



product
information

3500 SERIES
WATERBORNE ACRYLIC
HYBRID ENAMEL

Cardinal's 3500 series waterborne acrylic-hybrid low cure enamel is manufactured to meet strict air quality regulations. Although this product will air dry, force dry is recommended to fully develop the physical properties. It can be applied to properly prepared steel, aluminum and plastic substrates. Cardinal's 3500 series contain limited organic co-solvents. Health, safety, fire and environmental risks and liabilities are therefore minimized.

Typical Uses:

- Top coat for decorative and protective use on metal and plastic
- Business machines
- General metal and plastic finishing

Benefits:

- Low VOC content
- Low fire hazard
- Water clean up
- Ready to spray
- RoHS / WEEE Compliant

Cured Film Properties:

Testing conducted on 3503-10 gloss white at 1.5 mils DFT (Dry Film Thickness) over 32 gauge Bonderite 1000® test panel, force dried 30 min. at 180°F then air dried for 14 days.

TEST	METHOD	PARAMETERS	RESULT
Impact:	ASTM D2794	Direct / Reverse	160 in. lbs. (1 in ball)
Flexibility:	ASTM D1737	1/8" mandrel	No cracking
Hardness:	ASTM D3363	Pencil	H
Abrasion:	ASTM D4060	CS-17 wheels, 1kg, 1000 cycles	Less than 75 mg loss
Salt Spray:	ASTM B117	120 hrs. 95° 5% salt solution	No blistering; less than 1/8 inch creepage from scribe
Chemical & Stain Resistance:	ASTM D1308 30 min. spot	A – 0.1N HCl, lemon juice, coffee, Ivory® Liquid dish soap, tap water, Spic & Span®, Superiter Blue Felt Pen, Faber-Castell Ballpen, Lipids (Fatty acids), Corn Oil, WD-40®.	
(plastic substrate)	A: No effect B: Slight dulling C: Moderate effect D: Severe deterioration	B – Ammonia, Fantastic®, Liquid Paper®, mustard. C – 70% Isopropyl Alcohol, D – Methyl Ethyl Ketone, Butyl Cellosolve	

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. The proper preparation of various substrates will require specific attention.

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.

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

Aluminum — A chemical conversion coating is highly recommended. When this is not possible, Cardinal's 4860 pretreatment primer is recommended.

Plastic — All mold release agents should be completely removed. Cardinal's 3500 series low cure enamel is compatible with a variety of plastics, however, since there are numerous formulations of plastic, a trial sample should be painted and tested prior to production.

For more information on your application, contact Cardinal.

FOR INDUSTRIAL USE ONLY
NOT FOR RESIDENTIAL USE

Type: Acrylic –Hybrid Emulsion

Components: One

Colors: Full range including metallics.

Gloss: High 70° @ 60° ∠, semi and flat.

Coverage: At 1 mil DFT

535 ft²/gal at 100% transfer efficiency (TE)

325 ft²/gal at 65% transfer efficiency

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

VOC : (as supplied)

275 grams/liter (2.30 lbs/gal) less water.

125 grams/liter (1.00 lbs/gal) including water.

Volume Solids: 33% - 35%

Flash Point: >212° F TCC

SHELF LIFE: 6 months from date of manufacture in factory sealed container.

Application: See surface preparation and priming section. This material is designed for spray application. Brushing or rolling are not recommended.

Texturing: Apply smooth base coat and air dry 10-15 min. Apply texture by lowering air pressure, to spatter paint on the base coat. The lower the air pressure, the larger the texture.

Thinning: Mix well. If thinning is necessary, use water, 5% - 10% by volume. Avoid over thinning.

Viscosity: 7,000 – 10,000 CPS, Spindle #4, Speed; 20 rpm at 78° F.

Recommended DFT: 1.0 – 2.0 mils

Cure: Force Dry

Air Dry

Flash off 10 – 15 min.

Tack free 15 min.

Bake cycles:

30 min. at 140°F

20 min. at 160°F

10 min. at 180°F

Dry to handle 1 – 1 ½ hr

Full cure 7 – 10 days

(At 1.5 mils dry film thickness, 78° F, 50% RH)

Application Equipment: Electrostatic or high volume low pressure (HVLP) spray guns.

CAUTION: Electrostatic equipment requires proper isolation for waterborne use.

Fluid and air hoses should be a minimum of 3/8" for fluid and 5/16" for air.

EQUIPMENT CLEAN-UP: Warm water. Water should always be used for primary cleaning. If something stronger is needed exempt solvents can be used for secondary cleaning, air quality regulations, in your area may have limited the allowable emissions from cleaning operations.

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

Primer Selection:

PRODUCT NO.	DESCRIPTION	FUNCTION
3660	W/B Primer Surfacer	Some filling properties
3760	W/B Plastic Primer	Adhesion and some filling for plastic.
3860	W/B Anti-corrosion	Corrosion inhibiting

Related Products:

PRODUCT NO.	DESCRIPTION / FUNCTION
SB-11	Slow waterbase co-solvent
SB-09	Medium waterbase co-solvent, coalescing agent
AMON	Raises pH of paint
A-60	Flash rust additive

Trouble Shooting:

PROBLEM	CAUSE	REMEDY
Too thin / low viscosity	Over reduced. pH too low (evaporation from open container).	Contact Cardinal representative
Dry spray	High atmospheric temperature. Over atomization Gun to part distance	Decrease air pressure. Decrease gun to part distance
Flash rusting	Cold and/or humid weather. Cold substrate. Over reduced.	Warm paint and parts to 70° - 80°F. SB-09 at 1 oz./gal may help.
Mudcracking	Over reduced Film build too high.	SB-09 at 1 oz./gal may help. Lower film build.
Craters	Contamination of substrate, application equipment or environment.	Find and eliminate source of contamination.
Poor adhesion	Improper surface preparation. Film too thin to coalesce properly.	See surface preparation section. Increase film build.

Product Limitations:

- AVOID FREEZING — Product contains water.
- Optimum film properties depend on force cure.
- See Cure section

Safety: Contains organic solvents. Use with adequate ventilation - do not breath vapors or spray mists. If component TLVs are exceeded, a NIOSH approved air supplied respirator is advised. See MSDS for TLV information. Keep from heat, sparks or open flame. 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 minutes, seek medical attention.
Skin contact, wash thoroughly with soap and water for 5 minutes.
If swallowed, do not induce vomiting, seek medical attention immediately.
Inhalation, remove to fresh air.

Product Identification

3 5 0 7 - 1 6 4 9 2 (example)
 _____ Color number
 _____ Gloss: 0 = flat; 1 = 10°; 2 = 20° . . . etc.; 70° - 90°+ = high gloss
 _____ Special: eg., 2 = metallic; 3 = hammer; 4 = texture; 6 = primer; 7 = clear
 _____ Product type

G12TL

IMPORTANT: Warranty and Disclaimer — The performance characteristics of these products vary according to product application, operating conditions, materials applied to or with and use. Since these factors can affect results, we strongly recommend that you make your own test to determine to your satisfaction whether the product is of acceptable quality, has not been affected by storage or transport and is suitable for your particular purpose under your own operation conditions prior to using any product in full scale production. Seller warrants the products to be free from defects in materials and workmanship. SUCH WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OF FITNESS FOR A PARTICULAR PURPOSE. No representative of ours has authority to waive or change this provision, which applies to all sales of these products.