

Amercoat® 235

235 Series

Multi-purpose epoxy coating

Product Data/ Application Instructions

- Exceptional corrosion protection in salt and fresh water immersion and corrosive chemical environments
- Surface tolerant, lowers the cost of surface preparation
- Excellent adhesion to tight rust
- Good adhesion to damp surfaces
- Low temperature cure, cures down to 0°F (-18°C)
- Fast dry-to-recoat
- Self-priming

Low solvent content 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.

Typical Uses

Tank Linings and Pipe Coatings

- Ballast tanks
- Bilges, wet voids and drainage pipes

Ships, Offshore and Marine Structures

- Above and below-water hull areas
- Decks and superstructures
- Multi-purpose repair coating

Fabrication and New Construction

- Speeds up production, even at low temperatures
- A single multi-purpose, surface-tolerant coating

Qualifications

- MIL-PRF-23236C, Type V, Class 7, Class 5 (for topside and underwater hull) Type 1 and IV Class 2
- Canada Health and Welfare, dry food, fish holds (off white and buff only)
- USDA approval for incidental food contact (limited colors)
- MIL-P-24647 and Chapter 631, Table 631-8-10, keel to rail and exterior topside

Chemical Resistance Guide

ASTM D 1308, 24 hour contact at 77°F	Excellent, no effect on film integrity
50% Sodium hydroxide	10% Hydrochloric acid
28% Ammonia	20% Tannic acid
5% Trisodium phosphate	Crude oil
25% Citric acid	5% Sodium chloride
25% Lactic acid	10% Ammonium hydroxide
10% Sulfuric acid	Sewage

Physical Data

Finish	Semigloss	
Color	Haze Gray, Med. Gray, Black, Off-White, Buff, Oxide Red, Med. Green	
Components	2	
Curing mechanism	Solvent release and chemical reaction between components	
Volume solids (ASTM D2697 modified)	68% ± 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)	1091	26.8
5 mils (125 microns)	218	5.4
VOC (EPA 24)	lb/gal	g/L
mixed	2.4	292
Temperature resistance	dry	
	°F	°C
continuous	250	121
Flash point (SETA)	°F	°C
Amercoat 235		
resin	98	37
cure	90	32
T-10	80	27
Amercoat 65	81	27
Amercoat 101	145	63
Amercoat 12	2	-17

Application Data

Applied over	Steel, concrete, aluminum, galvanizing				
Surface preparation	Steel				
	SSPC-SP2, 3, 7, 10 or 12, WJ-2L, SC-1, or 12 (WJ-2L, SC-1)				
Concrete	ASTM D4259 or 4260				
Aluminum	Alodine®, Alumiprep® 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)	4 part resin to 1 part cure				
Thinner	T-10, 65 or 101				
Equipment cleaner	Thinner or Amercoat 12				
Pot life	70°F				
	4.5 hours				
Drying time	°F/°C				
dry through(hours)	90/32	70/21	50/10	32/0	20/-7
	5	10	22	45	62

Typical Properties

Physical

Property	Method	Result
Abrasion Resistance	ASTM D 4060, CS-17 1000 gram load, 1000 cycles	120 mg loss
Adhesion	ASTM D 4541	1000 psi
Exterior Exposure	Exposed in Florida facing integrity 45° South for	No effect on film 3 years or adhesion. Less than ½ inch undercutting at scribe. Less than 2% rust at edges.
Humidity Resistant	ASTM D 2247, 1000 hours.	No effect on film integrity or adhesion. Less than ½ inch undercutting at scribe. Less than 2% rust at edges.
Immersion Resistance	ASTM D 1308 Water, 24 months at 77°F	No effect
Impact Resistance	ASTM D 2794, 10 ga. steel	60 inch-pounds
Moisture Permeability	ASTM E 96	0.7 perms
Pencil Hardness	ASTM D 3363	3H
Salt Fog Resistance	ASTM B 117, 1000 hours	No effect on film integrity or adhesion. Less than ½ inch undercutting at scribe. Less than 2% rust at edges.

