

Ultra-Rib™ PVC Sewer Pipe

Short Form Specification

Product Data Form

Extrusion Technologies, Inc.

Introduction

Ultra-Rib PVC Gravity Sewer pipe, manufactured by Extrusion Technologies, Inc., is a unique combination of PVC pipe technology and innovative engineering design. Ultra-Rib brings to the marketplace a cost effective, high quality sewer pipe system. Ultra-Rib offers the user a pipe having a homogenous and seamless cross-sectional wall, ribs perpendicular to the axis of the pipe and a smooth interior for excellent flow characteristics. The Ultra-Rib design enables it to resist earth and impact loads normally associated with sewer pipe installation. The outstanding chemical and corrosion resistance of Ultra-Rib PVC pipe and its integral bell and rubber gasket joint, make it an excellent choice for sanitary sewer systems and other drainage applications.

Joining System

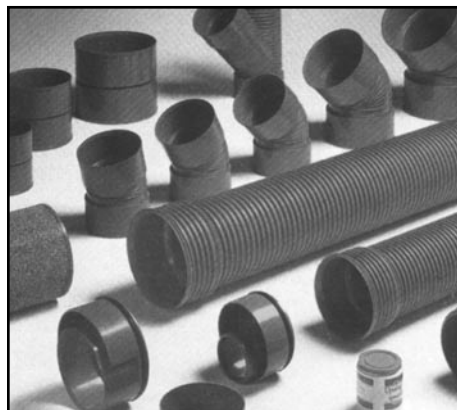


Ultra-Rib features a bell and spigot joint. The rubber gasket is pretensioned around the spigot of the pipe and is inserted into a smooth bell to provide a tight joint in compliance with ASTM D3212.

Flow Characteristics

The Ultra-Rib 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 .009.

Fittings



All fittings furnished with Ultra-Rib pipe are made from smooth wall SDR 35 pipe to Ultra-Rib's sealing dimensions. Fittings are generally Bell x Bell and include Tees, Wyes, T/Ys, Bends, Couplings, Saddles and Gaskets.

Structural Design

Ultra-Rib PVC Sewer Pipe is a flexible conduit having a minimum pipe stiffness ($F/\Delta y$) of 60 psi in sizes 8"-12" and 46 psi in sizes 15"-30" when tested in accordance with ASTM D2412. Ultra-Rib is tough and durable, designed to handle up to 220 ft. lbs. of impact when tested in accordance with ASTM D2444. The relatively thick minimum wall of Ultra-Rib offers excellent resistance to abrasions, gouging and scarring. Ultra-Rib will not rust, rot or corrode and can not be harmed by sewer gas, acids or fluids found in ordinary domestic sewage.



Field Cutting and Joining

Because the ribs are perpendicular to the axis of the pipe, the pipe can be cut between any rib. The rubber gasket can then be placed between the second and third ribs and the pipe joined together to form a water-tight seal. The gasket material meets the requirements of ASTM F477, Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

Installation and Testing

When installing Ultra-Rib pipe, the trench should be excavated with bell holes to give uniform bearing along the full length of each pipe section. The ditch 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, Uponor ETI recommends adherence to Uni-Bell publication UNI-PUB-6, Installation Guide for 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, depending on the project size and soil conditions encountered. Deflection shall be measured by pulling a mandrel or other device through the pipe.



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Short Form Specification: Ultra-Rib™ PVC Gravity Sewer Pipe Sizes 8"-30"

Scope

This short form specification designates the requirements for Ultra-Rib PVC Gravity Sewer Pipe and Fittings for sanitary gravity sewer systems.

General Requirements

Ultra-Rib PVC Gravity Sewer Pipe is available in sizes 8"-30". Pipe shall have a smooth interior with a solid cross sectional rib exterior. Exterior ribs shall be perpendicular to the axis of the pipe to allow placement of the sealing gasket without additional cutting or machining. Ultra-Rib PVC Gravity Sewer Pipe shall be green in color. Ultra-Rib shall meet the requirements of ASTM F794, Specification for Poly(Vinyl Chloride) (PVC) Profile Gravity Sewer Pipe and Fittings Based on Controlled Inside Diameter, and Uni-Bell Uni-B-9, Recommended Performance Specification for Poly(Vinyl Chloride) (PVC) Profile Wall Gravity Sewer Pipe and Fittings Based on Controlled Inside Diameter.

