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Product Standard

for

FIRE RESISTANT LINEAR LOW DENSITY POLYETHYLENE FR TWIN TUBING

Date of Original Standard (3/16/83)

Changes: (DK-83-1993)(DK-83-2121)(D-83-2135)(DK-84-2397) (DK-98-4797)(05-6610)

FORM: QFT-002



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DESCRIPTION

Eaton’s FR twin tubing is made of a proprietary linear low density polyethylene compound. It combines the physical characteristics and long-term stability of linear low density polyethylene with flame retardant properties.

PRODUCT TECHNICAL DATA

Part Number	Dimensions						
	Wall Thickness	O.D. Nominal	O.D. Tolerance	I.D. Nominal	I.D. Tolerance	Wall Thickness	Web Thickness
1219-130T4	0.030"	0.156"	+0.005" -0.003"	0.096"	+0.005" -0.003"	Min. .028 Max. .034	0.005" - 0.015
1219-440T3	0.040"	0.250"	+0.003" -0.005"	0.170"	+0.002" -0.006"	Min. .036 Max. .044	0.005"- 0.015"

Part Number	Min. Bend Radius	Max. Pulling Strength	Net weight Per 100'
1219-130T4	1/2"	14 lbs.	1.16 lbs.
1219-440T3	1"	30 lbs.	2.57 lbs.

PHYSICAL PROPERTIES OF "FR" TWIN TUBING

Property	Units	Test Method	Value
Tensile Strength	PSI	ASTM D 638	1,600 min.
Elongation (pull at 20"/min.)	%	ASTM D 638	400 min.
Melt Index	dg/min.	ASTM D 1238	0.6 - 1.0
Density	g/cc	ASTM D 1505	1.08
Water Absorption	%	ASTM D 570	0.11
Brittleness Temperature	°C	ASTM D 746	-50
Flammability	in/min.	ASTM D 635	Self-extinguishing
Environmental Stress Crack Resistance	hours	See Note (a)	No failure
Maximum Service Temperature	°F	See Note (b)	150



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- Note: (a) Modified version of ASTM D 1693 to evaluate quality of tubing. Sections of tubing 1-1/2" long are bent into a "V" and inserted into test tubes. The sizes of the test tubes are 18mm for 5/32" O.D. tubes and 25mm for 1/4" O.D. tubes. Five (5) specimens are evenly spaced in the test tube, then the test tube is filled with a 10% solution of Igepal CO-630. The test tube is then placed at 50°C (122°F) either in a water bath or a circulating air oven. Any crack or split in the stressed section of the tube constitutes failure. Samples must exhibit no failure at 240 hours (10 days) to be considered satisfactory for extended use.
- (b) Maximum service temperature is specified for applications involving the transfer of clean, dry air or gas. The presence of moisture in the application will diminish the life of the product, especially at elevated temperatures.

PERFORMANCE CHARACTERISTICS

Table 1
BURST PRESSURE (PSI) VS. TEMPERATURE

Tube Size	75°F	100°F	125°F	150°F
5/32" O.D. x .030" Wall	600	500	400	300
1/4" O.D. x .040" Wall	500	400	275	225

Table 2
RECOMMENDED WORKING PRESSURE (PSI) AT VARIOUS TEMPERATURES

Note: 5:1 safety factor to burst pressures

Tubing Size	75°F	100°F	125°F	150°F
5/32" O.D. x .030" Wall	120	100	80	60
1/4" O.D. x .040" Wall	100	80	55	45

PRODUCT ADVANTAGES

1. "FR" twin tubing is a flame retardant material
2. Light weight
3. High level of flexibility
4. Exceptional corrosion and chemical resistance
5. Good mechanical abuse characteristics
6. Ease of installation
7. Freedom from stress concentrations and imperfections
8. Offers excellent protection against thermal and environmental degradation
9. High stress cracking resistance