Nano-Clear NCI for Industrial Applications - TDS




High Gloss - Polyurethane Hybrid Clear

Nano-Clear® NCI is the only industrial coating in the global marketplace to enhance, restore, and extend the service life of "freshly" painted or "oxidized" painted surfaces by 10 years. Nano-Clear dramatically improves corrosion resistance, scratch, abrasion, chemical & UV resistance. Nano-Clear penetrates deep into the pores of painted surfaces to enhance color, improve gloss, dramatically improve surface hardness and extend UV resistance. Nano-Clear is a one-component humidity cured / highly cross-linked / hybrid polyurethane nanocoating.

Nano-Clear® 1K physical properties are far superior to leading 2K & 3K industrial coatings like Imron®.

APPLICATION USES

Provides an extreme hardness and high gloss clear coating over freshly painted or highly oxidized paint surfaces including 2K epoxies *(2K = two-component)*, 2K polyurethanes, 2K topcoatings, powder coatings, anodized aluminum and sanded fibeglass.

Application Potential: Oil & Gas Tankers, Oil & Gas Pipelines, Exterior Pipelines, Lifeboats, Cargo Ships, Epoxy Floors, Bridges, Painted Building Structures, Railway Tank Cars, Chemical Tanks, Heavy Duty Equipment, Anodized Aluminum, Transformers...

- One-component formulation - save on labor and preparation time.
- High surface area coverage (1,000 sq. ft. / gal. or 93 m² / 3.8L).
- Extends in-service life of newly painted or highly oxidized painted surfaces.
- Restores original color, gloss, surface hardness and extreme UV resistance.
- High scratch resistance (4H pencil hardness).
- Extreme chemical resistance (>1500 MEK rubs).
- Extreme weathering resistance (98-100% gloss retention).

PAINT / MATERIAL COMPATIBILITY

- Designed to be applied over "freshly" painted 2K epoxies, 2K polyurethanes, powder coatings, sanded fiberglass and anodized aluminum.
- Designed to be applied over "oxidized" painted 2K epoxies, 2K polyurethanes, powder coatings, sanded fiberglass and anodized aluminum.

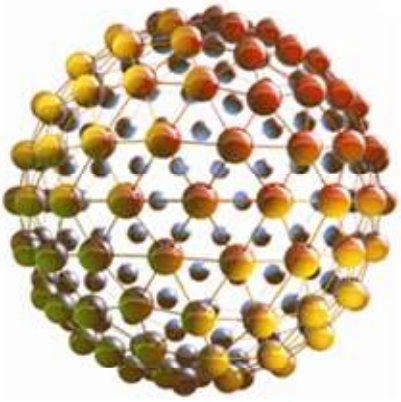
APPLICATION CONDITIONS

Temperature: 40°F (4°C) to 90°F (32°C)
Relative Humidity: 20% to 80%

PHYSICAL PROPERTIES

Polymer Chemistry: Nanostructured Polyurethane Hybrid
Mixing Ratio: No mixing required
Recommended Dry Film Thickness: 1.00 - 2.00 mil (25 - 50 µm)
Pencil Hardness - ASTM D3363: 4H
Pendulum Hardness (Persoz) - ASTM D4366: 220
Abrasion Resistance - ASTM D4060: 8.4 mg loss
Impact Strength - ASTM D2794: > 140
Water Immersion Test - ISO 2812-2: Pass
QUV Resistance - ASTM D4587: 99%
Xenon WOM - ASTM G155: 99%
MEK Resistance - ASTM D4752: >1500
Salt Spray - ASTM B-117: 4000 hrs. no rust, no blisters
DMA – Crosslink Density - (X103 mol/m3): 2.17
VOC (less exempts): 1.25 lbs. / gal. or 156 g / L
Viscosity: 200 cps

NANO-CLEAR 3D POLYMER



APPLICATION INFORMATION

Consult SDS for proper handling, cleanup, disposal, and use of personal protective equipment. Circulate sufficient air to maintain working environment below the PEL and LEL. Apply according to local, state, and federal (OSHA) regulations.

- Ambient temperature: 40°F (4°C) to 90°F (32°C)
- Relative Humidity: 20% to 80%
- Metal temperature: 40°F (4°C) to 90°F (32°C)
- Metal temperature: At least 5°F (-5°C) above the dew point
- Material temperature: 40°F (4°C) to 90°F (32°C)

SURFACE PREPARATION

Freshly Painted / Wet Painted Surfaces:

- Apply directly over two-component epoxies, two-component polyurethanes, two-component topcoatings & powder coatings.
- Allow solvents to fully evaporate-out from the underlying paint prior to the application of Nano-Clear NCI.

