

UL and CSA Type LFNC-B (6000 Series)



Scope

This specification covers Kaf-Tech® UL LIQUID-TUFF™ Integral Liquidtight Flexible Nonmetallic Conduit, Type LFNC-B designed for use in wet, dry or oily locations as a flame resistant, Nonmetallic raceway for power, control and communications cables in compliance with Article 356 of the National Electrical Code. The product is UL Listed for 80°C (176°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 through 2-inch trade sizes for direct burial, outdoor use and sunlight resistance. In addition the product is CSA certified for use at 75°C (167°F) in dry and oily locations and for minus 18°C (0°F) low temperature applications. This Liquidtight Flexible Nonmetallic Conduit is manufactured and tested in accordance with the harmonized Underwriters Laboratories Inc. Standard UL 1660 and CSA International Standard CSA C22.2 Number 227.2.1. The product carries the UL Listing Mark and the CSA Certification Mark.

Construction

Liquidtight Flexible Nonmetallic Conduit, Type LFNC-B is a raceway of circular cross section with a smooth polyvinyl chloride (PVC) inner surface and an integral rigid PVC reinforcing member within the conduit wall. The wall thicknesses and dimensions of the integral conduit shall comply with Table 3 of harmonized UL 1660/CSA No. 227.2.1 which are summarized in Table 1.

A rugged moisture, oil and sunlight resistant flexible polyvinyl chloride (PVC) jacket shall be extruded directly over the integral rigid PVC core with a wall thickness in conformance with Product Information below. Jacket: Gray

Grounding

A separate Grounding conductor is required by both the National Electrical Code and the Canadian Electrical Code for all trade sizes.

Markings

The surface of the outer jacket shall be clearly marked with a legible print legend in compliance with UL 1660 and CSA C22.2 No. 227.2.1.

Performance Tests

The completed UL LIQUID-TUFF™ Liquidtight Flexible Nonmetallic Conduit, Type LFNC-B shall meet all of the performance requirements contained in UL 1660 and CSA C22.2 No. 227.2.1 and outlined in Appendix A.

Description

- UL Listed and CSA certified
- Rugged Nonmetallic PVC
- Interior integral reinforced member within conduit wall
- Integral Type B construction per NEC® 356.2(2)
- Rigid PVC spiral core for strength
- Outdoor applications including direct burial
- Rated for concrete embedment
- Sunlight and oil resistant
- Non-conductive raceway

Temperature Rating

- 80°C (176°F) DRY
- 60°C (140°F) WET
- 70°C (158°F) OIL
- -18°C (0°F) LOW TEMPERATURE

Applications & References

Suitable for use in:

- NEC® 356.2(2) Liquidtight Flexible Nonmetallic Conduit Type LFNC-B
- Wet Locations
- Direct Burial in earth
- Concrete Embedment
- Exposure to Sunlight and Weather
- Flexible Connections in Hazardous Locations:
 - Class I Div 2 NEC® 501.10(B)(2)(5), Class II Div 1 NEC® 502.10(A)(2)(3), Class II Div 2 NEC® 502.10(B)(2), Class III Div 1 NEC® 503.10(A)(3)(3) and Class III Div 2 NEC® 503.10(B).
- Raised Computer Room Floors per NEC® 645.5(E)(1)(b)(12)
- Service Entrance Wiring per NEC® 230.43(16)
- Marinas and Boatyards per NEC® 555.13(A)(1)
- Electric signs and Outdoor Lighting per NEC® 600.31(A) 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 1660 File: E123464
- CSA Group: Standard: C22.2 No. 227.2.1 File: 69271 MC# 15778
- NFPA 70 NEC® Article 356
- Canadian Electric Code (CEC) Part I Clause 12-1300
- UL Listed in all Trade Sizes for Direct Burial which includes Concrete Encasement
- All Trade Sizes require an equipment grounding conductor per NEC® 356.60
- All Trade Sizes require a bonding conductor per CEC Rule 12-1306

TABLE 1.

| ORDERING INFORMATION | | | | | | PRODUCT DIMENSIONS/BEND RADIUS | | |
|----------------------|---------------------|-----------------|--------------------|---------------------|----------------------------------|------------------------------------|------------------------------------|----------------------|
| Product Code | Trade Size (inches) | Trade Size (mm) | Coil Length (feet) | Reel Length (feet)* | Approx. Weight 100 feet (pounds) | Internal Diameter (min/max) inches | External Diameter (min/max) inches | Bend Radius (inches) |
| 6001-30-00 | 3/8 | 12 | 100 | – | 12 | 0.484/0.504 | 0.690/0.710 | 2 |
| 6002-30-00 | 1/2 | 16 | 100' | – | 13 | 0.622/0.642 | 0.820/0.840 | 3.25 |
| 6002-60-00 | 1/2 | 16 | – | 1000 | 13 | 0.622/0.642 | 0.820/0.840 | 3.25 |
| 6003-30-00 | 3/4 | 21 | 100 | – | 18 | 0.820/0.840 | 1.030/1.050 | 4.25 |
| 6003-46-00 | 3/4 | 21 | – | 700 | 18 | 0.820/0.840 | 1.030/1.050 | 4.25 |
| 6004-30-00 | 1 | 27 | 100 | – | 27 | 1.041/1.066 | 1.290/1.315 | 6.5 |
| 6004-45-00 | 1 | 27 | – | 500 | 27 | 1.041/1.066 | 1.290/1.315 | 6.5 |
| 6005-24-00 | 1-1/4 | 35 | 50 | – | 35 | 1.380/1.410 | 1.630/1.660 | 8 |
| 6006-24-00 | 1-1/2 | 41 | 50 | – | 48 | 1.575/1.600 | 1.865/1.900 | 9 |
| 6007-24-00 | 2 | 53 | 50 | – | 70 | 2.020/2.045 | 2.340/2.375 | 11.1 |

NOTE: All dimensions and weights are subject to normal manufacturing tolerances.
 * Continuous lengths available in 1/2 – 1

Appendix A

| UL Performance Tests | CSA Performance Tests |
|--|---|
| Physical Properties: • Original Tensile and Elongation • Air Oven Aging Test • Oil Immersion Test • Deformation Test | Physical Properties: • Original Tensile and Elongation • Air Oven Aging Test • Oil Immersion Test • Deformation |
| Tension | Tension |
| Cold Flexibility | Cold Flexibility |
| Vertical Flame | Vertical Flame |
| Cold Impact | Cold Impact |
| Secureness (of Fittings) | Fitting Pull-Out |
| Mechanical Water Absorption | Secureness (of Fitting) |
| Moisture Penetration Test | Moisture Penetration Test |
| Durability of Ink | Durability of Ink |
| Weather Resistance | Weather Resistance |
| Resistance to Deflections (Crush) | – |
| Pipe Stiffness for Direct Burial | – |

Reference Standards

| | |
|--------------------------------|--|
| UL 1660/ CSA C22.2 No. 227.2.1 | Harmonized Standard for Liquidtight Flexible Nonmetallic Conduit |
| UL514B | Standard for Conduit, Tubing and Cable Fittings |
| NFPA 70 | National Electric Code (NEC®) Articles 250, 356, 390, 501, 502, 503, 504, 511, 620, 645, 680 and 690 |