

SELECTION & SPECIFICATION DATA

Generic Type	Impact & Abrasion Resistant Cross-linked epoxy polymeric amine
Description	An all-purpose epoxy that has a variety of attributes including low-temperature cure, surface tolerance, fast recoat times, moisture tolerance during application and cure, and excellent corrosion protection. Carboguard 635 HAR can be used direct to metal as a corrosion resistant primer or as an intermediate coating over other primers. It is suitable for both maintenance and new construction projects due to its excellent surface wetting characteristics and quick cure for handling. It may also be used for immersion in fresh or salt water (marine) exposures and exhibits exceptional abrasion resistance & toughness.
Features	<ul style="list-style-type: none"> • Low temperature cure -7°C (20°F) • Excellent corrosion protection • Excellent abrasion resistance** • Excellent flexibility** • Excellent application characteristics • Fast re-coat times • Moisture tolerance during application • Extended re-coat window for atmospheric exposures up to 6 months self re-coat <p>**See performance test data in "Physical Properties" table, page 4</p>
Colour	N53 Light Grey
Gloss	Satin
Primer	Self-Priming
Dry Film Thickness	102 - 152 microns (4 - 6 mils) per coat <i>Note: Thicknesses above this range may result in higher gloss appearance which can interfere with topcoat adhesion. Follow Curing Schedule notes to mitigate possible adhesion issues.</i>
Solids Content	By Volume 65% +/- 2%
Theoretical Coverage Rate	25.6 m ² at 25 microns (1043 ft ² at 1.0 mils) 6.4 m ² at 100 microns (261 ft ² at 4.0 mils) 4.3 m ² at 150 microns (174 ft ² at 6.0 mils) Allow for loss in mixing and application.
VOC Values	As Supplied : 296 g/l mixed These are nominal values and may vary with color.
Dry Temp. Resistance	Continuous: 82°C (180°F) Non-Continuous: 104°C (220°F)
Limitations	Epoxies lose gloss, discolour and eventually chalk in sunlight exposure.
Topcoats	May be coated with Acrylics, Epoxies, Alkyds, Polyurethanes or Polysiloxanes depending on exposure and need.

Carboguard 635 HAR

PRODUCT DATA SHEET



SUBSTRATES & SURFACE PREPARATION

General	<p>Remove any oil or grease from surface to be coated with clean rags soaked in Thinner #2 or toluene.</p> <p>Concrete: Do not apply coating unless concrete has cured at least 28 days @ 21°C and 50% RH or equivalent.</p>
Steel	<p><u>Immersion Service & Atmospheric exposures:</u></p> <ul style="list-style-type: none">• For optimal performance, Abrasive blast to SSPC-SP 10 (AS 1627.4 Sa 2½) and achieve a uniform jagged blast profile of between 35µm (minimum) and up to 75µm.• For commercial performance abrasive blast to a minimum of SSPC-SP 6, (AS 1627.4 Class 2) with a 40-75 micron blast profile. <p>Higher film builds and increased abrasion necessitate the need to increase the profile achieved.</p> <ul style="list-style-type: none">• For minor repairs, hand tool or power tool clean in accordance with SSPC SP2 or 3 / AS 1627.2 or AS 1627.7 to produce a rust-scale free surface.
Concrete or CMU	<p>Remove all loose, unsound concrete. Remove all oils or other non-compatible sealers or treatments.</p> <p>Surfaces shall be clean, sound, and be abraded to remove laitence, rendering the surface to a coarse profile similar in texture to 80 grit sandpaper.</p> <p>Seal surfaces with Carboguard 1340, or similar penetrating sealer prior to applying Carboguard 635HAR.</p> <p>Consult Carboline Technical Service for more specific recommendations.</p>

PERFORMANCE DATA

Adhesion	<p>ASTM D4541 / ISO 4624 - Positest AT Hydraulic</p> <ul style="list-style-type: none">• >1700 psi on Class 2½ blast, 30-40 µm profile
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MIXING & THINNING

Mixing	<p>Mix separately, then combine and mix in the correct 4:1 v/v ratio</p>
Thinning	<p>For spray application thin up to 8% by volume with Thinner #76. For brush application thin up to 8% by volume with Thinner #33. \</p>
Pot Life	<p>3 hours at 24°C and less at higher temperatures. Pot life ends when coating becomes too viscous to use.</p>

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.

