

SPECIFICATION

CERAMAPURE PL 90™ FOR LINING THE INTERIOR OF STEEL PIPE

I. Description

All steel pipe and fittings shall have a high build protective lining on the interior. All surface areas must be smooth without voids and projections. Any rough and sharp edges shall be rounded smooth with at least 1/8" radius. Surface before lining application shall meet the requirements of NACE RPO178, Condition C.

II. Lining Material

The material must be a high build amine cured epoxy lining. The approved standard of quality is Ceramapure PL-90.

III. Surface Preparation

The entire surface to be lined shall be abrasive blast cleaned. The intent of this specification is that 100% of the surface be cleaned by the blast media, so that the surface shall be cleaned to a SSPC-SP 10 Near White Metal Blast Cleaning. Only abrasive grit is acceptable. A minimum of 3 mils angular surface profile depth must be achieved. No steel shot shall be used for abrasive blasting.

IV. Coating of Pipe

Within 8 hours of completing surface cleaning, the entire surface to be lined with the exception of A or B as follows, shall receive a minimum of 20 mils of Ceramapure PL-90. All pipe lining shall be performed by an applicator certified by the lining manufacturer with at least a 10-year history of pipe lining application. No lining shall be applied over grease, oil, moisture, etc. The lining shall not be applied when the substrate temperature is below 40°F or in adverse atmospheric conditions (fog, dust, storms, etc.) that will cause blistering, pinholing, porosity, or other film defects. Care should also be taken with substrate temperatures above 120°F, since application properties may vary with high temperatures. The substrate temperature must be 5°F above the dewpoint for a period of at least two hours after application to avoid condensation occurring on wet coating. Do not apply Ceramapure PL-90 over wet or frozen surfaces. If any rusting is apparent prior to coating the surface, the entire area must be restored to the specified degree of cleanliness.

A. Coating of the Spigot and Lining of the Bell Areas on Slip Joint Pipe

Due to tolerances involved, the spigot end from the gasket area to the end of the spigot must be coated with 6 mils minimum, 10 mils maximum Ceramapure PL-90. Care should be taken that the Ceramapure PL-90 is smooth without excess buildup on the spigot end. The interior of the bell shall be lined with 20 mils minimum and 25 mils maximum of Ceramapure PL-90.

B. Lining of Welded Steel Pipe Joints

All welded steel pipe shall be lined as indicated with 20 mils dry film thickness minimum of Ceramapure PL-90. Each joint of pipe shall have the last 3" of the

interior taped prior to lining to allow for bare pipe at the welded joints. The interior of all pipe joints must be sealed welded with no voids. After the joints are welded and prior to placing the pipe in service, the welded joints and any adjacent areas shall be prepared to achieve a level of cleanliness equal to SSPC-SP 10 Near White Metal Blast Cleaning. This will include a thorough cleaning to remove any weld smoke, anti-splatter, oil deposited on the surface or other foreign contamination. The finished joint application shall be a minimum of 20 mils dry film thickness. All joint repairs shall be performed as indicated by the specification including pinhole detection and inspected independent of the contractor to insure compliance with the specification. Holiday detection and inspection independent of the contractor shall insure compliance with the specification resulting in a finished, continuous lining equal in all respects to the original lining, as outlined in this specification.

V. Testing of Lining

- A. The dry film thickness of the lining shall be measured using a magnetic film thickness gauge. Measurements shall be taken per SSPC PA2 Section 5.1. Minimum dry film thickness must be 20 mils.
- B. The lined areas of the pipe from the edge of the spigot back to the gasket or the lined interior of the welded pipe, shall be tested at the lining facility for pinholes using a non-destructive 2500 volt maximum pinhole detection test as described in ASTM-D-5162-01. Any pinholes found shall be repaired prior to shipment.
- C. The pipe or fitting fabricator must supply a certificate of conformance certifying that the applicator met the requirements of this specification, that the approved material was used, and that the material was applied as required by the specification.

VI. Jobsite Repair

Follow the repair requirement described in *Ceramapure Repair Procedure*.