



product
information

6400 / 340HP SERIES
HIGH SOLIDS POLYURETHANE

Cardinal's 6400 series catalyzed with 340HP is a high-solids aliphatic two-component polyurethane coating. This coating is well suited for exterior applications on both metal and plastic. The 6400 Series was formulated to meet strict air quality regulations, while maintaining the application and performance benefits of a conventional polyurethane coating. Cardinal's 6400 series high solids polyurethane coating is available in a full selection of color and gloss, including metallic, cardtex finish and clear.

TYPICAL USES:

- Top coat for decorative and protective use on metal and plastic
- General metal finishing
- Electronic enclosures
- Trailers and vehicles
- Machinery

BENEFITS:

- Low VOC – 2.8 lbs/gal
- Very high gloss
- Excellent chemical and solvent resistance
- UL approved (phosphatized steel electronics enclosures)
- Available in a complete range of colors, glosses, textures and cardtex finishes
- RoHS / WEEE compliant

CURED FILM PROPERTIES:

Testing conducted on 6409-10 gloss white catalyzed with 340HP at 1.5 mils DFT (Dry Film Thickness) over 20 gauge Bonderite 1000® test panels, cured 30 minutes at 180°F and air dried 14 days.

TEST	METHOD	PARAMETERS	RESULT
Adhesion	ASTM D3359	Cross-hatch tape	0% failure
Impact:	ASTM D2794	Direct Reverse	130 in. lbs. 60 in. lbs
Flexibility:	ASTM D1737	1/8" mandrel	No cracking
Hardness	ASTM D3363	Pencil	H - 2H
Abrasion	ASTM D4060	CS-17 wheels, 1 kg, 1000 cycles	Less than 100 mg loss
Humidity	ASTM D2247	168 hrs	No effect
Salt Spray	ASTM B117	1000 hrs 95°, 5% salt solution	Less than 3/16" creep - along scribe, otherwise, no effect
UV Light	ASTM G53	1000 hrs	90.3% gloss retention
Solvent Resistance	ASTM D4752	MEK 100 rubs IPA 200 rubs	No effect No effect
Chemical & Stain Resistance	ASTM D1308 30 min. spot	A – 0.1N HCl, 30 wt. motor oil, ammonia, butyl carbitol, butyl cellosolve, Cascade®, Clorox®, Coca Cola®, coffee, diethyl ether, Drano®, Fantastic®, fiber pen ink, floor stripper, gasoline, IPA, Ivory® Liquid, lanolin lotion, lemon juice, Snap®, Spic & Span®, tap water, vegetable oil, water base ink, WD-40®. B – ball point pen ink, carbon disulfide, correction fluid, Freon TF®, MEK, nail polish. C – chloroform. D – solvent base ink.	A: No effect B: Slight dulling C: Moderate effect D: Discolored & softened

**FOR INDUSTRIAL USE ONLY
NOT FOR RESIDENTIAL USE**

TYPE: Aliphatic polyester polyurethane.

COMPONENTS: Two.

COLORS: Full range including metallics.

GLOSS: High, semi and flat.

COVERAGE: At 1.0 mil DFT, 65% transfer efficiency(TE)

Mixed paint, 2.8 lbs/gal : 620 ft²/gal.

Mixed paint, 3.5 lbs/gal : 520 ft²/gal.

Calculation: 1604 ft²/gal x % volume solids x TE ÷ DFT

VOC MIXED: 340 grams/liter = 2.8 lbs/gal minimum.
420 grams/liter = 3.5 lbs/gal minimum.

See mix ratio table below.

VOLUME SOLIDS:

6400 gloss base 53%

340HP 87%

Mixed to 2.8 lbs/gal 60%

Mixed to 3.5 lbs/gal 49%

FLASH POINT: 24°F TCC

SHELF LIFE: 1 year from date of manufacture in factory sealed container.

APPLICATION: After preparing the surface, thoroughly mix component 1 before adding catalyst. Mix only the amount of material needed. The base to catalyst proportion must be measured accurately, by volume only, to obtain optimum film properties. Do not use reducers that contain water or alcohol; these react with the catalyst and can cause a variety of problems. Be aware of spray-able pot life. Brushing, rolling and dipping are not recommended.

APPLICATION CONDITIONS:

- Temperature – Apply coating within 55-100 F.
- Relative Humidity – Not recommended to apply in conditions greater than 85%.
- Substrate temperature – 5° above the dew point and a minimum of 55° F.

If coating is not applied within these conditions then the cured coating properties may not be representative.

MIX RATIOS: Two components must be mixed properly to obtain coating performance. Thinning depends on applicator's regulatory VOC limits.

Parts are by volume	COLORS GLOSS	COLORS SEMI GLOSS	CLEAR ALL GLOSS
6400 base	4	5	4
340HP catalyst	1	1	1
1600-0# reducer for 340 gms/l	0	1/2	N/A
for 420 gms/l	1	1-1/2	1

VISCOSITY: Will vary depending on color and gloss at a given VOC. At 2.8 lbs/gal, most semi gloss colors will be in the 25"-30" #3 Zahn range. At 3.5 lbs/gal, 28"-32" #2 Zahn can be expected for most colors.

SPRAY-able Pot Life: 2-3 hrs. at 2.8 lbs. VOC/gal
4-5 hrs. at 3.5 lbs. VOC/gal

Note: If material is accelerated the actual pot life may vary depending on amount added.

