



AMERON
INTERNATIONAL

Performance Coatings & Finishes

Amerlock® 400

High-solids epoxy coating

Product Data/ Application Instructions

- Low VOC
- 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 has good chemical resistance to splash/spillage, fumes and immersion in neutral, fresh and salt water (see resistance table). Contact your Ameron representative for specific information.

Typical Properties

Physical

Abrasion resistance (ASTM D4060)	
1 kg load/1000 cycles CS-17 wheel	weight loss 102 mg
Impact resistance (ASTM D2794)	
Direct	24 in · lb
Reverse	6 in · lb
Moisture vapor transmission (ASTM D1653)	
	6.28g/m ² /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



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	83% ± 3%
400AL	88% ± 3%

Dry film thickness (per coat)	4-8 mils (100-200 microns)
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Coats	1 or 2
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Theoretical coverage		ft ² /gal	m ² /L
1 mil (25 microns)			
400	1331	32.6	
400AL	1412	34.7	

5 mils (125 microns)			
400	266	6.5	
400AL	282	6.9	

VOC		lb/gal	g/L
400 mixed*		1.5	180
mixed/thinned (½ pt/gal)**		1.8	220
400AL mixed**		1.0	120
mixed/thinned (1 ½ pt/gal)**		2.0	240

*EPA method 24

** Calculated

Temperature resistance,		wet		dry	
400	°F	°C	°F	°C	
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	

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 resin		131	55
400 cure		85	29
400AL resin		110	43
400AL cure		116	47
Amercoat® 8		20	-7
Amercoat 65		78	25
Amercoat 12		2	-17

** Amerlock 400 resin and Amerlock 2 resin are identical, and are packaged under a common label as Amerlock 2/400 resin. Amerlock 400 cure and Amerlock 2 cure are different, and are labeled individually.*

Qualifications

USDA – Incidental food contact
NFPA – Class A

NSF Standard 61 – For use in drinking water;
Amerlock 400 only

- Colors: Ivory, White, Medium Grey, RT 1805 Blue
 - Numbers of Coats: 2-4
 - Sequence of Coats: Any combination of listed colors
 - Maximum Field Use Dry Film Thickness (in mils) : 24
 - Maximum Thinner 12% Amercoat #65 by volume; 12% Amercoat #8 by volume (alternate)
 - Recoat / Cure Time: 12 hours / 7 days
 - Number of Coats: Use of Amercoat #8 Thinner is limited to tanks of 250,000 gallons or greater
 - Tanks 1,000 gallons or greater
 - Pipes 21 inches in diameter or greater
 - Valves 6 inches in diameter or greater
- *Certain restrictions do apply*

Chemical Resistance Guide

Environment	Immersion		Splash and Spillage		Fumes and Weather	
	400	400AL	400	400AL	400	400AL
Acidic	*	*	F	F	G	G
Alkaline	*	*	E	G	E	E
Solvents	*	*	G	G	E	E
Salt water	E	E	E	E	E	E
Water	E	E	E	E	E	E

F-Fair G-Good E-Excellent

**Contact your Ameron representative.*

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

Systems using Amerlock 400 or 400AL

1 st coat	2 nd Coat***	3 rd coat***
400	None	None
400	450HS	None
Amershield™ 400**	None 400	None
Dimetcote® 9, 9FT or 9HS	400	None
Dimetcote 9, 9FT or 9HS	400	450HS

***Water immersion.*

****For color contrast when 2 coats of 400AL are used, 400AL red can be used as first coat.*

Recoat/Topcoat time

	°F/°C		
minimum (hours)	90/32	70/21	50/10
400	8	16	30
400 with 1 pt 861	4	7	16
400AL	3	12	48
400AL with 1/2 pt 861	3	5	12

Recoat/Topcoat time @ 70°F (21°C)

System	Maximum time
400/400	3 months
400 with 861/400	1 month
400/Amershield or 450HS	1 month
400/5405	1 day
400 with 861/Amershield or 450HS	2 weeks

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 can be applied over mechanically cleaned surfaces. All surfaces must be clean, dry and free of all contaminants, including salt deposits.

