



# **PERFORMANCE PIPE**

*A DIVISION OF CHEVRON PHILLIPS CHEMICAL COMPANY LP*

## **Flame Retardant Polyethylene Tubing**

Classified Under U.L. 1820.



Bulletin: PP 700

## DRISCOPEX™ 2600 Instube®

Flame Retardant (FR) Polyethylene Tubing  
For Pneumatic Instrument Controls

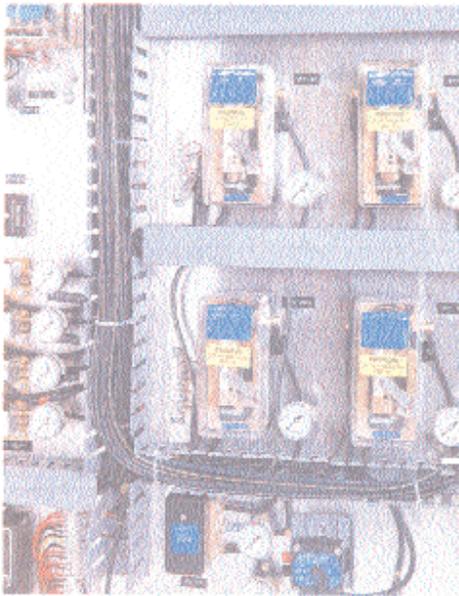
### Performance Pipe

PERFORMANCE PIPE is the functional successor to the operations of Plexco<sup>1</sup> and Driscopipe<sup>2</sup>. On July 1, 2000, Chevron Chemical Company and Phillips Chemical Company joined to form Chevron Phillips Chemical Company LP. Performance Pipe, a division of Chevron Phillips Chemical Company LP, succeeds Plexco and Driscopipe as North America's largest producer of polyethylene piping products for gas, industrial, municipal, mining, oilfield, and utility applications.

Performance Pipe tenders more than forty years of polyethylene pipe manufacturing experience, thirteen manufacturing facilities ISO certified in nine states, and two manufacturing facilities in Mexico.

The unmatched quality and performance of Performance Pipe polyethylene piping products is enhanced and strengthened with over four decades of quality polyolefin plastic resin production from Chevron Phillips Chemical Company LP.

### A Commitment to Quality and Performance



#### *Flame Retardant (FR) Polyethylene Tubing*

Performance Pipe™ Driscoplex™ 2600 Instube® Flame Retardant Polyethylene Tubing is a superior quality, flame retardant, stress crack resistant, exclusively compounded polyethylene tubing product for pneumatic instrument controls.

DriscoPlex™ 2600 Instube® systems are marked with a white ink numbering system over the full length of the tubing. Cut the lead end at any number from 1 to 30 for easy identification of individual tubes.

Color-coding in up to seven different color stripes is available for instant, easy identification. Bright color stripes are extruded directly into the outside surface of the tubing and provide permanent color-coding that will not wear or fade. When color-coded, the combination of color stripes and printline numbering provides for up to 210 pneumatic circuit lines without duplicating a color stripe-number combination.

<sup>1</sup> Formerly - Plexco, a Division of Chevron Chemical Company

<sup>2</sup> Formerly - Phillips Driscopipe, A Division of Phillips Petroleum Company

**NOTICE - This publication is intended for use as a guide to support the designer of piping systems. It is not intended to be used as installation instructions, and should not be used in place of the advice of a professional engineer. It does not constitute a guarantee or warranty for piping installations. Performance Pipe has made every reasonable effort to ensure the accuracy of this publication, but it may not provide all necessary information, particularly with respect to special or unusual applications. This publication may be changed from time to time without notice. Contact Performance Pipe to determine if you have the most current edition.**

