

**Fusible C-900®, Fusible C-905®, FPVC®, and Fusible PVC™
FUSIBLE POLYVINYLCHLORIDE PIPE MATERIAL SPECIFICATION**

PART 1 –GENERAL

1.01 DESCRIPTION

A SCOPE

1. This material specification covers requirements of fusible polyvinylchloride pipe, including Fusible C-900®, Fusible C-905®, and FPVC®.
2. Pipe shall conform to the following dimensionality and properties table:

| <u>Pipe Description</u> | <u>Nominal Diameter (in.)</u> | <u>DR</u> | <u>Color</u> | <u>Pressure Class (psi)</u> | <u>Required Inner Diameter (in.)</u> |
|-------------------------|-------------------------------|-----------|--------------|-----------------------------|--------------------------------------|
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1.02 QUALITY ASSURANCE

A REFERENCES

1. References indicated shall mean the latest revision or issuance, unless specifically indicated in the table below:

| Reference | Title |
|------------|---|
| AWWA C900 | Standard for Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 in. through 12 in. (100mm Through 300mm), for Water Distribution |
| AWWA C905 | Standard for Polyvinyl Chloride (PVC Pressure Pipe and Fabricated Fittings, 14 in. through 48 in. (350mm Through 1200mm), for Water Distribution and Transmission |
| AWWA M23 | AWWA Manual of Supply Practices PVC Pipe—Design and Installation, Second Edition |
| ASTM D1784 | Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds |
| ASTM D1785 | Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120 |
| ASTM D2152 | Test Method for Degree of Fusion of Extruded Poly(Vinyl Chloride) (PVC) Pipe and Molded Fittings by Acetone Immersion |
| ASTM D2241 | Poly (Vinyl Chloride) (PVC) Plastic Pipe (SDR-PR) |
| ASTM D3034 | Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings |
| ASTM F679 | Standard Specification for Poly(Vinyl Chloride) (PVC) Large Diameter Plastic Gravity Sewer Pipe and Fittings |
| NSF-14 | Plastics Piping System Components and Related Materials |
| NSF-61 | Drinking Water System Components--Health Effects |
| PPI TR-2 | PVC Range Composition Listing of Qualified Ingredients |

B MANUFACTURER REQUIREMENTS

1. All piping shall be made from a PVC compound conforming to cell classification 12454 per ASTM D1784.

C FUSION TECHNICIAN REQUIREMENTS

1. Fusion Technician shall be qualified by the pipe supplier to install fusible polyvinylchloride pipe of the type(s) and size(s) being used. Qualification shall be current as of the actual date of fusion performance on the project.

D SPECIFIED PIPE SUPPLIERS

1. Fusible polyvinylchloride pipe shall be used as manufactured under the trade names Fusible C-900®, Fusible C-905®, and FPVC®, for Underground Solutions, Inc., Poway, CA, (858) 679-9551. Fusion process shall be as patented by Underground Solutions, Inc., Poway, CA, Patent No. 6,982,051.

E WARRANTY

1. The pipe shall be warranted for one year per the pipe supplier's standard terms.
2. In addition to the pipe warranty, the fusion services shall be warranted for one year per the fusion service provider's standard terms.

PART 2 – PRODUCTS

2.01 FUSIBLE POLYVINYLCHLORIDE PIPE

- A** Fusible polyvinylchloride pipe for potable water shall conform to AWWA C900, AWWA C905, ASTM D2241 or ASTM D1785, as applicable. Testing shall be in accordance with the referenced AWWA standards for all pipe types. Pipe shall be marked verifying suitability for potable water service per NSF-61.
- B** Fusible polyvinylchloride pipe for non-potable water or pressurized wastewater not conforming to AWWA C905 dimensionality shall conform to AWWA C900, ASTM D2241 or ASTM D1785 for standard dimensionality, as applicable. Testing shall be in accordance with the referenced AWWA standards.
- C** Fusible polyvinylchloride pipe for non-potable water or pressurized wastewater conforming to AWWA C905 dimensionality shall conform to AWWA C905.
- D** Fusible polyvinyl chloride pipe for non-pressure storm or wastewater not conforming to AWWA C905 dimensionality shall conform to ASTM D3034, ASTM F679, AWWA C900, ASTM D2241, or ASTM D1785 for standard dimensions, as applicable. Testing shall be in accordance with the applicable standard used.
- E** Fusible polyvinylchloride pipe for non-pressure storm or wastewater conforming to AWWA C905 dimensionality shall conform to AWWA C905.
- F** Fusible polyvinylchloride pipe shall be extruded with plain ends. The ends shall be square to the pipe and free of any bevel or chamfer. There shall be no bell or gasket of any kind incorporated into the pipe.
- G** Fusible polyvinylchloride pipe shall be manufactured in a standard 40' nominal length or custom lengths as specified.

