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POLYMER NATION CHEMICAL COMPANY, LLC

Setting the Standard

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TECHNICAL DATA SHEET: U-51 GLOSS

Product Overview

U-51 is a non-yellowing, single-component, aliphatic moisture cure urethane (MCU) coating with excellent wear, stain resistance and adhesion properties. When used as a topcoat over conventional coatings, U-51 provides excellent chemical resistance and dramatically improved abrasion resistance. U-51 is available in a gloss finish.

Uses and Benefits

U-51 is primarily used as a clear topcoat due to its outstanding UV, stain, mar and abrasion resistance. It can be applied to floors and walls and adheres well to many substrates including concrete, gypsum, cement board, metals, vinyl, PVC and fiberglass. It can also be applied direct to concrete as a sealer and topcoat.

Limitations

U-51 is designed to be applied at 3-4 mils as a top coat on floors and walls. Allowing to puddle will have a negative effect on the finish. Ideal application temperatures to be between 60-90°F. Cooler temperatures will increase cure times. Warmer temperatures will decrease working and cure times. Higher RH will shorten dry time. Verify that substrate temperature is 5 degrees above the dewpoint during application and cure of material to avoid a potential blush or condensation.

Surface Preparation

The preparation method for each project is determined by a full understanding of the substrate to be coated, the chemistry of the coating system being used, the coating system thickness, and numerous other factors. The coating installer should fully read and understand ICRI Guideline NO. 310.2R-2013 and OSHA 29 CFR 1926.1153 before starting preparatory work. The aim, of preparing a substrate for coating applications, is to roughen the surface, remove weak layers, contaminants, dirt, debris and present a solid, clean, dry substrate for the primer. If unsure as to the level of preparation needed contact Polymer Nation at Lab@polymerNation.com.

Note: Before applying U-51 Gloss, PN recommends thoroughly sanding the epoxy or polyaspartic basecoat with 120 grit sandpaper.

Application

Material should be bucket rolled out of an 18” roller pan with a high-quality, shed-resistant 1/4" or 3/8” nap roller to 3-4 mils (400-500 SF/PG) in a “W” pattern to evenly spread the material. A finish back-roll in the opposite direction should be completed to ensure the material is free of roller lines and delivered at a consistent spread rate. If desired, to assist in application and leveling, 3-5% xylene may be added. For a non-skid finish, add 150 grams per 1 gallon kit of PN 1337-8 S (1-10 oz cup struck off at the top) or 1 lb. of PN 1335-1 AO and mix well into the gallon of U-51. The roller should be run through the pan regularly to ensure the non-skid remains evenly distributed. **Recoat within 12-24 hours.** If U-51 is to be top-coated, it is critical that it is sanded and abraded extremely well to achieve a surface contact angle of <50 degrees. U-51 is an extremely abrasion-resistant topcoat, and it must be abraded thoroughly. Clean tools with a solvent similar to Xylene or Acetone.

Technical Data

The data below was gathered at temperatures of 72-75°F and 30-50% RH

Packaging	1 Gallon kit
Mix Ratio by Volume	See **Accelerator** section below
Mixed Viscosity	250-400 cP 25°C/77°F
Work Time	45-60 minutes
Dry to Touch	5 hours
Through Dry	7-8 hours
Dry to Walk	12-16 hours
Dry to Light Use	24 hours
Full Cure	7 days
Pendulum Hardness (König)	40 @ 24 hours
Pendulum Hardness (König)	65 @ 7 days
Gloss @ 60 Degree Angle	>90
VOC’s of Mixed Material	<50 g/l EPA Method 24
Color Scale	0.5-1.0 per ASTM D1500
Solids by Volume Mixed	>98%
Application in Mils	3-4 (400-500 sq.ft./gal.)
Available Colors	Clear and Color Packs

Accelerator

In applications where humidity is low, or where quicker return to service is desired, U-51 Accelerator may be used to speed up the cure of U-51. The following mix ratios are recommended in the given humidity ranges:

Relative Humidity (RH)	Mix ratio	Notes
>40%	See Notes	U-51 will cure sufficiently even ***without*** accelerator in these RH ranges; the accelerator should **only** be used when quicker return to service is desired.
20-40%	8:1	U-51 will cure sufficiently even ***without*** accelerator in these RH ranges; the accelerator should **only** be used when quicker return to service is desired.
<20%	4:1	U-51 will cure sufficiently even ***without*** accelerator in these RH ranges; the accelerator should **only** be used when quicker return to service is desired.

