commercially available silicone resins that require high-temperature curing and have poor salt spray resistance. Once cured, it provides high hardness, excellent heat resistance, low permeability, and superior corrosion resistance, ensuring complete isolation of metal surfaces from water, air, and salt, thereby preventing environmental damage. The high toughness ensures that the coating will not crack or peel under extreme conditions (such as acid/alkali, salt spray, and temperature fluctuations), offering long-term protection for 20-30 years.

Product Features

- Excellent water dilutability, low odor, free from toluene and xylene, complies with environmental regulations.
- Outstanding stability, good dispersion at high speeds, resistant to acids, bases, and high-temperature storage.
- Excellent film-forming properties, fast drying at room temperature, good wetting and leveling properties.
- Can be used with appropriate heat-stable colorants or metal powders, ideal for preparing high-temperature waterborne coatings.
- Cured film has excellent heat stability, outstanding weather resistance, and salt spray resistance.
- After full curing, the coating has excellent hardness, toughness, abrasion resistance, impact resistance, and chemical resistance.
- High-gloss color paints can be prepared, suitable for decorative high-temperature coatings with gloss levels of 4-5.
- Excellent silver-matching effects; paints prepared with metallic powders have a strong metallic feel and good transparency.
- No yellowing at high temperatures, ideal for preparing white, silver, and colored decorative high-temperature coatings.
- Can be directly ground into color pastes.

Technical Specifications

Property	Value	Test Method
Appearance	Milky white liquid with blue tint	Visual inspection
Ionic property	Non-ionic	
pH (at 20°C)	6-7	pH paper
Solid content (wt%)	45-50	ASTM D1630
Kinematic viscosity (Cp)	100-300	Brookfield
Density (kg/l)	1.02-1.11	ASTM D4052

Curing Conditions

- Room temperature curing: Cures in 24 hours, achieving hardness H.
- Deep curing: Recommended for curing at 200-280°C for 10-60 minutes. The higher the temperature, the shorter the curing time. The best curing condition is 220°C for 30 minutes or 280°C for 10 minutes.
- Under these curing conditions, the film exhibits best salt spray resistance and chemical resistance.

Product Comparison

Property	Foreign Product 1	Foreign Product 2	Foreign Product 3	SIO-714
Appearance	Milky white	Milky white	Milky white	Milky white with blue tint
Solid Content (%)	60	50 ± 2	52-63	45-50
Solvent Content (%)	None	<8 (xylene)	<10 (methanol)	None
pH Value	9-10	6	8-10	6-7
Transparency after drying	Semi-transparent	Semi-transparent	White powder	Colorless and transparent
Dry Film Feel	Elastic, sticky	Hard, dry	Powdery, no adhesion	Hard, dry

Product Applications

- High-temperature waterborne coatings for household appliances, cooking utensils, stoves, fireplaces, ovens, chimneys, automobile tailpipes, and engines.
- Weather-resistant anti-corrosion outdoor metal waterborne coatings.
- Waterborne high-temperature insulating coatings for home appliances (e.g., non-stick coatings), electronic components, and electromechanical products.
- Ideal base material for high-temperature waterborne insulating, anti-fire, anti-corrosion, and heat-conducting coatings.

Usage Recommendations

1. Color paste preparation: Can be ground into color paste directly or first prepare water-based pigment paste without resin, then use with waterborne silicone resin emulsion.
2. The formulated coating has good room temperature self-drying properties. For excellent heat resistance and physical/mechanical performance, we recommend curing under 200-280°C for 10-60 minutes, with 220°C for 30 minutes or 280°C for 10 minutes for optimal results.

Packaging and Storage

- Packaging: 50 kg plastic drums.
- Storage: Store in a cool, dry place above 0°C and below 40°C, in a well-sealed container.
- Shelf life: 12 months when stored in a sealed container. (The product label indicates the "best use by" date. Exceeding the "best use by" date does not mean the product cannot be used, but the properties should be rechecked to ensure quality).

Shelf Life

- Store in a sealed container for 12 months. (Each product label will indicate the "best use period". Exceeding the best use period does not necessarily mean the product cannot be used, but it should be rechecked for relevant properties to ensure quality.)