SIO-517 Solvent-Free Room Temperature Curing High-Temperature Resistant Silicone Resin

SIO-517 room temperature curing high-temperature resistant silicone resin is a two-component system that cures at room temperature and has a fast surface drying speed. It exhibits excellent properties such as aging resistance, high and low temperature resistance, high hardness, wear resistance, color retention, and gloss retention.

SIO-517 formulated room temperature curing high-temperature resistant silicone resin coating addresses the shortcomings of commercially available silicone resin products that cannot balance hardness and toughness, offering superior overall performance. The cured high hardness and high-density coating provide excellent heat resistance, low permeability, and corrosion resistance, completely isolating the metal surface from external water, air, salt, etc., protecting it from environmental damage. High toughness ensures that the coating is not easily cracked or peeled in extreme environments (acid-base, salt spray, high and low temperatures), maintaining its protective effect for 20-30 years.

SIO-517 is VOC-free, featuring high solid content and low viscosity. The formulated coating can be sprayed or brushed without adding a diluent, meeting environmental regulations. The high hardness can reach over 8H. To achieve necessary adhesion to the substrate, the coating thickness should not exceed 35μm. The coating does not discolor at high temperatures.

The room temperature curing high-temperature resistant silicone resin coating overcomes the limitation of traditional high-temperature coatings (Teflon, inorganic coatings, solvent-based silicone resin coatings, water-based silicone resin coatings) that cannot cure at room temperature, making it more suitable for outdoor large workpieces, equipment, pipelines, platforms, units, etc., that cannot undergo high-temperature baking. SIO-517 is packaged in A and B components.

Performance Characteristics

* High gloss, high hardness
* High wear resistance, anti-fouling
* Oxidation resistance, aging resistance
*Pollution resistance, solvent resistance
* Acid, alkali, and salt resistance, washable
* Non-toxic, environmentally friendly, cost-effective

Performance Parameters

Test Item	Reference Standard	Index
Cross Hatch Adhesion	GMW14669	0 grade after 168h
Surface Hardness	Mitsubishi Pencil	>8H after 168h
Gloss (60 degrees)		>96
High Humidity Test	GMW14669	No change after 240h
Fuel Resistance	GMW14333-A	Grade 2, no surface change
Cyclic Corrosion Test	GMW14669	Condition C, grade 9, <3mm change
Scratch Resistance after Humidity	GMW14729	No penetration into coating after 144h, 5N force
Filiform Corrosion	GMW15287	No change, no filiform formation at scratch
Abrasion Resistance	GMW14669	No fogging, no sticking
Restricted Substances	GB/T30512	Lead, cadmium, polybrominated biphenyls far below standard
Low Humidity Impact Resistance	ESOw3	No cracks, no peeling
Detergent Resistance	GMW143334	Grade 2, no swelling, no color change
1 Year Aging/96h Humidity/Adhesion	GMW14873, GMW14829	Gloss retention 85, polished gloss 92
Wash Scratch Resistance	GMW14865	Same as control sample

Application Range

- Household appliances, cookware, stoves, fireplaces, ovens, kilns, flues, chimneys, car exhaust pipes, and engine high-temperature resistant coatings.
- Weather-resistant anti-corrosion outdoor high-temperature coatings.
- High-temperature insulation coatings for household appliances (such as non-stick pan exterior coatings), electronic and electrical components, and electromechanical products.
- Ideal base material for preparing high-temperature insulating coatings, fireproof coatings, heavy-duty anti-corrosion coatings, thermal conductive coatings, etc.
- Used for formulating color paints, widely applicable on stone, plastic, metal, paint surfaces, walls, and floors.

Main Parameters

Combination and Ratio	Appearance	Solid Content (wt%)	Specific Gravity (g/cm^3)	Viscosity @25℃ (cps)
SIO-517 A/B	Main Resin A: Colorless to pale yellow transparent liquid	>98	0.95-1.05	10-20
A/B=100/2~5	Curing Agent B: Pale yellow transparent liquid	>98	0.95-1.05	2-5

Curing Conditions: Recommended room temperature curing, 25℃, touch dry within 1 hour, optimal performance achieved after curing for 7 days or more; if heating is needed to accelerate curing, low-temperature baking is recommended: e.g., 80-100℃, 30 minutes, optimal performance achieved after placing for 7 days, specific application experiments should determine the details.

Usage Instructions

1 Coating Preparation: Pigments and fillers must be added to SIO-517A and dispersed evenly at high speed before mixing uniformly with SIO-517B before use. Diluent can be used to thin the resin as needed, and the specific amount should be determined based on actual requirements.

Reference formula (component A):

Ingredient	Parts by Weight
SIO-517A	100
High-Temperature Pigment	22
Mica Powder	11
Low Melting Point Glass Powder (380℃)	22
High Purity Zinc Phosphate	11
KH560 Silane Coupling Agent	0.5
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Procedure:

- Directly disperse all components until uniform, recommended dispersion speed 1200~1500r/min for 45 minutes, use a 200 mesh filter bag for packaging.

Room Temperature Curing High-Temperature Coating Formula (Component B): SIO-517B Coating Formula Ratio: Component A: Component B = 100: 2~3

2 Application Method:

Use spray coating; it is recommended to clean the substrate thoroughly before spraying, remove oil and rust, and sandblast the surface to improve adhesion. The coating thickness should be controlled at 25~35μm, as too thick a coating may crack at high temperatures.

3 Curing Conditions:

Room temperature drying: touch dry in 1 hour, 8H achieved in 7 days; low-temperature drying: baking at 80-100℃ for 15-30 minutes to accelerate surface drying; to achieve maximum hardness and optimal performance, curing should be over 7 days.

Products with added solvents must choose the appropriate drying temperature based on the solvent's evaporation rate. For solvents with a high boiling point and slow evaporation rate, baking at 80-100℃ is recommended to accelerate solvent evaporation. Residual solvents will significantly affect the coating's hardness and adhesion.

Precautions

1. After pouring out the resin from the container, wipe the excess resin from the container mouth and tighten the lid, store it in a cool place.
2. Clean brushes, spray guns, and other tools with a diluent immediately after use to prepare for the next use.
3. Strictly prohibit open flames during construction, and ensure proper ventilation.
4. The product has a mild odor and slight irritation to the skin and eyes. If splashed into the eyes, rinse immediately with plenty of water and seek medical attention if discomfort occurs.
5. Be cautious during construction if the ambient temperature is <15℃ or the relative humidity is >75%.

Packaging and Storage :

Component A is packaged in 200KG barrels, should be stored in a cool, dry place, protected from light, with a storage temperature of 5~25℃, and kept intact. The shelf life for both the main agent and curing agent is 12 months. Both components should be sealed tightly and protected from moisture.

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