Amerlock 400 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 or 11					
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					
Amount	/mixed 5 gal					
None	400	1 1/2	2 1/2	4	7	
	400AL	3 1/2	5 1/2	10	15	
1/2 pt	400	1	1 1/2	2 1/2	4	
	400AL	1	1 1/2	2 1/2	4	
1 pt	400	1 1/2	1	1 1/2	2	
<i>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.</i>						
Environmental conditions						
Product						
Air and Surface Temperature						
Amerlock 400 or 400 AL						
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.						
<i>Do not use Amerlock 400AL on water damp surfaces.</i>						
Drying time (ASTM D1640) (hours)						
touch						
°F/°C						
861	Amerlock					
Amt	/mixed 5 gal	120/49	90/32	70/21	50/10	32/0 20/-6
None	400	1 1/2	4 1/2	9	28	96 NR
	400AL	1	4	12	36	96 NR

1/2 pt	400	1 1/2	3	5	24	72	120
	400AL	1	1 1/2	2 1/2	5	10	24
1 pt	400	1	2	4	15	48	96

Drying time continued

			through				
None	400	6	12	20	40	140	NR
	400AL	1 1/2	7 1/2	24	72	216	NR
1/2 pt	400	3	6	10	30	96	180
	400AL	2	4	9	24	48	120
1 pt	400	2 1/2	5	9	24	72	160

Cure for immersion (days)

None	400	2	4	7	21	NR	NR
	400AL	2	4	7	21	NR	NR
1/2 pt	400AL	1	2	3	7	21	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 or 65
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 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. Use only Ameron recommended thinners. Above 85°F (29°C) use Amercoat 8, at lower temperatures use Amercoat 65. A small amount of thinner greatly reduces viscosity; excessive thinning will cause running or sagging. Thin cautiously as follows:

Amercoat 8 or 65 thinner	400	400AL
Airless – up to	1/4 pt/gal	1 1/2 pt/gal
Conventional – up to	1/2 pt/gal	1 1/2 pt/gal

Below 50°F additional thinning may be needed and multiple coats required to achieve specified thickness.

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 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 Dimetecote®, surface roughness and conditions during curing.

Note – Do not use Amerlock 400AL on water damp surfaces

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 cure	12.5	5.7
2/400 resin	13.7	6.2
400AL cure	12.1	5.5
400AL resin	11.0	5.0
5-gal unit		
400 cure	31.8	14.4
2/400 resin	35.0	15.9
400AL cure	30.9	14.0
400AL resin	28.3	12.8

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. Ameron makes no recommendation about the types of safety measures that may need to be adopted because these depend on application and space, of which Ameron 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.

Limitation of Liability

Ameron's liability on any claim of any kind, including claims based upon Ameron's negligence or strict liability, for any loss or damage arising out of, connected with, or resulting from the use of the products, shall in no case exceed the purchase price allocable to the products or part thereof which give rise to the claim. **In no event shall Ameron be liable for consequential or incidental damages.**

Warranty

Ameron warrants its products to be free from defects in material and workmanship. Ameron's sole obligation and Buyer's exclusive remedy in connection with the products shall be limited, at Ameron's option, to either replacement of products not conforming to this Warranty or credit to Buyer's account in the invoiced amount of the nonconforming products. Any claim under this Warranty must be made by Buyer to Ameron in writing within five (5) days of Buyer's discovery of the claimed defect, but in no event later than the expiration of the applicable shelf life, or one year from the delivery date, whichever is earlier. Buyer's failure to notify Ameron of such nonconformance as required herein shall bar Buyer from recovery under this Warranty.

Ameron makes no other warranties concerning the product. No other warranties, whether expressed, implied, or statutory, such as warranties of merchantability or fitness for a particular purpose, shall apply. In no event shall Ameron be liable for consequential or incidental damages.

Any recommendation or suggestion relating to use of the products made by Ameron, whether in its technical literature, or in response to specific inquiry, or otherwise, is based on data believed to be reliable; however, the products and information are intended for use by Buyers having requisite skill and know-how in the industry, and therefore it is for Buyer to satisfy itself of the suitability of the products for its own particular use and it shall be deemed that Buyer has done so, at its sole discretion and risk. Variation in environment, changes in procedures of use, or extrapolation of data may cause unsatisfactory results.



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