

## PRODUCT DESCRIPTION

**Generic:** Advanced Technology Epoxy

**General Description:** A high performance, multi-purpose, surface tolerant, two-component chemically-cured epoxy semi-gloss coating.

**Typical Uses:** BAR-RUST 233H is a true universal coating for steel or masonry surfaces in immersion and non-immersion service. Also for concrete floors, interior drywall, plaster and wood. Ideal for structural steel, piping, tanks, and equipment in chemical, fertilizer, and power plants, refineries, pulp and paper mills, mining operations, potable water transfer and storage, water and sewage treatment plants. Can also be used in hard service areas of food processing plants, breweries, dairies, correctional facilities, schools, and hospitals.

**Special Qualifications:** NSF certified for potable water tanks, pipes, and valves. See current NSF listing for restrictions and approved colors. (Buff 233H1642, Off White 233H3501, Oxide Red 233H7821, Light Blue 233H4406 and Black 233H9903 only). Performance alternate for Federal Specifications TT-C-550C, TT-C-535B, MIL-P-24441-Type I & II, MIL-C-22750D-Type I, MIL-P-23377E-Type I, and MIL-P-23236B (SH)-Type I & IV-Class 1 & 2.

Suitable for use on structural surfaces or surfaces where there is a possibility of incidental food contact in commercial food preparation establishments, food processing plants and federally inspected meat and poultry plants. USDA no longer requires or furnishes product certification letters. Meets AWWA C-210.

## FEATURES

### Advantages:

- Suitable for fresh & salt water immersion
- Suitable for corrosive environments
- Resistant to many solvents and chemicals
- Resistant to cathodic disbondment
- Low temperature cure to 0°F (-18°C)
- Approved, certified for potable water service by NSF
- Surface tolerant
- Good adhesion to tight rust
- Tolerates surface dampness at application
- Self-priming for most applications
- Fast dry to recoat – speeds up production
- Easily applied by brush, roll, or spray
- Low VOC

**Limitations of Use:** Exterior exposure will cause a color change, early dulling, and loss of gloss, but this does not affect protective properties. Epoxy coatings may yellow during application and cure if exposed to the combustion by-products of improperly vented fossil fuel burning heaters. Commonly finished with ICI Devoe Coatings DEVTHANE™ Urethane Enamel for maximum exterior color & gloss retention.

## SPECIFICATION DATA

**Color:** Off White 233H 3501, Buff 233H1642, Oxide Red 233H7821, Light Blue 233H4406, and Black 233H9903 are NSF approved colors. Off White tintable to pastel colors for areas where NSF approval not required.

**Finish:** Semi-Gloss

**Reduction Solvent:** T-5 Thinner for NSF usage – see thinning. T-10 Thinner acceptable for non-NSF usage.

**Clean-up Solvent:** T-10 Thinner

**Weight/Gallon:** 12.3 lbs./gal. (1.47 kg/L) – varies with color

**VOC (EPA 24):** 1.41 lbs./gal. (170 g/L) – varies with color

**Solids By Volume (ASTM D 2697-7 days):** 80%

**Theoretical Coverage at 1.0 Mil (25 microns) Dry:**

1283 sq. ft./gal. (31.6 m<sup>2</sup>/L)

**Recommended Film Thickness:** 4.0-6.0 mils (100-150 microns) dry – 5.0-7.5 mils (125-190 microns) wet. May be applied up to 25.0 mils (625 microns) wet to obtain 20.0 mils (500 microns) dry. – see NSF Systems.

**Systems:** Please consult the appropriate system guide, the particular job specification or your ICI Devoe Coatings' Industrial Coatings Specialist for proper systems using this product. Systems must be selected considering the particular environment involved.

**Service Temperature Limits:** 250°F (121°C) dry, water only 160°F (71°C) wet

**Moisture Permeability (ASTM E 96):** 0.7 perms

**Minimum Dry Time (ASTM D 1640):** At 6 mils (150 microns) DFT

Substrate Temperature	20°F (-7°C)	40°F (4°C)	60°F (16°C)	80°F (27°C)
Minimum Recoat	26 Hours	9 Hours	5 Hours	3.5 Hours
Dry Hard	53 Hours	17 Hours	10 Hours	7 Hours
Maximum Recoat				
Self	30 Days	30 Days	30 Days	30 Days
Devthane Urethane	7 Days	6 Days	5 Days	5 Days

**Warning:** The above table provides general guidelines only. Always consult your ICI Devoe Coatings Specialist for appropriate recoat windows since the maximum aged recoat time of this product may be significantly shortened or lengthened by a variety of conditions, including, but not limited to humidity, surface temperature, and the use of additives or thinners. The use of accelerators or force curing may shorten the aged recoat of individual coatings. The above recoat windows may not apply if recoating with a product other than those listed above. If the maximum aged recoat window is exceeded, please consult your ICI Industrial Coatings Specialist for appropriate recommendations to enhance adhesion. Failure to observe these precautions may result in intercoat delamination.