Glossy Cured Surfaces:

- Sand using 400 grit orbital sander, then solvent clean using paint thinner to remove excess debris.

Oxidized Painted Surfaces:

- Repair any structural damage (rust or chipping) using two-component epoxy primer (Macropoxy 646).
- Oxidized "**Non-Waxed**" Paint "**MUST**" be thoroughly cleaned using **SuperClean Degreaser;** water rinse & dry.
- Oxidixed "**Waxed**" Paint "**MUST**" be sanded using 400 grit paper with orbital sander; solvent clean & dry.

RECOMMENDED FILM BUILD

- Number of spray coats: Apply 2 - 3 wet coats with 5 - 10 min. between wet coats to allow for solvent evaporation.
- Avoid recoating additional coats after 20 min. as flow and leveling will be negatively effected.
- Recommended (Wet Film Thickness WFT): 2 - 3 mil per each wet coat.
- Recommended (Dry Film Thickness DFT): 1.5 – 2.50 mil depending on surface properties desired.

Nano-Clear NCI Over Oxidized Paint:

- One wet coat of Nano-Clear will "**Enhance**" and enhance the underlying paint color.
- Apply **2** - **3** wet coats @ 2 - 3 mils per each wet coat to "**Fill & Fortify**" the oxidized paint layer for long-term surface protection.
- **The number of wet coats required should be determined by the overall gloss level 5 min. after application:**
  - * High gloss = Good film build
  - * Low Gloss = Low film build (*recommend applying another wet coat to increase gloss and improve properties*).

Nano-Clear NCI Over Fresh Paint:

- One wet coat of Nano-Clear NCI will "**Fill**" the underlying paint pore layer.
- Apply **2** - **3** wet coats @ 2 - 3 mils per each wet coat to "**Fill & Fortify**" the paint layer for long-term surface protection.
- **The number of wet coats required should be determined by the overall gloss level 5 min. after application:**
  - * High gloss = Good film build
  - * Low Gloss = Low film build (*recommend applying another wet coat to increase gloss and improve properties*).

Solvent Flash: Allow 5 to 10 min. between wet coats at 72°F (22°C) to allow for solvent evaporation.

THINNING

- No thinner is required as Nano-Clear has very low viscosity.

EQUIPMENT CLEAN-UP

- Clean equipment immediately after using Acetone or MEK. Never clean spray equipment with water or alcohol.

CURE TIME @ 72°F (22°C), 50% R.H.

Dust free:	~ 20-30 minutes
Tack free:	~ 30-40 minutes
Handle:	~ 4 hours
Dry Hard:	24 hours @ 72°F (22°C)

* Lower temperatures and lower humidity conditions will slow-down the curing rate.
* Higher temperatures and higher humidity conditions will speed-up the curing rate.

SURFACE COVERAGE PER GALLON

1000 ft² / gal @ .50 mil DFT or 93 m² / 3.8L @ .50 mil DFT

WEIGHT PER GALLON:

8.0 lbs (3.63 kg)

PACKAGING

1 gal (3.8L), 5 gal (19L), 55 gal (208L)

SHIPPING WEIGHT

1 gal container - 8 lbs (3.63 kg)
5 gal container - 40 lbs (18.14 kg)
55 gal container - 440 lbs (200 kg)

SHELF LIFE & STORAGE

- Storage temperatures must be dry and between 40°F (4°C) and 72°F (22°C). Higher temps will decrease shelf-life.
- Shelf life - 6 months un-opened when stored at temperatures between 40°F (4°C) and 72°F (22°C).
- Shelf life opened: 2 weeks.
- Container must be closed immediately after use to avoid moisture contamination.
- Do not leave container open for extended periods to avoid moisture contamination. Discard contents if liquid turns white or gels.

SAFETY INSTRUCTIONS

Consult Nano-Clear NCI Safety Data Sheet prior to use.

APPLICATION EQUIPMENT

- Apply using HVLP, Conventional or Airless spray equipment.
- Nano-Clear may be applied using a "wipe-on" technique using 9 in. "Shur-Line Deck Painter Pad" (HomeDepot).
- Streaking or high spots may occur using a "wipe-on" technique. Avoid high spots by smooting surface while wet.

