



TESLAN® 1101 (ISO 20340)

ZN-CNT LOW VOC EPOXY PRIMER

Product Description

TESLAN® 1101 ZN-CNT LOW VOC EPOXY PRIMER is a solvent-based, two-component, Zinc/CNT epoxy-polyamide primer designed for the protection of steel in offshore environments per ISO 20340. This product incorporates carbon nanotubes (CNTs) together with sacrificial zinc dust for enhanced durability and maximized corrosion inhibition. TESLAN® 1101 ZN-CNT LOW VOC EPOXY PRIMER can be directly top-coated without the use of an intermediate coating. Use this product only in conjunction with recommended TESLAN® topcoat systems.

Recommended Uses

For primary use directly on cleaned and blasted steel surfaces exposed to offshore environments of corrosivity category C5-M (ISO 20340). Project applications include:

- Offshore Platforms and Related Structures
- Ships and Barges
- Locks and Dams

Product Characteristics (mixed)

Finish:	Mid-Gloss
Color:	Gray
Volume Solids:	64 ± 2% (unreduced) 62± 2% @ 5% reduction 60 ± 2% @10% reduction
Weight Solids:	86 ± 2% (unreduced)
Zn Content:	75% by Weight in Dry Film
Mix Ratio:	4:1 by Volume (Parts A: Parts B)
Wet Density:	18.9 lbs/gal (2.3 kg/l) (unreduced)
Dry Film Density:	25.3 lbs/gal (3.0 kg/l)
Pot Life:	2 hrs @ 100°F/38°C 4 hrs @ 77°F/25°C 6 hrs @ 50°F/10°C
VOC:	1.9 lbs/gal (228 g/l) (unreduced) 1.9 lbs/gal (228 g/l) @ 5% reduction* 2.0 lbs/gal (240 g/l) @10% reduction*
Viscosity @77°F(25C):	91 Krebs Units (unreduced)
Sweat-in-Time:	Not Required

*with TESLAN® 0901 Type II Low VOC Epoxy Reducer

Application Guidelines

This product is designed for application directly to properly cleaned and/or blasted steel substrates using conventional air-spray and airless-spray techniques. Brush application is recommended for small areas and for stripe coating. This product can also be used over aluminum, plated metals, stainless steel and concrete. For application over existing coatings (in sound condition), contact Tesla NanoCoatings technical service for application recommendations.

Recommended Film Thicknesses (unreduced)

For 2 coat system with total Nominal Dry Film Thickness (NDFT) of ≥ 11 mils (275 microns) per ISO 20340 C5-M (Zn (R)):

	Min.	Max.
Wet mils (microns) per coat	13 (325)	19 (475)
Dry mils (microns) per coat	8 (200)	12 (300)
Coverage in sq ft/gal (m²/l)	86 (2.1)	129 (3.2)

For 3 coat system with total Nominal Dry Film Thickness (NDFT) of ≥ 11 mils (275 microns) per ISO 20340 C5-M (Zn (R)):

	Min.	Max.
Wet mils (microns) per coat	9 (225)	16 (400)
Dry mils (microns) per coat	6 (150)	10 (250)
Coverage in sq ft/gal (m²/l)	103 (2.5)	172 (4.2)

Coverage in sq ft/gal (m²/l) per dry mil (25 microns): 1034 (25.3)

If reduced more than 5%, do not exceed dry film thickness of 10 mils/250 microns (15 mils/375 microns wet) in single coats.

Drying Schedule @ 10 mils wet (250 microns)

	@50°F(10°C)**	@77°F(25C)**	@100F(38C)**
To Touch:	8 hrs	4 hrs	2 hrs
To Handle:	24 hrs	10 hrs	4 hrs
To Recoat w/ Epoxy:			
minimum:	1 hrs	0.5 hrs	0.5 hrs
maximum:	6 months	6 months	6 months
To Recoat w/ Urethane			
minimum:	24 hrs	16 hrs	16 hrs
maximum:	6 months	6 months	6 months
To cure:	10 days	7 days	7 days

**50% RH

If maximum recoat time is exceeded, abrade surface and power wash before recoating. Drying time is temperature, humidity, and film thickness dependent.

