# Carboguard 690

PRODUCT DATA SHEET

## SELECTION & SPECIFICATION DATA

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| **Generic Type** | Phenalkamine epoxy |
| **Description** | High performance, surface tolerant epoxy that has excellent resistance to water and wastewater exposures. This coating exhibits outstanding moisture tolerance during application, low temperature cure capability, and very fast cure response for quick return to service. Can be used on structural steel, piping, tankage, and equipment exposed to industrial or marine environments. It can also be used in immersion service for salt water, process water, fresh water and waste water treatment projects; and is ideal for coatings under insulation on pipes up to 150°C. |
| **Features** | • High solids, low VOC<br>• High build (200 microns)<br>• Low temperature cure -7°C (20°F)<br>• Excellent moisture tolerance during application<br>• Fast cure response<br>• Suitable for use in USDA inspected facilities<br>• Registered with NZ AsureQuality for use in food & beverage industry (see Approvals NZ/AU, page 5)<br>• AS4020:2005 Potable Water approved (see Approvals NZ/AU, page 5)<br>• Also available in glass flake (GF) and Non-Skid options (refer to relevant PDS) |
| **Colour** | **AU/NZ:** White, N53 Blue Grey<br>**AU only:** N35 Light Grey, Black, Yellow (LF) & Aluminium<br>**Tints AU/NZ:** Extensive range of AS2700, BS 5252, RAL and customs tinted colours |
| **Finish** | Semi-Gloss (35-70) |
| **Primer** | Self-Priming, Zinc-rich, or epoxies |
| **Dry Film Thickness** | 127 - 203 microns (5 - 8 mils) per coat |
| **Solids Content** | By Volume 80% +/- 2% |
| **Theoretical Coverage Rate** | 31.5 m² at 25 microns (1283 ft² at 1.0 mils)<br>6.3 m² at 125 microns (257 ft² at 5.0 mils)<br>3.9 m² at 200 microns (160 ft² at 8.0 mils)<br>Allow for loss in mixing and application. |
| **Severe Exposures** | Under insulation temperature resistance:<br>Continuous: 149°C<br>Non-Continuous: 176°C<br>Discolouration occurs above 93°C but does not affect performance.<br><br>Discolouration occurs above 93°C but does not affect performance. |
| **VOC Values** | **As Supplied** : 170 g/l mixed<br>Thinner 2 : *20% 248 g/l<br><br>These are nominal values and may vary with colour. |

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| **Limitations** | • Epoxies lose gloss, discolour and eventually chalk in sunlight exposure. Discolouration is more pronounced with this product.<br>• Unpredictable discolouration (may be severe with lighter colours) may also occur with prolonged exposure to UV; particularly during the application and curing phases.<br>• For immersion projects use only factory made material in standard colours.(Refer Approvals, Pg 5)<br>• This product has the ability to be applied over damp or even wet substrates. Remove excess water by blowing down the surface and apply in multiple coats to achieve desired film thickness.<br>• Brush or roller, and multiple coats are preferred over wet substrates. |
| **Temperature Resistance (Immersion)** | Immersion temperature resistance depends upon exposure (49°C maximum). Consult Carboline Technical Service for specific information.<br>Linings exposed to cargoes warmer than the outside steel temperature are subject to a "cold-wall' effect. The smaller the temperature differential, the less negative influence on performance.<br>Tanks should always be checked for adequate insulation before applying lining or placing lining in service. |
| **Topcoats** | May be coated with Acrylics, Epoxies, Alkyds, or Polyurethanes depending on exposure and need. |

## SUBSTRATES & SURFACE PREPARATION

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| **General** | Remove any oil or grease from surface to be coated with clean rags soaked in Carboline Thinner #2, or toluene. |
| **Steel** | **Optimum performance & Immersion Service:** Abrasive Blast SSPC SP10 (AS/NZS 1627.4 Class 2½) and achieve a uniform jagged blast profile of 35µm (minimum) and up to 75µm.<br>**Commercial performance / Non-Immersion:** Abrasive Blast SSPC SP6 (AS/NZS 1627.4 Class 2) and achieve a uniform jagged blast profile of 35µm (minimum) and up to 75µm.<br>In certain situations hand tool or power tool cleaning (SSPC-SP2 or 3) is acceptable for coating thicknesses up to 200 microns. |
| **Concrete or CMU** | Clean and dry. Remove all loose, unsound concrete. Do not apply coating unless concrete has cured at least 28 days @ 21°C and 50% Relative Humidity or equivalent.<br>Consult Carboline Technical Service for more specific recommendations. |

## MIXING & THINNING

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| **Mixing** | Mix separately, then combine and mix in the correct 4:1 v/v proportions<br>Thin up to 12.5% by volume with Carboline Thinner #2 for non-immersion applications and Thinner #10 for immersion projects. |
| **Pot Life** | 1.5 hours at 24°C and less at higher temperatures or in larger mix volumes. 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.