RECOMMENDED DFT: 1.5 – 2.5 mils (depending on color)

CURE:

	<u>Air Dry</u>	<u>Force Dry *</u>
Tack free	2 hrs.	1 hr at 120° F
Dry to handle	24 hrs.	30 min at 140° F
Dry hard	72 hrs.	15 min at 180° F
	(At 1.5 mils dry film thickness, 78° F, 50% RH)	

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NO WARRANTY EXPRESSED OR IMPLIED, ACCEPTABILITY TO BE DETERMINED BY USER, SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE

SURFACE PREPARATION AND PRIMING: The most important steps in a successful coating process are cleaning, pretreatment and priming. The following is a brief outline of some basics for unpainted substrates. It is not intended to be all-inclusive. For more information on your particular application contact Cardinal.

Cleaning the substrate: All surfaces to be coated, must be free of dirt, grease, oil, oxidation, mill scale, and all other contaminants. The surface must be thoroughly dry before painting. Air quality regulations have limited the allowable emissions from cleaning operations.

Steel — A phosphate chemical conversion coating is highly recommended. When this is not possible, a vinyl acid wash pretreatment primer is recommended such as Cardinal's 4860 series primers. UL approval on our product requires the minimum of a three stage iron phosphate pre-treatment.

Aluminum — A chemical conversion coating is highly recommended. When this is not possible, a vinyl acid wash pretreatment primer is recommended such as Cardinal's 4860 series primers.

Galvanized — Cardinal's W-303-A surface preparation solution helps improve adhesion followed by a vinyl acid wash pretreatment primer such as Cardinal's 4860 series primers.

Stainless Steel — Brush-off or blast clean per SSPC-SP 7 to a uniform profile of 1.5 mils. Cardinal's W-303-A surface preparation solution can help improve adhesion followed by a vinyl acid wash pretreatment primer such as Cardinal's 4860 series primers.

Plastic — All mold release should be completely removed. 6400 series polyurethane is compatible with a variety of plastics, however, since there are numerous different formulations of plastic, a trial sample should be painted and checked before running production. If 6400 attacks or weakens the plastic, a barrier coat of 3777-1 clear waterborne acrylic enamel may help.

PRIMER SELECTION:

PRODUCT NO.	DESCRIPTION	FUNCTION
6460-4702	Polyurethane Gray	Corrosion resistance, some surfacing
7760-4702	Epoxy Gray	Corrosion resistance, chemical resistance
7063-4702	Epoxy Gray	Corrosion resistance, chemical resistance and high build
3777-1	Waterborne Acrylic Clear	Barrier coat for some plastics

RELATED PRODUCTS:

PRODUCT NO.	DESCRIPTION
1600 Series Reducers	Thinners. Urethane grade. 1600-01, fast; 1600-02, medium; 1600-03, slow.
EL-005	Accelerator. Speeds up dry time (and shortens pot life).
J-3081	Surfactant. Helps eliminate blisters, bubbles, pin holes, solvent-pop.
P-5033	Surfactant. Helps eliminate craters and fish-eyes.

TROUBLE SHOOTING:

PROBLEM	CAUSE	REMEDY
Blisters, pin holes or solvent pop	Water contamination. Entrapped air. Entrapped solvent	Eliminate water – Check air lines. Use fresh catalyst. Use urethane grade thinners. Increase atomization, decrease film build.
Craters	Contaminated ambient air, e.g., silicone mist, dust.	Locate and eliminate source of contamination.
Fish-eyes	Substrate contamination.	Clean and prepare substrate.
Not drying	Alcohol in reducer. Wrong catalyst ratio.	Use Cardinal's 1600 series or urethane grade reducers only. Double check mix ratio.
Poor adhesion	Improper surface preparation.	See surface preparation section.
Gloss variation	Variation in application, cure schedule, catalyst ratio, humidity.	Consistent gloss depends upon consistent process.

PRODUCT IDENTIFICATION

6409 - 16473 (example)

Color number

Gloss: 0 = flat; 1 = 10°; 2 = 20° . . . etc.; 70° - 90°+ = high gloss

Special: e.g., 2 = metallic; 3 = cardtex; 4 = texture; 6 = primer; 7 = clear

Product type

* Some Air quality regulations require a maximum temp. of 194° F to qualify as an "air dry" system which generally have higher VOC limits than baking systems.

APPLICATION EQUIPMENT: Most air quality regulations require the paint application transfer efficiency to be 65% or better. This generally means using electrostatic or high volume low pressure (HVLP) spray guns. Otherwise, conventional pressure feed, airless or air assisted airless spray equipment can be used. Air supply lines need water and oil traps.

EQUIPMENT CLEAN-UP: Clean up should be done as soon as possible keeping in mind the pot life of the mixed paint. Avoid leaving catalyzed paint in the lines. Air quality regulations have limited the allowable emissions from cleaning operations.

PRODUCT LIMITATIONS:

- Catalyst reacts with water. Air supply should be dry. Containers should be kept tightly closed. Use urethane grade thinners only.
- Alcohols and glycols interfere with curing chemistry and should be avoided. They can be found in some lacquer thinners and certain synthetic reducers.
- Optimum film properties are dependent upon proper mixing of paint and catalyst.

SAFETY: Refer to the product's Material Safety Data Sheet (MSDS) for complete safety information. Contains organic solvents. Use with adequate ventilation. Do not breathe vapors or spray mists. If component TLVs are exceeded, a NIOSH approved air supplied respirator is advised. See MSDS for TLV information.

Contents are **FLAMMABLE**. Keep from heat, sparks or open flame.

Allergic reactions are possible. Avoid use by persons with respiratory problems.

Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling.

FIRST AID:

Eye contact: flush immediately with plenty of water for at least 15 min. and get medical attention.

Skin contact: wash thoroughly with soap and water for 5 minutes.

If swallowed, do not induce vomiting and get medical attention immediately.