**Shelf Life:** Over 24 months at 77°F (25°C) – unopened

**Hardness (ASTM D 3363, 7 day cure @ 77°F (25°C):** 3H

**Mix Ratio By Volume:** 4(base):1(converter) – see mixing instructions.

**Induction:** 15 minutes at 60-80°F (16-27°C) – see mixing instructions.

**Pot Life:** 3.5 hours @ 77°F (25°C) & 50% R.H.

**ANSI/NSF STANDARD 61** Devoe Coatings BAR-RUST 233H is certified by the National Sanitation Foundation (NSF) for potable water service in tanks larger than 500 gallons, and valves and pipes with diameters greater than six inches. Use Only Approved Colors (Buff 233H1642, Off White 233H3501, Oxide Red 233H7821, Light Blue 233H4406 or Black 233H9903).



## PERFORMANCE DATA

**Adhesion:** (ASTM D 4541) – Excellent

**Abrasion Resistance:** (ASTM D 4060) – Excellent

**Elongation:** (ASTM D 522 Method B) – Excellent

**Humidity Resistance:** (ASTM D 2247) – Excellent

**Salt Spray Resistance:** (ASTM B 117) – Excellent

**Water Immersion:** (ASTM D 1308) – Excellent

**Chemical & Solvent Resistance:** (ASTM D 1308 24 hr. contact) – Excellent. Resists splash and spillage of alkalis, salts, moisture, oils, greases, foodstuffs and detergents, 50% Sodium Hydroxide, 28% Ammonia, 5% Trisodium Phosphate, 25% Citric Acid, 25% Lactic Acid, 10% Sulfuric Acid, Crude Oil, 10% Hydrochloric Acid, 20% Tannic Acid, 5% Sodium Chloride, 10% Ammonium Hydroxide, sewage.

## GENERAL SURFACE PREPARATION

Surfaces must be dry, clean, free of oil, grease, form release agents, curing compounds, laitance, other foreign matter and be structurally sound. Remove all loose paint, mortar spatter, mill scale, and rust. All direct to metal coatings provide maximum performance over blasted surfaces. There are situations and cost limitations which preclude blasting. BAR-RUST 233H was designed to provide excellent protection over less than ideal surface preparation. The minimum standard for non-immersion service is SSPC-SP2 (SSI-St2); for immersion service the minimum standard is SSPC-SP3 (SSI-St3). **These minimum surface preparation standards apply to steel that has been previously abrasive blasted, coated and deteriorated.** Where very rusty surfaces still remain after cleaning use PRE-PRIME 167™ Sealer before application of BAR-RUST 233H.

**New Surfaces: Steel** – New steel surfaces should be initially blasted to near-white metal surface cleanliness in accordance with SSPC-SP10 or SSI-Sa2 1/2 for immersion service or commercial blast cleanliness in accordance with SSPC-SP6 or SSI-Sa2 for non-immersion service. Blast profile on steel should be 1 1/2 to 2 1/2 mils (38-63 microns) in depth and be of a sharp, jagged nature as opposed to a “peen” pattern (from shot blasting). Surfaces must be free of grit dust. **Concrete Block** – Remove loose aggregate and repair voids. Fill with this product, Tru-Glaze® 4010 or DEVTRAN® 265BHF. **Concrete Floors, Poured Concrete** – Cure at least 30 days. Acid etch or abrasive blast slick, glazed concrete or

concrete with laitance. Prime with PRE-PRIME 167 or this coating thinned with T-10 Thinner in a 4 to 1 ratio. **Drywall** – Prime with a premium acrylic latex vapor barrier primer sealer. **Interior Wood** – Prime with this product thinned 10% with T-10 Thinner. **Exterior Wood** – Not recommended over this surface. **Galvanized Steel** – Remove dirt and oils by solvent cleaning or with DEVPREP® 88 Cleaner followed by a thorough water rinsing. Prime with DEVTRAN 205 Epoxy Primer for non-immersion. For immersion or severe moisture condition, abrasive blasting is recommended before priming with DEVTRAN 201 Epoxy Primer.

**Previously Painted Surfaces:** Old coatings should be tested for lifting. If lifting occurs, remove the lifted coating. Otherwise scuff sand glossy areas and aged epoxy coatings. Clean aged epoxy or urethane coatings with DEVPREP 88 Cleaner. Remove cracked and peeling paint. Prime bare areas with primer specified under **New Surfaces**. If thinning is required, thin with T-5 Thinner or Xylene only when used over aged alkyd coatings.

