



1601 E. Monroe St.
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HDPE Conduit Specification

General

This specification covers the minimum requirements for Creek Plastics coilable HDPE conduit and is based on ASTM F 2160. Creek Plastics conduit is for use primarily in underground applications as conduit, innerduct, direct buried, or concrete encased installations. This specification addresses solid wall types commonly selected for applications in the communications, power utility, transportation, mining, commercial and industrial markets. Sizes ranging from 1" through 4" diameter, in several wall thickness designs, are available that can be matched to the specific application. The properties and dimensions shall be in accordance with ASTM F 2160 standard specification for "Solid Wall High Density Polyethylene (HDPE) Conduit Based on Controlled Outside Diameter (OD)". Suggested standards for various options like pull tape installation, color coding and pre-lubrication of the conduit are also addressed.

1.0 Materials

1.1 Creek Plastics conduit shall be made from high-density polyethylene (HDPE). The HDPE shall meet or exceed the properties listed in ASTM D-3350 for minimum cell classification of 335480 C (black minimum 2% carbon black) or E (color with UV stabilizer). Properties are listed below in Table 1.1

TABLE 1-1

ASTM Test	Description	Values
D-1505	Density g/CM ³	0.941 - 0.955
D-1238	Melt Index, g/10 min Condition E	0.05 - 0.50
D-638	Tensile strength at yield (psi)	3000 min.
D-1693	Environmental Stress Crack Resistance Condition B F 20	96 min.
D-790	Flexural Modulus, Mpa (psi)	80,000 min.
D-746	Brittleness Temperature	Celsius -75

1.2 If certified test reports are required by the purchaser they shall be requested and agreed to at the time of purchase. Certification shall be provided in accordance with this specification unless changes are agreed and authorized in writing by the seller.

1.3 A run code will be printed on each production lot that is traceable to the resin used in the manufacture of the conduit.



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1.4 Clean rework material from the manufacturers own production may be used, either alone or blended with virgin compound. The finished conduit, made by using a portion of rework material, shall meet all of the material and physical requirements of this specification.

2.0 Dimensions and lengths

2.1 Creek Plastics conduit shall meet the dimensional specifications set forth in Appendix-A.

2.2 Standard length tolerances shall be +/-5% of the ordered lengths unless otherwise agreed to in writing.

2.3 Average outside diameter (OD) shall be as shown in Appendix-A for standard types.

2.4 Minimum and Maximum wall thickness shall be as shown in Appendix-A for standard types.

2.5 The Ovality shall be measured as defined in ASTM D 2122 and calculated as follows:

Maximum allowable ovality of 3" and smaller conduit shall be less than 10% when conditioned in accordance and measured in accordance with the above formula. Due to shipping limitations and associated coil requirements ovality for 4" and larger conduit may exceed 10%, it is recommended that rerounding/straightening equipment be used to install coiled conduit in 4" and larger diameters.

3.0 FRICTION REDUCTION

3.1 Friction-reducing lubricants shall be available for use in empty conduit for reducing the coefficient of friction between the cable and the inner wall of the conduit.

3.2 Interior lubrication:

3.2.1 Interior lubrication shall be compatible with all cable jacket materials.

3.2.2 The lubricant shall be compatible with the conduit materials.

3.2.3 Where conduit is to be factory lubricated the lubrication shall be a permanent silicone emulsion that will not lose its lubricity over time.

4.0 Surface Appearance and Workmanship

4.1 There shall be no foreign particles embedded into the plastic surface as a result of the extrusion process.

4.2 There shall not be any surface distortions that penetrate either internally or externally into the conduit wall greater than 10% of the minimum wall thickness.



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4.3 There shall not be any holes, visible cracks or defects that could cause damage or compromise the physical strength of the conduit.

5.0 PULL MEDIA

5.1 Factory installed pull media shall be available.

5.2 The pull media shall be installed with sufficient slack to assure free payout of the conduit and adequate tape slack when cutting the conduit.

