

Harvel® Blazemaster® CPVC Fire Sprinkler Pipe

Application:

Corrosion resistant fire sprinkler pipe, IPS sizes 3/4" through 3", for use in wet automatic fire sprinkler systems. When installed in accordance with Harvel's Installation Instructions, this pipe is Listed by Underwriters Laboratories (UL) for use in: Light Hazard Occupancies as defined in the Standard for Installation of Sprinkler systems (NFPA 13); Residential Occupancies up to and including four stories in height (NFPA 13R); and Residential Occupancies as defined in the Standard for Sprinkler Systems in One and Two Family Dwellings and Mobile Homes (NFPA 13D). Harvel BlazeMaster, pipe is UL Listed for use in Return Air Plenums (NFPA 90A), System Risers per NFPA 13 Light Hazard, 13R and 13D, Exposed installations, Garages per NFPA 13R, and for use as Underground Fire Service Mains (NFPA 24) when installed in accordance with Harvel CPVC Fire Sprinkler Pipe Installation Instructions.

Scope:

This specification outlines minimum manufacturing requirements for Chlorinated Polyvinyl Chloride (CPVC) standard dimension ratio (SDR) 13.5 series iron pipe size (IPS) fire sprinkler pressure pipe. Pipe is intended for use in wet automatic fire sprinkler systems when installed in accordance with Harvel Plastics, Inc. CPVC Fire Sprinkler Piping Products Installation Instructions. Harvel, BlazeMaster, pipe carries a maximum working pressure of 175 psi @ 150° F. Pipe meets or exceeds applicable industry standards and requirements as set forth by the American Society for Testing and Materials (ASTM), the National Sanitation Foundation (NSF), and Underwriters Laboratories (UL). Harvel, BlazeMaster, fire sprinkler pipe is approved by the Factory Mutual Corporation (FM) and the Loss Prevention Certification Board (LPCB). Refer to current approval guide and installation and design manual for installation limitations.

CPVC Materials:

The material used in the manufacture of the pipe shall be a rigid chlorinated polyvinyl chloride (CPVC) compound, Type IV Grade I, with a Cell Classification of 23447 as defined in ASTM D1784. The compound and the finished product shall be orange in color, and shall be approved by the National Sanitation Foundation (NSF) for use with potable water. Material used shall be domestically produced BlazeMaster, CPVC material as provided by Noveon, Inc. (formerly the BFGoodrich Company).

System Design:

The CPVC sprinkler system shall be hydraulically calculated using a Hazen-Williams C factor of 150, and shall be designed in strict accordance with the Standard for Installation of Sprinkler Systems, NFPA 13 Light Hazard, NFPA 13R, and NFPA 13D as applicable.

Dimensions:

Harvel BlazeMaster, CPVC fire sprinkler pipe shall be manufactured to Standard Dimension Ratio (SDR) 13.5 dimensions in strict accordance to the requirements of ASTM F442 for physical dimensions and tolerances. Each production run of pipe manufactured in compliance to this standard, shall also meet the test requirements for materials, workmanship, burst pressure, flattening, and extrusion quality defined in ASTM F442. Furthermore, this pipe shall consistently meet or exceed the physical performance test requirements of the appropriate approval/listing agency(s) follow-up procedures established for the product.

Marking:

Product marking shall meet the requirements of ASTM F 442 and the Listing agency. Marking shall include: the phrase Harvel® BlazeMaster® (or the manufacturers' trademark when privately labeled); the nominal pipe size; the type of material and material designation code; the SDR series and pressure rating for water (SDR 13.5; 175 psi @ 150° F); the ASTM designation F 442; the logo of the Listing and Approval agencies (UL, FM, LPCB, etc.); the independent laboratory's seal of approval for potable water usage (NSF-pw); the date and time of manufacture; and the UL assigned control number (2N95).

Installation Procedures:

All installation procedures such as storage and handling, solvent cement joining techniques, pipe support spacing, bracing, allowance for thermal expansion/contraction, component assembly techniques, and testing etc. shall be in strict accordance with Harvel Plastics, Inc. Installation Instructions and the UL Listing which includes installation limitations.

System Components:

Fittings used shall be UL Listed CPVC fittings and shall meet or exceed the requirements of ASTM F437 (Sch 80 threaded), ASTM F437 (Sch 80 socket), or ASTM F438 (Sch 40 socket) as applicable, such as those manufactured by Spears Manufacturing Co. or equivalent. Solvent cements used shall be those referenced in Harvel Plastics, Inc. Installation Instructions (such as Spears FS-5 or equivalent), which meet or exceed the requirements of ASTM F656 and ASTM F493, and shall be approved by the National Sanitation Foundation (NSF) for use with potable water. Socket type joints, sizes 3/4" - 3", shall be made up using the One-Step solvent cement joining method. The solvent cement joining method chosen shall be applied in strict accordance with the appropriate procedures as outlined in Harvel Plastics Installation Instructions.

Maintenance:

Maintenance shall be in accordance with the Standard for Inspection, Testing, and Maintenance of Water Based Sprinkler Systems as defined by NFPA 25.

