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Aurora Center Of Excellence
Title: PRODUCT STANDARD

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Product Standard

for

“FR” POLY-COR INSTRUMENT TUBING HARNESS

Date of Original Standard (1/2/74)

Changes: (DK-89-3655) (DK-98-4797)(DK-01-5284z)(05-6610)

FORM: QFT-002



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DESCRIPTION

Eaton’s “FR” Poly-Cor consists of a harness of multiple black Synflex® “FR” tubes, number identified on 2” centers, positioned adjacent and parallel to each other with a PET barrier envelope over which is extruded a black, flame retardant polyethylene jacket.

PRODUCT TECHNICAL DATA

No. Of Tubes	Part Number	Net Wt. Lbs/C'	Approx. Shpg. Wt. Lbs/C' *	Nominal O.D. (Inches)	Jacket Thickness (Inches) (nom.)
<u>1/4" O.D. x 0.040" WALL</u>					
2	1224-40200	8.2	10	5/8	0.062
3	1224-40300	10.1	12	5/8	0.062
4	1224-40400	12.1	24	13/16	0.062
5	1224-40500	14.0	26	7/8	0.062
7	1224-40700	17.1	29	7/8	0.062
8	1224-40800	19.1	35	1-1/32	0.062
10	1224-41000	22.2	39	1-1/8	0.062
12	1224-41200	25.4	41	1-1/8	0.062
14	1224-41400	28.7	45	1-1/4	0.062
19	1224-41900	36.0	53	1-3/8	0.062
37	1224-43700	66.8	96	1-61/64	0.100
<u>3/8" O.D. x 0.062" WALL</u>					
2	1224-60200	12.7	26	7/8	0.062
3	1224-60300	16.3	30	7/8	0.062
4	1224-60400	21.5	37	1-3/16	0.062
7	1224-60700	31.1	46	1-1/4	0.062
10	1224-61000	41.3	72	1-5/8	0.062
12	1224-61200	48.7	79	1-45/64	0.100
19	1224-61900	75.0	103	2-5/64	0.100

* Based on 500 ft. reel: Bundles of two and three 1/4” tubes to 549 ft. and four through eight 1/4” tubes plus two and three 3/8” tubes to 199 ft. are shipped on plywood reels. All other bundles are shipped on solid wood reels. Theoretically, this is an over-designed package for the net weight of the product, however, we have found that this reel construction is necessary to withstand the normal transit and installation abuses and outside storage conditions of many industrial jobs.



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No. Of Tubes	Part Number	Jacket Tolerance	Jacket TIR	Minimum Bend Radius (Inches)	Max. Pulling Tension to Deform. (lbs)	Min. Install. Temperature (°F)
		<u>1/4" O.D. x 0.040" WALL</u>				
2	1224-40200	+0.018 - 0.012	0.016 Max.	1-1/2	90	-40
3	1224-40300	+0.018 - 0.012	0.016 Max.	1-1/2	105	-40
4	1224-40400	+0.018 - 0.012	0.016 Max.	2	140	-40
5	1224-40500	+0.018 - 0.012	0.016 Max.	2	160	-40
7	1224-40700	+0.018 - 0.012	0.016 Max.	2-1/2	190	-40
8	1224-40800	+0.018 - 0.012	0.016 Max.	2-1/2	225	-40
10	1224-41000	+0.018 - 0.012	0.016 Max.	3	250	-40
12	1224-41200	+0.018 - 0.012	0.016 Max.	3-1/2	290	-40
14	1224-41400	+0.018 - 0.012	0.016 Max.	4	330	-40
19	1224-41900	+0.018 - 0.012	0.016 Max.	5	415	-40
37	1224-43700	+0.018 - 0.012	0.016 Max.	9	855	-40
		<u>3/8" O.D. x 0.062" WALL</u>				
2	1224-60200	+0.018 - 0.012	0.016 Max.	2	155	-40
3	1224-60300	+0.018 - 0.012	0.016 Max.	2	185	-40
4	1224-60400	+0.018 - 0.012	0.016 Max.	2-1/2	255	-40
7	1224-60700	+0.018 - 0.012	0.016 Max.	4	355	-40
10	1224-61000	+0.018 - 0.012	0.016 Max.	5	500	-40
12	1224-61200	+0.018 - 0.012	0.016 Max.	6	655	-40
19	1224-61900	+0.018 - 0.012	0.016 Max.	10	870	-40



