product data

carboline®

Carbomastic® 615

High Performance MIO Epoxy Mastic

Selection & Specification Data

Generic Type
Phenalkamine epoxy

Description
High performance epoxy that has excellent resistance to fresh and salt water exposures. This coating exhibits outstanding moisture and surface tolerance during application, low temperature cure capability, and very fast cure response for quick return to service. It contains an inert flake reinforcement (micaceous iron oxide) to enhance film strength and performance.

Features
- High solids, low VOC
- Low temperature cure
- Excellent wetting properties
- Excellent surface tolerance
- Excellent moisture tolerance (application)
- Fast cure response
- Suitable for immersion service in fresh or salt water after 60 minute cure @ 24°C

Gloss
Semi-gloss

Colour
MIOX and Aluminium grey

Primers
Self-priming

Topcoats
Acrylics, Alkyds, Epoxies, Polyurethanes

Dry Film Thickness
For most applications: 125-250 microns

Solids Content
Theoretical solids of mixed material by volume: 80 +/- 2%

Theoretical Coverage Rate
32 m²/l at 25 microns, 6.4 sq. m/l @ 125 microns
NOTE: Material losses during mixing and applications will vary and must be taken into consideration when estimating job requirements.

Mix Ratio
4 : 1 by volume (Part A : Part B)

VOC Values
As supplied: 170 g/l mixed*
Thinned 12.5% with #2: 248 g/l mixed*
*These are nominal values and may vary with color.

Dry Temp. Resistance
Continuous: 93°C
Non-Continuous: 121°C

Wet Temp. Resistance
Immersion temperature resistance depends upon exposure. Consult Carboline Technical Service for specific information.

Limitations
Epoxies lose gloss, discolour and eventually chalk in sunlight exposure. Discolouration after long-term storage may be more pronounced with Carbomastic 615 HS.

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Substrates & Surface Preparation

General
Remove any oil or grease from surface to be coated with clean rags soaked in Thinner #2, or toluene.
Concrete - Do not apply coating unless concrete has cured at least 28 days 21°C and 50% RH or equivalent.

Steel
Immersion:
AS 1627.4 Class 2½ (SSPC-SP10) with a 50-75 micron surface profile.
Non-Immersion:
AS 1627.4 Class 2 (SSPC-SP6) with a 50-75 micron surface profile for maximum protection. Thorough power or hand tool cleaning to AS 1627.2 or 1627.7 are also acceptable methods.
Dockyards & Slipways
For rapid turn-around dockings preparation by water-jetting to minimum WJ-2 M (NACE No.5 / SSPC-SP 12) is acceptable.

Concrete
Normally clean and dry. Remove all loose, unsound concrete. This product can tolerate damp concrete (green appearance but not visibly wet). Consult Carboline Technical Service for more specific recommendations.

Typical Performance Data

Property and Test Method	Conditions	Results	
Pneumatic Adhesion (ASTM D4541)	SP2* MS (damp / 24°C) SP2* MS (damp / 4°C)	1258 psi 1340 psi	
Pneumatic Adhesion (ASTM D4541)	Class 2½ MS, 24°C	2359 psi	
Flexibility: Mandre (ASTM D522; B)	2 week lab cure	NE @ 11mm radius	
Impact Resistance (ASTM 2794)	2 week lab cure; SP2 MS direct impact	Pass: 35 inch-pound	
AC Impedance** (ISO 16773)	Polarization Resistance Capacitance	$1.91x10^{10}$ ohm cm^2 275 pF/CM^2	
Cathodic Disbondment (mod ASTM G95)	7 days, 24°C, -1.5 volts over smooth Q-Panel	2mm zero bond & 2mm total disbondment radii	
Dry Time (ASTM D1640)	Cure Temperature 2°C 24°C	Touch 8 hours 2.5 hours	Handle 18 hour 6 hours

** AC Impedance or Electrochemical Impedance Spectroscopy is a method to evaluate barrier properties and water uptake. The higher the Polarization Resistance – the better barrier properties. Immersion grade coatings typically have Polarization Resistance of 1 x 10^9 ohm x cm^2 or higher. Capacitance is an indicator of water absorption of coatings; the smaller the capacitance – the lower water penetration and absorption.
*SP2 preparation (SSPC SP2 = Hand tool clean AS 1627.7)

Approvals

Food Processing
NZ AsureQuality assessed & passed for food/beverage including dairy farm & factory non-incidental contact. Ref: H3110

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Carbomastic® 615

Application Equipment

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 Guidelines**:

Spray Application — Hold gun 300-350mm from the surface and at a right angle to the surface.

Conventional Spray — Pressure pot equipped with dual regulators, 9.mm (3/8") I.D. minimum material hose, 1.8mm (.070") I.D. fluid tip and appropriate air cap.

Airless Spray — Pump Ratio: 30:1
Volume Output: 9.5 l/min min.
Material Hose: 9.5mm (3/8" I.D.) min.
Tip Size: 0.43-0.53mm (0.017-0.021")
Output Pressure: 140-175kg/cm² (2000-2500 psi)
Use a 12mm (1/2") minimum I.D. material hose
The following spray equipment has been found suitable and is available from manufacturers such as Graco and Devilbiss.
Mfr. & Gun : Graco 207-300 or equivalent
Pump*: Graco Bulldog 45:1, DeVilbiss Huskie
*Teflon packings are recommended and available from pump manufacturer.

Brush & Roller (General) — Not recommended for tank lining applications except when striping welds. For non-immersion 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. Thin up to 10% by volume (500 ml / 5 litre) with Thinner #2, or in hot windy conditions use Thinner #25. Use a short-nap synthetic roller cover with phenolic core.

Mixing & Thinning

Mixing — Mix separately, then combine and mix in the following proportions:

Kit Size	5 litre	10 litre
Part A	4 litre	8 litre
Part B	1 litre	2 litre

Ratio — Volume: 4 parts Part A : 1 part Part B

Thinning — Thin up to 12% by volume with Thinner #2

Pot Life — 1½ hours at 24°C and less at higher temperatures. Pot life ends when coating becomes too viscous to use.

Application Conditions

Condition	Material	Surface	Ambient	Humidity
Normal	16°- 24°C	16°- 24°C	16°- 24°C	30-70%
Minimum	7°C	-7°C	-7°C	0%
Maximum	32°C	50°C	35°C	95%

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 Carbomastic 615 can tolerate damp substrates. See Brush or Roller overleaf. Special thinning and application techniques may be required above or below normal conditions. Do not apply to substrates with ice or ice crystal formation. Dehumidify or raise the temperature to eliminate ice on the substrate.

Curing Schedule

Surface Temp. & 50% Relative Humidity	Dry to Topcoat Minimum	Minimum Cure for Water Immersion	Maximum Recoat Time
-7°C	72 hours	7 days	90 days
2°C	17 hours	3 days	60 days
14°C	8 hours	48 hours	30 days
24°C	2 hours	1 hour	15 days
32°C	1.5 hours	1 hour	7 days

These times above are based on a 125-250 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.

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.

Packaging, Handling & Storage

Pack Sizes — **Australia: 5 litre & 10 litre kits**
New Zealand: 5 litre & 10 litre kits

Flash Point (Closed Cup) — Part A: 27°C
Part B: 27°C

Storage Temperature & Humidity — Store under cover. **Keep dry**.
4°C-38°C
0-95% Relative Humidity

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.**

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