SPECIALTY POLYMER COATINGS, INC.

MANUFACTURER'S QUALIFIED APPLICATION PROCEDURE

FOR SP-4888® DAMP SURFACE COATING

MQAP IDENTIFIER – SP-4888 R.1

DOCUMENT REVISION HISTORY

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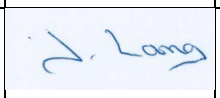
1	Feb. 16 2018	Intro and Sec. 1 modified				

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INTRODUCTION

SP- 4888® is a 100% solids, two-component, epoxy coating developed specifically for application on wet or damp surfaces. SP- 4888® is used for below ground corrosion control on pipe, piping assemblies, valve assemblies, pipe components, and girth welds. Additionally, it can be applied on dry steel surfaces and retain its corrosion protection properties.

SP- 4888® is available only in Brush Grade and is essentially used as a maintenance coating and applied on operating pipelines & pipeline components.

This Manufacturer's Qualified Application Procedure (MQAP) addresses the requirements outlined in CSA Z245.30 Clause 5.3.2 for SP-4888® Brush Grade where pipeline service temperatures do not exceed 80°C (185°F).

1.0 STANDARDS AND SPECIFICATIONS

NACE Recommended Practices / SSPC Standards – Surface Preparation: - NACE No.2/SSPC-SP-10.

2.0 DEFINITIONS

Adequate Cure - where preheating is used in cold weather application or to accelerate a cure, adequate cure shall be achieved for Shore D Hardness ≥75 measured at 21˚ C ± 2°C (70˚F±35.6˚F). For the purpose of handling the coated surface (lowering in or backfilling), adequate cure for temperatures above 10˚C (50˚F) is achieved when the coating is dry hard.

Applicator - the company which is applying the coating. Typically this is either the contractor or his subcontractor.

Contractor - those who have been contracted to prepare the surface and apply coatings covered in this specification.

Dry Hard - coating does not indent when pressed forcefully with a thumbnail.

DFT - Dry Film Thickness - the thickness of the coating after it has hardened to a solid state, as defined in SSPC PA2.

Epoxy - a two-component liquid coating system.

Manufacturer - Specialty Polymer Coatings, Inc. (SPC).

Owner - pipeline owner/operator including its affiliates, engineering agencies, inspectors and other authorized representatives.

Service Temperature - the maximum operating temperature at which the coating will perform.

Sweating/Damp Pipe - any substrate to be coated or blasted is considered to be sweating or damp if its temperature is less than 3˚C (5˚F) above the dew point of the air immediately adjacent to the surface.

Touch dry time - coating does not adhere to a fingertip when lightly touched.

Tacky - refers to a coating in an uncured state. Coating is said to be tacky when coating adheres to a finger contacting it.

WFT - Wet Film Thickness - the thickness of the coating film while in the liquid state.

3.0 COMPATIBILITY WITH OTHER ANTI-CORROSION COATINGS

SP-4888® is compatible with all SPC and fusion bonded epoxy (FBE) anti-corrosion coatings. For compatibility with other anti-corrosion coatings, please consult with SPC.

4.0 PACKAGING

Brush Grade Material

- Part 'A' - 2 Parts of Base (measured by volume).
- Part 'B' - 1 Part of Hardener (measured by volume).

SP-4888® is available in 0.5 litre, 1.0 litre and 2.0 litre kits.

5.0 RECOMMENDED FILM THICKNESS

For standard corrosion protection, a DFT of 0.50 mm minimum to 1.25 mm maximum (750 microns to 1250 microns, 20 mils to 50 mils), is recommended.

6.0 SAFETY CONSIDERATIONS

SP-4888® is harmful if absorbed through skin, inhaled or swallowed. It is a skin and eye irritant. Personal protective equipment is required. Refer to the Safety Data Sheets for additional information.

