



**Protecting Critical Infrastructure** 

## overview

Blue Diamond Industries, a member of the Hexatronic Group of Sweden, is headquartered in Lexington, KY with manufacturing facilities in Middlesboro, KY near the Tennesse border and Aubrey, Texas just north of Dallas.



Blue Diamond Industries is a valued market leader in providing HDPE (High Density Polyethylene) conduit solutions for the protection of fiber optic, data and power cables. Blue Diamond's conduit solutions are installed through horizontal directional drilling, plowing and through traditional trenching methods, supporting a wide-range of market applications from residential, power utility, Cable TV, Broadband, Commercial & Industrial, Department of Transportation and the US infrastructure investment nationwide.





Blue Diamond conduit solutions of duct, innerduct and microduct support the needs of a loyal customer base by providing optimal service and value through delivery, technology and economic benefit. Blue Diamond's highly efficient manufacturing locations provide the production agility necessary to support the demands of the rapidly growing infrastructure expansion throughout the US market. Blue Diamond Industries is an ISO 9001:2015 certified company.



# ASTM F2160 - Standard Specification for Solid Wall High Density (HDPE) Conduit Based on Controlled Outside Diameter

The industry standard for conduit for communication and power applications.

#### **ASTM D3350 - Standard Specification for Polyethylene Plastics Pipe and Fittings Materials**

Defines the raw materials requirements for all HDPE pipe. The standard cell class for ASTM F2160, D3485 and NEMA TC 7 conduit is PE33480C or E.

#### **NEMA TC 7 - Smooth Wall Coilable Electrical Polyethylene Conduit**

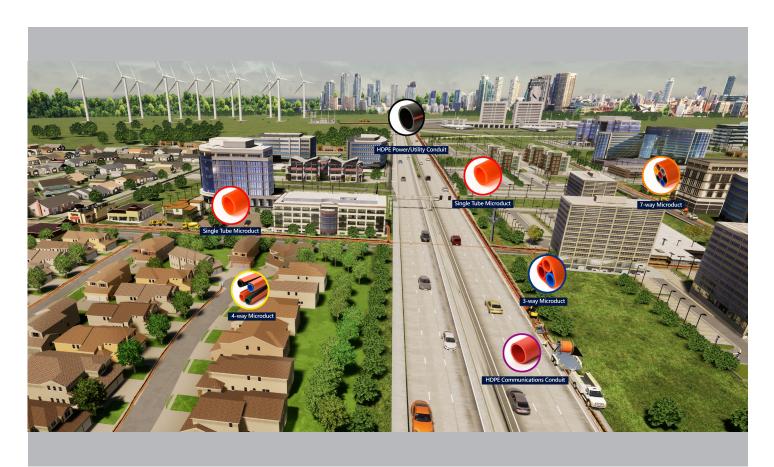
A standard used in power applications.

# UL 651A - High density polyethylene conduit, and UL 1990-non-metalic underground conduit with conductors (Cable in Conduit - CIC)

The Underwriters Laboratory standard for power applications. Certification by UL is required to produce this conduit. UL conduit meets NEC Code Article 353.

# ASTM D3485 - Standard Specfication for Smooth-Wall Coilable Polyethylene (PE) Conduit for Preassembled Wire and Cable

The ASTM Standard for Cable in Conduit (CIC) where the cable is installed during the extrusion process of the conduit.



# communication & power hdpe conduit

# **HDPE Conduit**

Blue Diamond Industries HDPE Conduit solutions enable the essential infrastructure by providing protection of fiber, data and power cables.



#### **Smooth Wall Innerduct**

Smooth wall is the standard High Density Polyethylene (HDPE) Duct. The interior of smooth wall has a slick finish which delivers the lowest coefficient of friction of all available non-lubricated innerduct. Smooth wall innerduct is a durable high quality product for direct burial and HDD (horizontal directional drilling) applications.



#### **Ribbed Wall Innerduct**

Blue Diamond's ribbed wall innerduct provides turbulent airflow when blowing fiber cable. Ribbed wall innerduct is available through 6" diameter in any SDR and SIDR rating.



