

Amerlock® 400 VOC

Amerlock Series

High-solids epoxy coating

Product Data/ Application Instructions

- Low VOC-compliant with SCAQMD Rule 1113
- High-performance general maintenance coating for new or old steel
- Cures through wide temperature range
- Self-priming topcoat over most existing coatings
- Can be overcoated with wide range of topcoats
- Compatible with prepared damp surfaces
- Compatible with adherent rust remaining on prepared surfaces
- 5 mils or more in a single coat
- Resists high humidity and moisture
- Temperature resistance to 450°F on insulated or uninsulated surfaces when mixed with Amercoat 880 glass flake additive

Amerlock's low solvent level meets VOC requirements, reduces the chances for film pinholing and solvent entrapment at the substrate-coating interface, often a major cause of coating failure with conventional epoxies and lower solids systems.

Amerlock 400 is available in a variety of colors, including aluminum, and therefore does not require a topcoat. For extended weatherability or special uses, a topcoat may be desired.

Typical Uses

Amerlock 400 is used in those areas where blasting is impractical or impossible. As a maintenance coating, Amerlock 400 protects steel structures in industrial facilities, bridges, tank exteriors, marine weathering, offshore, oil tanks, piping, roofs, water towers and other exposures. Amerlock 400 VOC has good chemical resistance to splash/spillage, fumes and immersion in neutral, fresh and salt water (see resistance table). Contact your PPG representative for specific information.

Typical Properties

Physical

Abrasion resistance (ASTM D4060)

1 kg load/1000 cycles	weight loss
CS-17 wheel	102 mg

Impact resistance (ASTM D2794)

Direct	24 in • lb
Reverse	6 in • lb

Moisture vapor transmission (ASTM D1653)

6.28g/m²/24hrs.

Adhesion (ASTM D4541)

900 psi

Performance

Salt spray (ASTM B117) 3000 hours

Face blistering None

Humidity (ASTM D2247) 750 hours

Face corrosion, blistering None

Immersion (NACE TM-01-69) fresh water 1 year

blistering None

Qualifications

USDA – Incidental food contact

NFPA – Class A

Physical Data

Finish	Semigloss
Color	Standard, Rapid Response, custom colors and aluminum

White and light colors may show yellowing on aging. Use of Amercoat 861 with white or light colors will slightly discolor.

Yellow, red and orange colors will fade faster than other colors due to the replacement of lead-based pigments with lead-free pigments in these colors

Components	2
Curing mechanism	Solvent release and chemical reaction between components

Volume solids (ASTM D2697 modified)	
400 VOC	83% ± 3%
Dry film thickness (per coat)	4-8 mils (100-200 microns)

Coats	1 or 2	
Theoretical coverage	ft ² /gal	m ² /L
1 mil (25 microns)	1331	32.6
5 mils (125 microns)	266	6.5
	lb/gal	g/L
400 VOC mixed*	0.82	98**

* EPA method 24

** VOC is determined for jurisdictions and applications where tert-butyl acetate (TBAC) is considered to be a VOC-exempt compound. For shop applications that fall under the Miscellaneous Metal Parts and Products category, the VOC should be taken as 192 g/L unless TBAC is considered to be exempt by the local air quality jurisdiction.

Temperature resistance,*	wet		dry	
	°F	°C	°F	°C
400				
continuous	100	38	200	93
intermittent	100	38	350	177
with 880 (1 gal can/2 gal mix)				
continuous	100	38	425	218
intermittent	100	38	450	232

* At temperatures above 200°F, dry film thickness must not exceed 10 mils (250 microns).

Some discoloration and darkening will occur at temperatures greater than 200°F, this will not affect film integrity or coating performance.

Flash point (SETA)	°F	°C
2/400 VOC resin	118	48
400 VOC cure	102	39
2AL/400AL resin	110	43
Amercoat® 8	20	-7
Amercoat 65	78	25
Amercoat 101	145	63
Amercoat 12	2	-17
PPG 97-739	107	43

Chemical Resistance Guide

Environment	Immersion	Splash and Spillage	Fumes and Weather
	400 VOC	400VOC	400VOC
Acidic	*	F	G
Alkaline	*	E	E
Solvents	*	G	E
Salt water	E	E	E
Water	E	E	E
F-Fair	G-Good	E-Excellent	

*Contact your PPG representative.

This table is only a guide to show typical resistances of Amerlock 400 VOC. For specific recommendations, contact your PPG representative for your particular corrosion protection needs.

