

## SELECTION & SPECIFICATION DATA

|                                  |   |
|----------------------------------|---|
| <b>Generic Type</b>              | Epoxy Phenalkamine  |
| <b>Designation</b>               | <b>This is a product that Carboline is intending to drop from the product line. Please reach out to your Carboline Sales Representative for a product alternative.</b>  |
| <b>Description</b>               | A highly abrasion resistant, all-purpose epoxy with a variety of attributes including low-temperature cure, surface tolerance, fast re-coat 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 particularly where abrasion resistance is needed. 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. |
| <b>Features</b>                  | <ul style="list-style-type: none"> <li>• High abrasion resistance</li> <li>• Low temperature cure (20°F)</li> <li>• Excellent corrosion protection</li> <li>• Excellent application characteristics</li> <li>• Fast recoat times</li> <li>• Moisture tolerance during application</li> <li>• Continues to cure underwater</li> <li>• Extended recoat window for atmospheric exposures (6 months for most topcoats)</li> <li>• Meets VOC restrictions</li> </ul>   |
| <b>Color</b>                     | Black (C900), Red (0500)  |
| <b>Gloss</b>                     | Satin   |
| <b>Primer</b>                    | Self-Priming  |
| <b>Dry Film Thickness</b>        | 4 - 6 mils (102 - 152 microns) per coat   |
| <b>Solids Content</b>            | By Volume 65% +/- 2%  |
| <b>Theoretical Coverage Rate</b> | 1043 ft <sup>2</sup> /gal at 1.0 mils (25.6 m <sup>2</sup> /l at 25 microns)<br>261 ft <sup>2</sup> /gal at 4.0 mils (6.4 m <sup>2</sup> /l at 100 microns)<br>174 ft <sup>2</sup> /gal at 6.0 mils (4.3 m <sup>2</sup> /l at 150 microns)<br>Allow for loss in mixing and application.   |
| <b>VOC Values</b>                | Thinner 76 : (8%) 10.5oz/gal=2.79 lbs/gal (337 g/l)<br>Thinner 248 : (8%) 10.5oz/gal=2.79 lbs/gal (337 g/l)<br><b>As Supplied</b> : 2.47 lbs/gal (296 g/l) mixed<br><br>These are nominal values and may vary with color.   |
| <b>Dry Temp. Resistance</b>      | Continuous: 180°F (82°C)<br>Non-Continuous: 220°F (104°C)   |
| <b>Limitations</b>               | Epoxies may lose gloss, discolor and chalk when exposed to sunlight.  |
| <b>Abrasion Resistance</b>       | 55-65 mg loss (Tabor Abrasion Test using 1 kg weight, CS17 wheel and 1000 cycles)   |
| <b>Topcoats</b>                  | May be coated with Acrylics, Epoxies, Alkyds, Polyurethanes or Polysiloxanes depending on exposure and need.  |

# Carboguard<sup>®</sup> 635 HAR

## PRODUCT DATA SHEET



### SUBSTRATES & SURFACE PREPARATION

|                        |  |
|------------------------|--|
| <b>General</b>         | Remove any oil or grease from surface to be coated with clean rags soaked in Carboline Thinner #2 or toluol.<br><b>Concrete:</b> Do not apply coating unless concrete has cured at least 28 days @ 70°F (21°C) and 50% RH or equivalent.   |
| <b>Steel</b>           | Atmospheric exposures: For optimal performance, hand tool or power tool clean in accordance with SSPC-SP 2, SSPC-SP 3, SSPC-SP 15 or SSPC-SP 11 to produce a rust-scale free surface.<br>For maximum performance clean to a minimum of SSPC-SP 6 with a 1 1/2 to 3 mil (40-75 micron) blast profile.<br>Immersion service: Minimum of SSPC-SP 10 with 1 1/2 to 3 mil (40-75 micron) blast profile. |
| <b>Concrete or CMU</b> | Remove all loose, unsound concrete. Remove all oils or other non-compatible sealers or treatments. Consult Carboline Technical Service for more specific recommendations.  |

### MIXING & THINNING

|                 |  |
|-----------------|--|
| <b>Mixing</b>   | Mix separately, then combine and mix in the following proportions (4:1 ratio):<br>Part A: <b>1 Gal Kit:</b> .8 gallon<br>Part B: <b>1 Gal Kit:</b> .2 gallon<br>Part A: <b>5 Gal Kit:</b> 4 gallon<br>Part B: <b>5 Gal Kit:</b> 1 gallon |
| <b>Thinning</b> | For atmospheric applications thin up to 8% by volume with Carboline Thinner 76 or Thinner 10, or 8% by volume with Thinner 33 for brush and roller.<br>For immersion, use Thinner #38 up to 8%.  |
| <b>Pot Life</b> | 3 hours at 75°F (24°C) and less at higher temperatures. Pot life ends when coating becomes too viscous to use.   |

### 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.

|                                    |  |
|------------------------------------|--|
| <b>Spray Application (General)</b> | Hold gun 12-14 inches from the surface and at a right angle to the surface.  |
| <b>Conventional Spray</b>          | Pressure pot equipped with dual regulators, 3/8" I.D. minimum material hose, .070" I.D. fluid tip and appropriate air cap. |

