SIO-513 High-Hardness Nano Silicone Resin Topcoat Varnish

Product Description:
SIO-513 is a self-crosslinking nano-coating system with fast surface drying at room temperature. It can be widely applied on ships, steel structures, stone, plastics, metals, and glass. Additionally, it is suitable for anti-graffiti coatings, self-cleaning glass coatings, and electroplating varnishes. The product is resistant to nitric acid, alkalis, and methyl ethyl ketone, and withstands neutral salt spray testing for over 2000 hours. Pencil hardness ranges between 4 to 5H.

Key Features:

- High gloss and excellent fullness
- High hardness and strong adhesion
- High abrasion resistance and anti-stain properties
- High temperature resistance and anti-aging performance
- Anti-oxidation and yellowing resistance
- Solvent resistance and pollution resistance

Technical Specifications:

Performance	Unit	Value	Test Method/Standard
Appearance		Transparent/semi-transparent liquid	Visual Inspection
Solid Content	wt%	42	ASTM D1630
Dynamic Viscosity	seconds	14	(Iwata Cup #2)
Density	Kg/L	1.08-1.11	ASTM D4052

Applications:
Widely applicable as a protective coating on ships, cars, high-speed trains, airplanes, mobile devices, and particularly on decorative automotive parts such as trim, front grilles, wheels, and aluminum or stainless steel seat frames.

Curing Conditions:

- **Natural Air Drying at Room Temperature:** Surface dry in 2 hours, reaching H hardness after 24 hours, and 4-5H hardness after 7 days.
- **Low-Temperature Baking:** Bake at 170°C for 20-30 minutes, then allow to set for 24 hours to achieve 3H hardness, and 4-5H after 7 days.

Note: To achieve the highest hardness and optimal performance, a curing period of more than 7 days is recommended. Coating hardness may vary based on substrate hardness, with harder substrates yielding higher coating hardness.

Performance Parameters:

Test Item	Reference Standard	Performance
Cross-Cut Adhesion	GMW14669	0 grade after 168 hours
Surface Hardness	Mitsubishi Pencil	>4H
Gloss	60°	>96
High-Humidity Test	GMW14669	No change after 240 hours
Fuel Resistance	GMW14333-A	Grade 2, no surface change
Cyclic Corrosion Test	GMW14669	Grade 9 (<3mm)
Stone Chip Resistance	GMW14770	>Grade 8
Scratch Resistance after Humidity	GMW14729	5N force, no penetration after 144 hours
Filiform Corrosion	GMW15287	No filiform formation at scratch line
Abrasion Resistance	GMW14669	No fogging or adhesion
Restricted Substances	GB/T30512	Lead, cadmium, PCBs well below standard
Low-Temperature Impact Resistance	ES0w3	No cracking or peeling
Detergent Resistance	GMW143334	Grade 2, no swelling or color change
1-Year Aging/96h Humidity/Adhesion	GMW14873/14829	Gloss retention: 85% (unpolished), 92% (polished)
1-Year Aging + Stone Chip Impact	GMW14873/14700	Impact resistance >Grade 8
Wash & Scratch Resistance	GMW14865	Equivalent to control sample

Application Process:

- Apply the original liquid by spraying.
- Filter through a 400-mesh nylon filter and allow to settle until bubble-free before application.
- Recommended coating thickness (Dry film thickness): 25-30μm.
- Baking conditions: 150-170°C for 20-30 minutes.
- Surface dry at room temperature in 2 hours.

Note: It is recommended to thoroughly clean the substrate before spraying. Use a specialized spray gun for oil-based coatings.

Packaging:
Available in 4kg and 18kg metal drums.