



Protal Liquid Coatings 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.

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.

2.0 Material and Storage

- 2.1 Material shall be Denso Protal liquid coating system as manufactured by Denso North America Inc. 18211 Chisholm Trail, Houston, TX 77060, 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.

- 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. The containers shall be stored up right.

- 4.3 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.

- 4.4 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.

3.0 Equipment

- 3.1 Equipment shall be a plural component airless or hydraulic spray unit capable of pumping at the correct ratio for the specified Protal coating (see product data sheet). Heated hoppers, manifolds, and hoses are recommended in most cases. A Graco mastic gun, used with a 19 thou to 23 thou tip size, is recommended.

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

- 3.3 Wet film thickness gauges.

- 4.7 The quality of the blasted surfaces, including cleaning of blast grit from these surfaces, will be inspected by the owner's appointed representative prior to the application of Protal. Acceptance to be given by said representative to the owner and contractor's representative.

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 185°F (85°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 can be lower if the substrate is heated. Preheating may be accomplished by either flame heating the surface with a propane torch or induction coil.

4.0 Surface Preparation

- 4.1 Material for abrasive cleaning shall be the appropriate blend of grit to produce an angular surface profile of 2-4 mils (0.050 - 0.10 mm).

- 4.2 All surfaces to be coated shall be grit blasted to a near-white finish (SSPC SP-10 or SIS 05 59 00-1967 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*

- 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) up to 40 mils in one application. Runs, sags, and drips shall be kept to a minimum. Owner may allow these imperfections to be brushed out while wet or sanded out when dry.

5.4 The thickness of Protal should be checked continuously by wet film gauge to achieve the minimum 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 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.

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 Backfill time shall be determined by the "thumb nail test". The thumb nail test is defined by when one can no longer make a permanent indentation in the coating using one's thumb nail. *Note: A full and/or chemical cure may not be achieved by backfill time. For burying in wet soils or water the coating will need a full chemical 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 testing of the finished coating film shall be performed to ensure adequate thickness and to locate possible holidays. The voltage used for this testing shall not exceed 2000 volts for a specified minimum thickness of 20 mils.

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 Testing (Optional)

7.1 For each spray application a minimum of one plate sample coated to the specified DFT and one free film sample sprayed to a minimum DFT of 100 mils (4 mm) shall be taken. The plate size should be approximately 4" x 6" x .375" (100 mm x 150 mm x 9.5 mm). The plate must be cleaned in accordance with section 4.0. Both samples should be cured for a minimum of four (4) days at 68°F (20°C) prior to testing.

7.1 Adhesion Test: Apply three (3) tensile adhesion dollies to the plate sample with epoxy adhesive and cure for 24 hours at 68°F (20°C). Pull the dollies at a controlled rate with an elcometer adhesion tester or equal (approximately 1" (25 mm) per minute). The minimum average adhesion should be 2000 PSI or glue failure.

8.0 Repairs

8.1 Pinhole repairs may be accomplished by using an approved epoxy hot melt patch stick. Repair areas shall be roughened using Carborundum cloth or sandpaper and wiped clean with a xylene soaked cloth prior to patching.

8.2 Areas larger than 0.15 sq. in. (0.3 sq. cm.), but less than 1.0 sq. ft. (100 sq. cm.) shall be repaired using the brush grade version of Protal being applied. The surface to be coated shall be clean and dry prior to applying the coating. Surfaces below 50°F (10°C) shall be pre-heated in accordance with Section 5.2. Areas requiring repair shall be prepared with a surface grinder or by grit blasting prior to application of the coating. All edges of the surrounding area should be feathered prior to performing the repair.

9.0 Safety Precautions

9.1 Follow the guidelines detailed in the Material Safety Data Sheets (MSDS).

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

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

