

# PERFORMANCE PIPE

## DriscoPlex® 5100 Ultra-Line®

### The Ultra-Durable Cold Water Service Pipe and Tubing



Irrigation

Potable Water

Cold Water Service

Plastic Pipe Institute

Plastic Pipe and Fittings Association

NSF 14 and 61

AWWA C901-08

IAPMO PS24-69

Uniform Plumbing Code

ASTM D2239, D3035, D2737

**When Performance Matters**  
*Rely on Us!*

## DriscoPlex® 5100 Ultra-Line® High Density Polyethylene Piping and Tubing System

### PHYSICAL CHARACTERISTICS

Not all polyethylene (PE) materials are created equal. Just as with other piping materials, there are different types and grades with varying levels of performance. DriscoPlex® 5100 Ultra-Line® PE pipe is manufactured from high density polyethylene (HDPE) with superior levels of performance exceeding those of other conventional, commodity HDPE pipe.

This pipe is extruded using a high density pipe resin (PE 4710) manufactured by Chevron Phillips Chemical Company. PE 4710 is tailor-made to obtain a high quality pipe with superior long-term load bearing capabilities. This resin combines high density and toughness with quality extrusion to impart superior properties to the finished pipe product.

DriscoPlex® 5100 Ultra-Line® PE pipe possesses the following characteristics, yet offers the broadest levels of performance:

#### Tough and Durable

DriscoPlex® 5100 Ultra-Line® PE pipe can endure the punishment of the most demanding urban installations. Municipalities and home owners need a product that can provide reliability and longevity. To achieve this, the installation location's average annual water temperature is recommended as a design guideline.

Water flow velocities should be limited to the specific design criteria of the piping system to ensure that the pipe can handle repetitive water hammer and pressure surges while providing long service life.

#### Listed and Approved

DriscoPlex® 5100 Ultra-Line® PE pipe meets or exceeds the following organization codes and standards:

- American Water Works Association: AWWA C901-08
- National Sanitation Foundation: NSF Standard 14 & NSF Standard 61
- International Association of Plumbing and Mechanical Officials: IAPMO PS24-69
- American Society for Testing and Materials: ASTM D2239, D3035, D2737
- Uniform Plumbing Code: UPC
- Plastic Pipe Institute: PPI
- Plastic Pipe and Fittings Association: PPFA

#### Economical

Using DriscoPlex® 5100 Ultra-Line® PE pipe with proper installation practices may result in substantial material and construction savings over alternate piping materials.

#### Flexible

The flexibility of DriscoPlex® allows it to be curved over, under and around obstacles, and to make elevation and directional changes. The flexibility and toughness allow the pipe to be plowed or pulled-in with suitable equipment.

#### Ductile

Because HDPE is ductile, it can endure freezing weather without becoming brittle. Should the water freeze, DriscoPlex® 5100 Ultra-Line® PE pipe will temporarily, yet reversibly, swell without splitting, cracking or bursting

#### Light Weight with Long Lengths

DriscoPlex® 5100 Ultra-Line® PE pipe weighs less than copper (size for size) and is manufactured in long coil lengths for rapid installation in the service trench, thus reducing the need for joints and fittings.

#### Non-toxic/Non-tasting

DriscoPlex® 5100 Ultra-Line® PE pipe is resistant to a wide array of chemicals and consistently passes the National Sanitation Foundation (NSF) requirements for odor and taste. The NSF logo is an integral part of the pipe's permanent print line. NSF Standard 61 is a health-effects standard evaluating materials that come into contact with potable water. NSF Standard 14 is both a product performance standard and a health-effects standard. DriscoPlex® 5100 Ultra-Line® PE pipe meets the requirements of both NSF 14 and 61.

DriscoPlex® 5100 Ultra-Line® PE pipe is NSF 14 listed.

## Sizes and Working Pressure Ratings

### ASTM D2239 Inside Diameter Controlled HDPE Pipe (IPS/SIDR)

Nominal Size (inches)	Dimension Ratio	OD / ID (Inches)	Coil Length / Pallet Quantity	Weight (lbs/100 ft)	Pressure Class (psi)
3/4"	7	1.074" / 0.824"	100'/1800' or 400'/4000'	16	250 psi
1"	7	1.367" / 1.049"	100'/1800' or 300'/2400'	25	250 psi
1-1/4"	7	1.798" / 1.380"	100'/1500' or 300'/2100'	43	250 psi
1-1/2"	7	2.098" / 1.610"	100'/1400' or 300'/1800'	59	250 psi
2"	7	2.692" / 2.067"	100'/1000' or 300'/2100'	97	250 psi