#### **Tracer Wire Innerduct**

Tracer wire innerduct provides a method of locating underground fiber optic cable. The tracer wire is a single copper wire co-extruded onto the wall of the innerduct providing a corrosion resistant conductor. An alternative method of locating buried fiber optic cable is to use traceable tape, available pre-installed in any of our duct products.

Colors & Identification							
Standard colors available in:							
Striping:	Striping combinations are available in all colors. Three stripes located 120 degrees apart are extruded into the wall of the conduit.						
Identification:	<ul> <li>Innerduct size, SDR, and sequential markings every 2' are in jet imprinted on every order.</li> <li>Custom imprints such as company name, project name, or any special identification markings are also available.</li> </ul>						
Options:	<ul> <li>Lubrication</li> <li>Up to three lengths/colors of innerduct per reel available in parallel or segmented.</li> <li>Pre-installed pull tape, tracer tape, or cable.</li> <li>SuperGlide*</li> </ul>						

# **SuperGlide®**

SuperGlide® is a coextruded layer of low friction media in available in Blue Diamond conduit products. The compound of Siloxane and HDPE lowers the already low friction factor of the microduct to below 0.12. This is a significant improvement on the Telcordia Bellcore GRE 3155 Core recommended standard of 0.15.



# **UL Listed HDPE**

UL Listed HDPE is a coilable nonmetallic underground conduit manufactured from High Density Polyethylene (HDPE) used for underground or innerduct applications to protect cables and wires. UL Listed HDPE is compliant with NEC 2017 Article 353 and is manufactured to UL 651A specifications. UL 1990 is the standard for UL certified conduit with conductors installed at the manufacturing facility, known as CIC (Cable in Conduit), Unit Duct, and Duct Cable. Its high tensile strength-to-weight ratio, superior crush resistance and low coefficient of friction for cable installation makes it ideal for directional boring.

### **Options:**

- Sizes: 3/4" 6"
- Schedule 40
- Schedule 80
- Sizes 1 ½" 6" SDR 13.5
- Multiple color and striping options
- Sequentially marked footage
- Also meets: NEMA TC-7 Smoothwall
- Coilable PE Electrical Plastic conduit

UL 651 Listed SCF			SCH 40	SCH 40 SCH 80					SDR 13.5	
Nominal Duct Size	Nominal OD	Nominal ID	Min Wall	Weight LBS/FT	Nominal ID	Min Wall	Weight LBS/FT	Nominal ID	Min Wall	Weight LBS/FT
3/4"	1.050	0.804	0.113	0.148	0.722	0.154	0.189	-	-	-
1"	1.315	1.029	0.133	0.218	0.936	0.179	0.278	-	-	-
11/4"	1.660	1.360	0.140	0.295	1.255	0.191	0.384	-	-	-
1½"	1.900	1.590	0.145	0.352	1.476	0.200	0.465	1.599	0.141	0.343
2"	2.375	2.047	0.154	0.472	1.913	0.218	0.644	2.002	0.176	0.531
2½"	2.875	2.445	0.203	0.744	2.290	0.276	0.983	2.429	0.213	0.768
3"	3.500	3.042	0.216	0.974	2.482	0.300	1.316	2.950	0.259	1.153
4"	4.500	3.998	0.237	1.387*	3.786	0.337	1.924	3.794	0.333	1.906
5"	5.563	5.009	0.258	1.880*	4.768	0.375	2.671	4.689	0.412	2.912
6"	6.625	6.031	0.280	2.444*	5.711	0.432	3.674*	5.585	0.491	4.130

<sup>\*</sup>Note: Some dimensions only available in stick form.

