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Effective: October 20, 2016

SPECIALTY POLYMER COATINGS, INC. (SPC)

SP-1864® SPRAY GRADE APPLICATION SPECIFICATION

STEEL SUBSTRATE

I. GENERAL

1.1 SP-1864® Spray Grade is a 100% solids, polyurethane manufactured and marketed by **Specialty Polymer Coatings, Inc.** ("SPC"), #101 - 20529 - 62nd Avenue, Langley, B.C., Canada, V3A 8R4, Telephone: (604) 514-9711, Fax: (604) 514-9722, and applied by approved applicators.

1.2 This specification covers only the spray application of the material. For brush or roller application, refer to the SP-1842® Weldcoat Application Specification and / or the SP-1853® Brush Grade Application Specification. Only application to steel surfaces is intended.

1.3 Mixing Ratio: 3 Parts Base to 1 Part Activator (pre-measured) by volume.

II. SURFACE PREPARATION

2.1 All surfaces to be coated shall be abrasive blasted to NACE 2, SSPC SP-10 (Near White) Cleanliness or equivalent. The resulting surface roughness profile shall be a minimum of 75 microns (3.0 mils) and a maximum of 125 microns (5.0 mils) peak to valley.

2.2 The underside and narrow edges of all angles, weld beads, pits and structural members must be blasted to the same surface condition as specified in Section 2.1. All surfaces must be cleaned of all blasting products, leaving no trapped particles or traces when blasting is completed.

2.3 All surfaces to be coated must be completely dry, free of moisture, soil, dust and abrasive material at the time the coating is applied. All weld spatter must be removed from the surface and rough welds must be ground smooth prior to coating.

2.4 Only that area that can be coated in a particular day shall be blast-cleaned. Blast cleaning shall extend for at least 50 mm (2") past the end of the coated area. Any area that is allowed to sit overnight must be returned to its original blast-cleaned condition. This requirement also applies to any blast-cleaned surface that has flash rusted as a result of exposure to rain or moisture.

II. SURFACE PREPARATION (cont.)

2.5 If the coating operation is to continue to the following day, the edges of the area coated with SP-1864® Spray Grade are to be feathered down to the steel substrate after the coating has cured and before resumption of coating.

2.6 Blasting adjacent to freshly coated steel shall not commence until the SP-1864® Spray Grade has cured to a tack-free condition. All blasting onto existing SP-1864® Spray Grade must be directed from the coated surface to the adjacent substrate, rather than from the substrate onto the coating. The blasting should be initiated 300 mm (12") onto the existing coating.

2.7 For parent coatings other than SP-1864® Spray Grade, grit blasting must be directed from the parent coating to the adjacent substrate rather than from the substrate onto the coating. When coating girth welds where the parent coating is Fusion Bond Epoxy (FBE) or Polyethylene (PE), blasting should be initiated 50 mm (2") onto the parent coating. In the case of PE, ensure the surface is well roughened and not just sweep-blasted.

2.8 Prior to coating, all areas, including the floor, scaffolding, walkways, pipes, and decks within 15 m (50') of the coating site, shall be swept or cleaned of abrasive products to prevent wind blown contamination of the coating surface.

2.9 Wetting of the ground in the vicinity of the coating operation may be necessary on new construction sites with bare ground and where high winds may occur.

III. APPLICATION

3.1 SP-1864® Spray Grade can be applied directly to the prepared surface without the need for additional priming systems. Increased film thickness may be required in certain immersed applications operating at elevated temperatures. Contact SPC Technical Department for additional information.

3.2 SP-1864® Spray Grade must be applied to clean, dry surfaces only. Condensation, precipitation, water vapour or any other forms of contamination will **NOT** be acceptable on the blasted surface prior to coating. Surfaces subject to any of these conditions shall be cleaned with fresh water if necessary and re-blasted to return the surface to NACE 2, SSPC SP-10 cleanliness as per Section II.

3.3 The acceptable substrate temperature range for application of SP-1864® Spray Grade is 1°C (33°F) to 100°C (212°F). The substrate temperature must be a minimum of 3°C (5°F) above the dew point temperature before proceeding with the coating operation.

III. APPLICATION (cont.)

3.4 Coating application can be performed in cold temperature conditions if the substrate is preheated. The maximum preheat temperature shall not exceed 100°C (212°F). Post-heating may be required for some applications 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. Preheating and post-heating may also be utilized if an accelerated cure time is required.

3.5 Preheating may be accomplished by flame heating the surface with a propane torch prior to blasting or by the use of an induction coil or catalytic infrared heater subsequent to blasting and prior to coating. In the case of some vessels, internal heating is required before the coating operation. Post-heating can only be done using an induction coil or catalytic infrared heater.

