

SELECTION & SPECIFICATION DATA

Generic Type	Phenalkamine epoxy
Description	<p>An ideal high performance, high build coating for any service or structure, marine or industrial, where water or corrosion resistance is required. Has excellent proven long-term service case histories for marine hull externals, above & below water, and as a lining for hydro penstocks, gates, and similar permanently immersed structures. Carboguard 640 is the barrier coating of choice under Sea~Barrier[®] 1000 and 3000 antifoulings.</p> <p>Sea~Barrier[®] is the registered trademark of Altex Coatings Limited</p>
Features	<ul style="list-style-type: none"> • Excellent barrier protective properties • Recommended for permanent fresh & salt water immersion • Exceeds performance of coal tar epoxy coatings • Over 35 years failure-free case history in permanent fresh-water immersion service • Good abrasion resistance • High volume solids • Suitable for use on concrete surfaces • Can be self-priming • Easy application - thick films may be applied in one application by airless spray • Non-bleeding
Colour	Haze Grey & Off White
Gloss	Semi-gloss
Primer	<p>Carbozinc 858 series, Carboguard 504, Carboguard 635, and Altra~Zinc[®] 605. May be self-priming on correctly prepared steel or concrete.</p> <p>Altra~Zinc[®] is the registered trademark of Altex Coatings Limited.</p>
Film Build	<p>100-200* microns DFT per coat, depending upon service.</p> <p>(* applied in two wet-on-tack passes)</p>
Solid(s) Content	71% by volume (ASTM D2697 - 7 days)
Coverage Rate	<p>4.73 square metres per litre at 150 microns DFT</p> <p>2.55 square metres per litre at 200 microns DFT</p>
VOC Value(s)	247 grams per litre (mixed)
Dry Temp. Resistance	<p>Continuous: 80°C (176°F)</p> <p>Non-Continuous: 121°C (250°F)</p> <p>Discolouration will be observed above 93°C.</p>
Limitations	Exterior exposure will cause early loss of sheen, possible discolouration and chalking. This will not affect the protective properties of the coating.

Carboguard 640

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Chemical Resistance Tables	<p><u>Chemical Resistance - ASTM D1308 - 24 hours @ 25°C</u> Excellent, no effect on film integrity:</p> <ul style="list-style-type: none">• 50% Sodium Hydroxide• 28% Ammonia• 10% Ammonium Hydroxide• 5% Trisodium Phosphate• 25% Citric Acid• 25% Lactic Acid• 10% Sulphuric Acid• 10% Hydrochloric Acid• 20% Tannic Acid• Crude Oil• 5% Sodium Chloride• Raw Sewage
Topcoats	<p>Carbothane 134 HG or 133 LH, Carboguard 2929, Sea~Barrier® series, or E~Line® series.</p> <p>E~Line® is the registered trademark of Altex Coatings Limited.</p>

SUBSTRATES & SURFACE PREPARATION

General	<p>Surfaces must be clean and dry. Employ adequate methods to remove dirt, dust, oil and all other contaminants as described in SSPC SP1.</p>
Steel	<ul style="list-style-type: none">• <u>For optimum performance & immersion service:</u> Abrasive blast to SSPC-SP 10 (AS 1627.4 Sa 2½) and achieve a uniform jagged blast profile of 35µm (minimum) and up to 75µm.• <u>For general commercial work:</u> Abrasive blast to a minimum SSPC-SP 6 (AS 1627.4 Sa 2) and achieve a uniform jagged blast profile of 35µm (minimum) and up to 75µm. NACE/SSPC WJ-1 to WJ-2, or NACE WAB-2/SSPC-SP 10 (WAB) are also acceptable methods.• <u>For rapid turn-around ship dockings or general maintenance:</u> Power-tool clean to SSPC-SP 3 (AS 1627.2 St 3), or preparation by water-jetting to NACE/SSPC WJ-1 to WJ-2 are acceptable. The degree of flash rusting shall be no greater than L – Light.
Galvanised Steel	<p>Sweep abrasive blast to remove all passivation treatment, white rust etc and render a profiled surface. Prime with Carboguard 504 or 635 direct to freshly prepared galvanizing prior to applying Carboguard 640.</p>
Concrete	<p>Concrete should be fully cured for 28 days at 21°C and 50% RH or equivalent. Remove all laitance by sweep abrasive blasting, HP Water-Jetting or acid etching. For maximum performance and to reduce the risk of pin-holing seal the prepared concrete with Carboguard 1340.</p>