Systems using Amerlock 400 VOC

1 st coat	2 nd Coat***	3 rd coat***
400 VOC	400 VOC	None
400 VOC	Amershield™ VOC	None
Dimetcote® 21-5 Series	400	Amershield™

**Water immersion.

Recoat/Topcoat time

	°F/°C		
minimum (hours)	90/32	70/21	50/10
400 with 1 pt 861	4	7	16

Recoat/Topcoat time @ 70°F (21°C)

System	Maximum time
400/400	3 months
400 VOC with 861/400	1 month
400/Amershield or 450H Series	1 month
400VOC with 861/Amershield VOC or 450H Series	2 weeks

Drying times are dependent on air and surface temperatures as well as film thickness, ventilation and relative humidity. Maximum recoating time is highly dependent upon actual surface temperatures - not simply ambient air temperatures. Surface temperatures should be monitored, especially with sun-exposed or otherwise heated surfaces. Higher surface temperatures shorten the maximum recoat window.

Note: If maximum time is exceeded, roughen surface. For topcoats (finish coats) not listed, see Product Data sheet for specific topcoat time limitations.

Surface Preparation

Coating performance is, in general, proportional to the degree of surface preparation. Abrasive blasting is usually the most effective and economical method. When this is impossible or impractical, Amerlock 400 VOC can be applied over mechanically cleaned surfaces. All surfaces must be clean, dry and free of all contaminants, including salt deposits.

Amerlock 400 VOC may be used over most types of properly prepared and tightly adhering coatings. A test patch is recommended for use over existing coatings.

Steel – Remove all loose rust, dirt, moisture, grease or other contaminants from surface. Power-tool clean SSPC-SP3 or hand-tool clean SSPC-SP2. For more severe environments, dry abrasive blast SSPC-SP7. Water blasting is also acceptable. For immersion service – dry abrasive blast SSPC-SP10. For high-heat service on uninsulated substrates, abrasive blast per SSPC-SP6. For insulated substrates, abrasive blast per SSPC-SP10. In both cases, a 2-3 mil profile must be obtained.

Aluminum – Remove oil, grease or soap film with neutral detergent or emulsion cleaner, treat with Alodine® 1200, Alumiprep® or equivalent or blast lightly with fine abrasive.

Galvanizing – Remove oil or soap film with detergent or emulsion cleaner, then use zinc treatment such as Galvaprep® or equivalent or blast lightly with fine abrasive.

Concrete – Acid etching (ASTM D4260) or abrasive blast (ASTM D4259) new concrete cured a minimum of 14 days.

Application Data

Applied over	Steel, concrete, aluminum, galvanizing
Surface preparation	SSPC-SP2, 3, 6, 7, 10, 11, or 12
Steel	ASTM D4259 or 4260
Concrete	Alodine®, Alumiprep® or light abrasive blast
Aluminum	Galvaprep® or light abrasive blast
Galvanizing	Galvaprep® or light abrasive blast
Method	Airless or conventional spray. Brush or roller may require additional coats.

Mixing ratio (by volume) 1 part resin to 1 part cure

Pot life (hours)	°F/°C					
861 Accelerator	Amerlock	90/32	70/21	50/10	32/0	
Amount	/mixed 5 gal					
None	400	1½	2½	4	7	
½ pt	400	1	1½	2½	4	
1 pt	400	½	1	1½	2	

Pot life is the period of time after mixing that a five-gallon unit of material is sprayable when thinned as recommended. Mixture may appear fluid beyond this time, but spraying and film build characteristics may be impaired.

Environmental conditions

Product	Air or Surface Temperature
Amerlock 400 VOC	40° to 122°F (4° to 50°C)
Amerlock with 861	20° to 122°F (-6° to 50°C)

Surface temperatures must be at least 5°F (3°C) above dew point to prevent condensation. At freezing temperatures, surface must be free of ice.

Drying time (ASTM D1640) (hours)

861 Amt	Amerlock /mixed 5 gal	touch						
		°F/°C						
None	400	120/49	90/32	70/21	50/10	32/0	20/-6	NR
½ pt	400	1½	4½	9	28	96		
1 pt	400	1½	3	5	24	72	120	
		1	2	4	15	48	96	

Drying time continued

None	400	through						
		6	12	20	40	140	NR	
½ pt	400	3	6	10	30	96	180	
1 pt	400	2½	5	9	24	72	160	

Cure for immersion (days)

None	400	2	4	7	21	NR	NR
1 pt	400	1	2	3	7	21	NR

Amercoat 861 Accelerator will slightly discolor Amerlock 400 white and other Amerlock light colors.

