

VERSADUCT™

IPS High Density Polyethylene Conduit for Fiber Optic and CATV Cables Applications

Made of PE3408/3608, ribbed or smooth wall

SCOPE

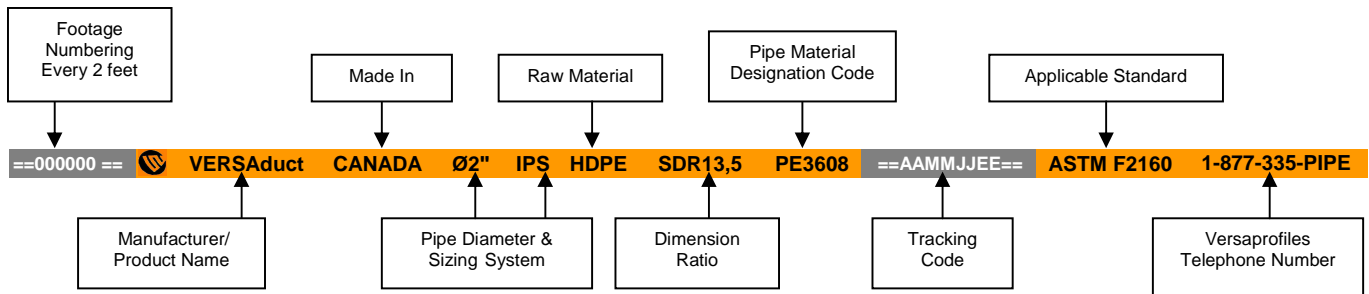
This technical data sheet designates the raw materials properties of the **VERSADUCT™** conduit for cable housing and protection. It describes the minimum requirements established by Versaprofiles for the design and manufacture of a conduit especially created for various fiber optic, electrical and CATV cables applications.

RAW MATERIAL

All **VERSADUCT™** high density polyethylene conduits are manufactured from PE3408/3608 high density polyethylene resin meeting the cell classification 345464, or equivalent, as per ASTM D-3350. The raw material is filled with carbon black as an ultra violet inhibitor and can be stored outside. In addition, this pipe is also available in a solid orange color and is protected against UV rays with a high quality color blend. The raw material also offers good protection against chemical products such as glycol and methanol. (See the tables below for more information.)

PRINTLINE

VERSADUCT™ conduit from **Versaprofiles** is identified with permanent marking and sequential footage numbering every two (2) feet.*



*The example shown here represents 2" SDR13.5 conduit. Some classifications may vary depending of the pipe application.

HANDLING, JOINING AND INSTALLATION

In order to assure the complete integrity of the piping system, do not drag or roll the **VERSADUCT™** pipe across rocks or rough ground. Installation practices for **VERSADUCT™** conduit should comply with guidelines prepared by Plastic Pipe Institute (PPI)¹. **VERSADUCT™** conduit is connected by heat fusions in accordance with ASTM F2620 and Plastic Pipe Institute (PPI)² recommendations. The fittings must be made with the same polyethylene used in the pipe. The product is also offered ribbed to ease the components insertion.

1 : <http://plasticpipe.org/pdf/chapter07.pdf>
2 : <http://plasticpipe.org/pdf/chapter09.pdf>

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RAW MATERIAL PROPERTIES AND CELL CLASSIFICATION

Properties	Cell classification (345464)	ASTM Test Method	Typical Values	
			Imperial Units	SI Units
Density (natural)	3	D 792	-	0.945 g/cm ³
Melt Index	4	D 1238	-	0.08 g/10min.
Flexural Modulus	5	D 790	125,000 psi	861 MPa
Tensile Strength at Yield	4	D 638	3,300 psi	22.7 MPa
Resistance to Slow Crack Growth of Compound (SCG), hrs. (PENT)	6	F 1473	>100 h	>100 h
Hydrostatic Design Basis @ 73°F (23°C)	4	D 2837	1,600 psi	11.0 MPa
Carbon Black Weight Concentration (black option)	C	-	-	2.3%
UV Stabilizer Weight Concentration (orange option)	E	-	-	0.5%
Elongation at Break		D 638	> 800%	> 800%
IZOD Impact Strength, notched		D 256	> 11.0 ft-lb./in.	> 590 J/m
Brittleness Temperature		D 746	< -100°F	< -78°C
Environmental Stress Crack Resistance		D 1693	>1,000 h	>1,000 h
		(C Condition)		
Thermal conductivity			0.24 BTU/hr ft °F	0.42 W/m °K
Specific heat capacity			0.55 BTU/ lb °F	2,300 JK/g °K

STANDARD PRODUCT SIZES AS PER ASTM F2160*

Nominal Pipe Size, IN	Outside Diameter, IN (mm)	Tolerance, IN (mm)	SDR 15.5		SDR 13.5		SDR 11		Ribbed and Smooth option	Available Colors (Standard)
			Average Wall Thickness, IN (mm)	Weight for 100 Ft. LBS (Kg)	Average Wall Thickness, IN (mm)	Weight for 100 Ft. LBS (Kg)	Average Wall Thickness, IN (mm)	Weight for 100 Ft. LBS (Kg)		
1 ¼	1.660	± 0.008	0.117	23.46	0.133	26.39	0.161	31.36	Yes	Black or Orange
	(42.20)	(0.20)	(2.97)	(10.64)	(3.38)	(11.97)	(4.09)	(14.23)		
1 ½	1.900	± 0.010	0.133	30.54	0.151	34.32	0.184	41.03	Yes	Black or Orange
	(48.30)	(0.25)	(3.38)	(13.85)	(3.84)	(15.57)	(4.67)	(18.61)		
2	2.375	± 0.012	0.163	46.85	0.187	53.16	0.229	63.85	Yes	Black or Orange
	(60.30)	(0.30)	(4.14)	(21.25)	(4.75)	(24.11)	(5.82)	(28.96)		
3	3.500	± 0.018	0.240	101.46	0.275	115.04	0.337	138.50	N/A	Black or Orange
	(88.90)	(0.46)	(6.08)	(46.02)	(6.99)	(52.18)	(8.56)	(62.82)		

*Ask your account manager about the availability of the displayed sizes. Versaprofiles may also offer options that are not listed in this document.

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**THERMAL EXPANSION
CALCULATION**

$\Delta L = L \alpha \Delta T$

Where

ΔL = pipeline length variation, ft

L = pipe length, ft

$\alpha = 10^{-6} 67$ (thermal expansion coefficient, in/in/°F)

ΔT = temperature variation, °F

**TEMPERATURE
COMPENSATING MULTIPLIER**

Maximum Pipe Sustained Temperature °F (°C)	Compensating Multiplier
-20 (-29)	2.54
-10 (-23)	2.36
0 (-18)	2.18
10 (-12)	2.00
20 (-7)	1.81
30 (-1)	1.65
40 (4)	1.49
50 (10)	1.32
60 (16)	1.18
73.4 (23)	1.00
80 (27)	0.93
90 (32)	0.82
100 (38)	0.73
110 (43)	0.64
120 (49)	0.58
130 (54)	0.50
140 (60)	0.43

MINIMUM BENDING RADIUS

Pipe Standard Diameter Ratio (SDR)	Minimum Long Term Cold Bending Radius
9 or less	20 X OD
11, 13.5	25 X OD
15.5, 17, 21	27 X OD

OD = Pipe outside diameter.

References :

-ASTM Standards D3350, F2160 et F2620

-Plastic Pipe Institute (PPI), http://plasticpipe.org/publications/pe_handbook.html

Versaprofiles can change the information contained in this document without notice. Please contact the customer service to receive an updated version.