

High Density Polyethylene – Frequently Asked Questions

Greetings, I'm looking for a transition piece from rigid PVC to fiber-optic innerduct, 1-1/2". Installation environment will be in a cable trench and will therefore be exposed to rain water. Is there a piece designed for this application? If not, what would you recommend?

If you are using polyethylene fiber-optic innerduct, than PVC fittings will not adhere to the product. You can only use metal fittings. The best way to transition between the two types of duct is to use a junction box.

I have a customer that installed interduct in 1994. The code was OS1-13109-Carlton 1 1/4". They need to know if it is fire retardant or not.

Part number 13109 is 1 1/4" HDPE innerduct and is not flame retardant. Carlton makes two raceways, Plenum-Gard and Riser-Gard that are listed for Optical Fiber or Communication cables per the NEC Articles 770 and 800.

For electrical applications Carlton's Rigid PVC Schedule 40 & 80 Conduit, Electrical Nonmetallic Tubing (ENT) and Liquidtight Flexible Nonmetallic Conduit are all flame retardant and listed for use within a building

What is the burst pressure on your PE raceway? Looking for 1 1/2" raceway with 3/16 to 1/4" wall thickness.

We do not make pressure rated pipe, only conduit, which is, not require to have a burst pressure. In other words, I do not know.

I would contact the Plastic Pipe Institute for a list of HDPE Pressure Pipe manufactures at (202) 462-9607 or check www.plasticpipe.org.

What does the acronym HDPE stand for?

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Could you tell me what the difference is between an electrofusion & a transition fusion coupling is?

I think an electrofusion coupling is a coupling used to fuse to pipes of the same OD together by the electrofusion process of heating the wire in the coupling. A transition fusion coupling would speak to the same process but would be fusing two dissimilar sizes or two different types of material. i.e. PVC to HDPE

Do you have a paper that explains the differences between wall types?:

SDR 7- ASTM D3035 up to SDR 32.5- ASTM D3035?

SIDR 9- ASTM D2239 up to SIDR 15- ASTM D2239?

The difference between SDR and SIDR?

What is Type 9&11 Ribbed duct- ASTM D2339?

SDR stands for "Standard Diameter Ratio" which is the outside diameter divided by the wall thickness. A 2" SDR 7 product would have the outside diameter of 2.375" and a wall thickness of 0.339" ($2.375/0.339 = 7$).

SIDR stands for "Standard Inside Diameter Ratio" which is the inside diameter divided by the wall thickness.

The higher the number, the thinner the wall thickness.

Type 9 duct is an OD control product that maintains a truer dimension to the inside diameter. 1" Type 9 product will have an ID of 1". Type 11 is the same raceway with a thinner wall. Both products have internal ribs for the ease of cable installation.

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ASTM Volume 8.04 has all the D3035, D2239 and D2339 and shows all the physical requirements. There is a new HDPE Standard (ASTM F2160) being published next month that will cover all the telecommunication HDPE products. The previously mentioned standards are for water pipe. They are used by the telecommunication industry for dimensions only.

[How is PVC pipe welded to PE pipe? What should be used as a solvent to obtain a secure joint?](#)

PVC solvent cement does not adhere to PE. Usually, you just use a special coupling like the Standard "E-LOC", electrofusion coupling, or threaded aluminum coupling.

[Do you guys have any info on using HDPE within a structure?](#)

HDPE on its own is not allowed to be used indoors per the building codes and because it doesn't have fire retardant properties. In addition it is not UL listed for indoors. It has been used indoors, only when run through metallic conduit, for telecommunications applications.

[What is the Industry Standard for HDPE Conduit Bundling in Trenching Applications?](#)

Referencing your question on practices of bundling of HDPE conduits. The use of taping methods and strapping methods are not expressly covered in industry application and installation guides due to the various techniques and products that are used ranging from plastic banding equipment to grey "duct tape". However, bundling the product in any means which does not damage or reduce the inside diameter of the conduit should allow the product to be more easily managed for duct placement. This practice is commonly used by contractors to

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keep conduits together as they are going into a trench similar to electricians taping wire together for pulling into a conduit.

[What is the coefficient of friction for your pre-lubed HDPE innerduct?](#)

The coefficient of friction for Innerglide (which contains a spray in lubricant) is .051.

[Do you know what TC-7 duct is?](#)

NEMA TC-7 is a standard for HDPE duct.

[Does Carlton make a figure 8 innerduct?](#)

We sure do make figure 8 Innerduct. More information on Figure 8 aerial duct is located on our website at:

http://www.carlon.com/p_AerialFigure8.html

[Do you have to purchase any accessories with the multiple pulling harness?](#)

Yes, you must purchase swivels and pulling eyes.

[Does Carlton make a coupling for 6" innerduct to 6" PVC?](#)

Etco makes an "e-loc" coupling that transitions HDPE to PVC. It is not for pressure (internal pressure) applications, but it prevents exterior intrusion of water, dirt, critters, etc. It utilizes a series of rubber "gasketing" ridges that retain the pipe(s), in the coupling.

[What is the best coupling to use for boring PE duct?](#)

That is the problem with using PE in a bore, no good coupling for this application. Fusion welding is the best way to couple the PE and bore it using a fusion-

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welding machine. Expensive, but the joint from the fusion is actually stronger than the duct itself when bored. They can use a Electrofusion coupling such as the ones in our HDPE catalog on page 19 to join the two. Best way of course is to use our Bore-Gard!

[What is used to connect 1" HDPE corrugated to 1" PVC? What type of fittings?](#)

You could use a 1" E-Loc, EL1.215, coupling. You cannot solvent cement fittings to HDPE as they will not adhere. We also have TC100 terminating couplings if he's going to terminate the HDPE into a box. See pages 18 and 19 of our HDPE catalog for all the fittings used with HDPE.

[May we pull two 1" Carlton optic-guard fiber corrugated conduits into 2" underground PVC conduit? We would appreciate your answer very much.](#)

The innerducts will not fit. The 1" innerduct has an OD of 1.315" where as the 2" PVC Conduit has an ID of 2.067".

[Would it be appropriate to use Carlton #AF2B1A-500 for burying a fiber cable in a substation yard? The two ends that come out of the ground may be exposed to sunlight. I probably would want to be able to trace the fiber cable but I want to insure protection for people using the fibers that they don't get shocked in case a live wire should somehow come in contact with the buried conduit or fiber cable. Do you have any recommendations? What would be the insulating voltage of the appropriate duct?](#)

Yes it would be appropriate to use HDPE Innerduct (AF2B1A) for buried fiber cables. Only problem would be the ends. This product would have a limited life when exposed to the sunlight. You will need to enclose the ends or go with an "Aerial Solid Wall HDPE" that has sunlight protection.



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I know HDPE is an electrical insulator but I am unaware of the value since this question is usually asked for electrical conduit, not fiber-optical raceways. I would guess the Dielectrical Strength would be about 1100 volts/mil.

[Can HDPE be used in an electrical application?](#)

Only UL listed HDPE can be used for electrical applications in accordance with the National Electrical Code. If it is a utility application, utility companies do not require a UL listed product, so they can use any of the HDPE products

[I am looking at the reel sizes in the catalog and it says FxW. Can you please tell me what the F means? I assume that the W means width. Please let me know.](#)

F stands for flange. W stands for width.