Spray Application (General)	<p>Hold gun 300-350 mm from the surface and at a right angle to the surface.</p>
Conventional Spray	<p>Pressure pot equipped with dual regulators, 9.5 mm (3/8") I.D. minimum material hose, 1.8 mm (.070") I.D. fluid tip and appropriate air cap.</p>

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Airless Spray	<p>Pump Ratio: 30:1 min. Output: 9.5 l/minute min. Material Hose: 9.5 mm (3/8") I.D. min. Tip Size: 0.43-0.53mm (0.017-0.021") Pressure: 140-175kg/cm² (2000-2500 psi) The following spray equipment has been found suitable and is available from manufacturer. Mfg. & Gun Graco 207-300 Pump : Graco Bulldog 45:1 *Teflon packings are recommended and available from pump manufacturer.</p>
Brush & Roller (General)	<p>For applications over damp surfaces, brush and roller is the preferred method. Multiple coats may be required to obtain desired appearance, recommended dry film thickness, and adequate hiding. Avoid excessive re-brushing or re-rolling. For best results, tie-in within 10 minutes at 24°C. Use a short-nap synthetic roller cover with phenolic core.</p>

APPLICATION CONDITIONS

Condition	Material	Surface	Ambient	Humidity
Minimum	7°C (45°F)	-7°C (20°F)	-7°C (20°F)	0%
Maximum	32°C (90°F)	49°C (120°F)	38°C (100°F)	95%

Industry standards are for substrate temperatures to be above the dew point. Carboguard 635 HAR 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 Topcoat Minimum	Dry to Topcoat with Antifoulant Maximum	Dry to Topcoat with Itself
-7°C (20°F)	24 Hours	36 Hours	30 Days
2°C (35°F)	2 Hours	16 Hours	30 Days
10°C (50°F)	1 Hours	8 Hours	30 Days
24°C (75°F)	45 Minutes	4 Hours	30 Days
32°C (90°F)	30 Minutes	3 Hours	30 Days

The curing schedule above references curing times for immersion service when an antifoulant topcoat is used.

Marine Use: Un-docking time of 24 hours @ 24°C

The listed times in the chart above are based on a 100-150 micron dry film thickness per coat. Deviation from those thicknesses may compromise the performance and adhesive properties of the film. Higher film thickness, insufficient ventilation or cooler temperatures could result in solvent entrapment and premature failure. Excessive humidity or condensation on the surface during curing will not affect performance but may cause discoloration and result in a surface haze. Any haze or blush must be removed by water washing before recoating. If the maximum recoat times have been exceeded, the surface must be abraded by sweep blasting or sanding prior to the application of additional coats. For force curing, contact Carboline Technical Service for specific requirements.

Note: For atmospheric exposure the Dry to Self Re-Coat time may be extended to up to 180 days (a trial patch is recommended to assess the possible level of preparation that may be required).

*Do not apply to substrates with ice or ice crystal formation. Dehumidify or raise the temperature to eliminate ice on the substrate. This product will tolerate drops in temperature to -17°C, (0°F) during its cure and will continue to cure when the temperature rises. Follow "Cure for Service" guideline listed above to determine when the product is fully cured.

Carboguard 635 HAR

PRODUCT DATA SHEET



CLEANUP & SAFETY

Cleanup	Use Thinner #2 or Acetone. In case of spillage, absorb and dispose of in accordance with local applicable regulations.
Safety	Read and follow all caution statements on this product data sheet and on the SDS for this product. Employ normal workmanlike safety precautions. Hypersensitive persons should wear protective clothing, gloves and use protective cream on face, hands and all exposed areas.
Ventilation	When used as a tank lining or in enclosed areas, thorough air circulation must be used during and after application until the coating is cured. The ventilation system should be capable of preventing the solvent vapor concentration from reaching the lower explosion limit for the solvents used. User should test and monitor exposure levels to insure all personnel are below guidelines. If not sure or if not able to monitor levels, use suitable approved supplied air respirator.
Caution	This product contains flammable solvents. Keep away from sparks and open flames. All electrical equipment and installations should be made and grounded in accordance with the local electrical code. In areas where explosion hazards exist, workers should be required to use non-ferrous tools and wear conductive and non-sparking shoes.

PACKAGING, HANDLING & STORAGE

Shelf Life	Part A: 24 months at 24°C Part B: 24 months at 24°C *Shelf Life: (actual stated shelf life) when kept at recommended storage conditions and in original unopened containers.
Shipping Weight (Approximate)	5 Litre Kit - 8.6 kg
Storage Temperature & Humidity	4°C-38°C 0-95% Relative Humidity
Flash Point (Setaflash)	<ul style="list-style-type: none">• Part A: 7°C• Part B: 27°C• Mixed: 31°C
Storage	Store indoors and KEEP DRY

PHYSICAL PROPERTIES

Test Method	System	Cure Time	Results
Abrasion Resistance ASTM D4060	1 coat @ 150 microns DFT	14 days; lab conditions	CS17 Wheel, 1 kg load 1000 cycles 55-65 mg loss
Elongation (Flexibility) ASTM D522, Method B	2 coats to 250 microns DFT	14 days, lab conditions	Passes 180° Bend 5mm Mandrel

WARRANTY

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