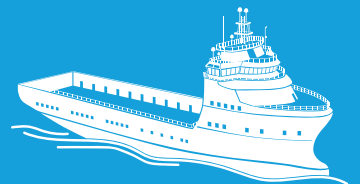


Marine

System Guide

Coatings and Linings



Weathering Exposures

Weathering and Salt Environment (Minimum SSPC-SP6)

PRIMER	DESCRIPTION	MID-COAT	DESCRIPTION	TOPCOAT	DESCRIPTION
Superstructure and Deck Structures					
Applications – Wheelhouse steel, cranes, equipment, piping and handrails and other equipment operating up to 250°F (121°C)					
Carbozinc 11 -or- Carbozinc 808 -or- Carbozinc 859	Inorganic zinc primer for maximum corrosion protection -or- Organic zinc for quick topcoating -or- High zinc load organic zinc for quick topcoating	Carboguard 881 -or- Carboguard 635	Versatile, chemical resistant epoxy -or- Moisture tolerant, low temp cure epoxy	Carbothane 134 Series -or- Carbothane 133 Series	High gloss weatherable acrylic urethane -or- Satin finish; high build urethane hybrid

Weathering and Salt Environment (Minimum SSPC-SP3)

PERFORMANCE	PRIMER	DESCRIPTION	MID-COAT	DESCRIPTION	TOPCOAT	DESCRIPTION
Superstructure and Deck Structures						
Applications – Wheelhouse steel, cranes, equipment, piping and handrails and other equipment operating up to 250°F (121°C)						
Excellent	Carbomastic 15 Series -or- Carbomastic 615	Aluminum surface tolerant epoxy -or- Inert-flake filled, moisture tolerant, low temp cure epoxy	Carboguard 881 -or- Carboguard 635	Versatile, chemical resistant epoxy -or- Moisture tolerant, low temp cure epoxy	Carbothane 134 Series -or- Carbothane 133 Series	High gloss weatherable acrylic urethane -or- Satin finish; high build urethane hybrid
Good	Carbocoat 150 UP -or- Carbocoat 8215	Universal phenolic alkyd primer -or- High build, surface tolerant, direct to metal alkyd			Carbocoat 45 -or- Carbocoat 8215	High gloss alkyd enamel -or- High build, surface tolerant, direct to metal alkyd

Weathering Exposures

Weathering and Salt Environment – Systems over Existing Coatings*

PERFORMANCE	OVERCOAT SEALER	DESCRIPTION	SPOT PRIMER	DESCRIPTION	TOPCOAT	DESCRIPTION
Superstructure and Deck Structures						
Applications - Wheelhouse steel, cranes, equipment, piping and handrails and other equipment operating up to 250°F (121°C)						
Excellent	Rustbond Series	Penetrating epoxy sealer	Carboguard 881 -or- Carboguard 635	Versatile, chemical resistant epoxy -or- Moisture tolerant, low temp cure epoxy	Carbothane 134 Series -or- Carbothane 133 Series	High gloss weatherable acrylic urethane -or- Satin finish; high build urethane hybrid
Good	Carbocoat 150 UP -or- Carbocoat 8215	Universal phenolic alkyd primer -or- High build, surface tolerant, direct to metal alkyd			Carbocoat 45 -or- Carbocoat 8215	High gloss alkyd enamel -or- High build, surface tolerant, direct to metal alkyd

*Recommended surface preparation is SP1 followed by SP2/3. Always determine suitability for overcoating prior to application (see Notes section).

Underwater Hull

Fresh or Salt Water Immersion

PREP	TWO COATS ANTI-CORROSIVE COATING	DESCRIPTION	2-3 COATS ANTIFOULANT COATING	DESCRIPTION
Underwater Hull Applications – Underwater hull exposed to fresh or salt water exposures.				
SP 10	Carboguard 881 -or- Carboguard 235 -or- Carboguard 635	Versatile, chemical resistant epoxy -or- Moisture tolerant, low temp cure epoxy -or- Moisture tolerant, low temp cure, fast recoat epoxy	C-Flex 1-2-3 AF	Self-polishing, ablative, tin-free, antifoulant

