Protal™ 7200

Plural Spray Application Specifications

1.0 Scope

1.1 This specification covers the external surface preparation and coating of pipelines for rehabilitation, welds, directional drill, fittings and fabrication.

1.2 All spray application personnel shall be trained by a Denso representative prior to application of Protal 7200. Additionally, all spray application personnel shall be trained in the proper spray pump operational procedures by the specific spray pump manufacturer.

2.0 Material and Storage

2.1 Material shall be Denso Protal 7200 liquid coating system as manufactured by Denso, Inc., 9710 Telge Road, Houston, TX 77095 (Tel) 281-821-3355 (Fax) 281-821-0304 or 90 Ironside Crescent Unit 12, Toronto, Ontario, Canada M1X1M3 (Tel) 416-291-3435 (Fax) 416-291-0898. E-mail: info@densona.com.

2.2 Material shall meet the physical properties of the attached product data sheet.

2.3 Storage of the material shall be in a warm dry place, between 40°F (4°C) to 105°F (41°C). The containers shall be stored up right. Do not allow material to freeze.

3.0 Equipment

3.1 The coating shall be applied using a heated plural-component spray system with a minimum working pressure of 5000psi capable of reliably maintaining a consistent 3:1 mix ratio under all operating conditions.

The system must generate sufficient fluid pressure to properly atomize the material and produce a defect-free, monolithic film. All equipment shall be maintained and operated in accordance with the manufacturer's recommendations.

The proportioning pump should include:

- 1800 watt or greater in-line paint heaters
- Volumetrically balanced heated hose assembly capable of maintaining material temperature between 140°F and 150°F to the remote mix manifold
- Remote mix manifold equipped with solvent-flush capability and a hardener restrictor valve
- Two 3/8" (9.5mm), 12-fold static mixers
- 1/4" (6.4mm) paint hose (length 15 ft to 25 ft)
- One 1/4" static mixer (6.4mm), 12-fold static mixer
- 1/4" (6.4mm) whip hose (length 6 ft to 10 ft)
- Airless spray gun with gun swivel; an insulated gun handle is recommended
- Reversable airless spray tip with an orifice between .021" - .029". The tip guard must be used and in good working condition
- 30:1 or greater solvent-flush pump
- Manual ratio-check kit
- Pressure monitoring kit

The supply system should include:

- Transfer pumps with a flow rate greater than the flow rate of the metering pumps installed on the proportioner.
- Full coverage, insulated drum heating blankets with thermostats or heated hoppers.
- Agitators in the bulk material containers are recommended to ensure consistent viscosity control and accurate mixing throughout the application process.

3.2 Part A should be heated to 140°F - 160°F (60°C - 71°C) and Part B heated to 100°F - 110°F (38°C - 43°C). Hose bundle shall be set at 140°F - 150°F (60°C - 65°C).

3.3 A solvent such as Xylene, MEK, Toluene, or a combination of the three is recommended to clean the equipment.

3.4 Wet film thickness gauges.

4.0 Surface Preparation

4.1 All contaminants shall be removed from the steel surface to be coated. Oil and grease should be removed in accordance with SSPC SP-1 using the solvent Xylene.

4.2 Material for abrasive cleaning shall be the appropriate blend of abrasive to produce an angular surface profile of 2.5 - 5 mils (0.063 - 0.125 mm).

4.3 All surfaces to be coated shall be abrasive blasted to a near-white finish (SSPC SP-10, NACE No. 2 or Sa 2 1/2). *Note: Near-white finish is interpreted to mean that all metal surfaces shall be blasted clean to remove all dirt, mill scale, rust, corrosion products, oxides, paint and other foreign matter. Very light shadow, very light streaks or slight discoloration's shall be acceptable; however, at least 95% of the surface shall have the uniform gray appearance of a white metal blast-cleaned surface as defined by Swedish Pictorial Surface Preparation Standard Sa 2 1/2 or SSPC VIS-1.*

4.4 Edges of the existing coating shall be roughened by power brushing or by sweep blasting the coating for a distance of 1" (25 mm) minimum.

4.5 The Contractor shall check the surface profile depth by using a suitable surface profile gauge (Press-O-Film Gauge or equal).

4.6 Metal areas that develop flash rust due to exposure to rain or moisture shall be given a sweep blast to return them to their original blasted condition.