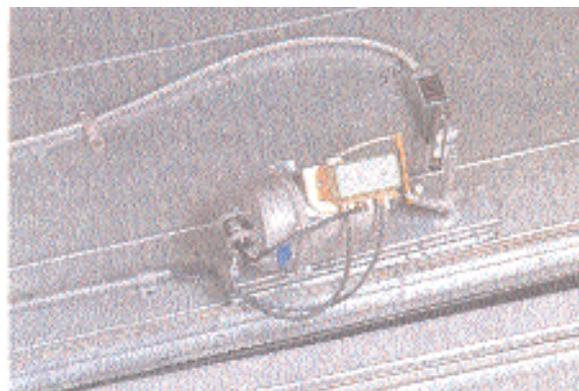
## Stress Crack Resistance

Resistance to stress cracking is critical. The possibility of tubing failure occurring behind skyscraper walls 10 or 15 years in the future is of great concern. Performance Pipe has developed material compounds and extrusion techniques that ensure tubing with inherently superior stress crack resistance. Performance Pipe's environmental stress crack resistance tests are more stringent than ASTM D 1693. Our 48-hour, 70°C accelerated aging test produces crystal developments within the polymer that would otherwise take years to develop. Tubing samples are then bent into a "V" shape and aged in a chemical stress cracking solution at 50°C for 200 hours. Stress cracking tests are conducted on every production lot of tubing. DriscoPlex™ 2600 Instube® pneumatic tubing is recertified annually for conformance with ESCR requirements.

## Flame Retardant

"Flame Retardant" or "self-extinguishing" mean that the tubing material has the ability to retard burning and extinguish the flame once the flame source is removed.

Industry tests are used to evaluate the burning characteristics of pneumatic tubing materials. ASTM D 635 Standard Test Method for Rate of Burning and/or Extent/Time of Burning of Plastics in a Horizontal Position test materials for horizontal burn rate. DriscoPlex™ 2600 Instube® pneumatic tubing meets or exceeds the requirements of ASTM D 635.



DriscoPlex™ 2600 Instube® is classified by Underwriters Laboratories. Under UL94 tests conducted by UL to analyze vertical burn characteristics of polymeric materials, DriscoPlex™ 2600 Instube® pneumatic tubing has a vertical burn rating of 94V-2.

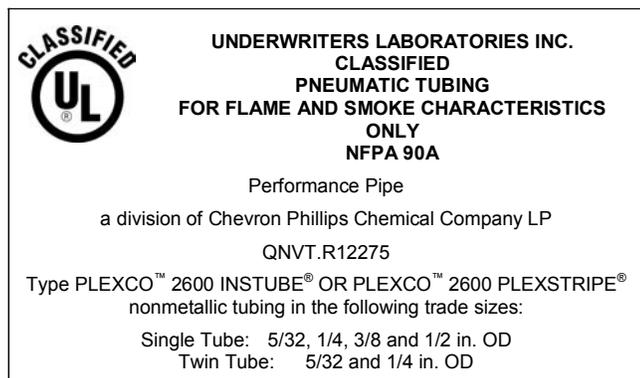
## Plenum Rated Pneumatic Tubing

NFPA 90A Standard for the Installation of Air-Conditioning and Ventilating Systems, permits pneumatic tubing for control systems in ceiling cavity plenums (§2-3.10.1) and raised floor plenums (§2-3.10.5) when it is "listed as having a maximum peak optical density of 0.5 or less, an average optical density of 0.15 or less, and a maximum flame spread distance of 5 ft (1.5 m) or less when tested in accordance with the specified test method." The specified test method is UL1820 Standard for Safety Fire Test of Pneumatic Tubing for Flame and Smoke Characteristics. When pneumatic tubing is listed in accordance with NFPA 90A requirements, it is a "plenum rated" material.

<i>Property</i>	<i>Test Method</i>	<i>Value</i>
<i>Maximum peak optical density</i>	UL 1820	< 0.5
<i>Average optical density</i>	UL 1820	< 0.15
<i>Maximum flame spread distance</i>	UL 1820	< 5 ft (< 1.5 m)

DriscoPlex™ 2600 Instube® and DriscoPlex™ 2600 Plexstripe® pneumatic tubing are listed as "UL Classified" by Underwriters Laboratories, UL, under UL 1820 as follows:

DriscoPlex™ 2600 Instube® pneumatic tubing meet the requirements of the Uniform Building Code, Uniform Mechanical Code, Southern Building Code and B.O.C.A.



