

UL Hi-Low Temperature Type LFMC (6900 Series)

Scope

This specification covers AFC Cable Systems, Inc. UL Listed LIQUID-TUFF™ Hi-Low Liquidtight Flexible Steel Conduit designed for use as a raceway for power, control and communication cables in accordance with Article 350 of the National Electrical Code. The product is Underwriters Laboratories Inc. (UL) Listed for 105°C (221°F) in a dry location, 60°C (140°F) in a wet location and 70°C (158°F) in an oily location. It is also UL Listed in all trade sizes for direct burial, outdoor use and sunlight resistance. THE LIQUID-TUFF™ HI-LOW IS UL LISTED FOR -55°C (-67°F) LOW TEMPERATURE APPLICATIONS. This Liquidtight Flexible Steel Conduit is manufactured and tested in accordance with Underwriters Laboratories Inc. Standard UL 360. The product carries the UL Listing Mark.

Construction

The Type LFMC (UL) Liquidtight Flexible Steel Conduit shall be formed from a zinc coated galvanized low carbon steel strip having a uniform width and thickness. The 3/8 through 1-1/4 Trade Sizes are manufactured with square-lock profile that contains a continuous bonding strip. The 1-1/2 through 4 Trade Sizes are manufactured with a fully interlocked "S" profile without a bonding strip. The construction shall be in accordance with UL 360 and CSA C22.2 Number 56 requirements. The finished Type LFMC dimensions shall be in accordance with Table 5.1 of UL 360 and Table 2 of CSA C22.2 No. 56 which are summarized in Table 1.

Jacket – PVC

A rugged moisture, oil and sunlight resistant polyvinyl chloride (PVC) jacket shall be applied directly over the flexible metal conduit with a wall thickness in accordance with Table 4.1 of UL 360 which is summarized in Table 1. Jacket: Gray. Additional colors available upon request.

Grounding

Permanent circuit ground protection is provided through the continuous bonding strip built into the conduit core in trade sizes 3/8 through 1-1/4. A separate grounding conductor is required by the NEC® for trade sizes 1-1/2 and larger.

Markings

The surface of the outer jacket shall be clearly marked with a legible print legend in compliance with UL 360.

Performance Tests

In accordance with UL 360, the completed LIQUID-TUFF™ Hi-Low Liquidtight Flexible Steel Conduit shall meet all of the performance requirements outlined in Appendix A.

Description

- Superior temperature ratings
- Hot dipped zinc galvanized low carbon steel core
- UL bonding strip 3/8 – 1-1/4 for grounding
- Sunlight resistant
- Flame retardant PVC jacket – Gray



Temperature Rating

- 105°C (221°F) DRY
- 60°C (140°F) WET
- 70°C (158°F) OIL RESISTANT
- -55°C (-67°F) LOW TEMPERATURE

Applications

Suitable for use in:

- NEC® 350 Liquidtight Flexible Metal Conduit Type LFMC Machine tool wiring applications
- Wet Locations
- Direct Burial in earth
- Concrete Embedment
- Exposure to Sunlight and Weather
- Installation at low temperatures
- Grounding in 3/8 to 1 ¼ trade sizes per NEC® 250.118(6)
- Flexible Connections in Hazardous Locations: Class I Div 2 NEC 501.10(B)(2)(4), Class II Div 1 NEC 502.10(A)(2)(2), Class II Div 2 NEC 502.10(B)(2), Class III Div 1 NEC 503.10(A)(3)(2) and Class III Div 2 NEC 503.10(B).
- Raised Computer Room Floors per NEC 645.5(E)(1)(b)(11)
- Service Entrance Wiring up to 6 feet per NEC 230.43(15)
- Feeders and services where flexible connections are required in Floating Buildings per NEC 553.7(B)
- Marinas and Boatyards per NEC 555.13(A)(1)
- Electric signs and Outdoor Lighting per NEC 600.31(A)(1) and 600.32(A)(1)
- Flexible Connections for hoists and cranes per NEC 610.11(C)
- Wiring Elevators, Dumbwaiters, Escalators, Moving Walks, Platforms and Stairway Chairlifts per NEC 620.21
- Motors for Permanently Installed Pools where Flexible Connections are required per NEC 680.21(A)(2)
- Spas and Hot Tubs where Flexible Connections are required per NEC 680.42(A)(1)
- Feeders for Natural and Artificially Made Bodies of Water where Flexible Connections are required per NEC 682.13
- Solar Photovoltaic (PV) Systems per NEC 690.31(A)
- Fire Pump Wiring per NEC 695.6(D)
- Electric Fire Pump Control Wiring per NEC 695.14(E)