AIR SPRAY EQUIPMENT

Spray Gun: HVLP or LVLP (SATA, Devilbiss or Iwata)
Fluid Tip: 1.3, 1.4 or 1.5 mm
Fan Pattern: Full
Fluid Control: 2 1/2 turns out
Spray Pattern: 50% overlap
Pressure at Gun: 29 - 30 PSI

AIRLESS SPRAY EQUIPMENT

Tip Size: Graco 519 or 619 spray tip
Pump: 30:1 or 40:1
Pump Pressure: 800 psi

BUFFING & POLISHING (if needed)

- **Equipment:** Orbital sander and orbital polishing equipment.
- **Sand Paper:** 800 grit paper, then 1000, then 1500, then 2000 grit paper.
- **Compound:** Heavy cut compound with wool pad @ 1,200 to 1,400 RPM.
- **Polishing:** 3M SRC (scratch resistant clears) polishing paste with wool @ 1,200 to 1,400 RPM.
- **Final Polish:** Use light to medium cut polishing past with wool pad @ 1,200 to 1,400 RPM.

SURFACE MAINTENANCE / CLEANING

- Use low pH soap and water for clean-up.
- Use lint-free microfiber cloths to clean and dry surfaces.
- Use paint thinner to remove graffiti.

IMPORTANT COMMENTS

1. Use dedicated spray lines and equipment for the best results. Clean equipment immediately after use using paint thinner or acetone. Avoid contact with skin and hair as Nano-Clear will adhere like super-glue.
2. Avoid recoating after 20 minutes as flow and leveling will be effected.
3. Nano-Clear is a moisture sensitive system. It is important to close containers immediately after use to avoid moisture contamination.

Nano-Clear Application Recommendations:

Nano-Clear is a unique one-component clear coating with remarkable physical properties. The application of Nano-Clear is very important to achieve these desired outlined physical properties. The substrate type (material composition) and surface preparation is critically important prior to considering the application of Nano-Clear Coatings. The application parameters of Nano-Clear are just as or even more important than achieving the desired physical properties.

Important: *Nano-Clear + Poor Adhesion = Failure. Nano-Clear + Excellent Adhesion = 10 Year Warranty.*

Application Environment:
Nano-Clear was developed to cure or crosslink in the presence of humidity. As a general rule, higher humidity results in a faster cure cycle. Lower humidity results in a slower cure cycle. Higher humidity may reduce flow and leveling of Nano-Clear. One way to improve flow and leveling is to reduce the wet-on-wet recoat time to 2-3 minutes (vs. 5-10). Conversely, lower humidity positively affects the flow and leveling of Nano-Clear.

It is important to spray Nano-Clear is a dust-free environment as to avoid surface contamination. Appropriate ventilation, approved respirator, protective clothing and rubber gloves are required to apply Nano-Clear.

Package Stability:
Nano-Clear is sensitive to moisture contamination. It is very important to quickly close the gallon, pail or drum container immediately after opening. Do not leave the container cap open for extended periods, which will allow solvents to evaporate and crosslinking to begin. ***Moisture contamination or storage at high temps will cause gelation within the container.***

It is "not" recommended to repackage Nano-Clear in smaller containers without first consulting Nanovere for application instructions including package material type (*un-lined aluminum bottle or Baritainer® only*) and nitrogen gas blanketing.

Substrate Consideration:
Nano-Clear is designed to adhere directly to cleaned - highly oxidized or newly painted steel surfaces including epoxy, polyester, polyurethane, latex and powder coatings. Nano-Clear will also adhere directly to sanded fiberglass, sanded gelcoat, un-coated stone pavers and epoxy coated cement.

Nano-Clear will "not" adhere directly to bare aluminum, steel, rust, stainless steel or chrome unless surface treated or primed. Nano-Clear has been shown to adhere directly to these substrates with a phosphoric acid surface treatment. Testing will be required to ensure proper adhesion with any surface treatment.

Surface Preparation:
Nano-Clear is designed to be a permanent coating with proper surface preparation. Nano-Clear will "not" adhere to a surface with oil, grease, silicone, wax or fluorination present. It is important to remove surface contaminants using an effective degreaser like "SuperClean" (sodium hydroxide based cleaner) + Water + Dry. Solvents like acetone, MEK and paint thinner are also effective at removing surface contaminants.

Oxidized Paint Surfaces: See above surface preparation / cleaning process. One to Two wet-coats are recommended depending on desired gloss level and surface hardness. One wet-coat will enhance color and slightly improve gloss. Two-wet coats with 3-5 min. between wet coats will enhance color, gloss, surface hardness and UV resistance.

Glossy Surfaces: Nano-Clear will adhere to highly glossy painted surfaces when first treated with 400 grit sand paper, then solvent cleaned to remove surface contaminants. One to Two wet-coats are recommended.

Fresh / New Paint: Nano-Clear will adhere directly to fresh primer, basecoat or topcoats systems using a wet-on-wet application process. It is important to first allow all of the solvents to escape these systems prior to the application of Nano-Clear Coatings. Nano-Clear can be applied to primer, basecoat or topcoat systems using two - three wet coats with 3-5 minutes between Nano-Clear wet coats to allow for solvent evaporation.