### ASTM D2737 Outside Diameter Controlled HDPE Tubing (CTS)

Nominal Size (inches)	Dimension Ratio	OD / ID (Inches)	Coil Length / Pallet Quantity	Weight (lbs/100 ft)	Pressure Class (psi)
3/4"	9	0.875" / 0.669"	100'/1800' or 500'/7500'	10	250 psi
1"	9	1.125" / 0.860"	100'/1600' or 300'/4200'	17	250 psi
1-1/4"	9	1.375" / 1.051"	100'/1400' or 300'/2400'	26	250 psi
1-1/2"	9	1.625" / 1.241"	100'/1300' or 300'/2400'	36	250 psi
2"	9	2.125" / 1.625"	100'/1300' or 300'/2700'	61	250 psi

### ASTM D3035 Outside Diameter Controlled HDPE Pipe (IPS/SDR)

Nominal Size (inches)	Dimension Ratio	OD / ID (Inches)	Coil Length / Pallet Quantity	Weight (lbs/100 ft)	Pressure Class (psi)
3/4"	11	1.050" / 0.849"	150'/1800' or 500'/3500'	13	200 psi
1"	11	1.315" / 1.061"	150'/1800' or 500'/3000'	20	200 psi
1-1/4"	11	1.660" / 1.358"	150'/1500' or 500'/6000'	31	200 psi
1-1/2"	11	1.900" / 1.554"	250'/2500' or 500'/4000'	41	200 psi
2"	13.5	2.375" / 2.002"	150'/1800' or 500'/3500'	53	160 psi
2"	11	2.375" / 1.917"	150'/1800' or 500'/3500'	64	200 psi
3"	17	3.500" / 3.063"	250'/1750' or 1000'/2000'	94	125 psi
3"	13.5	3.500" / 2.951"	250'/1750' or 1000'/2000'	116	160 psi
3"	11	3.500" / 2.826"	250'/1750' or 1000'/2000'	140	200 psi

**Note:** Performance Pipe Ultra-Line® Water Service Pipe and Tubing Pressure Class is based on applications at temperatures up to and including 80°F. Solid black pipe and tubing is standard. Contact your Performance Pipe representative for additional sizes, information, installation and temperature guidelines.

[www.performancepipe.com](http://www.performancepipe.com)

## Easy Installation

### Pipe and Tubing,

### Main-to-Meter, Meter-to -House

The flexibility, toughness and light weight of DriscoPlex® 5100 Ultra-Line® PE pipe combine for easy handling and minimum installation time. The underground installation techniques for DriscoPlex® 5100 Ultra-Line® PE pipe are very similar to those used for metallic pipe and tubing. Some considerations, however, should be taken for the differences between metal and plastic pipe as follows:

### Storage and Handling

Inspect new coils for transport damage. Coils may be stored outside without damage from weather. Avoid placing coils where they may be exposed to excessive heat. Avoid dragging coils over rough terrain. Avoid letting the coils hit sharp objects which may cut or puncture the pipe or tubing.

### Pre-Installation Considerations

Before installation, pipe should be inspected for cuts, punctures or excessive abrasion which may have resulted from shipping or handling damage. Any damage equal to or greater than 10 percent of the wall thickness should be cut out and the pipe rejoined to form continuous lengths.

Pipe should be flushed out before final connections are made to eliminate any dirt or sand which may have entered the pipe during installation. Each service line must be totally flushed of concentrated disinfectant solution within 24 hours after disinfection.

### Trenching and Backfill

Trench bottoms should be free of large rocks and sharp objects, and be relatively smooth. Where ledge rock, hard pan, or stones/boulders are encountered, it is advisable to bed the trench bottom with sand or compacted fine grained soil. The trench depth should be at least 12 inches below the local frost-line and a minimum backfill depth of 18 inches or one pipe diameter whichever is greater should be used. The trench bottom should be compacted to prevent soil settlement. The trench may be curved to avoid obstacles and reduce fittings. The curvature should be a minimum radius of at least 30 times the pipe outside

dimension (30 x D). Where mechanical connectors are present, the connection should be isolated from the curve. The backfill should be uniform, free of rocks and sharp or heavy objects which may damage the pipe. Soil conditions, frost-line, pipe size and necessary cover will determine the trench depth. When trenching and backfilling, installers should follow the guidelines of ASTM D2774 and ASTM D2321. Local, state or national codes may also govern.