PERFORMANCE DATA (TYPICAL VALUES)

Test Method	System	Results
Abrasion Resistance ASTM D4060 CS-17 Wheel, 1000 gm load	200 microns DFT on 1/8" MS plate	Very good - 130 mg loss
Adhesion ASTM D4541	200 microns DFT on 1/8" MS plate	>1500 psi Class 2½ blast, 50 micron profile
Humidity Resistance ASTM D2247 1000 hours	200 microns DFT on 1/8" MS plate	No effect on integrity or adhesion. Less than 0.8mm undercut at scribe
Impact Resistance ASTM D2794	200 microns DFT on 1/8" MS plate	0.69 kg-metres 60 inch-pounds
Permeability ASTM E96-53	200 microns DFT on 1/8" MS plate	Excellent - 0.7 Perms
Salt Spray Resistance ASTM B117	200 microns DFT on 1/8" MS plate	Excellent
Water Immersion ASTM D1308	200 microns DFT on 1/8" MS plate	24 months Excellent, no effect

MIXING & THINNING

Mixing | Mix each component separately, then combine and mix to the correct 4:1 proportions.

Thinning | • For spray application thin up to 12.5% by volume with Thinner #12.
• For brush /roller applications thin up to 12.5% with Thinner #25.

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

Pot Life | 5 hours at 25°C

Induction Time | 15 minutes at 25°C; longer if colder

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

Airless Spray | Pump Ratio: 45:1
Volume Output: 11.5 l/minute min.
Material Hose: 12.5mm min. (½" I.D.) recommended
Tip Size: 0.53-0.78mm (.021-.031")
Output Press.: 140-175kg/cm² (2000-2500 psi)
The following spray equipment has been found suitable; or equivalent.
Mfr. & Gun: Graco 207-300
Pump*: Bulldog 45:1
*Teflon packings are recommended and available from pump manufacturer.

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Brush & Roller (General)

Manual application is 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. Use a short-nap synthetic roller cover with phenolic core.

APPLICATION CONDITIONS

Condition	Material	Surface	Ambient	Humidity
Minimum	10°C (50°F)	0°C (32°F)	5°C (41°F)	0%
Maximum	32°C (90°F)	50°C (122°F)	35°C (95°F)	90%
Optimum	20°C (68°F)	20°C (68°F)	20°C (68°F)	30%

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.	Cure for Service	Minimum Topcoat Time	Dry to Recoat Minimum
10°C (50°F)	15 Days	16 Hours	12 Hours
16°C (61°F)	12 Days	14 Hours	10 Hours
24°C (75°F)	5 Days	8 Hours	4 Hours
32°C (90°F)	3 Days	4 Hours	3 Hours

The above data is indicative for finished DFT's of 150-200 microns. Drying and curing rates are influenced by ventilation, film thickness, humidity, thinning and other factors.

**Antifouling Topcoat – optimum time to topcoat Carboguard 640 with antifouling coatings is when the film is just tack-free, firm to thumb pressure but 'thumbnail soft'. Do not overcure.

CLEANUP & SAFETY

Cleanup	Use Thinner #2, #12 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.
Caution	This product contains flammable solvents. Keep away from sparks and open flames.

PACKAGING, HANDLING & STORAGE

Packaging	AU: 5 litre and 10 litre kits NZ: 10 litre kit
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PACKAGING, HANDLING & STORAGE

Shelf Life	Part A: 48 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. For products/components exceeding the stated shelf life, contact Technical Services for further advice.
Storage Temperature & Humidity	4-38°C 0-95%
Flash Point (Setaflash)	38°C (mixed)
Storage	Store indoors and KEEP DRY

WARRANTY

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