Ratings

- Underwriters Laboratories Inc. Standard: UL 360 File: E26540
- UL LISTED for 105°C (221°F)
- UL LISTED for -55°C (67°F)
- NFPA 70 NEC® Article 350
- UL LISTED in all Trade Sizes for DIRECT BURIAL which includes Concrete Encasement
- Conduit in Trade Sizes 1-1/2 and larger require an equipment grounding conductor per NEC 350.60

TABLE 1.									
ORDERING INFORMATION						PRODUCT DIMENSIONS/BEND RADIUS			
Product Code	Trade Size	Metric Designator	Coil Length (feet)	Reel Length (feet)	Approx. Weight/ 100 feet (pounds)	Min Average Thickness of Jacket (Average)	Internal Diameter (min/max) (inches)	Over Jacket (min/max) (min/max)	Bend Radius (inches)
6901-30-00	3/8	12	100	—	25	0.03	0.484/0.504	0.690/0.710	2
6902-30-00	1/2	16	100	—	31	0.03	0.622/0.642	0.820/0.840	3.25
6902-45-00	1/2	16	—	500	31	0.03	0.622/0.642	0.820/0.840	3.25
6902-60-00	1/2	16	—	1000	31	0.03	0.622/0.642	0.820/0.840	3.25
6903-30-00	3/4	21	100	—	48	0.035	0.820/0.840	1.030/1.050	4.25
6903-45-00	3/4	21	—	500	48	0.035	0.820/0.840	1.030/1.050	4.25
6903-60-00	3/4	21	—	1000	48	0.035	0.820/0.840	1.030/1.050	4.25
6904-30-00	1	27	100	—	80	0.035	1.041/1.066	1.290/1.315	6.5
6904-41-00	1	27	—	400	80	0.035	1.041/1.066	1.290/1.315	6.5
6905-24-00	1-1/4	35	50	—	105	0.035	1.380/1.410	1.630/1.660	8
6906-24-00	1-1/2	41	50	—	110	0.04	1.575/1.600	1.865/1.900	9
6907-24-00	2	53	50	—	147	0.04	2.020/2.045	2.340/2.375	11.12
6908-22-00	2-1/2	63	25	—	172	0.04	2.480/2.505	2.840/2.875	14.62
6909-22-00	3	78	25	—	200	0.05	3.070/3.100	3.460/3.500	17.5
6910-22-00	3-1/2	91	25	—	235	0.06	3.500/3.540	3.960/4.000	20
6911-22-00	4	103	25	—	256	0.06	4.000/4.040	4.460/4.500	24

NOTE: All dimensions and weights are subject to normal manufacturing tolerances. **Review NEC® 350.60 and 250.118(6) for grounding requirements.**

Appendix A		
UL Performance Tests		
Resistance and High Current	Flexibility	Mechanical Water Absorption
Fault Current	Low Temperature Flexibility	Moisture Penetration
Impact	Zinc Coating	Sunlight Resistance
Tension	Vertical Flame	Test for Secureness of Fittings
Crushing	Physical Properties	Test for Durability of Ink Printing
Pipe Stiffness	Deformation	

Reference Standards	
UL 360	Standard for Liquidtight Flexible Metal Conduit
UL 514B	UL Standard for Conduit, Tubing and Cable Fittings
NFPA 70	National Electric Code (NEC) Articles 250, 350, 390, 501, 502, 503, 504, 511, 620, 645, 680 and 690
NEMA RV 3	Application and Installation Guidelines for Flexible and Liquidtight Flexible Metal Conduits