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|   |   |
|---|---|
| <b>Airless Spray</b>                    | <p>Pump Ratio: 30:1 (min.)<br/> Volume: 9.5 l/min min.<br/> Output: (2.5gpm min.)<br/> Material: 905 mm min.<br/> Hose: (3/8" I.D. min.)<br/> Tip Size: 0.43-0.53mm (0.017-0.021")<br/> Output: 140-175kg/cm<sup>2</sup><br/> Pressure: (2000-2500 psi)<br/> Use a 3/8" minimum I.D. material hose.<br/> The following spray equipment has been found suitable and is available from manufacturers such as Binks, DeVilbiss and Graco.</p> <p><b>Mfg. &amp; Gun</b> Use either model: Graco 207-300, Binks Model 520<br/> <b>Pump</b> : Huskie, (DeVilbiss), Bulldog 45:1, Jupiter 8D<br/> *Teflon packings are recommended and available from pump manufacturer.</p> |
| <b>Brush &amp; Roller<br/>(General)</b> | <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 75°F (24°C). Use a short-nap synthetic roller cover with phenolic core.</p>  |

## APPLICATION CONDITIONS

| Condition | Material    | Surface      | Ambient      | Humidity |
|-----------|-------------|--------------|--------------|----------|
| Minimum   | 45°F (7°C)  | 20°F (-7°C)  | 20°F (-7°C)  | 0%       |
| Maximum   | 90°F (32°C) | 120°F (49°C) | 100°F (38°C) | 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 Handle | Dry to Topcoat Minimum | Dry to Topcoat Maximum |
|---------------|---------------|------------------------|------------------------|
| 20°F (-7°C)   | 36 Hours      | 24 Hours               | 180 Days               |
| 35°F (2°C)    | 16 Hours      | 2 Hours                | 180 Days               |
| 50°F (10°C)   | 10 Hours      | 1 Hour                 | 180 Days               |
| 75°F (24°C)   | 3 Hours       | 45 Minutes             | 180 Days               |
| 90°F (32°C)   | 1.5 Hours     | 30 Minutes             | 180 Days               |

**\*These times are to be used as a guideline. The optimum time to topcoat with an antifoulant is when the 635 HAR is "tough-tacky".** If the touch-tacky time has been exceeded, or if the film is "glossy", you can generally reprime/refresh the first coat of 635 HAR 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 Marine Representative for assistance/guidance.**

# Carboguard® 635 HAR

## PRODUCT DATA SHEET



### CURING SCHEDULE

| Surface Temp. | Dry to Topcoat Minimum | Dry to Topcoat with Antifoulant Maximum | Dry to Topcoat Maximum |
|---------------|------------------------|---|------------------------|
| 20°F (-7°C)   | 24 Hours               | 36 Hours                                | 30 Days                |
| 35°F (2°C)    | 2 Hours                | 16 Hours                                | 30 Days                |
| 50°F (10°C)   | 1 Hour                 | 8 Hours                                 | 30 Days                |
| 75°F (24°C)   | 45 Minutes             | 4 Hours                                 | 30 Days                |
| 90°F (32°C)   | 30 Minutes             | 3 Hours                                 | 30 Days                |

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

**Marine Use: Undocking time of 24 hours @ 75°F**

The listed times in the chart above are based on a 4-6 mil (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.

\*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 0°F (-17°C) 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.

### CLEANUP & SAFETY

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|--------------------|---|
| <b>Cleanup</b>     | Use Thinner #2 or Acetone. In case of spillage, absorb and dispose of in accordance with local applicable regulations.  |
| <b>Safety</b>      | 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.  |
| <b>Ventilation</b> | 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 MSHA/NIOSH approved supplied air respirator. |
| <b>Caution</b>     | 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 National Electric 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

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|---|--|
| <b>Shelf Life</b>                         | Part A: 24 months at 76°F (24°C)<br>Part B: 24 months at 76°F (24°C)<br><br>*Shelf Life: (actual stated shelf life) when kept at recommended storage conditions and in original unopened containers. |
| <b>Storage Temperature &amp; Humidity</b> | Store Indoors. KEEP DRY<br>40 -100°F (4°C-38°C)<br>0-95% Relative Humidity   |



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## PACKAGING, HANDLING & STORAGE

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| <b>Shipping Weight<br/>(Approximate)</b> | 5 Gal Kit - 65 lbs. (30 kg)  |
| <b>Flash Point (Setaflash)</b>           | Part A: 45°F (7°C)<br>Part B: 80°F (27°C)<br>Mixed: 88°F (31°C)<br>Carboline Thinner 76: 23°F (-5°C) |

## WARRANTY

To the best of our knowledge the technical data contained herein is true and accurate on the date of publication and is subject to change without prior notice. User must contact Carboline Company to verify correctness before specifying or ordering. No guarantee of accuracy is given or implied. We guarantee our products to conform to Carboline quality control. We assume no responsibility for coverage, performance, injuries or damages resulting from use. Carbolines sole obligation, if any, is to replace or refund the purchase price of the Carboline product(s) proven to be defective, at Carbolines option. Carboline shall not be liable for any loss or damage. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY CARBOLINE, EXPRESS OR IMPLIED, STATUTORY, BY OPERATION OF LAW, OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. All of the trademarks referenced above are the property of Carboline International Corporation unless otherwise indicated.