# **CIC (Cable in Conduit) HDPE**

- Pre-installtion of power and communication cables inside conduit during the manufacturing process
- For use in DOT, Street or Airport Lighting, Coax and Fiber Optic Cable, Fiber to the Home, Power Utility and Renewable Energy markets
- Long lengths allow for directional drilling and plowing applications
- Reduces cost and labor with no need to pull cables after the conduit is installed
- Available in diameters from 3/4" through 3"
- Ability to manufacture to UL 1990, ASTM F2160 and ASTM D3485

# 3N1<sup>™</sup> Boreable Conduit Patent No. 9,819,160

- Pre-installation of 3 or 4 innerducts inside of a 4" case pipe
- No need to pull innerducts through after the bore, instead allowing for fiber or power cables to be installed immediately after the bore is complete.
- Innerducts won't get stuck or twisted during installation
- Blue Diamond's 3N1<sup>™</sup> can be directional drilled or plowed
- Available lengths are 500' to 1,000' on steel reels
- Configurations:
  - 4" SIDR 11.5 casing with 3-1.25" SDR 13.5 innerducts
  - 4" SDR 13.5 casing with 3-1" SDR 13.5 innerducts
  - 4" SIDR 11.5 casing with 4-1" SDR 13.5 innerducts



# hdpe conduit sizes

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ASTM F 2160 SDR Pipe Data			SDR 9			SDR 11			SDR 13.5		
Nominal Duct Size	Nominal OD	Nominal ID	Min Wall	Weight LBS/FT		Nominal ID	Min Wall	Weight LBS/FT	Nominal ID	Min Wall	Weight LBS/FT
1/2"	0.840	0.633	0.093	0.099		0.667	0.076	0.085	0.696	0.062	0.072
3/4"	1.050	0.797	0.117	0.152		0.839	0.095	0.130	0.874	0.078	0.110
1"	1.315	1.003	0.146	0.235	Ì	1.051	0.120	0.200	1.100	0.097	0.169
1 1/4"	1.660	1.270	0.184	0.372		1.338	0.151	0.314	1.394	0.123	0.264
1 ½"	1.900	1.452	0.211	0.488		1.534	0.173	0.409	1.599	0.141	0.343
2"	2.375	1.816	0.264	0.762		1.917	0.216	0.639	2.002	0.176	0.531
2 ½"	2.875	2.198	0.319	1.117		2.321	0.261	0.936	2.429	0.213	0.769
3"	3.500	2.676	0.389	1.657		2.825	0.318	1.387	2.950	0.259	1.153
4"	4.500	3.440	0.500	2.737		3.633	0.409	2.293	3.794	0.333	1.906
5"	5.563	4.252	0.618	4.182*		4.490	0.506	3.505	4.689	0.412	2.912
6"	6.625	5.064	0.736	5.930*		5.348	0.602	4.971	5.585	0.491	4.130
ASTM F 2160 SDR Pipe Data SDR 15.5					SDR 17			SCH 40			
Nominal Duct Size	Nominal OD	Nominal ID	Min Wall	Weight LBS/FT		Nominal ID	Min Wall	Weight LBS/FT	Nominal ID	Min Wall	Weight LBS/FT
1/2"	0.840	-	-	-		-	-	-	-	-	-
3/4"	1.050	0.895	0.068	0.098		0.906	0.062	0.092	0.804	0.113	0.148
1"	1.315	1.127	0.084	0.151		1.140	0.077	0.139	1.029	0.133	0.218
1 1/4"	1.660	1.426	0.107	0.235		1.445	0.098	0.218	1.360	0.140	0.295
1 ½"	1.900	1.635	0.123	0.305		1.656	0.112	0.282	1.590	0.145	0.352
2"	2.375	2.049	0.153	0.469		2.076	0.140	0.434*	2.047	0.154	0.472
2 ½"	2.875	2.482	0.185	0.685		2.516	0.169	0.629*	2.445	0.203	0.744
3"	3.500	3.021	0.226	1.015		3.064	0.206	0.932*	3.042	0.216	0.974
4"	4.500	3.885	0.290	1.678		3.939	0.265	1.540*	3.998	0.237	1.387*
5"	5.563	4.801	0.359	2.565*		4.868	0.327	2.351*	5.009	0.258	1.882*
6"	6.625	5.719	0.427	3.633*		5.799	0.390	3.341*	6.031	0.280	2.445*
ASTM F 2160 SDR Pipe Data SIDR 9			SIDR 11.5			SIDR 15					
Nominal Duct Size	Nominal ID	Nominal OD	Min Wall	Weight LBS/FT		Nominal OD	Min Wall	Weight LBS/FT	Nominal OD	Min Wall	Weight LBS/FT
1"	1.049	1.302	0.117	0.194	[	1.251	0.091	0.151	1.209	0.070	0.117
1 1/4"	1.380	1.707	0.153	0.327		1.640	0.120	0.255	1.584	0.092	0.197*
1 ½"	1.610	1.989	0.179	0.444		1.910	0.140	0.343	1.845	0.107	0.263
2"	2.067	2.554	0.230	0.733		2.448	0.180	0.561	2.363	0.138	0.426
2 1/2"	2.469	3.051	0.274	1.044		2.924	0.215	0.800	2.818	0.165	0.613
3"	3.068	3.791	0.341	1.612		3.634	0.267	1.233	3.502	0.205	0.929
4"	4.026	-	-	-		4.768	0.350	2.122	4.595	0.268	1.595
5"	5.046	-	-	-		5.976	0.439	3.337	5.759	0.336	2.501