Systems

	1 st coat	2 nd Coat	3 rd coat
Amercoat 235		None	None
Amercoat 235		Amercoat 229 Series	None
Amercoat 235*		Amercoat 235*	None
Amercoat 235		Amercoat 235	Antifouling Systems ABC® 3, ABC 4, ABC® Release
Dimetcote® 9 Series or 302 Series		Amercoat 235	None
Dimetcote 9 Series or 302 Series		Amercoat 235	Amercoat 450 Series

*Immersion service.

Tank Coating System – Two coats of Amercoat 235 at 4 to 8 mils (100 to 200 microns) per coat, plus two stripe coats over sharp edges, cutouts and welds. Use contrasting colors for each coat and stripe coat.

Recoat/Topcoat time (@ 5 mils DFT)

minimum (hours)	°F/°C					
	90/32	70/21	50/10	32/0	20/-7	
Amercoat 235	2	4	8	16	28	
Amercoat 229 Series	3	4	7	12	40	
maximum (days)	°F/°C					
	120/49	90/32	70/21	50/10	32/0	20/-7
Amercoat 235	30	30	30	30	30	30
Amercoat 229 Series	1	4	5	5	7	7
Amercoat 450 Series	1	4	5	5	7	7

Cure to immersion 7 days

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.

Roughen surface if maximum recoat / topcoat time is exceeded.

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, coating can be applied over mechanically cleaned surfaces.

Amercoat 235 may be used over most types of tightly adhering coatings prepared with Amercoat 88. A test patch is recommended for use over existing coatings.

The surface preparation recommended for Amercoat 235 is to include removal of water, salt, dirt, oil, loose rust and **all rust scale**. For maximum performance, treat all surfaces with Amercoat 88 Cleaner, followed by high pressure wash. The minimum standard for non-immersion service is Steel Structures Painting Council Standard SSPC-SP2 or Swedish Standard DSt2; for immersion service, the minimum standard is SSPC-SP3 or Swedish Standard DSt3, in each case a coat of Amerlock Sealer followed by a full coat of Amercoat 235 can also be used.

Steel – All direct to metal coatings provide the maximum performance over near white blasted surfaces. There are, however, situations and cost limitations, where grit blasting to near white metal is not possible. Amercoat coatings were designed to provide excellent protection over less than ideal surface preparation. SSPC-SP12 WJ-2L is also acceptable over a previous blasted surface. The maximum soluble salt content for saltwater immersion should be 3 µg/cm². For freshwater immersion, the limit is 2 µg/cm². For atmospheric exposure, it can be as high as 10 µg/cm².

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 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 such as Graco Bulldog 30:1 or larger, with a 0.021- to 0.025-inch fluid tip, ¾" ID hose with 50 ft. maximum length.

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 for 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.

Environmental Conditions

Air and Surface Temperature
20° to 122°F (-7° 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.

To obtain the maximum performance, adhere to all application instructions, precautions, conditions and limitations. For conditions outside the requirements or limitations described, contact your PPG representative.

Application Procedure

1. Flush all equipment with thinner or Amercoat® 12 before use.
2. Stir base using an explosion-proof power mixer to disperse pigments.
3. Add cure to resin. Mix thoroughly until uniformly blended to a workable consistency.

Induction time (minutes)	70°F/21°C
	15

4. Do not mix more material than can be used within the expected pot life, 4½ hours at 70°F.
5. For optimum application, material should be from 50° to 90°F (10° to 32°C).
6. Use only PPG recommended thinners at 1 pint/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 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.

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.

Shipping Data

Packaging unit	1 gal	5 gal
Shipping weight (approx)	lbs	kg
1-gal unit		
resin	12.7	5.8
cure	2.0	0.9
5-gal unit		
resin	51.2	23.2
cure	8.8	4.0

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 both components. 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.

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



PPG Protective & Marine Coatings
www.ppgmc.com

One PPG Place, Pittsburgh, PA 15272 • Tel: (800) 441-9695