



Protal™ ARO

Brush Application Specification

1.0 Scope

- 1.1 This specification covers the external surface preparation and coating of FBE coated pipe with Protal ARO as an ARO coating on boring applications.

2.0 Material and Storage

- 2.1 Material shall be Denso Protal ARO 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: Material shall be stored in a warm, dry place. Care shall be taken to insure the material is stored up right (arrows on boxes facing up). Note: If the material is kept cold, it will become very viscous.

3.0 Equipment

- 3.1 For mixing, use strong wooden stir sticks, or power drills with mixing paddle.
- 3.2 For application, use 4" (100 mm) wide brushes or Denso applicator pads for small diameter pipe and/or Protal 9" rollers for large diameter applications. Spray application may be achieved through a plural spray unit
- 3.3 Wet film thickness gauges.

4.0 Surface Preparation

- 4.1 Prepare FBE coating with a light sweep blast to remove gloss and roughen surface (approx. 1 mil / 25 microns).
- 4.2 After sweep blast wipe entire surface with MEK or approved solvent to remove all dust and other surface contamination.

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 40°F (4°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 may be lower than 40°F (4°C) if the substrate is heated. Preheating may be accomplished with propane torch or induction coil.
- 5.3 Mixing: Make sure the part A (Resin) and Part B (Hardener) components match in both material and size as specified on the containers. Independently stir Part A and Part B separately for approximately 30 seconds. Pour the contents of Part B into the Part A container. Mix at a slow speed so as not to create a vortex that could introduce air into the product until a uniform color is achieved making sure to scrape the bottom and sides of the container (approximately 2 minutes). No streaks shall be visible.
- 5.4 APPLICATION SHALL TAKE PLACE IMMEDIATELY AFTER MIXING. Pour the product onto the surface and spread down and around the surface in bands beginning from the leading edge of the material to as far under the pipe as can be reached. Overlap the bands and onto the existing coating a minimum of 1" (25 mm). Applicators shall use a brush to smooth out any obvious sags or rough edges, valleys, or drips. Special attention shall be given to weld buttons and bottom surfaces.
- 5.5 The thickness of Protal shall be checked periodically by wet film gauge to achieve the minimum and maximum wet film thickness specified. After the Protal has cured, the owner's representative and/or contractor's inspector should measure the film thickness by magnetic gauge and notify the applicator of their acceptance. Notification to the applicator of any inadequately coated sections must be made immediately.
- 5.6 Over-coating, when necessary, shall take place within 3 hours at 77°F (25°C). If recoat window has lapsed, the surface shall be roughened using 80 grit sand paper or by sweep blasting prior to application of the topcoat.

6.0 Inspection/Testing for Backfill

- 6.1 The finished coating shall smooth and free of protuberances or holidays. All surfaces shall have the required minimum/maximum DFT. Inspection of brush application is best performed immediately after application.
- 6.2 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.
- 6.3 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.
- 6.4 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.

- 6.5 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.

7.0 Repairs

- 7.1 Holidays may be repaired by using Protal Repair Cartridge. Areas shall be roughened a minimum 1 in. (25 mm) around holiday using Carborundum cloth or 80 grit sandpaper and wiped clean with a cloth or brush prior to patching.
- 7.2 Areas larger than 0.15 sq. in., but less than 1.0 sq. ft. (100 sq. cm.) shall be repaired using Protal Repair Cartridge. Prepare surfaces with 80 grit sand paper and apply using a brush or trowel. Preheat using propane may be used up to 212°F (100°C).

8.0 Safety Precautions

- 8.1 Follow the guidelines detailed in the Safety Data Sheets (SDS).
- 8.2 The contractor shall provide safe and secure access to application site.
- 8.3 Keep containers closed when not in use. In case of spillage, absorb with inert material and dispose of in accordance with applicable regulations.
- 8.4 Always refer to project specifications as they may supercede Denso specifications.



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