### Burial in Contaminated Soils

Polyethylene pipe has been used successfully to transport potable water safely since the early 1950s. However, all potable water piping systems, whether plastic or metal, are vulnerable to contamination by certain chemical absorption into the pipe wall or joints of the pipe. There are some organic solvents and hydrocarbon fuels which will affect PE pipe if present in the surrounding soil in sufficient concentrations. The underground use of DriscoPlex® PE piping systems and water service lines should be avoided in areas of soil contamination known to affect PE pipe, or anywhere there is high risk for potential severe chemical spills. Performance Pipe advises that DriscoPlex® 5100 Ultra-Line® PE pipe should not be installed in contaminated soils. In these circumstances, no piping system can be considered immune to contamination. If the contaminating source cannot be safely controlled, or if the service tubing cannot be dual-contained, it is best to change the piping route all together, regardless of the pipe material being used. Please review the PPI comment on Permeation of Water Pipes.

### Thermal Expansion and Contraction

Plastic expands and contracts when exposed to temperature changes and allowances for this should be made during installation. The general rule of thumb is a 1 inch per 100 ft of pipe per 10°F temperature change.

### Hydrostatic Testing

Pressure test the line with water before backfilling (or with partial backfill to hold the pipe in place). Normally, a test is completed at a pressure of 150 percent of the pipe working pressure rating or at the lowest component pressure rating for a total duration of 8 hours from initial pressurization to depressurization. Check all joints and connections for leaks before completing the backfill.

Additional guidelines for hydro-testing can be found in the Plastics Pipe Institute's technical recommendations TR-31 and Performance Pipe's PP 802-TN Leak Testing. Again, total flushing of concentrated disinfectant solution from each service line is prescribed within 24 hours of disinfection.

### Mechanical Joining

DriscoPlex® 5100 Ultra-Line® PE pipe can be mechanically joined to itself, copper tubing or mechanical devices using plastic or metal couplers. It's suggested that only the manufacturer's supplied installation instructions should be used to assemble the mechanical fitting on the PE pipe. Extra care is required when using internal stiffeners in mechanical connectors.

The stiffeners should not extend beyond the body of the mechanical joint. There is a potential for crack formation in the pipe if a bend is too sharp near the end of such a stiffener. Consult with each mechanical joint device manufacturer for its endorsement and recommendation when used with HDPE service pipe and tubing.

### Connection to Mains

There are many options available to connect DriscoPlex® 5100 Ultra-Line® PE pipe to a main. Options that must be considered include type of material, installation, fitting, tap and size. Connection to a PE main can be made using either fusion or mechanical fittings. However, to connect to a main that is of a different material, only mechanical fittings can be utilized.

If mechanical saddles or fittings are utilized, it must be designed for use with PE, otherwise leakage in joints may be present. In addition, mechanical fittings that use screws or bolts that tighten into the wall of the pipe can cause point loading failures in PE pipe. Fittings that distribute equal compressive stresses around the PE pipe wall are recommended. More information can be found in the PPI *Polyethylene Piping Systems Field Manual for Municipal Water*. Please consult with the fittings manufacturer for further recommendations.

### Cautions

Polyethylene has been used safely in many applications. There are precautions that should be adhered to when using any product and in this respect PE is no different. The following is a listing of some of the cautions that

should be considered when using Performance Pipe PE products:

### Bend Radius

The pipe bend radius should be kept to 100 times the outside diameter when a mechanical or socket fitting is present to avoid over stressing the pipe and/or fitting connection. When a fitting is not present, the bend radius should be kept within the prescribed minimum bend radius ratio based on the pipe's Dimension Ratio.

- Review *PP 819-TN Field Bending of DriscoPlex® Pipe*

### Fusion

During the heat fusion process the equipment and pipe product may reach temperatures in excess of 400°F. Cautions should be taken to prevent burns.

- Review Performance Pipe's heat fusion literature

### Air Pressure

High air pressure is not recommended for use in HDPE pipe for testing. DriscoPlex® 5100 Ultra-Line® PE pipe should not be used for process air. Consult your supplier for additional precautions.

- Review *PP 820-TN Leak Testing*

### Static Electricity

High static electricity charges can be associated with HDPE pipe products. Improper use of pinch-off equipment in gaseous areas can be extremely dangerous.

- Review *PP 801-TN Polyethylene Pipe Squeeze-Off*

### Impact or Hitting

HDPE pipe is impact resistant. Any hitting of the pipe with an instrument, such as a hammer, may result in uncontrolled rebound.

- Review DriscoPlex® 5100 Ultra-Line® PE Pipe Material Safety Data Sheet

### Coils

Coiled HDPE pipe may contain energy like in a spring. Uncontrolled release, i.e. cutting of straps, can result in dangerous uncontrolled forces. All safety precautions and proper equipment are required.

- Review Performance Pipe's *Pipe Loading and Unloading Safety Video*

**When Performance Matters Rely on**  
*Performance Pipe*

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