SP-9888® HARC

PRODUCT DATA SHEET

SELECTION & SPECIFICATION DATA

Generic Type	Novolac Lining
Description	The ultra-high abrasion resistance version of SP-9888®. The “State of the Art” novolac chemistry coupled with advanced ceramic materials provides superior abrasion resistance and excellent chemical, solvent and water immersion resistance.
Features	• Super abrasion resistance • Excellent resistance to high temperature cathodic disbonding up to 150˚C (302˚F) • Good flexibility and impact resistance • Service temperature up to 150˚C (302˚F) • High build in a single coat • Excellent chemical resistance
Typical Uses	Ideal for use as an internal liner for storage tanks and slurry pipelines requiring exceptional abrasion resistance. It can also be used as an exterior coating in Horizontal Directional Drilling (HDD) applications.
Color	Grey (0700)
Dry Film Thickness	20 - 35 mils (508 - 889 microns) DFT Depends upon application. Consult with your SPC Representative.
Solids Content	By Volume 100% +/- 0%
Theoretical Coverage Rate	1604 ft²/gal at 1.0 mils (39.4 m²/l at 25 microns) 80 ft²/gal at 20.0 mils (2.0 m²/l at 500 microns) 46 ft²/gal at 35.0 mils (1.1 m²/l at 875 microns) Allow for loss in mixing and application.
VOC Values	**As Supplied** : 5 g/l
Dry Temp. Resistance	Continuous: 302°F (150°C)
Specific Gravity	Base: 1.53 ± 0.03 Hardener: 1.05 ± 0.03 Mixed Material: 1.41 ± 0.03

SUBSTRATES & SURFACE PREPARATION

Steel	Cleanliness: NACE No.2/SSPC SP-10, SA 2.5 (ISO 8501-1) Profile: 62.5 microns (2.5 mils) – 125 microns (5.0 mils) The Substrate Temperature must be a minimum of 3˚C (5˚F) above the dew point temperature before proceeding with the blasting operation.

PERFORMANCE DATA

All test data was generated under laboratory conditions. Field testing results may vary.

Test Method	Results
Adhesion to FBE (Hot Water Soak) (CSA Z245.20)	28 days @ 95°C (203°F): Rating #1
Adhesion to Steel (Hot Water Soak) (CSA-Z245.20)	28 days @ 95˚C (203˚F): Rating #1
Adhesion to Steel (Pull Off Strength) (ASTM D4541)	27 MPa (>4000 psi) @ 25˚C (77˚F)
Cathodic Disbondment Resistance (CSA Z 245.20, Clause 12.8)	28 days @ 95˚C (203˚F): 3.8 mmR 28 days @ 150°C (203°F): 6.7 mmR
Flexibility (CSA Z245.20, Clause 12.11)	1.0˚PPD @ 25˚C (77˚F) 1.5ºPPD @ 25ºC (77ºF)
Impact Resistance (CSA Z245.20, Clause 12.12)	>5.0 Joules (3.89 lb-ft) 5.0 Joules (3.69 ft-lbf) @ 25˚C (77˚F) 3.0 Joules (2.21 ft-lb) @ -30°C (-22°F)
Shore D Hardness	25˚C (77˚F): 85 ± 3
Taber Abrasion Resistance (ASTM D4060)	13 mg removal, C-17 wheel, 1 kg load, 1000 cycles

Chemical Resistance | No change in various chemical solutions (ASTM G20, 90 days immersion, RT)

MIXING & THINNING

Mixing | **Spray Grade**: Agitation of the Part A component is recommended during the preheating process and during application to ensure a uniform heat throughout the base portion.

Component Details for Color:
Grey (0700): The Base is Grey (0700) and the Hardener is Amber (0908)

Thinning | Do Not Thin.

Ratio | 3:1 Base to Hardener, by Volume

Pot Life | **Brush Grade:**
40 minutes
200 gms mass @ 25˚C (77˚F)

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.