3.6 SP-1864® Spray Grade cures to a tack-free condition in one (1) hour and to a hard condition in four (4) hours at 25°C (77°F).

3.7 SP-1864® Spray Grade shall be applied to the specified Dry Film Thickness (DFT) in a single application using Graco Hydra-Cat high pressure airless spray equipment or approved equal. Wet Film Thickness (WFT) measurements shall be continuously taken to ensure the minimum film thickness specified. In general, a WFT of 0.50 mm (20.0 mils) can be applied in a single application. If additional coats are required, they shall be applied while the preceding coat is still tacky. The maximum overcoating interval **shall not** exceed eight (4) hours at 25°C (77°F) @ 50% RH without roughening the surface.

3.8 SP-1864® Spray Grade can be over-coated without the need for an additional tie coat. Should the overcoating interval exceed eight (4) hours at 25°C (77°F) @ 50% RH, the surface should be blast roughened prior to application of the topcoat. 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 product application temperature. Contact your SPC representative for assistance in determining minimum and maximum recoat intervals specific to your application.

3.9 Scaffolding and items such as hoses, cable braces, etc. shall be a minimum of 457 mm (18”) from the surface to be coated or placed so as not to interfere with the space normally required for a spray gun operation.

3.10 A minimum of four (4) hours curing above 20°C (68°F) is required prior to handling. Handling time may be longer at lower temperatures.

IV. APPEARANCE OF FINISHED COATING

4.1 The finished coating shall be generally smooth and free of protuberances or holidays. All surfaces shall have the required minimum DFT. In general, the surface of the coating shall be no rougher than the base or substrate material. No drips, running, sagging or other discontinuities are acceptable.

4.2 The applicator shall exercise every reasonable precaution to assure proper application of the coating and satisfactory protection of the steel surface.

V. INSPECTION

5.1 The owner's appointed representative must inspect the quality of all blasted surfaces, including cleaning of abrasive from these surfaces prior to the application of SP-1864® Spray Grade. Acceptance to be given by said representative to the owner and contractor's representative.

5.2 WFT measurements should be continuously taken to ensure the minimum film thickness specified. WFT measurements should be taken using SPC approved WFT gauges.

5.3 After the SP-1864® Spray Grade has cured to a tack-free condition, the owner's representative and / or contractor's inspector shall measure the DFT with an SPC approved, calibrated, magnetic gauge or electronic DFT gauge. The appointed inspector shall notify the applicator of their acceptance. Notification to the applicator of all inadequately coated sections must be made immediately.

5.4 Holiday testing of the finished coating film may be performed to ensure adequate corrosion protection. The maximum voltage used for this testing shall not exceed 100 volts per mil (25 microns). Refer to NACE RP0274-93

5.5 Immediately upon completion of the work, the coating application shall be subject to final inspection by SPC and / or the owner's representative. Notification of all defects must be made within a reasonable time frame from completion of the work to allow for all repairs within the allowed time frame for the project.

VI. REPAIRS

6.1 Repair of pinholes and holidays 100 mm (4") or less in diameter may be accomplished by using SP-3888® Cartridges. Refer to SPC Application Specification for Use of SP-3888® Cartridge for Coating Repairs. The procedure is as follows:

- Repair areas shall be roughened using a carborundum cloth, sandpaper, file, or surface grinder.
- The adjacent coating should be abraded for a minimum distance of 25 mm (1") to ensure inter-coat adhesion.
- If necessary on larger repairs, feather the edges of the adjacent coating.
- Wipe with a clean cloth to remove dust. A dust respirator should 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.
- The minimum surface temperature for coating is 10°C (50°F). The substrate temperature must be a minimum of 3°C (5°F) above the dew point temperature.
- Eject the required amount of material from the cartridge onto a clean tray using the manual dispenser.
- Hand-mix the product with a stir stick until the coating colour becomes uniform with no streaks.
- Apply the coating to the required thickness on the area to be repaired using a spatula or paint-brush.
- Extend the coating to at least 25 mm (1") over the surrounding pre-roughened coating.