6.0 Required and Optional Conduit Markings

6.1 The required markings on the conduit shall be legible, spaced at intervals not to exceed 5 ft. and include:

ASTM (letter-Number designation) or applicable standard and material designation HDPE

Trade size

Type, wall thickness, schedule or dimensional ratio

Manufacturer's name or trademark

Month & year of manufacture

Sequential foot markings with an accuracy of +/-2%

6.2 Optional surface printing

6.2.1 The print line may include special markings or symbols as agreed to between the manufacturer and buyer.

7.0 Conduit Color Identification

7.1 Color designations for the conduit shall be accomplished by using one of three methods; complete wall coloring, longitudinally extruded color stripes or a co-extruded color shell.

7.2 Most colors are available, typically orange is used by communication companies, red by power utilities and yellow is no longer available for conduit applications as it is used exclusively for gas pipe.

7.3 The extrusion resins used for color striping or jacketing conduit shall be a co-extruded part of the major wall and shall be materials that will not degrade the conduit wall's performance.



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7.4 There shall be a minimum of 3 stripes spaced at approximately equal distance apart longitudinally co-extruded as part of the conduit wall. The stripes shall have a depth of .025" ± .005" and of sufficient width and color intensity to be seen from a distance of 20 feet.

7.5 The co-extruded shell shall be uniform in color and thickness, as commercially practical, for the entire circumference of the conduit. The thickness of the shell shall be .025" ± .005".

8.0 Packaging

8.1 Coilable conduit shall be available on steel reels. Reel diameters are available from 60" through 96" diameter. Note: See Creek Plastics printed reel tables for a listing of available reels and conduit lengths.

8.1.1 The minimum drum diameter shall be consistent with the following recommendation: Drum Diameter ≤ (Duct Diameter/.0555).

8.1.2 A smaller drum diameter may be used if agreed to between buyer and seller and may be necessary for sizes larger than 3" to accommodate shipping height and width restrictions. If conduit is placed on a smaller drum diameter then use of an approved re-rounding and straightening device during installation of the conduit is recommended.

8.1.3 The eye of the coil shall be facing to the side to facilitate field loading onto coil handling equipment.

9.0 Tagging and Shipping

9.1 The following tagging information is to be included with any shipment from any Creek Plastics manufacturing facility. Shipping and product Identification tags shall be printed using indelible ink. Documentation includes the following items:

Shipping Label - Each reel shall have a label with complete shipping information that shows both a return address and ship to address.

Product Identification Tag - Each reel shall have a tag that has complete product identification information.

Packing List - That includes return and destination addresses along with a detailed summary of the reels that are shipping.

Bill of Lading - A standard commercially acceptable bill of lading shall be prepared for each shipment.

9.2 Other Optional identification markings as agreed to at the time of order.

9.3 Tag shall be affixed to the side of each reel.



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Appendix – A

NOM. SIZE	NOM. ID	NOM OD	MIN. WALL	WGT / 100 FT.	Pulled Tensile Safe (lbs)
SDR-7 ASTM D30305					
1"	0.939	1.315	0.188	28.552	743
1-1/4"	1.186	1.660	0.237	45.448	1183
1-1/2"	1.358	1.900	0.271	59.491	1549
2"	1.697	2.375	0.339	93.012	2421
3"	2.500	3.500	0.500	202.140	5262
4"	3.214	4.500	0.643	334.212	8700

NOM. SIZE	NOM. ID	NOM OD	MIN. WALL	WGT / 100 FT.	Pulled Tensile Safe (lbs)
SDR-9 ASTM D30305					
1"	1.023	1.315	0.146	23.000	599
1-1/4"	1.292	1.660	0.184	36.599	953
1-1/2"	1.478	1.900	0.211	48.026	1250
2"	1.847	2.375	0.264	75.102	1955
3"	2.722	3.500	0.389	163.084	4245
4"	3.500	4.500	0.500	269.520	7016