Notes:

- Once U-51 accelerator has been added, the product is no longer shelf-life stable. Add and mix only what is needed at the time of application.
- Once U-51 accelerator has been added, the impact on pot life is minimal within the first 30-45 minutes.
- To obtain accurate relative humidity readings, it is recommended to use a calibrated digital psychrometer, or at minimum, a humidity monitor

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Aggregate/Anti-Slip

Polymer Nation recommends adding anti-slip aggregate into U-51 Gloss before application. 100 grit Aluminum Oxide (1 lb. PN 1335-1/gal. U-51) is a common anti-slip additive used with U-51.

Some other options include:

- PN 1336 B – blend of 240/150 grit Aluminum Oxide
- PN 1337-8 L,M,S – Polycarbonate anti-slip aggregate (L – 20/40, M – 40/60, S – 60/100)

Color Packs

U-51 Gloss can be pigmented in the field with Polymer Nation's universal color packs.
The amount of color pack to be added is as follows:

- 1 gal. U-51 : 8 oz. universal color pack

- Add and mix the colorant thoroughly into U-51 before application.
- Once the colorant has been added, the product is no longer shelf-life stable (24 hours maximum).
- Add only the colorant that is needed for the immediate application.

Application Tips:

- Polymer Nation recommends using a dip and roll application method when colorant has been added.
- Do **not** pour a puddle or ribbon and then spread.
- Once pigmented U-51 has been applied, it has been observed that a backroll with a dry, unused roller sleeve is beneficial to eliminating any roller lines that may appear after initial application.

Tires

If vehicles or equipment with rubber tires will be parked or stored over U-51 Gloss, PN recommends allowing the U-51 to cure for a **minimum** of **72-96 hours** at ambient conditions (above 70° F/30% RH) before moving the aforementioned vehicle or equipment in place.
Also, *well before application*, Polymer Nation recommends placing a test panel coated with the appropriate U-51 product underneath the tire for an extended amount of time (1-4 weeks) to determine if contact of the tire with U-51 will be deleterious in any way.

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Polymer Nation cannot ensure that U-51 will not be affected by every make, model, and composition of tire that U-51 may come in contact with.

PHYSICAL PROPERTIES
U-51 GLOSS

Description	Standard	Results
Tensile Strength	ASTM C307	2,380 psi
Moisture Absorption	ASTM C413	<.17 weight increase
Coefficient of Thermal Lineal Expansion	ASTM C531	N/A
Compressive Strength	ASTM C579	N/A
Modulus of Elasticity	ASTM C580	N/A
Flexural Strength	ASTM C580	3,550 psi
Water Vapor Transmission	ASTM D1653	See ASTM D3010
Impact Resistance	ASTM D2794	>160 inch pounds
Independent Certificate from third party testing agency	ASTM D3010	N/A
Adhesion	ASTM D3359	5A
Abrasion Resistance CS17 1000 g 1000 cycles in g Loss	ASTM D4060	0.014 g Loss (when higher abrasion resistance is required the addition of PC 1336 to the coating should be included)
Adhesion to Steel	ASTM D4541	>1,000 psi
Hiding Power	ASTM D5150	N/A
Flammability When Adhered to Concrete	ASTM D635	Self-Extinguishing
Adhesion to Concrete	ASTM D7234	>450 psi Substrate failure
Coefficient of Friction Dry Ave. three tests	NFSI B101.0	0.72
Coefficient of Friction Wet Ave. three tests	NFSI B101.1	0.67
Accelerated Weathering Testing	ASTM G154	Non-yellowing

* Dispose of material, containers, solvents, etc., per Federal, State and local guideline, rules and laws
* Store material between 60-80 degrees F in a protected dry location.

Test data has been gathered from testing conducted by independent, internal and third-party testing. The best way to compare coating performance is by head-to-head independent testing as this removes the numerous variables found between testing standards, equipment and testing agencies.

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