### Pneumatic Tubing Products

DriscoPlex™ 2600 Instube® pneumatic tubing is a high quality, flame retardant pneumatic control tubing with superior stress crack resistance for reliable, long-term performance. DriscoPlex™ 2600 tubing is lightweight and flexible for easy handling and installation.

DriscoPlex™ 2600 Instube® pneumatic tubing are marked with a white ink numbering system over the full length of the tubing. Cut the lead end at any given number (from 1 to 30) for easy identification

of individual pneumatic circuit tubes. Color-coding is available in seven stripe colors. Up to 210 different pneumatic control circuits can be individually identified without repeating a stripe color-number combination.

DriscoPlex™ 2600 Instube® pneumatic tubing is produced in the following sizes and coils for pneumatic control applications.

### DRISCOPEX™ 2600 Instube® Pneumatic Tubing Product Sizes

Nominal Size	Nominal OD	Nominal ID	Nominal Wall	Weight/CLF	Coil Length	Master Pack
5/32" OD	0.156"	0.096"	0.030"	0.60#	500'	2000'
1/4" OD	0.250"	0.170"	0.040"	1.32#	250'/1000'	1000'/2000'
3/8" OD	0.375"	0.250"	0.062"	3.04#	250'/500'	1000'
1/2" OD	0.500"	0.375"	0.062"	4.25#	250'	500'
5/32"	–	0.096"	0.030"	1.20#	500'	1000'
Twintube	–	0.170"	0.040"	2.86#	250'	500'
1/4"						
Twintube						

Available in black only.

### Color Coding for DRISCOPEX™ 2600 Instube®† Pneumatic Tubing Product Sizes

Nominal Size	Nominal OD	Nominal ID	Nominal Wall	Weight/CLF	Coil Length	Master Pack
5/32" OD	0.156"	0.096"	0.030"	0.60#	500'	2000'
1/4" OD	0.250"	0.170"	0.040"	1.32#	250'/1000'	1000'/2000'
3/8" OD	0.375"	0.250"	0.062"	3.04#	250'/500'	1000'
1/2" OD‡	0.500"	0.375"	0.062"	4.25#	250'	500'

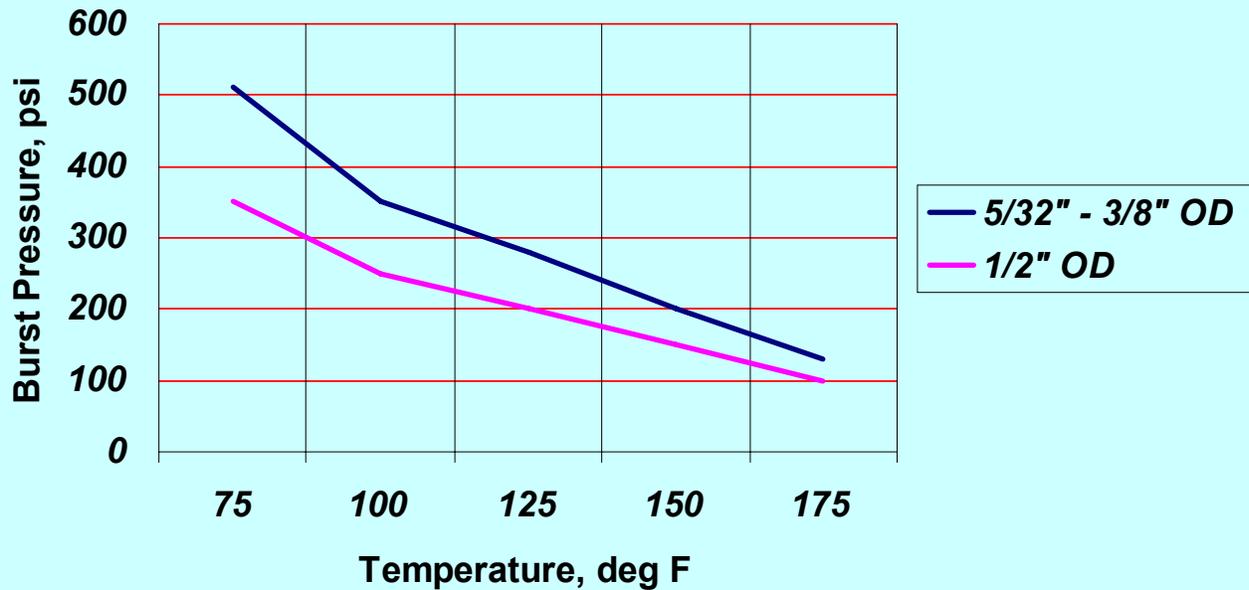
† Available stripe colors: red, white, blue, green, yellow, orange and violet. ‡ Available stripe colors: red, white, blue and green only.

