

SELECTION & SPECIFICATION DATA

Generic Type	Phenalkamine modified epoxy
Description	Carboguard 235 HAR is a high abrasion resistant phenalkamine modified, surface-tolerant, epoxy specially formulated for application in marine and other severe service industrial environments and is suitable for fresh and salt water immersion resistance. This high solids, high performance epoxy is application friendly and can be used at low temperatures down to 20°F.
Features	<ul style="list-style-type: none"> • High abrasion resistance • Surface tolerant properties • Fast and low-temperature cure • Outstanding as a heavy duty hull coating for marine
Color	Black; Buff; Gray; Red Oxide, Blue
Finish	Semi-Gloss (35-70)
Primer	Self priming
Dry Film Thickness	102 - 203 microns (4 - 8 mils) per coat
Solids Content	By Volume 69% +/- 2%
Theoretical Coverage Rate	27.2 m ² /l at 25 microns (1107 ft ² /gal at 1.0 mils) 6.8 m ² /l at 100 microns (277 ft ² /gal at 4.0 mils) 3.4 m ² /l at 200 microns (138 ft ² /gal at 8.0 mils) Allow for loss in mixing and application.
VOC Values	As Supplied : 2.30 lbs/gal (276 g/l) Thinner 248 : Thinned 16 oz per gal; 2.83 lbs/gal (340 g/l)
Limitations	Product will chalk and discolor in sunlight exposure but does not affect performance properties. Substrates below 32°F may be frost covered. Do not apply coating to frost or ice.
Topcoats	Topcoat for improved weathering or chemical resistance. <u>Immersion</u> : Antifoulants <u>Non-immersion</u> : Epoxies or Polyurethanes Call Carboline Technical Service for recommendation.

SUBSTRATES & SURFACE PREPARATION

General	All surfaces must be thoroughly cleaned to remove dirt, grease, mill scale, loose rust, and any other contaminants that can reduce adhesion.
Steel	Atmospheric Exposure – Minimum SSPC-SP3 power tool cleaning or SSPC-SP12 WJ-3 Immersion Exposure – SSPC-SP10, 2-3 mil profile

MIXING & THINNING

Mixing	Thoroughly mix each component separately, then combine and mix well using mechanical agitation. <u>Induction Time</u> : Allow 15 minutes induction time at 77°F or 30 minutes at 40°F. Do not mix more than can be applied during the product's useful pot life.
Thinning	May be thinned up to 15 oz/gal with Thinner 248.

Carboguard 235 HAR

PRODUCT DATA SHEET



MIXING & THINNING

Ratio | 4:1 by volume (Part A to Part B)

Pot Life | 4 hours @ 77°F

APPLICATION EQUIPMENT GUIDELINES

Listed below are general equipment guidelines for the application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results.

General | Apply using airless spray, conventional spray, brush or roller. Stripe coat crevices, welds, and sharp angles for best performance. Brush and roller application may require several coats to achieve uniform film thickness and appearance. Use a 50% overlap with each pass when spraying to eliminate holidays and pinholes.

Conventional Spray | DeVilbiss MBC-50 gun, E fluid tip, 704 nozzle, 60-65 psi atomization pressure, 5-15 psi fluid pressure.

Airless Spray | Apply using a 30:1 pump able to deliver 3000 psi.
Hose: 1/4" I.D. (min.)
Tip Size: 0.015-0.019"
High Pressure Filter: 60 Mesh

Brush | Natural bristle or nylon/polyester

Roller | 3/8" woven/phenolic core

APPLICATION CONDITIONS

Condition	Material	Surface	Ambient	Humidity
Minimum	4°C (40°F)	-7°C (20°F)	-7°C (20°F)	0%
Maximum	32°C (90°F)	49°C (120°F)	38°C (100°F)	95%

Consult Technical Service for conditions outside these ranges. Industry standards are for substrate temperatures to be above the dew point. This product is unique in that it can tolerate damp substrates. See Brush or Roller above. Special thinning and application techniques may be required above or below normal conditions.

CURING SCHEDULE

Surface Temp.	Dry to Handle or Recoat	Dry to Touch	Maximum Dry to Recoat for Immersion
-7°C (20°F)	28 Hours	10 Hours	30 Days
4°C (40°F)	12 Hours	4 Hours	30 Days
24°C (75°F)	4 Hours	2 Hours	15 Days
32°C (90°F)	2 Hours	1 Hour	7 Days

*These times are to be used as a guideline. The optimum time to topcoat with an antifoulant is when the 235 film is "touch-tacky". If the touch-tacky time has been exceeded, or if the film is "glossy", you can generally reprime/refresh the first coat with a fresh coat of itself. The longer the first coat has to cure, particularly in sunlight exposure or elevated temps, the higher risk of inadequate adhesion. If those maximum recoat times have been exceeded, the surface must be abraded by sweep blasting or sanding prior to the application of additional coats. Contact your local Carboline Representative for assistance/guidance.

CLEANUP & SAFETY

Cleanup | Clean up all tools and equipment promptly with Thinner #248 or #2.

Safety | Read and follow all caution statements on this product data sheet and on the MSDS for this product. Employ normal workmanlike safety precautions. Use adequate ventilation and wear gloves or use protective cream on face and hands if hypersensitive. Keep container closed when not in use.

PACKAGING, HANDLING & STORAGE

Shelf Life | Part A: 24 months
Part B: 24 months

*Shelf Life: (actual stated shelf life) when kept at recommended storage conditions and in original unopened containers.

Shipping Weight (Approximate) | **5 Gal Kit**
58-64 lbs (26-29 kg)

Storage Temperature & Humidity | 40-110°F
0-90% RH

Flash Point (Setaflash) | 109° F mixed

Storage | Store in a dry, protected area.

WARRANTY

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