Si-COAT® 570™

RTV Silicone High Voltage Insulator Coating

INTRODUCTION

Si-COAT® 570™ High Voltage Insulator Coating (HVIC) is a room temperature vulcanizing (RTV) silicone product.

It does not require additional thinning or excessive mixing before use. Its patent is based on a formulation using optimally sized alumina trihydrate (ATH) particle at optimized concentration to provide long-term hydrophobicity and resistance to electrical tracking.

Unlike competitors that rely on sub-micron ATH to reduce settling, Si-COAT® 570™ uses a larger, patented ATH particle combined with a controlled manufacturing process to minimize filler settling and reduce mixing requirements, making it one of the easiest HVICs to apply.

Si-COAT® 570™ also delivers strong adhesion to glass, porcelain, and polymer(silicone and EPDM) insulators without primer, across all voltage classes. With over 15 years of field service, it has demonstrated zero failures, outperforming all competitive HVICs.

For maximum suppression of leakage current and an unmatched long term performance greater than that of any other HVIC, turn to Si-COAT® 570™ by CSL Silicones Inc.

PRODUCT DESCRIPTION

A single component, RTV, moisture cure, high-build polysiloxane coating providing excellent long-term hydrophobicity, hydrophobicity recovery, electrical characteristics and UV tolerance leading to suppression of leakage current, reduction of pollution related flashover risk and a long service life.

INTENDED USES

Suitable for both new and refurbishment applications. Can be used, unprimed, on a variety of insulator substrates including glass, porcelain, HTV silicone, LSR type silicone and EPDM.

Can be used as a refresh coating over old existing silicone HVICs when properly cleaned and still displays strong adhesion to the insulator surface.

Effective in salt spray, salt fog, industrial (cement dust, fly ash, carbon black, acid emissions, etc.), desert sand and other severe environments.

Designed for use in AC and DC systems, in substations of all voltage levels and on transmission lines under all voltage conditions ranging from low distribution voltages to very high transmission voltages.

May also be used on metal substrates where a high dielectric strength insulating coating is required, including railway and other high-voltage applications..

PRODUCT CHARACTERISTICS AND PRACTICAL INFORMATION

Color	Clay Gray or White. Custom colors may be available dependent on formulation requirements
Gloss Level	Semi-gloss
Percent Solids	57% by volume, nominal 70% by weight, nominal
Theoretical Thickness	15.0 mil ± 4 mil (380 ± 100 microns) dry film thickness (DFT)
	26.3 ± 7 mil (667 ± 175 microns) wet film thickness (WFT)

Theoretical Coverage	**15.0 mils (380 µ) DFT**
sq. ft per US gal.	61,1
sq. ft per lb	6.4
sq. m per liter	1.5
sq. m per kg	1.3

Allow appropriate loss factor:
Practical Coverage = Theoretical Coverage x [100% - Loss%].
Coverage will vary with the substrate and texture of surface.

Practical Application Thickness Guidance:
380 microns ± 100 microns, in accordance with IEEE Std 1523TM-2002 (IEEE Guide for the Application, Maintenance, and Evaluation of Room Temperature Vulcanizing (RTV) Silicone Rubber Coatings for Outdoor Ceramic Insulators)

Method of Application: Airless spray, brush or dip

Application Temperature Range:
41 to 140°F (5 to 60°C) [ambient]
41 to 266°F (5 to 130°C) [substrate]

DRYING TIME:

Skin-over Time	20-25 minutes nominal*
Tack-free Time	30-40 minutes nominal*
Cure Through	6 hours nominal*
Full Physical Characteristics	7 days nominal*

**At standard conditions [77°F (25°C) and 50% relative humidity – 10 mils wet film thickness]*

REGULATORY DATA

Flash Point	100°F (38°C)
VOC	2.83 lb/US gallon (340 g/liter), nominal
Product Weight	9.6 lb/US gallon (1.15 kg/liter), nominal

PHYSICAL PROPERTIES

(Typical properties - values not to be used as specifications)