Temperature/Humidity Requirements**(air, surface, material)**

Minimum: 50°F (10°C), 40% RH
 Maximum: 100°F (38°C), 90% RH

The surface should be dry and at least 5°F (3°C) above the dew point.

Surface Preparation

This product is designed for direct application to bare metal substrates. For application over an existing coating, contact Tesla NanoCoatings technical service for recommendations. All surfaces should be clean, dry and in sound condition.

Minimum Surface Preparation Requirements:**Steel**

Severe Exposure SSPC: SP10 Near-White Metal
 NACE: No.2
 ISO8501-1: Sa 2.5
 SIS055900: Sa 2.5
 Surface Profile: 2-4 mil (50-100 micron)

Moderate Exposure SSPC: SP6 Commercial Blast
 NACE: No. 3
 ISO8501-1: Sa 2
 SIS055900: Sa 2
 Surface Profile: 2-4 mil (50-100 micron)

Galvanized/Plated Metals, Aluminum, Stainless Steel

Severe Exposure SSPC: SP7 Brush-Off Blast
 NACE: No. 4
 ISO8501-1: Sa 1
 SIS055900: Sa 1

Moderate Exposure SSPC: SP3 Power Tool Clean
 NACE: not applicable
 ISO8501-1: St 3
 SIS055900: St 3

Weathered Organic Zinc Rich Primers

Sweep blast surface followed by power washing. Allow surface to completely dry before proceeding. Contact Tesla NanoCoatings technical service for application over other types of coatings.

Mixing Procedures & Thinning Recommendations

Use an air-driven power mixer and keep material under agitation (as needed to prevent settling or separation) while applying this product. Slowly mix 4-parts component A with 1-part component B by volume. Adjust mixer speed as needed to thoroughly blend the two components. Part A is a highly thixotropic material (may have a semi-solid appearance) which will become fluid upon agitation and when mixed with Part B. Strain through a 35 to 60 mesh (310 to 681 microns) screen before using. For extended spray application sessions, keep under low RPM agitation to prevent settling. For brush application, stir occasionally to prevent settling.

Do not use mixed material beyond pot life limits.

Do not mix previous catalyzed material with freshly prepared material.

If needed, thin material up to 10% by volume using **only TESLAN® 0900 Type I Epoxy Reducer or TESLAN® 0901 Type II Low VOC Epoxy Reducer.**

Product Application & Equipment Recommendations

For optimum protection, stripe coat all crevices, welds, and sharp angles by brush application. Use a medium bristle brush and avoid re-brushing.

Airless Spray

Pressure: 2400-4000 psi (165-275 bar)
 Hose: 1/4 or 3/8 inches (6.4 or 9.5 mm)
 Tip: 0.017-0.021 inches (430-535microns)
 Filter: 60 mesh (250 microns)
 Reduction: As needed up to 10% by volume
 Equipment: Graco or similar

Conventional Air-Spray

Pressure: 40-50 psi (2.8-3.4 bar)
 Hose: 3/8 inches (9.5 mm)
 Tip: E
 Filter: None
 Reduction: As needed up to 10% by volume
 Equipment: Graco or similar

Roller application is acceptable

Cleanup

Immediately clean and flush all equipment with TESLAN® Epoxy Reducers or other solvents compatible with solvent based epoxy coatings (MEK, xylene, etc.)

Recommended Intermediate/Topcoat Systems

For moderate UV/weathering resistance

Optional TESLAN® 2XXX Epoxy Intermediates
 TESLAN® 3XXX Epoxy Topcoats

For highest UV/weathering resistance

Optional TESLAN® 2XXX Epoxy Intermediates
 TESLAN® 4XXX Urethane Topcoats

Safety/Storage/Disposal

Refer to Safety Data Sheets (SDS) before use.

Shelf Life (Parts A and B): 24 months, unopened (under recommended conditions). Store indoors at 40°F (5°C) to 100°F (38°C).

Dispose of unused material following all laws and regulations.

Disclaimer and Warranty

Tesla NanoCoatings Inc warrants only that its coatings represented herein meet the formulation standards of Tesla NanoCoatings Inc. Technical and application information herein is provided for the purpose of providing general properties of the coating and recommended coating application procedures. As application and environmental factors can vary significantly, due care should be exercised in the selection and use of this and any coating system.