6.2 Areas larger than 100 mm (4") in diameter shall be repaired using SP-1842® Weldcoat. Refer to SPC SP-1842® Weldcoat Application Specification. The procedure is as follows:

- Areas requiring repair shall be prepared with a surface grinder or by abrasive blasting. All edges of the surrounding area shall be feathered. A dust respirator should be worn for all sanding or grinding activities.
- The surface to be coated shall be completely clean and dry prior to applying the coating.
- The minimum surface temperature for coating is 10°C (50°F). The substrate temperature must be a minimum of 3°C (5°F) above the dew point temperature.
- The area to be repaired should be preheated in cold temperature conditions. The maximum pre-heat temperature shall not exceed 100°C (212°F). Post-heating may be required for some applications 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. Preheating and post-heating may also be utilized if an accelerated cure time is required.
- Preheating may be accomplished by flame heating the surface with a propane torch prior to blasting or by the use of an induction coil or catalytic infrared heater subsequent to blasting and prior to coating. Post-heating can only be done using an induction coil or catalytic infrared heater.
- Coat the repair area in accordance with Section VI of the SP-1842® Weldcoat Application Specification.

VI. REPAIRS (cont.)

6.3 Uncured areas requiring re-coating shall first have all uncured material removed and shall have the surface re-cleaned in accordance with Section II taking care to feather the edges of the surrounding coating. Re-application of the coating shall be in accordance with Section III, IV and V.

VII. SAFETY PRECAUTIONS

7.1 The contractor will provide safe and secure scaffolding for ready access to work areas.

7.2 Other contract services will be halted as necessary so as not to interfere with the workflow of the coating application.

7.3 SPC coating products are **HARMFUL IF ABSORBED THROUGH THE SKIN, INHALED OR SWALLOWED.** They are skin and eye irritants. Personal protective equipment is required. Refer to the **Material Safety Data Sheets**.

7.3.1 Chemical resistant gloves with a long cuff that will overlap the clothing sleeves should be worn when handling this product. The glove / clothing overlaps should be sealed by tape. Check with the glove manufacturer to determine the proper glove type.

7.3.2 Wear an appropriate, properly fitted vapour respirator (NIOSH / OSHA approved) during application where vapour / mist are 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. Follow the respirator manufacturer's recommendations. A dust respirator should be worn for any activity such as sanding or grinding of cured coating.

7.3.3 Wear splash proof chemical safety goggles and / or face shield.

7.3.4 Wear impervious boots.

7.3.5 Long-sleeved clothing is to be worn over regular clothing to cover all exposed areas of arms, legs or torso during mixing and application of the coating. Breathable clothing, such as cotton or disposable coveralls, is recommended.

7.3.6 Emergency eyewash and a shower should 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.

VII. SAFETY PRECAUTIONS (cont.)

7.4 Keep the containers closed when not in use. In case of spillage, absorb with inert material and dispose of in accordance with Federal, Provincial, and Municipal regulations in Canada and Federal, State, and County regulations in the United States of America.

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

7.6 All personnel on the application crew shall be informed of regulations regarding smoking, auto traffic restrictions, the meaning of warning bells, horns and whistles, fire warnings and restricted areas. Members of the coating crew shall maintain good personal hygiene, wash thoroughly after exposure to the coating application, particularly before eating or going on breaks.

VIII. EQUIPMENT

8.1 Graco Hydra-Cat high pressure spray equipment or approved equal must be used to apply SP-1864® Spray Grade coating systems in accordance with SPC recommendations and specifications.

IX. MATERIALS

9.1 All coating containers must be sealed prior to use. Product exposed to the atmosphere must be protected with a blanket of nitrogen gas.

9.2 **NO** amount of SPC coating products shall be given, sold or exchanged without express written permission from SPC.

9.3 The acceptable shipping and storage temperature range for SP-1864® Spray Grade is between 20°C (68°F) and 35°C (95°F). **DO NOT FREEZE THE ACTIVATOR.**

9.4 SPC coating products shall be stored in a cool, dry, well-ventilated area. Keep the lids sealed. The Shelf Life of SP-1864® Spray Grade is a maximum of 12 months in unopened containers. The Shelf Life of SP-1842® Weldcoat is a maximum of 12 months in unopened containers. The Shelf Life of SP-3888® Cartridges is a maximum of 24 months in unopened containers.

X. SUBSTRATE TYPES

10.1 This specification is applicable to standard steels.

10.2 Exotic metals, stainless steel or other special types of steel or alloys may require different consideration as to surface preparation and SPC formulations. Notification of the use of such metals must be made to SPC.

XI. INSURANCE

11.1 The contractor will provide all necessary insurance to protect itself and its employees during the application of SPC coating products.

11.2 SPC will provide all necessary coverage to protect SPC employees on site.

XII. DISPOSAL

12.1 Dispose of empty Base and Activator / Hardener containers according to Federal, Provincial, and Municipal regulations in Canada and Federal, State, and County regulations in the United States of America. Allow all mixed material to complete gel prior to disposal.

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