NOM. SIZE	NOM. ID	NOM OD	MIN. WALL	WGT / 100 FT.	Pulled Tensile Safe (lbs)
SDR-11 ASTM D30305					
1/2"	0.688	0.840	0.076	7.825	204
3/4"	0.860	1.050	0.095	12.226	318
1"	1.075	1.315	0.120	19.325	503
1-1/4"	1.358	1.660	0.151	30.706	799
1-1/2"	1.554	1.900	0.173	40.262	1048
2"	1.943	2.375	0.216	62.845	1636
3"	2.864	3.500	0.318	136.360	3550
4"	3.682	4.500	0.409	225.483	5870



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NOM. SIZE	NOM. ID	NOM OD	MIN. WALL	WGT / 100 FT.	Pulled Tensile Safe (lbs)
SDR-13.5 ASTM D30305					
1/2"	0.716	0.840	0.062	6.500	169
3/4"	0.894	1.050	0.078	10.217	266
1"	1.121	1.315	0.097	15.921	414
1-1/4"	1.414	1.660	0.123	25.477	663
1-1/2"	1.618	1.900	0.141	33.423	870
2"	2.023	2.375	0.176	52.155	1358
2-1/2"	2.469	2.875	0.203	73.096	1989
3"	2.982	3.500	0.259	113.120	2945
4"	3.834	4.500	0.333	186.994	4868

NOM. SIZE	NOM. ID	NOM OD	MIN. WALL	WGT / 100 FT.	Pulled Tensile Safe (lbs)
SDR-15.5 ASTM D30305					
1"	1.147	1.315	0.084	13.935	363
1-1/4"	1.446	1.660	0.107	22.393	583
1-1/2"	1.654	1.900	0.123	29.455	767
2"	2.069	2.375	0.153	45.814	1193
3"	3.048	3.500	0.226	99.712	2596
4"	3.920	4.500	0.290	164.528	4283

NOM. SIZE	NOM. ID	NOM OD	MIN. WALL	WGT / 100 FT.	Pulled Tensile Safe (lbs)
SCHEDULE 40 - ASTM D2447 / F2160 / NEMA TC-7 EP EC-40					
1/2"	0.622	0.840	0.109	10.738	280
3/4"	0.824	1.050	0.113	14.269	371
1"	1.049	1.315	0.133	21.185	551
1-1/4"	1.380	1.660	0.140	28.677	747
1-1/2"	1.610	1.900	0.145	34.293	893
2"	2.067	2.375	0.154	46.093	1200
2-1/2"	2.469	2.875	0.203	73.096	1903
3"	3.088	3.500	0.216	95.591	2488
4"	4.026	4.500	0.237	136.152	3544



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NOM. SIZE	NOM. ID	NOM OD	MIN. WALL	WGT / 100 FT.	Pulled Tensile Safe (lbs)
SCHEDULE 80 - ASTM D2447 / F2160 / NEMA TC-7 EP EC-80					
1/2"	0.546	0.840	0.147	13.728	357
3/4"	0.742	1.050	0.154	18.595	484
1"	0.957	1.315	0.179	27.403	713
1-1/4"	1.278	1.660	0.191	37.811	984
1-1/2"	1.500	1.900	0.200	45.818	1193
2"	1.939	2.375	0.218	63.368	1650
2-1/2"	2.323	2.875	0.276	96.667	2516
3"	2.900	3.500	0.300	129.370	3368
4"	3.826	4.500	0.337	189.059	4922

NOM. SIZE	NOM. ID	NOM OD	MIN. WALL	WGT / 100 FT.	Pulled Tensile Safe (lbs)
NEMA TC-7 EPEC A					
1/2"	0.720	0.840	0.060	6.307	164
3/4"	0.930	1.050	0.060	8.005	208
1"	1.165	1.315	0.075	12.533	326
1-1/4"	1.460	1.660	0.100	21.023	547
1-1/2"	1.670	1.900	0.115	27.663	720
2"	2.085	2.375	0.145	43.575	1134
2-1/2"	2.469	2.875	0.203	73.096	1903
3"	3.068	3.500	0.216	95.591	2488
4"	4.026	4.500	0.237	136.152	3544