Gloves

Hand and wrist protection shall be accomplished via selection of appropriate gloves. In cases where abrasion, nick or cut hazards exist, gloves shall be worn which are made of cotton, leather or Kevlar®. In the event hazardous chemicals are present, gloves constructed of appropriate chemical-resistant material shall be worn. The glove/clothing overlaps should be sealed by tape. Check with the glove manufacturer to determine the proper glove type.

Eye Protection

Appropriate eye protection shall be required and used when there is a probability that such protection equipment could prevent injury. Examples of such protection equipment include safety glasses with side shields, direct vent goggles and indirect vent goggles.

Safety glasses and/or goggles will not be required when the employee is using an enclosed helmet or hood assembly which is approved for providing adequate eye protection. Full-face respirators do not require safety glasses.

Face Shields

These protective devices shall be used when a potential for facial injury exists from flying debris or chemical splashes. Face shields shall not be utilized as the sole method of eye protection.

Face shields should also be considered as an additional level of eye protection when safety glasses and/or goggles are being worn.

Foot Protection
Foot protection shall be selected in regard to the potential hazard. Steel-toe footwear shall be used when the potential for toe and lower foot injury exists. In some cases, metatarsal protection will also be required. Boots constructed of an impervious material, such as neoprene, shall be required *w*hen the potential for contact with a chemical exists.

Chemical Protective Clothing (CPC)
In cases where a hazardous chemical could contact body parts, appropriate CPC shall be worn. Such clothing includes aprons, “splash” suits and totally encapsulated suits. When such clothing is required, clothing material shall be selected which resists the permeation of the hazardous chemical which is present. Long-sleeved clothing shall be worn over regular clothing to cover all exposed areas of arms, legs and torso during mixing and application of the coating. Breathable clothing, such as cotton or disposable coveralls, is recommended.

Respirator
An appropriate, properly fitted vapour respirator (NIOSH/OSHA approved), shall be worn during coating application where vapour/mist is likely to be encountered, e.g. confined spaces and during winter construction or when the substrate is preheated. For outdoor application and areas with adequate ventilation, the use of a respirator is normally not required. The respirator manufacturer’s recommendations shall be followed. A dust respirator shall be worn for any activity such as sanding or grinding of cured coating.

Other Safety Considerations
As a minimum, all selected protective equipment shall meet the requirements of the appropriate ANSI standards. Selection of such equipment shall be accomplished after completion of the pre-job safety review. After selection, changes in specific safety equipment must be approved by the job supervisor or the safety coordinator.

An emergency eyewash and a shower shall be in close proximity where possible. A barrier cream may be used, in conjunction with the stated protective measures, as an additional safeguard against skin contact.

Containers shall be kept closed when not in use. In case of spillage, the material shall be disposed of in accordance with Federal, Provincial, and Municipal regulations in Canada, and Federal, State, and County regulations in the United States of America.

No open flames, smoking or welding shall be allowed in the immediate vicinity during coating application.

Members of the coating crew shall wash thoroughly after exposure to the coating.

7.0 SURFACE PREPARATION

Surfaces to be blast cleaned shall be free of oil, grease, injurious contamination, slivers, mud, soils, burrs, weld spatter, etc. Prior to blast cleaning, the contractor shall examine the bare pipe for surface contaminants. Any oil, grease or magnetic particle inspection products or ultrasonic couplant shall be removed using acetone, xylene, MEK or non-oily solvent approved by the Owner.

The underside and narrow edges of all angles, weld beads and structural members shall be blast cleaned to NACE No.2 (Near-White) cleanliness. Just prior to coating application remove all adhered dust and media with fresh or distilled water in approximately 1 meter (3 foot) sections. .
* Do not remove blast media until immediately prior to applying coating as this prevents minor flash rusting from occurring.

Only areas that can be coated in a day shall be blast cleaned. The blast cleaning shall extend at least 50 mm (2”) past the end of the area to be coated. Any area that is allowed to sit overnight shall be returned to its original blast-cleaned condition.