Material

Ultra-Rib shall be made of PVC material having a cell classification of 12454B, 12454C, or 13364B as defined in ASTM D1784, Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds.

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 as commercially practicable in color, opacity, density and other physical properties.

Flattening

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

Extrusion Quality

Pipe shall not disintegrate or flake when tested in accordance with ASTM D2152, Test Method for Degree of Fusion of Extruded Poly(Vinyl Chloride) (PVC) Pipe and Molded Fittings by Acetone Immersion.

Impact Resistance

The impact resistance of Ultra-Rib shall meet the requirements shown below when tested in accordance with ASTM D2444, Test Method for Impact Resistance of Thermoplastic Pipe and Fittings by Means of a Tup (Falling Weight): 8" 210 ft/lbs, and 10"-30" 220 ft/lbs.

Pipe Stiffness

The minimum pipe stiffness ($F/\Delta y$) at 5% deflection shall be 60 psi for 8"-12" when tested in accordance with ASTM D2412, Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading. The minimum pipe stiffness ($F/\Delta y$) at 5% deflection shall be 46 psi for 15"-30" when tested in accordance with ASTM D2412.

Marking

Each length of pipe shall be marked with the following information: size, company name or logo, cell classification, PS 46 or 60 PVC Sewer Pipe, ASTM F794, Ultra-Rib™, and the manufacturer's code.

Applicable ASTM Specifications

- D618 Practice for Conditioning Plastics and Electrical Insulating Materials for Testing
- D883 Terminology Relating to Plastics
- D1784 Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compound
- D2122 Test Method of Determining Dimensions of Thermoplastic Pipe and Fittings
- D2152 Test Method for Degree of Fusion of Extruded Poly(Vinyl Chloride) (PVC) Pipe and Molded Fittings by Acetone Immersion
- D2321 Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
- D2412 Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading
- D2444 Test Method for Impact Resistance of Thermoplastic Pipe and Fittings by Means of a Tup (Falling Weight)
- D2855 Practice for Making Solvent-Cemented Joints with Poly(Vinyl Chloride) (PVC) Pipe and Fittings
- D3212 Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
- F402 Practice for Safe Handling of Solvent Cements, Primers and Cleaners Used for Joining Thermoplastic Pipe and Fittings
- F412 Terminology Relating to Plastic Piping Systems
- F477 Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
- F794 Specification for Poly(Vinyl Chloride) (PVC) Profile Gravity Sewer Pipe and Fittings Based on Controlled Inside Diameter

Ultra-Rib™ Dimensions

Pipe Size		Avg. I.D.		Avg. O.D. Barrel		Min. Wall		wt/ft*	Bell O.D.*	
in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)	(lbs/ft)	in.	(mm)
8	200	7.89	200.4	8.81	223.8	.095	2.41	2.5	10.20	259.1
10	250	9.86	250.5	11.02	279.8	.095	2.41	3.5	12.80	325.2
12	300	11.74	298.1	13.10	332.7	.095	2.41	4.9	15.26	387.7
15	375	14.37	365.0	15.91	404.0	.105	2.67	7.3	18.04	458.1
18	450	17.65	448.3	19.46	494.2	.130	3.30	10.5	22.02	559.3
21	525	20.75	527.0	22.92	582.2	.160	4.06	14.5	26.17	664.8
24	600	23.50	597.0	25.77	654.4	.180	4.57	21.2	28.91	734.4
27	675	26.50	673.1	29.14	740.2	.205	5.21	24.7	32.85	834.4
30	750	29.50	749.3	32.38	822.3	.235	5.97	35.5	36.68	931.5

* approximate

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Rev. 4/03 UR6



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