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| **Spray Application (General)** | Hold gun 300-350 mm from the surface and at a right angle to the surface |

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| **Conventional Spray** | 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. |
| **Airless Spray** | Pump Ratio: 45:1 (min.)<br>Volume Output: 12 lts/minute min.<br>Material Hose: 12.5mm (½") min.<br>Tip Size: 0.43-0.53mm (.017" - .021")<br>Output: 140-175kg/cm² (2000-2500 psi)<br>*PTFE packings are recommended and available from pump manufacturer. |
| **Brush & Roller (General)** | Not recommended for tank lining applications except when striping welds.<br>For non-immersion applications over damp surfaces, brush and roller is the preferred method.<br>Multiple coats may be required to obtain desired appearance, recommended dry film thickness and adequate hiding.<br>Avoid excessive re-brushing or re-rolling. For best results, tie-in within 10 minutes at 24°C. Thin up to 12.5% by volume with Thinner #2.<br>Use a short-nap synthetic roller cover with phenolic core. |

## 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) | 90% |

Industry standards are for substrate temperatures to be above the dew point. For immersion conditions it is recommended to follow this procedure. For non-immersion conditions this product 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 Touch | Maximum Recoat Time | Minimum Recoat Time | Minimum cure for immersion service |
|---|---|---|---|---|
| -7°C (20°F) | 10 Hours | 60 Days | 72 Hours | 45 Days |
| 2°C (35°F) | 6 Hours | 45 Days | 17 Hours | 30 Days |
| 16°C (60°F) | 5 Hours | 30 Days | 6 Hours | 14 Days |
| 24°C (75°F) | 4 Hours | 15 Days | 2 Hours | 7 Days |
| 32°C (90°F) | 2 Hours | 7 Days | 2 Hours | 6 Days |

**These times are based on a 125-200 micron dry film thickness per coat**. Higher film thickness, insufficient ventilation or cooler temperatures will require longer cure times and could result in solvent entrapment and premature failure. Excessive humidity or condensation on the surface during curing can interfere with the cure, can cause discoloration and may 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. For application and cure conditions below 2°C, dehumidify before, during, and after application to prevent ice formation on the surface.

## CURING SCHEDULE

| Surface Temp. | Dry to Handle | Dry to Recoat |
|---|---|---|
| 2°C (35°F) | 48 Hours | 2 Days |
| 16°C (60°F) | 24 Hours | 40 Hours |
| 24°C (75°F) | 8 Hours | 24 Hours |
| 32°C (90°F) | 6 Hours | 24 Hours |

The above times are based on 400 microns DFT of Carboguard 690 applied in a single coat. Honour the other precautions outlined above.

## 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 MSDS 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 vapour 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 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 relevant codes. 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: 12 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**
9 kg.
**10 Litre Kit**
18 kg.

**Storage Temperature & Humidity**
4°C-38°C
0-95% Relative Humidity

**Flash Point (Setaflash)**
Part A: 33°C
Part B: 27°C

**Storage**
Store Indoors. KEEP DRY

## APPROVALS

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| **Approvals NZ/AU** | **Food Processing**<br>NZ AsureQuality assessed & passed for food/beverage including dairy farm & factory non-incidental contact. Ref: H3108<br>**Potable Water Approval – AS 4020:2005**<br>Australian Water Quality Centre<br>Carboguard 690 White* Reference: 130243-2009-CSR-1<br>Carboguard 690 N53 Blue Grey Reference: 130243-2009-CSR-2<br>Tested taint-free & zero toxicity at exposure 75 $cm^2$ per litre<br>AMS Laboratories<br>Carboguard 690 N35 Lt. Grey* Reference: AMS 1316537A<br>Tested taint-free & zero toxicity at exposure 150 $cm^2$ per litre<br>**Coating Type Conformity**<br>Conforms to the performance requirements of AS 3750.14 “Paints for Steel Structures – High Build Epoxy (2 pack)”.<br><br>*Important Note: Potable water approvals relate only to standard manufactured colours (White, N53 Blue Grey & N35 Light Grey) as listed above. On no account should other colours be used for potable water service; nor should any tinted colours be used for any other immersion service. |

## WARRANTY

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