# hdpe conduit reel capacities

Reel Size = Flange (outside diameter) x outer reel width x drum (inside drum diameter); Pipe Size Standard arbor hold diamter 3" - 3 1/2" 48x48x30 60x48x30 72x48x30 78x48x30 5,500 10,500 17,000 20,000 48x48x30 72x48x30 96x48x30 60x48x30 84x48x30 3/4" 3.500 6.500 10.500 15.500 20.000 48x48x30 60x48x30 74x48x30 84x48x30 96x48x30 102x48x30 2,000 4,000 6,800 10,000 15,000 13,500 90x48x30 60x48x30 72x48x30 84x48x30 96x48x30 102x48x30 1 1/4" 2,500 4.000 6,500 7.500 8.500 10.000 72x48x36 84x48x36 96x48x36 102x48x36 114x48x36 3,000 4,500 6,500 7,500 9,000 90x48x42 72x48x42 84x48x42 96x48x42 102x48x42 114x48x42 1,500 2,500 3,000 3,750\* 4,500 5,500 84x48x48 96x48x48 102x48x48 114x48x48 2 ½" 1,500 2,500 2,000 3,500 96x48x64 102x48x64 114x48x64 120x48x64 1,200 1,500 2,000 2,500 120x48x60 96x48x60 102x48x60 114x48x60 550 SDR 500 SIDR 750 SDR **700 SIDR** 1.000 SDR 900 SIDR 1,250 SDR

Note: Ovality is a packaging condition when roundable conduit
is wound into a coil or a reel. Larger conduit will have significant
ovaility. 10%+, and may require re-rounding in the field. For

further information refer to ASTM F2160.

102x48x78

400

114x48x64

# **Respool Footages\* (Parallel or Segment)**

120x48x78

750

\*Respooled duct will decrease maximum reel capacities.

114x48x78

600

120x48x64

450

Pipe Size	2-way	3-way
1"	5,000	3,750
1 1/4"	4,000	2,500
1 ½"	2,500	1,500
2"	1,500	1,000
3"	375	*Footage based on stand Special put ups are avai

ard 96" reels.\*\*Footage is based on equal lengths. Special put ups are available upon request

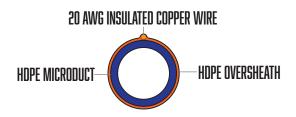
Reels per Truckload						
48"	24					
60"	20					
72"	16					
84"	14					
96"	12					
102"	12					
114"	8					
120"	8					

1.100 SIDR

<sup>275</sup> \*Can go up to 4000' of 2" on SDR 13.5 or heavier wall. \*\*Tracer wire will decrease maximum reel capacities.

# **Single Tube Microduct**

Blue Diamond manufactures a wide range of microduct sizes and configurations. Microducts are becoming increasingly popular with engineers and owners due to the thirst for 1G+ broadband speed, and with the advent of microfiber cables. They allow home-runs from node to customer, without splicing and empty ducts for future connections, all within the same trench footprint. Whether microtrenching, installing Fiber to the Home, 5G wireless, or highspeed business campuses, microducts from Blue Diamond can be the right solution.



