

## **SECTION 15300**

## **HDPE PIPE for FIRE PROTECTION**

### **PART 1: GENERAL**

- 1-1 DESCRIPTION: The work in this section consists of providing High Density Polyethylene (HDPE) pipe and fittings.
- 1-2 RELATED WORK SPECIFIED ELSEWHERE: Utility Trenching and Backfilling – Section **XXXXX**. Piping Accessories – Section **XXXXX**. Valves – Section **XXXXX**. Testing – Section **XXXXX**.
- 1-3 QUALITY ASSURANCE: References, American National Standards Institute (ANSI), American Society for Testing and Materials (ASTM), Federal Specifications (FS), International Standards Organization (ISO), Factory Mutual Research Corporation and manufacturer's printed recommendations. Product will have Factory Mutual logo on finished product.
- 1-4 SUBMITTALS: Material list naming each product to be used identified by manufacturer and type number, in accordance with Section 01300. Data shall be provided indicating that the product meets Factory Mutual requirements.
- 1-5 PRODUCT HANDLING: Handle pipe and fittings to insure delivery in a sound undamaged condition.
- 1-6 JOB CONDITIONS: Do not lay pipe when trenches or weather conditions are not suitable for such work.

### **PART 2: MATERIALS**

- 2-1 PIPE:
- A. Pipe shall be manufactured from a PE 3608 resin listed with the Plastic Pipe Institute (PPI) as TR-4. The resin material will meet the specifications of ASTM D 3350 with a minimum cell classification of 345464C. Pipe shall have a manufacturing standard of ASTM F 714. Pipe shall be supplied in two Classes 150 and 200 based on Factory Mutual Standards. Class 150 shall be used for applications requiring 150 psi or less. And Class 200 will be used for 200 psi or less. The pipe shall contain no recycled compounds except that generated in the manufacturer's own plant from resin of the same specification from the same raw material
- 2-2 FITTINGS:
- A. Butt Fusion Fittings - Fittings shall be PE3608 HDPE, minimum cell classification of 345464C as determined by ASTM D 3350. Molded butt

fusion fittings shall have a manufacturing standard of ASTM D 3261. Molded and fabricated fittings shall have the same pressure rating as the pipe unless otherwise specified on the plans. All fabricated fittings shall be made using a Data Logger. Temperature, fusion pressure and a graphic representation of the fusion cycle shall be part of the Quality Control records. Fittings will be made and tested to Factory Mutual requirements. The FM logo shall be on the fitting.

- B. Electrofusion Fittings - Fittings shall be PE3608 HDPE, minimum cell classification of 345464C as determined by ASTM D 3350. Electrofusion Fittings shall have a manufacturing standard of ASTM F 1055. Fittings shall have the same pressure rating as the pipe unless otherwise specified on the plans.
- C. Flanged and Mechanical Joint Adapters - Flanged and Mechanical Joint Adapters shall be PE 3608 HDPE, minimum cell classification of 345464C as determined by ASTM D3350. Flanged and Mechanical Joint Adapters shall have a manufacturing standard of ASTM D 3261. Fittings shall have the same pressure rating as the pipe unless otherwise specified on the plans. These fitting shall be meet Factory Mutual requirements.

### PART 3: EXECUTION

#### 3-1 GENERAL:

- A. Pipe and Fittings: Size as indicated on the plans. Install as shown in accordance with manufacturer's recommendations.

3-2 HAULING, UNLOADING and DISTRIBUTING PIPE: During loading, transportation and unloading, every precaution shall be taken to prevent injury to the pipe. No pipe shall be dropped from cars or trucks, or allowed to roll down slides without proper retaining ropes. During transportation each pipe shall rest on suitable pads, strips, skids or blocks securely wedged or tied in place. Any pipe damaged shall be replaced.

3-3 EXCAVATION AND TRENCHING: Section 02221.

#### 3-4 FUSION:

- A. Sections of polyethylene pipe should be joined into continuous lengths on the jobsite above ground. The joining method shall be the butt fusion method and shall be performed in strict accordance with the pipe manufacturer's recommendations. The butt fusion equipment used in the joining procedures should be capable of meeting all conditions recommended by the pipe manufacturer, including, but not limited to, temperature requirements of 400-450 degrees Fahrenheit, alignment, and an interfacial fusion pressure of 75 PSI. The butt fusion joining will produce joint weld strength equal to or greater than the tensile strength of

the pipe itself. All field welds shall be made with fusion equipment equipped with a Data Logger. Temperature, fusion pressure and a graphic representation of the fusion cycle shall be part of the Quality Control records.

- B. Sidewall fusions for connections to outlet piping shall be performed in accordance with HDPE pipe and fitting manufacturer's specifications. The heating irons used for sidewall fusion shall have an inside diameter equal to the outside diameter of the HDPE pipe being fused. The size of the heating iron shall be larger than the size of the outlet branch being fused.
- C. Mechanical joining will be used where the butt fusion method cannot be used. Mechanical joining will be accomplished by either using a HDPE flange adapter with a Ductile Iron back-up ring or HDPE Mechanical Joint adapter with a Ductile Iron back-up ring. Where Mechanical joints are used, these connections must be made using components that meet Factory Mutual requirements and show the FM logo.
- D. Socket fusion, hot gas fusion, threading, solvents, and epoxies will not be used to join HDPE pipe.

3-5 INSPECTION: Inspect the pipe for defects before installation and fusion. Defective, damaged or unsound pipe will be rejected.

3-6 TESTING: Hydrostatic testing shall be in accordance with Section XXXXX.

3-7 DISINFECTION: In accordance with Section XXXXX.  
(Required only for drinking water applications.)

#### PART 4: MEASUREMENT AND PAYMENT

4-1 HDPE PIPE, FITTINGS AND ACCESSORIES: Payment will be included under the bid item to which the work relates.

END  
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