Uncured	
Appearance	Thick Paint
Viscosity	1,350 ± 350 cP
Cure System	Neutral, moisture cure
Cured At Standard Conditions* for 7 Days	
Dielectric Strength (ASTM D149)	701.8 V/mil @ 16.1 mil (276.3 kV/cm @ 0.041 cm)
Volume Resistivity (ASTM D257)	>1.37 x 10^{16} Ω.in (3.48 x 10^{16} Ω.cm)
Surface Resistivity (ASTM D257)	1.36 x 10^{16} Ω/□
Dissipation Factor (ASTM D150)	at 100 Hz: 0.01 (DFT = 214 microns) at 100 Hz: 0.0292 (DFT = 878 microns) at 100 kHz: 0.00494 (DFT = 878 microns)
Dielectric Constant (ASTM D150)	at 100 Hz: 2.74 at 100 kHz: 2.63
Tracking Wheel Withstand (CEA LWIWG-01)	>1,000 hrs
Dry Arc Resistance (ASTM D495)	Track: 184 sec Burnout: > 450 sec
Temperature Stability	-40 a 480°F (-40 a 250°C)
Thermal Expansion Coefficient	1.33 x 10^{-5} in/in.°F (2.4 x 10^{-5} cm/cm.°C)
Thermal Conductivity	1.70 x 10^{-5} BTU/hr.ft °F (7.0 x 10^{-4} Cal/sec.cm.°C)
Loss Tangent at 100 Hz (ASTM D150)	0.0292
Water Repellency Angle (IEC 62073)	Static: 121.3 degrees Advancing: 121.4 degrees Receding: 104.4 degrees
UV & Salt Fog Accelerated Weathering (IEC61109, 5,000 hours)	No degradation
Inclined Plane Tracking & Erosion Test (IEC 60587)	PASS: 1A 4.5; 1B 4.5
Adhesion Testing (IEEE 957)	Water Blast Test: PASS
Adhesion Testing (CEA LWIWG-02)	100 hrs Boiling Water Test: PASS

**At standard conditions 77°F (25°C) and 50% relative humidity.*

SURFACE PREPARATION & CLEANLINESS

All surfaces to be coated must be dry and free of dirt, dust, grease, oil, release agents, curing compounds, and other foreign matter including frost, water and microscopic condensed moisture, to ensure proper adhesion of the Si-COAT® 570™ coating to the insulator surface.

High-pressure water washing is the suggested method for cleaning the insulator surface. The suggested pressure washing parameters are 200-1000 psi (14-70 bar) @ 8 – 10 gallons per minute (30 – 40 liters per minute). For cementitious contaminants us dry abrasive cleaner such as crushed corncob or walnut shells mixed with limestone.

For covered in silicone or hydrocarbon grease, remove the bulk of the grease with a dry abrasive cleaner or by hand-wiping with a rag, then clean the surface with an oil-free solvent such as acetone, followed by a final wipe with isopropyl alcohol. Apply coating only after surfaces are fully dry.

If coating application is delayed after cleaning, the insulators must be re-cleaned.

COATING APPLICATION

Mixing: Si-COAT® 570™ is a one-part, ready-to-use coating. However, it is normal, during shipment or extended storage, for carrier solvent to rise to the top of the container. Upon opening of the container, mix by power agitator until an even consistency of coating is obtained.

Application: All surfaces must be clean and dry before application. Apply coating in a manner to prevent runs, sags, drips, spills or holidays. The temperature of the surface to be coated should be between 41 and 122°F (5 and 50°C) and environmental temperature should be at least 5°F (3°C) above the dew point prior to and during application.

All surfaces must be clean and dry prior to application. The coating should be applied in a manner that prevents runs, sags, drips, spills, etc. and that completely covers surfaces without holidays. The temperature of the surface to be coated should be between 41 and 122°F (5 and 50°C) and environmental temperature should be at least 5°F (3°C) above the dew point prior to and during application.

All areas particularly prone to corrosion such as the caps and pins of insulator discs can also be coated to provide added protection and a uniform monolithic surface.
The insulator should be coated with a minimum 10.0 mils (254 microns) DFT of Si-COAT® 570™. The average DFT of Si-COAT® 570hs™ is 15 mils (380 microns) and the maximum advisable DFT is 50 mils (1,270 microns).