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Limitations:

- CPVC systems are intended for use at a maximum working pressure of 175 psi and ambient temperature of 150° F.
- CPVC systems shall employ sprinkler heads having a maximum temperature rating of 225° F or lower, regardless of type.
- CPVC products shall be installed in wet pipe systems only.
- Air or compressed gas shall never be used for pressure testing.
- CPVC sprinkler systems shall be hydrostatically tested for 2 hours at 200 psi, or 50 psi in excess of the maximum working pressure when the maximum working pressure exceeds 150 psi. Lines shall be slowly filled with water and the air bled from the highest and farthest sprinkler heads before test pressure is applied.
- Only Teflon® tape or a thread sealant specifically approved for use with Harvel® CPVC Fire Sprinkler Products shall be used in making threaded connections.
- Where freeze protection is required, only glycerin based anti-freeze solutions shall be used and installed in accordance with NFPA 13. Do not use glycol base anti-freeze solutions or contaminated glycerin solutions.
- CPVC is not approved for use in combustible concealed spaces where sprinklers are required to protect these areas as defined by NFPA 13, unless certain specific application sprinklers are installed per their listing. Refer to Harvel's current Installation Instructions for additional information.
- CPVC sprinkler piping may be installed in a plenum space adjacent to, but not over, openings in the ceiling such as open ventilation grills, and require the use of schedule 80 fittings for use on 1/2" and larger pipe sizes. Refer to Installation Instructions for additional detail.
- Minimum protection when installed "concealed" shall consist of: 3/8" gypsum wallboard or drywall, suspended membrane ceiling panels weighing not less than .35 pounds per square foot, or 1/2" plywood soffits. Minimum protection for NFPA 13R and 13D systems may consist of 1/2" plywood.
- Harvel, BlazeMaster, pipe is Listed for use in exposed applications with certain limitations. When installed without protection, "exposed" pipe is to be installed beneath smooth, flat, horizontal ceiling construction. Exposed categories include: standard coverage and residential pendent and sidewall sprinkler applications, light hazard extended coverage and residential sprinkler pendent and sidewall sprinkler applications, use in unfinished basements with exposed solid wood joists, light hazard upright quick response sprinklers, and system risers (in 13R & 13D occupancies). Refer to Harvel's installation instructions for specific sprinkler head temperature ratings and spacing requirements. The product must be installed in strict accordance with NFPA 13, 13D, 13R and Harvel's current CPVC Fire Sprinkler Piping Products Installation Instructions (HFS-3).
- Harvel CPVC Fire Sprinkler Products must be installed in accordance with Harvel's current installation instructions (HFS-3).

Harvel CPVC Fire Sprinkler Pipe Dimensions SDR 13.5 (ASTM F442)

| Nominal Size (in.) | Average O.D. | Min. Wall | Average I.D. | Nom. Wt. Lbs./Ft. |
|--------------------|--------------|-----------|--------------|-------------------|
| 3/4 | 1.050 | 0.078 | 0.874 | 0.168 |
| 1 | 1.315 | 0.097 | 1.101 | 0.262 |
| 1-1/4 | 1.660 | 0.123 | 1.394 | 0.418 |
| 1-1/2 | 1.900 | 0.141 | 1.598 | 0.548 |
| 2 | 2.375 | 0.176 | 2.003 | 0.859 |
| 2-1/2 | 2.875 | 0.213 | 2.423 | 1.257 |
| 3 | 3.500 | 0.259 | 2.950 | 1.867 |

Refer to this document for current listing limitations and installation requirements.

ASTM STANDARD D1784 MATERIAL CLASSIFICATION EQUIVALENTS:

Cell Classification 23447 = CPVC
Type IV Grade I = CPVC 4120

PIPE SIZES SHOWN ARE
MANUFACTURED IN STRICT
COMPLIANCE WITH ASTM F442



Sample Specification:

All CPVC fire sprinkler pipe shall be manufactured from a Type IV, Grade I Chlorinated Polyvinyl Chloride (CPVC) compound with a Cell Classification of 23447 per ASTM D1784. Pipe shall be manufactured in strict compliance with ASTM F442 to SDR 13.5 dimensions, consistently meeting the Quality Assurance test requirements of this standard with regard to material, workmanship, burst pressure, flattening, and extrusion quality. All CPVC fire sprinkler pipe shall be Listed by Underwriters Laboratories for wet pipe systems, and shall carry a rated working pressure of 175 psi @ 150° F. All CPVC fire sprinkler pipe shall be installed in accordance with Harvel Plastics, Inc. CPVC Fire Sprinkler Piping Products Installation Instructions. National Fire Protection Association (NFPA) Standards 13, 13D, and 13R must be referenced for design and installation requirements in conjunction with the Installation Instructions. All CPVC fire sprinkler pipe shall be manufactured in the USA by an ISO 9001 certified manufacturer and shall be FM and LPCB approved. All CPVC fire sprinkler pipe shall be packaged immediately after its manufacture to prevent damage and shall be stored indoors after production, at the manufacturing site, until shipped from factory. This pipe shall bear the logo of the listing agencies, and shall carry the National Sanitation Foundation (NSF) seal of approval for potable water applications. All CPVC fire sprinkler pipe shall be Harvel® Blazemaster® pipe as manufactured by HARVEL® PLASTICS, INC.