

# Ultra-Corr™ PVC Sewer Pipe

## Short Form Specification Product Data Form

Extrusion Technologies, Inc.

### Introduction

Ultra-Corr™ Poly(Vinyl Chloride) corrugated sewer pipe is a high performance, engineered, light weight and cost effective pipe product for the sanitary sewer market. This large diameter profile wall pipe consists of an outer corrugated wall fused to a smooth interior wall for maximum strength, and flow efficiency.

Ultra-Corr™ offers the user a lighter weight, yet structurally strong pipe that utilizes a seamless design, with radial corrugations for easy handling and field fabrication.

Ultra-Corr's™ design enables it to resist earth and impact loads normally associated with sewer and drain pipe installations. The outstanding chemical and corrosion resistance of Ultra-Corr™, along with an integral bell and rubber gasket joint, make it an excellent choice for sanitary sewer systems and other drainage applications.

### Joining System

Ultra-Corr™ features a bell and spigot joint. The rubber gasket is pre-tensioned around the spigot of the pipe and inserted into a smooth bell, providing a tight joint in compliance with ASTM D3212.

This assures the user that a maximum infiltration rate of 50 U.S. gal/inch dia./mile/day or less can easily be achieved.

### Flow Characteristics

The Ultra-Corr™ manufacturing process produces a smooth interior pipe for efficient hydraulic design. The non-porous PVC, together with longer lengths and fewer joints, yield a Manning "n" value of n=.009. This results in flatter grades, higher velocities or smaller diameters compared to pipes with higher "n" values.

### Fittings

All fittings furnished with Ultra-Corr™ shall have the sealing dimensions listed in ASTM F949. Fittings shall be fabricated from the pipe meeting the requirements of ASTM F949 or from SDR 35 pipe meeting the requirements of ASTM F679.

### Structural Design

Ultra-Corr™ is a profile wall PVC sewer pipe. It has a corrugated outer pipe and a smooth inner pipe, which are fully fused together at the corrugation valley.

Ultra-Corr™ is a flexible conduit and has a minimum pipe stiffness ( $F/\Delta y$ ) of 50 psi when tested in accordance with ASTM D2412. It is tough and durable, designed to handle the impact loads normally found during installation. Ultra-Corr™ offers excellent resistance to abrasion, gouging and scarring.

It will not rot or corrode and cannot be harmed by sewer acids or fluids normally found in ordinary domestic sewage.

### Field Cutting and Joining

Because the corrugations are perpendicular to the axis of the pipe, the pipe can be cut between any corrugation, in the valley. The rubber gasket can be moved and repositioned easily without special end preparation that is required with spirally wound pipes. In addition, since the gasket is symmetrical, it works in either direction. Gasket material meets the requirements of ASTM F477.

### Installation and Testing

When installing Ultra-Corr™ pipe, the trench should be excavated with bell holes to give uniform bearing along the full length of each pipe section.

The trench should be wide enough to allow for proper placement and compaction of haunching material. While only the engineer may specify and approve installation and testing procedures, ETI recommends adherence to Uni-Bell publication UNI-PUB-6, "Installation Guide of PVC Sewer Pipe".

### Infiltration Testing

Infiltration shall not exceed 50 U.S. gallons/inch dia./mile/day. Standard air, infiltration, exfiltration tests as described in Uni-Bell, UNI-B-6, "Recommended Practice for Low Pressure Air Testing of Installed Sewer Pipe", and/or TV scan are recommended.

### Deflection Testing

When specified, tests for pipe deflection shall be conducted on a random basis with the engineer determining the number and location. Deflection should be a percentage of the base inside diameter defined by the appropriate ASTM specification.



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## Scope

This short form specification designates the requirements for Ultra-Corr™ PVC Gravity Sewer and Storm Drain Pipe and Fittings.

## General Requirements

Ultra-Corr™ PVC Sewer and Drain Pipe is available in 24, 27, 30 or 36 inch diameters. Pipe shall have a smooth interior with a corrugated exterior. Exterior corrugations shall be perpendicular to the axis of the pipe to allow placement of the sealing gasket without additional cutting or machining. Ultra-Corr™ shall meet the requirements of ASTM F949 and ASTM F794.