Hull Above the Waterline (Freeboard)

Weathering/Salt Spray Exposure

PREP	PRIMER	DESCRIPTION	MID-COAT	DESCRIPTION	TOPCOAT	DESCRIPTION
Hull Above the Waterline Applications – Exterior hull above the waterline (freeboard).						
SP 6	Carbozinc 11 -or- Carbozinc 808 -or- Carbozinc 859	Inorganic zinc primer for maximum corrosion protection -or- Organic zinc for quick topcoating -or- High zinc load organic zinc for quick topcoating	Carboguard 881 -or- Carboguard 235 -or- Carboguard 635	Versatile, chemical resistant epoxy -or- Moisture tolerant, low temp cure epoxy -or- Moisture tolerant, low temp cure, fast recoat epoxy	Carbothane 134 Series -or- Carbothane 133 Series	High gloss weatherable acrylic urethane -or- Satin finish; high build urethane hybrid

Decks and Walkways

PREP	1ST COAT	DESCRIPTION	2ND COAT	DESCRIPTION	OPTIONAL THIRD COAT	DESCRIPTION
Walkways (Non-Slip Areas) – Steel Applications – For applications where non-slip walking surfaces are required.						
SP 3	Carbocoat 8215	Economical fast-dry alkyd enamel	Carbocoat 8215 Non-Skid	Economical fast-dry non-skid alkyd enamel		
SP 10	Carbozinc 808 -or- Carboguard 881	Organic zinc for additional corrosion resistance -or- Chemical resistant epoxy primer	Carboguard 1209 -or- Carboguard 869 Non-Skid	Heavy-duty, glass-flake, non-skid epoxy -or- Medium-duty, non-skid epoxy	Carbothane 134 Series	High gloss weatherable acrylic urethane

High Heat Applications

Non-Insulated

PREP	PRIMER	DESCRIPTION	TOPCOAT	DESCRIPTION	OPTIONAL THIRD COAT	DESCRIPTION
Uninsulated Piping and Equipment – Steel operating to 450°F (232°C) Applications – Piping, heaters, furnaces, boilers, stacks, vessels, heat exchangers, mufflers, valves and pumps and equipment operating at 250-450°F (121-232°C).						
SP 10	Carbozinc 11 Series	Inorganic zinc primer for maximum corrosion protection	Thermaline 4000 -or- Thermaline 4900	Inorganic silicate; no heat cure requirement -or- Silicone acrylic	Thermaline 4000 -or- Thermaline 4900	Inorganic silicate; no heat cure requirement -or- Silicone acrylic
Uninsulated Piping and Equipment – Steel operating up to 800-1000°F (427-538°C) Applications – Piping, heaters, furnaces, boilers, stacks, vessels, heat exchangers, mufflers, valves and pumps and equipment operating at 800-1000°F (427-538°C).						
SP 10	Carbozinc 11 Series*	Inorganic zinc primer for maximum corrosion protection	Thermaline 4000 -or- Thermaline 4700	Inorganic silicate; no heat cure requirement -or- Silicone	Thermaline 4000 -or- Thermaline 4700	Inorganic silicate; no heat cure requirement -or- Silicone

*Thermaline 2977 VOC can be used up to 800°F (427°C) over an SP3 surface preparation.

Insulated

PREP	PRIMER	DESCRIPTION	TOPCOAT	DESCRIPTION	OPTIONAL THIRD COAT	DESCRIPTION
Insulated Piping and Equipment – Steel operating up to 300°F (148°C) Applications – Insulated piping and equipment operating at elevated temperatures.						
SP 3	Carbomastic 15 Series	Aluminum surface tolerant epoxy	Carbomastic 15 Series	Aluminum surface tolerant epoxy		
Insulated Piping and Equipment – Steel operating up to 425°F (218°C) Applications – Insulated piping and equipment operating at elevated temperatures.						
SP 10	Thermaline 450	Glass-flake epoxy novolac				
Insulated Piping and Equipment – Steel operating up to 1000°F (538°C) Applications – Insulated piping and equipment operating at elevated temperatures.						
SP 10	Carbozinc 11	Inorganic zinc-rich primer	Thermaline 4700	Silicone	Thermaline 4700	Silicone