- H Fusible polyvinylchloride pipe shall be blue in color for potable water use. Fusible polyvinylchloride pipe shall be purple in color for reclaim, reuse, or other non-potable use. Fusible polyvinylchloride pipe shall be green in color for wastewater use. Fusible polyvinylchloride pipe shall be white in color for surface or storm water use.
- I Pipe shall be marked as follows:
1. Nominal pipe size
 2. PVC
 3. Dimension Ratio, Standard Dimension Ratio or Schedule
 4. AWWA pressure class, or standard pressure rating for non-AWWA pipe, as applicable
 5. AWWA standard designation number, or pipe type for non-AWWA pipe, as applicable
 6. Extrusion production-record code
 7. Trademark or trade name
 8. Cell Classification 12454 and/or PVC material code 1120 may also be included
- J Pipe shall be homogeneous throughout and be free of visible cracks, holes, foreign material, blisters, or other visible deleterious faults.

2.02 FUSION JOINTS

- A Unless otherwise specified, fusible polyvinylchloride pipe lengths shall be assembled in the field with butt-fused joints. The fusion technician shall follow the pipe supplier's guidelines for this procedure. All fusion joints shall be completed as described in this specification.

2.03 FUSIBLE POLYVINYL CHLORIDE SWEEPS OR BENDS

- A Fusible polyvinyl chloride sweeps or bends shall conform to the same sizing convention, diameter, dimensional tolerances and pressure class of the pipe being joined by the sweep or bend.
- B Fusible polyvinyl chloride sweeps or bends shall be manufactured from the same fusible polyvinyl chloride pipe being used for the installation, and shall have at least 2 feet of straight section on either end of the sweep or bend to allow for fusion of the sweep to the pipe installation. There shall be no gasketed connections utilized with a fusible polyvinyl chloride sweep.
- C Standard fusible polyvinyl chloride sweep or bend angles shall not be greater than 22.5 degrees, and shall be used in nominal diameters ranging from 4 inch through 16 inch.

PART 3 - EXECUTION

3.01 HANDLING AND STORAGE

- A Pipe shall be off-loaded, loaded, installed, handled, stored and stacked per the pipe supplier's guidelines. These guidelines include compliance with the minimum recommended bend radius and maximum safe pull force for the specific pipe being used.

B The general best practices of the industry per AWWA M23 shall also be observed.

3.02 FUSION PROCESS

A Fusible polyvinylchloride pipe will be handled in a safe and non-destructive manner before, during, and after the fusion process and in accordance with this specification and pipe supplier's guidelines.

B Fusible polyvinylchloride pipe will be fused by qualified fusion technicians holding current qualification credentials for the pipe size being fused, as documented by the pipe supplier.

C Pipe supplier's procedures shall be followed at all times during fusion operations.

D Each fusion joint shall be recorded and logged by an approved electronic monitoring device (data logger) connected to the fusion machine, which utilizes a current version of the pipe supplier's recommended and compatible software.

E Only appropriately sized and outfitted fusion machines that have been approved by the pipe supplier shall be used for the fusion process. This includes requirements for safety, maintenance, and operation with modifications made for PVC.

3.03 GENERAL INSTALLATION

A Installation guidelines from the pipe supplier shall be followed for all installations.

B The fusible polyvinylchloride pipe will be installed in a manner so as not to exceed the recommended bending radius guidelines.

C Where fusible polyvinylchloride pipe is installed by pulling in tension, the recommended maximum safe pulling force, established by the pipe supplier, shall not be exceeded.

****END OF SECTION****