5.0 Application

5.1 The surface shall have no condensation, precipitation or any other forms of contamination on the blasted surface prior to coating.

5.2 The substrate temperature range for application of Protal is 50°F (10°C) to 212°F (100°C). The substrate temperature must be a minimum of 5°F (3°C) above the dew point temperature before proceeding with the coating operation. Ambient temperature may be lower than 50°F (10°C) if the substrate is heated. Preheating may be accomplished with a propane torch or induction coil prior to abrasive blasting.

5.3 Using the prescribed equipment (Sect. 3.0), Protal shall be applied using a wet on wet spray technique to the specified Dry Film Thickness (DFT). Protal 7200 can be applied in a single coat from 20 to 60 mils (508 - 1524 microns) WFT.

5.4 The thickness of Protal should be checked continuously by wet film gauge to achieve the minimum/maximum film thickness specified. Notification to the applicator of any inadequately coated sections must be made immediately and repaired.

6.0 Inspection

6.1 The finished coating shall be smooth and free of runs, sags and/or holidays. All surfaces shall have the required minimum/maximum DFT. In general, the surface of the coating shall be no rougher than the base or substrate material.

6.2 After the Protal has cured to a hard cure condition, the owner's representative and/or contractor's inspector should measure the film thickness by magnetic gauge and notify the applicator of their acceptance.

6.3 For most applications, backfill can be accomplished when the coating reaches a Shore D of 80. Using a Shore D Durometer, measure the hardness on an area of the coating that measures a minimum 30 mils DFT. Several measurements should be taken at various locations circumferentially around the pipe to ensure sufficient cure.

6.4 An acceptable field test to check to see if the coating has a full chemical cure, a solvent such as Xylene, MEK or Toluene can be rubbed on to the coating. If the gloss/sheen is removed the coating is not fully cured.

6.5 Holiday detection shall be performed on all coated areas. Detection voltage should be based on the nominal coating thickness using the following chart:

A. 20-50 mils – 4,000 volts
B. 51-70 mils – 7,000 volts

Note that NACE SP0188 is an acceptable method of reference as well.

6.6 Denso and/or the owner's representative immediately upon completion of the work shall make final inspection of the completed application. 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.

6.7 Recoating: If a second coat is required and passes the cure test as described in section 6.3, the surfaces shall be roughened by sweep blasting. If the coating is soft, no surface preparation is required.

7.0 Repairs

7.1 For small pinhole repairs: Surfaces of repair up to 1/16 inch (2 mm) in diameter, roughen the surface of the parent coating, to remove gloss, around the holiday for at least 1 inch (25 mm). Use 80 - 120 grit sandpaper or light sweep blasting.

7.2 Medium sized repairs: Surfaces of repair areas up to 4 in^2 (25 cm^2) in size, shall be prepared by abrasive blasting, as specified in Section 4, or by power tool cleaning in accordance with SSPC- SP 11 to remove dirt, scale, rust, damaged coating and any other foreign material to a bare metal condition and retain or produce the surface profile required by Section 4.0.

7.3 Large repairs: Surfaces of repair areas exceeding 4 in^2 (25 cm^2) shall be repaired by abrasive blast cleaning as specified in Section 4.0.

7.4 The adjacent parent coating and any holidays or damaged coating adjacent to the cutback area shall be roughened for at least 1 inch (25 mm) around the repair and the edges shall be feathered.

7.5 After abrading, all dust shall be removed from the prepared areas using compressed air, a clean, dry bristle brush, a clean dry cloth or removed in accordance with SSPC-SP-1 using acetone, xylene or MEK.

7.6 Refer to "7200 Accelerated Cure Specifications for Repairs" for additional information.

8.0 Safety Precautions

8.1 Follow the guidelines detailed in the Safety Data Sheets (SDS).

8.2 Keep containers closed when not in use. In case of spillage, absorb with inert material and dispose of in accordance with applicable regulations.

8.3 No open flames, smoking or welding will be allowed in the immediate vicinity during the spray application of Protal 7200 liquid coatings.

8.4 Always refer to project specifications as they may supercede Denso specifications.

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PHONE: (877) 373-0118
FAX: (888) 850-3787
EMAIL: sales@libertysales.net
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