If the coating operation is to continue to the following day, the edges of the area coated with SP-4888® shall be feathered down to the steel substrate. All blasting onto existing SP-4888® shall be directed, for 50 mm (2”), from the coated surface to the adjacent substrate rather than from the substrate onto the coating.

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When coating girth welds where the parent coating is FBE, polyethylene (PE), polypropylene (PP), coal tar or liquid coating, sweep blasting shall be directed from the parent coating to the adjacent substrate. The blasting shall be initiated 50 mm (2”) onto the parent coating.

For the repair of pinholes and holidays 150 mm (6”) or less in diameter, the repair area shall be roughened using carborundum cloth, sandpaper, file, MBX® Bristle Blaster®, or as directed by the owner. Ensure all gloss has been removed from the repair area. The adjacent coating shall be abraded for a minimum distance of 25 mm (1”) to ensure inter-coat adhesion. Dust should be removed by wiping with a clean cloth, paint brush or with compressed air. A dust respirator shall be worn for all sanding or grinding activities. All surfaces to be coated shall be clean prior to the application of the coating.

For repair of areas greater than 150 mm (6”) in diameter, the repair area shall be mechanically abraded using a MBX® Bristle Blaster®, blast cleaned, or as directed by the owner. Ensure all gloss has been removed from the repair area. Dust shall be removed by wiping with a clean cloth, paint brush or with compressed air. A dust respirator shall be worn for all sanding or grinding activities. All surfaces to be coated shall be clean and completely dry prior to the application of the coating.

8.0 EQUIPMENT

Disposable tools, such as brushes or short nap mohair rollers (available from SPC), should be used to apply SP-4888®.

9.0 COATING APPLICATION

9.1 General Requirements

A DFT of .75 mm (30 mils) can be applied to a vertical surface in a single application. Higher builds are possible on horizontal surfaces.

The minimum substrate temperature for coating application is 5˚C (41˚F).

An adequate cure is achieved when the Shore D hardness is ≥75. Postheating may be utilized if an accelerated cure time is required. Postheating can be done using an induction coil, forced air or catalytic infrared heater.

SP-4888® can be overcoated without the need for an additional tie coat. Overcoating is best accomplished while the previous coat is still tacky. If the over-coating interval is exceeded, the surface should be blast roughened prior to application of the topcoat.

Blast roughening shall not be attempted until the coating has dried to a hard dry condition in accordance with the SP-4888® Curing Table, Appendix A.

9.1.1 Mixing Instructions

a) Mix Part 'A' (Base) slowly with a variable speed drill fitted with a mixing impeller. SPC mixing impellers assist in preventing the introduction of air into the coating and help to ensure a uniform mix.
b) Pour Part 'B' (Hardener) into Part 'A' (Base). The temperature of the coating components shall be above 15°C (59°F) to enhance mixing. Only Base and Hardener identified as the same kit size, shall be mixed together
c) Begin by mixing slowly. After the initial mix has been achieved, a spatula or mixing stick should be used to remove any raw resin from the side of the container.
d) Mix at a speed that ensures a uniform mix, but does not create a vortex in the liquid. Slow the mixer down at the surface of the liquid to prevent the introduction of air into the coating.
e) The ideal mixing and application temperature is between 20°C (68°F) and 30°C (95°F).
f) Mix for two minutes blending both parts to create one uniform colour with no streaks.
g) Workable pot life after mixing is 40 minutes at 25˚C (77˚F). Pot life will be extended at lower temperatures and shortened at higher temperatures.