Airless Spray: Recommended - Tip sizes to range from 17 to 21 thou (432 to 533 micron) with a 6 to 10 inch (15 to 25 cm) fan at 1 ft (30 cm) distance. Pump pressure ratio of 40:1. Total output fluid pressure at spray tip not less than 2,000 psi (141 kg/cm2). Minimum 1/2 inch (1.3 cm) ID, maximum 50 ft (15 m) length spray line.

Dip: *Suitable - Constant nitrogen purge should be used over liquid surface in container to avoid formation of skins while dipping. Rotate insulators after dipping to avoid formation of drip marks. Generally, higher DFT is achieved. Thinning may be necessary.*

Brush: *Suitable - Generally, 10 to 15 mil (254 to 381 micron) DFT can be achieved.*

Thinner: Naphtha or Odorless Mineral Spirits. It is recommended, however, that **Si-COAT® 570™** be used at the viscosity supplied. If product is thinned, do not exceed local environmental legislation.

Cleaner: Naphtha or Odorless Mineral Spirits.

Work Stoppages & Restarts: If work must stop before a container of **Si-COAT® 570™** is fully used, minimize air and moisture exposure by covering the coating surface with polyethylene film and sealing the container airtight.

When restarting, remove the film. If any cured material is present, cut it away from the container wall and peel off the cured layer to expose fresh coating underneath

Clean-up: Do not allow material to remain in hoses, gun or spray equipment.
Flush all equipment thoroughly with the recommended cleaner.

Fully cured coating is environmentally benign (will not harm) and is safe for landfill disposal. However, always check local environmental regulations before disposal

PRODUCT CHARACTERISTICS

Surface finish and sheen level depends on application method. Avoid a combination of methods. Airless spray gives the best appearance and gloss.

For over-coating aged **Si-COAT® 570™**, ensure all contamination such as dust, grease, oils, salts , fumes etc. are removed before applying a new coat.

Use only approved thinners, the use of alternatives may interfere with curing of the coating. Do not apply to substrate temperatures below 41°F (5°C).

When applying the product in confined spaces, ensure adequate ventilation and/or respiratory protection. Consult the **Si-COAT® 570™** SDS for further details. Condensation occurring during or immediately after application may produce a matte finish.

Si-COAT® 570™ has excellent tolerance to airborne chemicals exposure, but where severe chemical or solvent splashing/pooling is likely to occur, please consult CSL Silicones Inc. for more information regarding suitability.

SAFETY PRECAUTIONS

This product is intended for use only by professional applicators in industrial situations in accordance with the advice given in this document, the **Si-COAT® 570™** Safety Data Sheet (SDS) and the container(s), and should not be used without reference to the SDS that CSL Silicones Inc. has provided to its customers.

All work involving the application and use of this product should be performed in compliance with all relevant national, Health, Safety & Environmental standards & regulations.

In the event welding or flame cutting is performed on metal coated with this product, dust and fumes may be emitted that will require the use of appropriate personal protective equipment and adequate local exhaust ventilation.

If in doubt regarding the suitability of use of this product, consult CSL Silicones Inc. for further advice.

PACKAGING*

Size (unit)	Product Volume	Net Weight	Shipping Weight
1 US gal	1.0 US gal (3.8 L)	9.5 lb (4.3 kg)	11.1 lb (5.0 kg)
2.5 US gal	2.5 US gal (9.5 L)	23.6 lb (10.7 kg)	26.5 lb (12.0 kg)
5 US gal	5.0 US gal (18.9 L)	46.3 lb (21.0 kg)	50.7 lb (23.0 kg)

**For availability of other package sizes, please contact CSL Silicones Inc.*

STORAGE

Shelf Life: 12 months from date of manufacture in the original unopened container below 90°F (32°C). Subject to re-inspection thereafter. Store in dry, shaded conditions away from sources of heat or ignition.

If your country or region experience high temperatures, CSL strongly recommends storing the coating material in an air-conditioned dry area, away from sources of heat or ignition, preferably below 73°F (23°C).

Technical Data Sheet

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