## Material

Ultra-Corr™ shall be made of PVC compound having a minimum cell classification of 12454B or 12454C, as defined in ASTM D1784. The fittings shall be made of PVC compound having a cell classification of 12454B, 12454C, or 13343C as defined in ASTM D1784.

## Workmanship

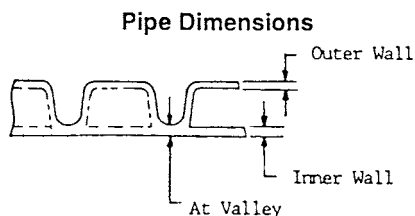
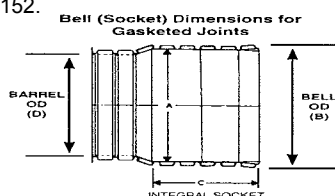
The pipe and fittings shall be homogeneous throughout and free from visible cracks, holes, foreign inclusions, or other injurious defects. The pipe shall be as uniform and commercially practicable in color, opacity, density and other physical properties.

## Flattening

There will be no evidence of splitting, cracking, breaking, or separation of the two walls when the pipe is flattened between parallel plates by 60% of its nominal diameter.

## Extrusion Quality

Pipe shall not disintegrate or flake when tested in accordance with ASTM D2152.



## Impact Resistance

The impact resistance of Ultra-Corr™ shall pass the requirements of ASTM F949.

## Pipe Stiffness

The minimum pipe stiffness ( $F/\Delta y$ ) at 5% deflection shall be 50 psi when tested in accordance with ASTM D2412.

## Marking

Each length of pipe shall be marked with the following information: size, company name or logo, PVC sewer pipe ASTM F949 manufacturers code, and cell classification.

## ASTM Specifications

- D1784** Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds
- D2122** Standard Test Method of Determining Dimensions of Thermoplastic Pipe and Fittings
- D2152** Standard Test Method Adequacy of Extruded Poly(Vinyl Chloride) (PVC) Pipe and Molded Fittings by Acetone Immersion
- D2321** Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
- D2412** Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading
- D2444** Standard Test Method for Determination of the Impact Resistance of Thermoplastic Pipe and Fittings by Means of a Tup (Falling Weight)

- D2564** Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems
- D2855** Standard Practice for Making Solvent-Cemented Joints with Poly(Vinyl Chloride) (PVC) Pipe and Fittings
- D3212** Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
- F402** Standard Practice for Safe Handling of Solvent Cements, Primers and Cleaners Used for Joining Thermoplastic Pipe and Fittings
- F412** Standard Terminology Relating to Plastic Piping Systems
- F477** Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
- F679** Standard Specification for Poly(Vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings
- F794** Standard Specification for Poly(Vinyl Chloride) (PVC) Profile Gravity Sewer Pipe and Fittings Based on Controlled Inside Diameter
- F949** Standard Specification for Poly(Vinyl Chloride) (PVC) Corrugated Sewer Pipe with a Smooth Interior and Fittings
- F1057** Standard Practice for Estimating the Quality of Extruded Poly(Vinyl Chloride) (PVC) Pipe by the Heat Reversion Technique
- AASHTO M304M**: Poly(Vinyl Chloride) (PVC) Profile Wall Drain Pipe & Fittings Based on Controlled Inside Diameter
- 2.2 Federal Standard: Fed. Std. No. 123** Marking for Shipments (Civil Agencies)
- 2.3 Military Standard: MIL-STD-129** Marking for Shipment and Storage

Pipe Size		Average I.D.		Average O.D. Barrel		Minimum Thickness						Approx. Bell O.D.		Approx. Weight
						Inner Wall		Outer Wall		At Valley				
in.	mm.	in.	mm.	in.	mm.	in.	mm.	in.	mm.	in.	mm.	in.	mm.	lbs./ft.
24	600	23.48	596.3	25.58	649.7	.115	2.92	.085	2.16	.123	3.12	28.7	729.0	18.2
27	675	26.46	672.2	28.86	733.0	.125	3.18	.091	2.31	.137	3.48	32.5	825.5	20.2
30	750	29.48	748.8	32.15	816.6	.135	3.43	.105	2.67	.147	3.73	35.8	909.3	26.0
36	900	35.49	901.4	38.74	984.0	.180	4.57	.125	3.18	.171	4.34	43.4	1102.4	36.1

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