

Suggested Specifications for Elevator Cylinder Pipe with Applied Extruded Coating

These specifications describe the adhesive undercoating applied to the outside surface of cylinder pipe, the polyethylene coating applied over the undercoat, joint treating, handling and coating repair.

1.0 Pipe Surface Preparation

The bare cylinder pipe shall be preheated by burners to drive off all surface moisture prior to blast cleaning and undercoating. The dried pipe OD shall then be blast-cleaned, using steel shot or grit, to a NACE No. 3 commercial blast cleaned surface finish.

2.0 Undercoat

The undercoat shall consist of a butyl rubber adhesive with sufficient properties to adhere to both the metal pipe OD and the plastic overcoat sheath to effectively resist moisture penetration and migration. This butyl-type adhesive shall be applied to pipe at temperatures exceeding 265° F, at a uniform, minimum thickness of 10 mils.

3.0 Overcoat Sheath

The overcoating shall be a virgin, high molecular weight polyethylene and hot extruded over the undercoating to a uniform thickness, entirely free of surface blemishes, cracks, or voids, and also free of contamination from foreign substances. This polyethylene sheath shall have a minimum thickness of 40 mils.

4.0 Bonding

The coated pipe shall be quenched following overcoating so as to achieve permanent bonding of the undercoat to the pipe, and also permanent bonding of the polyethylene overcoat to the undercoat.

5.0 Inspecting

Immediately after bonding, the coated pipe shall be tested for defects using a holiday detector, per NACE RE-02-74 (8000 volts minimum).

6.0 Recommended Joint Treatment (In the field)

The joint shall be preheated with burner or torch to drive off all surface moisture, prior to apply a heat shrinkable pipe sleeve as supplied by Canuso, Raychem or equal. The sleeve is to be centered on the joint and then wrapped around the joint, removing the release liner during wrapping, but leaving the liner on the last 12 inches of sleeve.

The overlap area is to be heated with a torch, the operator pressing down firmly with a gloved hand to smooth out wrinkles and heated until melted adhesive migrates to the outer edge of the sleeve. The remaining release liner shall then be removed to complete the circumferential wrap. The overlap shall be heated and pressed into place.

The torch shall then be used to heat shrink all around the remaining diameter of the pipe. The sleeve shall be heated toward one end, and then the other end and the joint finished off by applying long torch strokes to the overlap area.

7.0 Field Handling

Coated cylinder pipe requires careful handling during installation to minimize the possibility of damage to the coating. The installing contractor shall use padded end hooks and nylon-type slings with spreader bars to position the coated pipe.

8.0 Coating Repairs (In the field)

The plastic overcoat on any elevator cylinder section may be repaired, if necessary, only with the use of heat-shrinkable sleeves described in Section 6.0, "Recommended Joint Treatment".

The damaged portion of the polyethylene overcoat shall be prepared for repair by removing all of the plastic sheath that is raised, or does not adhere to the undercoating. Any sheath surface that will be under the sleeve used for repairing the damaged area shall be cleaned and all foreign materials removed.

The repair procedure shall follow those procedures noted in Section 6.0 or as recommended by the sleeve manufacturer.

9.0 Bottom End Cap

The integrity of the entire elevator cylinder pipe system necessarily depends on the integrity of the seal between the bottom pipe and the pipe cap. This end cap must be monolithic with the extruded coating, either by continuous extrusion or plastic welding, and holiday-tested the same as the coated pipe, and also protected during transportation and handling.

The bottom end cap, therefore, shall be a high molecular weight polyethylene cap, welded to the bottom pipe section, and protected during shipment by a cushioned, metallic oversheath.

PRIMARY PROPERTIES

Undercoating Adhesive

Compounded butyl rubber
Specific Gravity, 77 °F : 1.08 to 1.20
(ASTM D71)
Penetration, mm, 77 °F : 8 to 12
(ASTM D5)
Softening Point, °F : 140 to 170
(ASTM E28)
Adhesion-Cohesion : 60 lb. Cohesive failure

Polyethylene Overcoating

High molecular weight, stabilized for
UV protection
Density (pigmented) : 0.957 g/cm³ typical
(ASTM D1505)

Extruded Coating

Abrasion Resistance : no change (ASTM G6-69)
Adhesion: does not fail adhesively
Cathodic Disbonding : 30 days @ 77 °F = 0.15 in²
(ASTM G8-72)
Dielectric Strength : 700-800 v/mil
(ASTM D149-64)
Environmental Stress Crack Resistance :
100% Igepal CO-630; T[°] > 1000 hrs
(ASTM 1693-70)
Resistance to Acids, Alcohol, Alkalies, Amines,
Bacteria, Fungus, Water and Weather; all
excellent ... Resistance to hydrocarbons and
oils from fair to good.

Temperature Range : -40°F to +180° F
Tensile Strength : 2700 psi (ASTM D638-72)
Water Penetration : remained constant
(ASTM G9-72)

Note: This property data believed to be reliable, but CEMCOLIFT does not guarantee its accuracy.



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