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Part Number	Bundle Area Based on Nominal O.D.	Fill vs. Conduit Size **									
		1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4	5	6
		1/4" O.D. x 0.040" WALL									
1224-40200	0.307	1	1	2	4	6	9	12	16	26	37
1224-40300	0.307	1	1	2	4	6	9	12	16	26	37
1224-40400	0.519	0	1	1	2	3	5	7	9	15	22
1224-40500	0.601	0	1	1	1	3	4	6	8	13	19
1224-40700	0.601	0	1	1	1	3	4	6	8	13	19
1224-40800	0.835	0	0	1	1	1	3	4	6	9	13
1224-41000	0.994	0	0	1	1	1	2	3	5	8	11
1224-41200	0.994	0	0	1	1	1	2	3	5	8	11
1224-41400	1.227	0	0	0	1	1	1	3	4	6	9
1224-41900	1.485	0	0	0	1	1	1	2	3	5	7
1224-43700	2.996	0	0	0	0	0	1	1	1	2	3
		3/8" O.D. x 0.062" WALL									
1224-60200	.0601	0	1	1	1	3	4	6	8	13	19
1224-60300	.0601	0	1	1	1	3	4	6	8	13	19
1224-60400	1.108	0	0	0	1	1	2	3	4	7	10
1224-60700	1.227	0	0	0	1	1	1	3	4	6	9
1224-61000	2.074	0	0	0	0	1	1	1	1	3	5
1224-61200	2.278	0	0	0	0	1	1	1	1	3	5
1224-61900	3.391	0	0	0	0	0	1	1	1	1	3

** Data based on 53% fill for one bundle; 31% 2 bundles; 40% 3 or more bundles.

Recommended Support Centers	
2 - 3 Ft.	Horizontal
10 - 20 Ft.	Enclosed Vertical
5 - 10 Ft.	Open Vertical

COEFFICIENT OF LINEAR THERMAL EXPANSION

The Coefficient of linear thermal expansion of "FR" Poly-Cor tubes has been experimentally determined as 7×10^{-5} to 9×10^{-5} in./in./°C.



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AVAILABILITY

“FR” Poly-Cor is available in continuous lengths up to 2,000 ft. for 1/4” O.D. tubing bundles and up to 1,000 ft. for 3/8” O.D. tubing bundles.

SPECIFY AS:

As a harness of multiple, number coded virgin black flame retardant polyethylene tubes meeting the stress crack test performed per ASTM D-1693-60T Tubes positioned adjacent and parallel. Harness contained in a PET tape barrier envelope and jacketed with an extruded black flame retardant polyethylene sheath with a minimum thickness of .062 inches.

PRODUCT ADVANTAGES

1. “FR” Poly-Cor will not sustain a flame after the removal of the initial flame source.
2. Lightweight: “FR” Poly-Cor is approximately 40% lighter than aluminum and 75% lighter than copper bundles of a similar design.
3. “FR” Poly-Cor is extremely flexible and not subject to work hardening.
4. “FR” Poly-Cor is very resistant to most chemicals, organic and inorganic.
5. Available in continuous lengths up to 2,000 feet.

INSTALLATION SUGGESTIONS

1. In most industrial installations, it is recommended that “FR” Poly-Cor be pulled in conduit, closed cable tray, or in some way be protected from severe physical abuse. The jacket is relatively thin (.062” for most sizes) and is particularly susceptible to damage from welding, and cutting torch splatter. Where this type of abuse is probable, Synflex® Protecto-Pac is suggested.
2. When pulling “FR” Poly-Cor, apply grips over jacket; do not pull on tubes alone.
3. Allow 11” per 100 ft. per 100°F temperature change for thermal expansion and contraction.