9.1.2 Application Procedure

SP-4888® shall be applied as follows:

a) Mix the coating kit in accordance with Section 10.1.1.
b) Pour a small amount of coating on top of the pipe and saturate the roller with product.
c) Apply a thin initial layer of coating around the circumference of the pipe. It is essential that the initial layer be worked into the substrate, using a roller, to displace the moisture on the surface. This initial layer will be semi-transparent in appearance.
d) Pour the remainder of the coating on the top of the pipe and using a roller or brush, apply the coating around the circumference of the pipe, building the film up to the required thickness. Do not remove the application instrument from the bottom of the pipe. Always remove an application instrument on the up-stroke to prevent pulling material down and off of the pipe bottom.
e) The minimum acceptable substrate temperature for application of SP-4888® is 5°C (41°F).
f) SP-4888® cures to a touch-dry condition in one (1) hour and twenty (20) minutes and to a dry-hard condition in seven (7) hours at 25˚C (77˚F).

10.0 COATING REPAIR

Repair of Coating Defects

Repair of coating defects such as pinholes, holidays and areas with inadequate thickness, may be accomplished by using SP-4888® as follows:

a) Repair areas shall be roughened using carborundum cloth, sandpaper, or MBX® Bristle Blaster® or grit blasting. Ensure all gloss has been removed from the repair area.
b) The adjacent coating shall be abraded for a minimum distance of 25 mm (1”) to ensure inter-coat adhesion.
c) The area to be coated shall be wiped with a clean cloth to remove dust. A dust respirator shall be worn for all sanding or grinding activities.
d) All surfaces to be coated shall be clean prior to the application of the coating.
e) The minimum surface temperature for coating shall be 5°C (41°F). For some applications, postheating may be required to achieve an adequate cure depending upon ambient temperature, pipe wall thickness, and other variables. The coating must not be allowed to freeze before an adequate cure is reached.

f) Postheating shall only be done using an induction coil or catalytic infrared heater.

g) The coating shall be applied in accordance with Section 12.0.

11.0 BACKFILLING

Mechanical stress, including backfilling, shall not be applied to the coating until it has been adequately cured as defined in section 2.0

12.0 HANDLING PROPERTIES

Pot Life [100 gm (3.5 oz) mass @ 25°C (77°F)]	40 Minutes
Dry Time (ASTM D1640)	
[0.50 mm (20 mils) coating thickness @ 25°C (77°F)]	
Touch Dry Time	1 Hour 20 Minutes
Dry Hard Time	7 Hours

13.0 MATERIALS

SP-4888® containers shall be sealed when not in use.

No amount of SP-4888® shall be given, sold or exchanged without express written permission from SPC.

The acceptable shipping and storage temperature range for SP-4888® is 5°C (41°F) to 50°C (122°F).

SP-4888® shall be stored in a cool, dry, well-ventilated area with the lids sealed.

The shelf life is a maximum of 24 months in unopened containers.

14.0 DISPOSAL

Once the coating materials have been used, any residual material left in the containers shall be “kicked over”. To do this the Contractor shall scrape out the unmixed resin material (base) from its container, and mix it with the matching product material (hardener) in the hardener container. The two components will react to produce a cured coating.

By mixing the hardener and resin materials, the resultant product will be rendered inert and not pose a hazard to the environment when disposed of under reasonable conditions and in accordance with applicable Federal, Provincial, and Municipal regulations in Canada, and Federal, State and County regulations in the United States of America.

Please note that all parties handling SPC materials should refer to the applicable Safety Data Sheets and follow the Preventative Measures and Safety Precautions referred to therein.

APPENDIX A

SP-4888® Curing Table

SUBSTRATE TEMPERATURE	DRY HARD TIME
50°C (122°F)	2 Hours
40°C (104°F)	3.5 Hours
30°C (86°F)	5.5 Hours
25°C (77°F)	7 Hours
20°C (68°F)	10 Hours
10°C (50°F)	17 Hours
5°C (41°F)	35 Hours

Substrate: 12 mm (0.5 in.) Thick Steel Panels

Material Temperature: Base and Hardener: 25°C (77°F)

DFT: 0.50 mm (20 mils) to .75 mm (30 mils) as per ASTM D1640

Note: The information above 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.