Tanks

SERVICE CONDITIONS	GENERIC TYPE	PRODUCT	# OF COATS	mils (µm) TOTAL
Ballast Tanks and Double Bottoms	Epoxy Polyamide	Carbomastic 18 BT	2	12-14 (300-350)
	Epoxy Phenalkamine	Carboguard 635	2	12-14 (300-350)
	Epoxy Polyamide	Carboguard 881	2	12-14 (300-350)
	Epoxy Phenalkamine	Carboguard 235	2	12-14 (300-350)
	Solvent-Free Epoxy	Phenoline 341	1-2	12-20 (300-500)
Chemical Storage Tanks	Cycloaliphatic Amine Epoxy	Phenoline 385	2	12-14 (300-350)
	Epoxy Novolac	Phenoline 353	2	12-14 (300-350)
	Epoxy Amine	Plasite 9060 or 9060 LT	2	12-14 (300-350)
	Solvent-Free Epoxy Amine	Plasite 4500 S	1	25-35 (625-875)
Potable Water Tanks	Epoxy Polyamide	Carboguard 61	2	12-14 (300-350)
	Epoxy Phenalkamine	Carboguard 635	2	8-12 (200-300)
	Epoxy Phenalkamine	Carboguard 692	2	12-14 (300-350)
	Solvent-Free Epoxy	Phenoline 341	1	15-20 (375-500)
Dry Void Tanks	Epoxy Polyamide	Carboguard 881	2	12-14 (300-350)
	Epoxy Phenalkamine	Carboguard 635	2	12-14 (300-350)
	Epoxy Polyamide	Carboguard 894	2	12-14 (300-350)
Fuel Oil, Gasoline Storage	Cycloaliphatic Amine Epoxy	Phenoline 385	2	12-14 (300-350)
	Solvent-Free Epoxy	Phenoline 341	1	15-20 (375-500)

NOTES:

1. Carbozinc 11 Series consists of four inorganic zinc products designed to meet every need:
 - > Carbozinc 11: Standard high performance inorganic zinc silicate.
 - > Carbozinc 11 VOC: High performance inorganic zinc silicate designed to meet local VOC limits of 3.2 lbs./gal. (389 g/l)
 - > Carbozinc 11 HS: High performance inorganic zinc silicate designed to meet local VOC limits of 2.4 lbs./gal. (288 g/l)
 - > Carbozinc 11 WB: A water-based inorganic zinc with a VOC of zero.
2. Carbothane 134 Series includes several choices of high gloss acrylic urethanes to meet your needs:
 - > Carbothane 134 HG, 134 HS, 134 HP: Superior performance polyurethane exceeding the requirements of SSPC Paint 36 Level 3.
 - > Carbothane 134 VOC: Same performance as 134 HG but with a VOC limit of <200 g/l.
 - > Carbothane 134 MC: Same performance as 134 HG but with a VOC limit of <100 g/l.
 - > Carbothane 134 WB: A water-borne urethane exceeding the requirements of SSPC Paint 36; Level 3 and VOC <100 g/l.
3. Carbothane 133 Series may be used in lieu of 134 Series when a satin finish and higher film build characteristics are desired. Carbothane 133 Series includes 133 HB, 133 VOC, 133 MC, and 133 LH used where VOC regulations dictate.
4. Thermaline 4900 VOC and Thermaline 4700 VOC may be substituted for Thermaline 4900 and Thermaline 4700, respectively, as local VOC regulations dictate.
5. In maintenance painting, some coats may be eliminated depending on the condition of the existing paint system. Please consult your Carboline Sales Representative.
6. Heavily pitted steel can make coating application more complicated. Please consult your Carboline Sales Representative for specific advice.
7. The application technique of stripe coating edges and weld lines will improve coating system performance.
8. Surface Cleaner 3 is a water based cleaner that is effective in cleaning and degreasing surfaces prior to painting.
9. Where surface preparation designations of SSPC SP 10, SP 6, SP 7, SP 3, and SP 2 are used the ISO designations of Sa 2 ½, Sa 2, Sa 1, St 3, and St 2 (respectively) are also applicable.



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