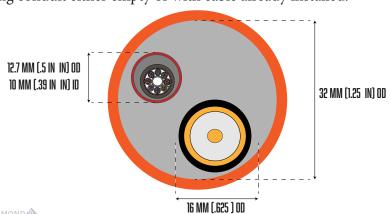
## **Options:**

- Sizes: 5mm 27mm
- Permanent SuperGlide® interior
- Ribbed inside wall
- Tracer Wire
- Full range of color options (page 3)
- Pull tape available in sizes 18-27mm

Size OD/ID	Weight LBS/FT	Bend Radius Unsupported IN	Max Fiber Count	Fiber OD Range MM
27/20	0.140		122	10.0 11.0
27/20	0.168	24	432	10.0 - 16.0
22/16	0.117	20	432	7.8 - 12.4
18/14	0.065	17	288	6.8 - 10.9
16/13	0.044	15	288	6.4 - 10.2
16/12	0.057	15	192	5.8 - 9.2
14/10	0.049	14	144	5.0 - 7.9
12.7/10	0.031	13	144	4.9 - 7.8
10/8	0.018	11	96	4.0 - 6.3
8.5/6	0.019	9	96	3.0 - 4.7
7/3.5	0.010	8	48	2.7 - 4.3
5/3.5	0.007	7	12	1.7 - 2.7

# **Microduct Override**

Microduct over-riding is the process of installing micro innerducts into an existing conduit either empty or with cable already installed.



## **Options:**

- Creates a pathway for new fiber to be installed
- No concerns about tangles with exisiting cables
- Micro innerducts can replace fabric dividers in conduits
- Allows fiber to be installed in pre-existing or abandoned pathways

BLUE DIAMOND

**Multiway Microduct** 

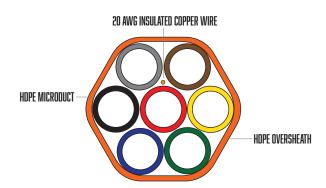
Blue Diamond offers both single tube and multi-tube combinations. Our multi-tube duct is offered in both regular wall and heavy wall oversheath options. Other standard features include: permanent SuperGlide® interior, ribbed inside wall, tracer wire, multiple color options oversheathed in various combinations.

## **Options:**

- Sizes: 5mm 27mm
- Multi-tube configurations are available in 2-way, 3-way, 4-way, and 7-way
- Other configurations are available upon request
- Ripcord options available
- Insulated Tracer wire options available
- Thin and heavy oversheath walls available

## **Applications & Benefits:**

- Allow home-runs from node to customer
- Allows for override in existing conduits
- Direct bury, bore, trench or plow
- Reduce cost with faster fiber installation
- Flat configurations for microtrenching installations





# quality



# **Quality Control**

The quality mission of BDI is to establish a culture of producing conduit, CIC (Cable in Conduit), and pressure polyethylene piping products to meet the required specifications. Tests are performed throughout the

entire manufacturing process, from incoming raw materials to finished goods. Results are documented and are traceable through recording dates, shifts, and production runs. The goal is to continually improve quality and prevent shipment of any product not meeting required specifications.

Blue Diamond earned the ISO 9001:2015 re-certification in September of 2019. We have been ISO certified since 2013. BDI maintains a full laboratory for testing of raw mateals in accordance with ASTM D3350, in order to confirm the quality of our incoming raw materials as well as provide historical data. Futhermore, BDI does post production testing to ensure compliance with specifications, including ASTM F2160, D3485, D3035, NEMA TC7, UL 651A and customer specific requirements. We monitor our record by executing customer Quality surveys on a regular basis and we welcome feedback and opportunities to improve.



Finally, BDI avails itself as a technical resource to our customers. As members of ASTM, PPI (Plastics Pipe Institute), and PCCA (Power and Communication Contractors Association), BDI is on the leading edge of industry research and techincal knowledge.







# **Vision Statement:**

To provide superior value for our customers by leveraging our expertise in the extrusion of HDPE conduit plastics solutions to enable the essential infrastructure expansion at the best economic value.









## Manufacturing

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## Manufacturing

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