NR = Not recommended

Thinner Amercoat 8, 65, or 101

Equipment cleaner Thinner or Amercoat 12

Application Equipment

The following is a guide; suitable equipment from other manufacturers may be used. Changes in pressure, hose and tip size may be needed for proper spray characteristics.

Airless spray – Standard equipment with 30:1 pump ratio or larger, with a 0.017- to 0.021-inch fluid tip.

Conventional spray – Industrial equipment, such as DeVilbiss MBC or JGA or Binks 18 or 62 spray gun. A moisture and oil trap in the main air supply line, a pressure material pot with mechanical agitator and separate regulators of air and fluid pressure are recommended.

Power mixer – Jiffy Mixer powered by an air or explosion-proof electric motor.

Brush or roller – Additional coats may be required to attain proper thickness.

Application Procedure

1. Flush all equipment with thinner or Amercoat® 12 before use.
2. Stir resin and cure using an explosion-proof power mixer to disperse pigments.
3. Add cure to resin. Mix thoroughly until uniformly blended to a workable consistency. For low temperature application, use Amercoat 861 accelerator. Do not exceed the 1 pint Amercoat 861 accelerator per 5 gallon unit recommendation.
4. Do not mix more material than can be used within the expected pot life.
5. For optimum application, material should be from 50° to 90°F (10° to 32°C). Above 122°F (50°C), sagging may occur.
6. For SCAQMD Rule 1113 applications, thin only with exempt thinner such as tert-butyl acetate or PPG 97-739.
7. To minimize orange peel appearance, adjust conventional spray equipment to obtain adequate atomization at lowest air pressure.
8. Apply a wet coat in even, parallel passes with 50 percent overlap to avoid holidays, bare areas and pinholes. If required, cross spray at right angles.
9. When applying Amerlock 400 VOC directly over inorganic zincs or zinc rich primers, a mist coat/full coat technique may be required to minimize bubbling. This will depend on the age of the Dimetcote®, surface roughness and conditions during curing.
10. Ventilate confined areas with clean air between coats and while curing the final coat. Prevent moisture condensation on the surface between coats.
11. Repair damaged areas by brush or spray.
12. Clean equipment with thinner or Amercoat 12 immediately after use.

Shipping Data

Packaging unit	2 gal	5 gal
cure	1-gal can	2.5-gal can
resin	1-gal can	2.5-gal can
Shipping weight (approx)	lbs	kg
2-gal unit		
400 VOC cure	12.5	5.7
2/400 VOC resin	13.7	6.2
5-gal unit		
400 cure	31.8	14.4
2/400 resin	35.0	15.9
Shelf life when stored indoors at 40° to 100°F (4° to 38°C)		
resin and cure	1 year from shipment date.	

Numerical values are subject to normal manufacturing tolerances, color and testing variances. Allow for application losses and surface irregularities.

This mixed product is photochemically reactive as defined by the South Coast Air Quality Management District's Rule 102 or equivalent regulations.

Safety Precautions

Read each component's material safety data sheet before use. Mixed material has hazards of each component. Safety precautions must be strictly followed during storage, handling and use.

CAUTION – Improper use and handling of this product can be hazardous to health and cause fire or explosion.

Do not use this product without first taking all appropriate safety measures to prevent property damage and injuries. These measures may include, without limitation: implementation of proper ventilation, use of proper lamps, wearing of proper protective clothing and masks, tenting and proper separation of application areas. Consult your supervisor. Proper ventilation and protective measures must be provided during application and drying to keep solvent vapor concentrations within safe limits and to protect against toxic hazards. Necessary safety equipment must be used and ventilation requirements carefully observed, especially in confined or enclosed spaces, such as tank interiors and buildings.

This product is to be used by those knowledgeable about proper application methods. PPG makes no recommendation about the types of safety measures that may need to be adopted because these depend on application and space, of which PPG is unaware and over which it has no control.

If you do not fully understand the warnings and instructions or if you cannot strictly comply with them, do not use the product.

Note: Consult Code of Federal Regulations Title 29, Labor, parts 1910 and 1915 concerning occupational safety and health standards and regulations, as well as any other applicable federal, state and local regulations on safe practices in coating operations.

This product is for industrial use only. Not for residential use.



PPG Protective & Marine Coatings

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