**ANSI/NSF Standard 61 Potable Water Coating System:** For tanks, pipes and valves, use one to three coats of BAR-RUSR 233H in any combination of certified colors (Buff 233H1642, Off White 233H3501, Oxide Red 233H7821, Light Blue 233H4406, Black 233H9903) up to a maximum of 20 mils (500 microns) dry film thickness. Stripe coats should be applied to all sharp edges and welds.

## DIRECTIONS FOR USE

**Tinting:** White can be tinted with ONLY Chroma-Chem 844 colorants. (Do not use water-based colorants). Add colorants to only the base portion. Mix thoroughly before adding the converter portion. Do not tint for NSF Systems – Use Only Approved Colors (Buff 233H1642, Off White 233H3501, Oxide Red 233H7821, Light Blue 233H4406 or Black 233H9903).

**Thinning:** Thinning is not normally required. However, Devco Coatings T-5 Thinner may be added up to 15% depending on local VOC and air quality regulations. Any solvent addition should be made after the two components are thoroughly mixed. The use of thinner may require additional cure time and ventilation prior to placing the coating system in service.

**Mixing:** BAR-RUST 233H Coating is a two component product supplied in 5 gallon and 1 gallon kits which contain the proper ratio of ingredients. The entire contents of each container must be mixed together. Power mix the base portion first to obtain a smooth, homogeneous condition. After mixing the base portion, add the converter slowly with continued agitation. After the converter add is complete, continue to mix slowly. BAR-RUST 233H Coating requires a 15 minute induction time. The pot life of the mixed material is 3.5 hours at 77°F (25°C). Higher temperatures will reduce working life of the coating; lower temperatures will increase it. If material thickens, do not add thinner, discard and mix new material.

**Application:** BAR-RUST 233H Coating can be applied by airless and air spray methods. However, the preferred method of application is with heavy-duty airless spray. For airless spray application, a 45 to 1 pump or larger and .021" to .027" tip size will provide a good spray pattern. Ideally, fluid hoses should be at least 3/8" ID. For longer fluid hoses, ID

should be 1/2". Longer hose lengths may require an increase in pump capacity, pressure and/or thinning. Viscosity control best achieved using in-line heaters. BAR-RUST 233H Coating may also be applied by brush or roller. Care should be taken that proper and uniform thicknesses are obtained. Brushing and rolling may require multiple coats to achieve correct film thickness and/or hiding.

**Spreading Rate:** Apply at 215-320 sq.ft. per gallon (5.27-7.84m²/L) depending on surface texture and porosity. Make allowances for over-spray loss and surface irregularities.

**Ventilation:** It is very important for the safety of the applicator and the proper performance of the BAR-RUST 233H Coating that good ventilation be provided to all portions of the enclosed area. It is equally important to bring into the enclosed area dry, fresh air to remove all solvent vapors. Since all solvent vapors are heavier than air, ventilation ducts should reach to the lowest portions of the enclosed areas as well as into any structural pockets. Ventilation should be provided throughout the cure period to insure all the solvents are removed from the coating. Allow at least 24 hours under full ventilation between coats. Allow seven days cure time, with ventilation, before putting a tank into service. Air temperatures below 77° F (25°C), longer cure time is required.

**Topcoats:** Can be used as a finish for interior areas. Accepts a variety of topcoats. In interior or exterior areas, DEVTHANE™ Urethane Enamels could be used as a finish to enhance performance and/or appearance.

**Dry Time:** At 77°F (25°C) & 50% R.H., dries to recoat with epoxy or urethane in 4 hours and hard in 7 hours. Cooler temperatures, higher humidity and degree of ventilation extend dry time.

**Clean-up:** Use T-10 Thinner.

## PRECAUTIONS

For industrial use only. Keep out of reach of children. Consult Material Safety Data Sheets appropriate for this product for important health and safety information prior to use.

	COMPONENT	HEALTH	FLAMMABILITY	REACTIVITY
HMIS DATA	233H BASE 233FXXXX	2*	3	1
	233H CONVERTER 233G0910	2*	3	1

\* Indicates possible chronic health hazard

## SHIPPING

**Freight Classification:** Paint, 3, PG III, UN1263 (Flammable Liquid)  
**Flash point:** 80°F (27°C)  
**Packaging:** 1 gallon kit (3.785L) 5 gallon kit (18.925L)  
 0.80 gallon base 4.00 gallon base  
 0.20 gallon converter 1.00 gallon converter

**Shipping Weight:** 4 - 1 gallon kits - 52 lbs. (21.6 kg)  
 5 gallon kit - 64 lbs. (29.0 kg)

233HXXX (9/99)  
 Ad Stock #68636A



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