Brush Grade | Brush or Roller

Spray Grade | **Plural Component Spray Equipment:**
Graco XP-70 or equivalent
Tip Size:: 0.019-0.031 0.031
Heated hose bundle consisting of 3/8” ID base and ¼” ID hardener with a solvent flush line.
Glycol heat trace or equivalent capable of 80˚C (176˚F)

APPLICATION CONDITIONS

Condition	Surface	Ambient
Minimum	50°F (10°C)	-40°F (-40°C)
Maximum	122°F (50°C)	122°F (50°C)

The recommended substrate (metal surface) temperature range for the application is 15˚C (59˚F) to 50˚C (122˚F) with a minimum of 10˚C (50˚F).
Preheating of the substrate is required if the surface to be coated is below 10˚C (50˚F). The substrate temperature must be a minimum of 3˚C (5˚F) above the dew point temperature before proceeding with the coating operation.
Recommended Spray Preheat Temperature in Drum/Pail:
Base: 75˚C (167˚F) to 90˚C (194˚F)
Hardener: 15˚C (59˚F) to 30˚C (86˚F) (Ambient-typically not heated)
Preheating of the base material is required to balance the viscosity of base and hardener. In cases of extreme weather conditions the recommended temperatures may change, please consult your SPC representative.

CURING SCHEDULE

Surface Temp.	Dry Hard
50°F (10°C)	15.5 Hours
68°F (20°C)	7 Hours
86°F (30°C)	3.5 Hours
104°F (40°C)	1.75 Hours
122°F (50°C)	35 Minutes
140°F (60°C)	14.5 Minutes
158°F (70°C)	8.5 Minutes
176°F (80°C)	5 Minutes
194°F (90°C)	3.5 Minutes

Dry Film Thickness: 0.63mm (25 mils) as per ASTM D1640.
Substrate: 12mm (0.5 in.) Thick Steel Panels
Note: This information is to serve as a guide only. The test results were compiled under laboratory-controlled conditions. Field results may vary due to variable conditions such as radiant heat loss and the cooling effects of wind.

Recoat Interval	Base: Max 3 hours @ 80˚C (176˚F) @ 50% RH Hardener: Max 3 hours @ 20˚C (68˚F) @ 50% RH The recommended recoat intervals are general guidelines only. The recoat intervals may vary significantly due to variable conditions including but not limited to, humidity, surface temperature, and the product application temperature. Contact your SPC representative for assistance in determining minimum and maximum recoat intervals specific to your application.
Return to Service	Base: 24 hours @ 80˚C (176˚F) Hardener: 24 hours @ 20˚C (68˚F)
Touch Dry	Base: 2 hours @ 80˚C (176˚F) Hardener: 2 hours @ 20˚C (68˚F) 0.75mm (30mils) coating thickness @ substrate temperature 25˚C (77˚F)

CLEANUP & SAFETY

Cleanup	Carboline Thinner 2 or SP-100 Equipment Wash
Safety	Refer to SPC's Safety Data Sheet prior to use. Carefully read and follow all safety instructions on labels and packing. Handle and store material with care in accordance to the Safety Data Sheet. Follow and observe any applicable local or national laws and regulations.

PACKAGING, HANDLING & STORAGE

Shelf Life	Maximum of 24 months from the date of manufacture Keep at recommended storage conditions and in original unopened containers.
Storage	Store in a cool, dry, well-ventilated area at temperatures between 5°C (41° F) and 50°C (122°F).Keep in a tightly sealed container when not in use. DO NOT FREEZE.
Packaging - Brush Grade	**1 Liter (0.26 Gallon) Kit** Part A: 0.75 liters (0.2 gallons) Part B: 0.25 liters (0.06 gallons)
Packaging - Spray Grade	**80 Liter (21.1 Gallon) Kit** Part A: 60 liters (15.9 gallons) Part B: 20 liters (5.3 gallons) **800 Liter (211.3 Gallon) Kit** Part A: 600 liters (158.5 gallons) Part B: 200 liters (52.8 gallons)

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 to verify correctness before specifying or ordering. No guarantee of accuracy is given or implied. Carboline warrants our products to be free of manufacturing defects in accord with applicable Carboline quality control procedures. THIS WARRANTY IS NOT VALID WHEN THE PRODUCT IS NOT: (1) APPLIED IN ACCORDANCE WITH CARBOLINE'S SPECIFICATIONS, AND/OR (2) PROPERLY STORED, CURED, AND USED UNDER NORMAL OPERATING CONDITIONS. Carboline assumes no responsibility for coverage, performance, injuries, or damages resulting from use of the product. If this product is found not to perform as specified upon inspection by a Carboline representative during the warranty period, Carboline's sole obligation, if any, is to replace the Carboline product(s) proven to be defective or refund the purchase price thereof, at Carboline's sole option. Carboline shall not be liable for any other losses or damages. This warranty excludes (1) labor and costs of labor for the application or removal of any product, and (2) any incidental or consequential damages, whether based on breach of express or implied warranty, negligence, strict liability or any other legal theory. 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. The whole text of this Product Data Sheet, as well as the documents derived from it, have been written in English, and for legal purposes the English version shall prevail.