

## SECTION 16130

### RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS: CONDUITS FOR USE IN CORROSIVE ENVIRONMENTS

#### PART 1: GENERAL

##### 1.1 SCOPE

The PVC-coated, threaded conduit system is specifically designed to prevent corrosive conditions from causing early replacement of the conduit. All the conduit, fittings, and supporting products shall be provided by the same manufacturer to ensure that a five-year product warranty is achieved.

##### 1.2 CLASSIFICATION AND USE

The PVC-coated, threaded conduit system is approved for all applications where rigid metal conduit is permitted excluding duct specifically fabricated for environmental air. Also, it will replace the need for wider fill around Rigid Metal Conduit (RMC) where judged suitable for the conditions (reference NEC Article 344, II, C).

#### PART 2: PRODUCT

##### 2.1 MANUFACTURER

Approved material: PVC-coated, Galvanized Rigid Conduit (GRC) and fittings as manufactured by Plasti-Bond, Perma-Cote, and KorKap. Any deviation will require approval of the specifying engineer or owner and shall meet all the performance standards specified herein American Society for Testing and Materials (ASTM) and Underwriter Laboratories (UL). All performance standards require verification by a nationally recognized testing agency.

##### 2.2 MATERIALS

2.2.1 The PVC coated galvanized rigid conduit must be UL Listed. The PVC coating must have been investigated by UL as providing the primary corrosion protection for the rigid metal conduit. Ferrous fittings for general service locations must be UL Listed with PVC as the primary corrosion protection. Hazardous location fittings, prior to plastic coating must be UL listed. All conduit and fittings must be new, unused material. Applicable UL standards may include: UL 6 Standard for Safety, Rigid Metal Conduit, UL514B Standard for Safety, Fittings for Conduit and Outlet Boxes.

2.2.2 The PVC coated galvanized rigid conduit must be ETL Verified to the Intertek ETL SEMKO High Temperature H2O PVC Coating Adhesion Test Procedure for 200 hours. The PVC coated galvanized rigid conduit must bear the ETL Verified PVC-001 label to signify compliance to the adhesion performance standard.

2.2.3 The conduit shall be hot dip galvanized inside and out with hot galvanized threads.

- 2.2.4 A PVC sleeve extending one pipe diameter or two inches, whichever is less, shall be formed at every female fitting opening except unions. The inside sleeve diameter shall be matched to the outside diameter of the conduit.
- 2.2.5 The PVC coating on the outside of conduit couplings shall have a series of longitudinal ribs 40 mils in thickness to protect the coating from tool damage during installation.
- 2.2.6 Form 8 Condulets, 1/2" through 4" diameters, shall be Form 8 with a V-Seal tongue-in-groove gasket and supplied with plastic encapsulated stainless steel cover screws. Form 8 condulets shall be UL Type 4X listed and IEC IP69 certified. Condulets shall be from the same manufacturer as the conduit in order to maintain system continuity and warranty.
- 2.2.7 PVC Coated Fittings for Hazardous Locations must be UL 1203 Listed. Sealing Fittings must be properly installed and visually verified using the P5SA feedback system.
- 2.2.8 A urethane coating shall be uniformly and consistently applied to the interior of all conduit and fittings. This internal coating shall be a nominal 2 mil thickness. Conduit or fittings having areas with thin or no coating shall be unacceptable.
- 2.2.9 The PVC exterior and urethane interior coatings applied to the conduit shall afford sufficient flexibility to permit field bending without cracking or flaking at temperatures above 30°F (-1°C).
- 2.2.10 A "PVC Coated Sealing Locknut" shall be used on all exposed male threads transitioning into female NPT threads which do not have sealing sleeves, including transitions from PVC couplings/female adapters to PVC coated GRC elbows in direct burial applications. "PVC Coated Sealing Locknuts" are not to be used in place of a conduit hub.
- 2.2.11 All female threads on fittings or conduit couplings shall be protected by application of a urethane coating.
- 2.2.12 Independent certified test results shall be available to confirm coating adhesion under the following conditions
- A. Conduit and conduit exposure to 150°F (65°C) and 95% relative humidity with a minimum mean time to failure of 30 days. (ASTM D1151)
  - B. The interior coating bond shall be confirmed using the Standard Method of Adhesion by Tape Test (ASTM D3359).
  - C. No trace of the internal coating shall be visible on a white cloth following six wipes over the coating which has been wetted with acetone (ASTM D1308).
  - D. The exterior coating bond shall be confirmed using the methods described in Section 3.8, NEMA RN1. After these tests the physical properties of the exterior coating shall exceed the minimum requirements specified in Table 3.1, NEMA RN1.

- 2.2.13 Right angle beam clamps and U bolts shall be specially formed and sized to snugly fit the outside diameter of the coated conduit. All U bolts will be supplied with plastic encapsulated nuts that cover the exposed portions of the threads.
- 2.2.14 Installation of the PVC Coated Conduit System shall be performed in accordance with the Manufacturer's Installation Manual. To assure correct installation, the installer shall be certified by Manufacturer to install coated conduit.
- 2.2.15 Approved material: PVC-coated, Galvanized Rigid Conduit (GRC) and fittings as manufactured by Plasti-Bond, Perma-Cote, and KorKap. Any deviation will require approval of the specifying engineer or owner and shall meet all the performance standards specified herein American Society for Testing and Materials (ASTM) and Underwriter Laboratories (UL). All performance standards require verification by a nationally recognized testing agency.

## PART 3: EXECUTION

### 3.1 INSTALLATION

Those installing PVC Coated Conduit shall be certified by the manufacturer and be able to present a valid, unexpired "Certified Installer" card prior to installation beginning. All clamping, cutting, threading, bending, and assembly instructions listed in the manufacturer's installation guide should be vigorously followed. Installer certification, before installation, is required. Please call the factory at 903-843-5591 for details and scheduling.