## Material and Tubing Specifications

Specifications for PLEXCO™ 2600 Instube® Pneumatic Control Tubing

Property	Test Method	Typical Value
<b>Flame Retardant Compound</b>		
Melt Index	ASTM D 1238	0.6 ± 0.1 g/10 min
Density	ASTM D 792	1.1 ± 0.005 g/cm <sup>3</sup>
Tensile Strength – ultimate (20 in./min)	ASTM D 638	> 2000 psi (> 1.8 MPa)
Tensile Elongation – ultimate (20 in./min.)	ASTM D 638	> 600 %
Bending Modulus	ASTM D 747	30,000 ± 5,000 psi (20639 ± 34.5 MPa)
Shore A Hardness	ASTM D 1700	97 ± 3
Shore D Hardness	ASTM D 1700	45 ± 3
Water Absorption	ASTM D 570	5% maximum
Polyethylene Classification	ASTM D 3350	PE 11 or PE 12
Stress-Crack Resistance	ASTM D 1693	> 200 hours non-failure
Brittleness Temperature	ASTM D 745	< -104.8°F (< -76°C)
<b>Pneumatic Instrument Control Tubing</b>		
Burst Pressure	ASTM D 1599	5/32" – > 500 psi (> 3.4 MPa) 1/4" – > 500 psi (> 3.4 MPa) 3/8" – > 500 psi (> 3.4 MPa) 1/2" – > 350 psi (> 3.4 MPa)
Minimum Bend Radius	–	5/32" – 0.50 in. (13 mm) 1/4" – 0.75 in. (19 mm) 3/8" – 1.50 in. (38 mm) 1/2" – 1.88 in. (48 mm)
Maximum Allowable Pulling Load During Installation	–	5/32" – 15 lb. (66 N) 1/4" – 33 lb. (147 N) 3/8" – 76 lb. (338 N) 1/2" – 106 lb. (472 N) 5/32" Twintube – 30 lb. (133 N) 1/4" Twintube – 65 lb. (289 N)
Flammability	UL 94 UL 910	V-2 UL Classified (NFPA 90A)
Flame Propagation	UL 1820	< 5 ft (< 1.5 m)
Smoke Density – Peak Optical Density	UL 1820	< 0.5
Smoke Density – Average Optical Density	UL 1820	< 0.15
<p><b>NOTICE – This table provides typical physical property information for polyethylene compounds used to manufacture DRISCOPLEX™ 2600 tubing products. It is intended for comparing compounds and tubing. It is not a product specification, and it does not establish minimum or maximum values or manufacturing tolerances for compounds or tubing. The typical property values for compound were determined using compression-molded plaques prepared from compound. Values obtained from tests of specimens taken from tubing can vary from these typical values. Performance Pipe has made every reasonable effort to ensure the accuracy of this information, but this table may not provide all necessary information, particularly with respect to special or unusual applications. This information may be changed from time to time without notice. Contact Performance Pipe to determine if you have the most recent edition.</b></p>		

## Quick Burst Pressure vs. Temperature (ASTM D 1599)



NOTICE - The above chart indicates short term burst pressures as indicated by laboratory tests and does not reflect long term operating burst pressures. No representations of operating burst pressures are expressed or implied.



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