



## UL Ultraflex™ Liquidtight Non-Metallic Mechanical Protection Tubing NMPT-B (160 Series)



### Scope

This specification covers Kaf-Tech® LIQUID-TUFF™ Liquidtight ULTRAFLEX™ (1)  RECOGNIZED COMPONENT EXTRA-FLEXIBLE NONMETALLIC MECHANICAL PROTECTION TUBING. (1) LIQUID-TUFF™ Liquidtight ULTRAFLEX™  RECOGNIZED COMPONENT EXTRA FLEXIBLE NONMETALLIC MECHANICAL PROTECTION TUBING is designed for use in connection with the support of and protection of insulated wires, placed within the tubing, that are used to interconnect separate component assemblies or consoles of electrical apparatus, such as x-ray equipment. Use of the combination is to be determined by Underwriters Laboratories Inc. The acceptable use of this material is limited to the following conditions:

1. This tubing may be used for the routing of internal wiring between electrical components of electrical equipment. The protection afforded to the internal wiring by the tubing may be considered equivalent to the protection afforded the internal conductors by the jacket of a Type SJT flexible cord.
2. The tubing is suitable for use at a maximum temperature of 60°C.
3. The tubing and manufacturer's supplied fittings were not tested to determine flammability rating per UL 224.
4. The tubing shall be terminated at each end of the consoles or appliances to which connected to provide strain relief to withstand a 35-pound pull for 1.0 minute. Fittings available from the manufacturer met this requirement.
5. The percent fill of the tubing with conductors shall not exceed 75% where percent fill is defined as: Percent Fill = Area of Enclosed Conductors x 100/Internal Area of Tubing Fill Factor.
6. The minimum bend radius shall not be less than the outside diameter of the tubing.
7. The manufacturer's fittings were subjected to the Oil Spray Test in accordance with UL 514B.
8. As this tubing and manufacturer supplied fittings are to be Recognized as a Component, final acceptance will be determined in terms of the combination of component and appliance as determined by Underwriters Laboratories Inc., regarding such characteristics as flammability; degree of bending or flexing; resistance to water, oil and abrasion; and physical strength.

LIQUID-TUFF™ Liquidtight ULTRAFLEX™ EXTRA-FLEXIBLE Nonmetallic tubing is designed for use in wet, dry or oily locations as a flame resistant, Nonmetallic raceway for power, control and communications cables. The product is intended for use at 60°C (140°F) in a dry location, 60°C (140°F) in a wet location and 60°C (140°F) in a oily location. It is sunlight resistant.

### Construction

LIQUID-TUFF™ Liquidtight ULTRAFLEX™ MECHANICAL PROTECTION TUBING has a circular cross section with a smooth polyvinyl chloride (PVC) inner surface and an integral reinforcing member within the conduit wall. The dimensions of the integral tubing/conduit shall comply with Table 1. Color: Black.

### Grounding

Where applicable a separate grounding conductor is required for all trade sizes.

### Markings

The product marking is contained on the outer carton.

### Performance Tests

The completed LIQUID-TUFF™ Liquidtight ULTRAFLEX™ TUBING shall meet the performance requirements outlined in Appendix A.


### Standards

- Harmonized UL 1696/cUL Listed
- Nonmetallic Mechanical Protection Tubing
- To maintain the Recognized Component Certification, the tubing and fittings must be from the same manufacturer. The components are not interchangeable. For fittings, please see Table 2.

### File

UL E79977


### Description

-  component, extra-flexible Nonmetallic mechanical protection tubing
- Corrugated flame resistant PVC with integral reinforcing member
- Non-conductive raceway – black


### Temperature Rating

- 60°C DRY
- 60°C WET AND OILY

### Applications

-  recognized component for use in protection of insulated wire in assemblies or consoles of electrical apparatus. Use is to be determined by Underwriters Laboratories Inc.

### References & Ratings

-  recognized component Liquidtight Mechanical Protection Tubing under UL File Number E79977
- UL1696 Standard for Nonmetallic Mechanical Protection Tubing
- UL Certified to CSA C22.2 No. 227.3
- Made in USA of US and/or imported materials

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)
160-012	3/8	12	100	—	5	0.484/0.504	0.695/0.705	0.49
160-016	1/2	16	100	—	8	0.622/0.642	0.825/0.835	0.63
160-021	3/4	21	100	—	11	0.820/0.840	1.035/1.045	0.83
160-026	1	27	100	—	16	1.041/1.066	1.297/1.308	1.10
160-035	1-1/4	35	100	—	21	1.380/1.410	1.640/1.650	1.40
160-040	1-1/2	41	100	—	26	1.575/1.600	1.877/1.888	1.59
160-051	2	53	100	—	33	2.020/2.045	2.352/2.363	2.04

NOTE: All dimensions and weights are subject to normal manufacturing tolerances.

Appendix A
Performance Requirements
Heat Aging Test
Cold Bend Test
Heat Shock Test
Crush Test
Impact Test
Oil Spray Test



Table 2.			
Size (IN)	Straight Designations	90 Degree Designations	Colors
3/8	0921-PP-GY	0981-PP-GY	Gray
1/2	0922-PP-BK/0922-PP-GY	0982-PP-BK/0982-PP-GY	Black/Gray
3/4	0923-PP-BK/0923-PP-GY	0983-PP-BK/0983-PP-GY	Black/Gray
1	0924-PP-BK/0924-PP-GY	0984-PP-BK/0984-PP-GY	Black/Gray
1-1/4	0925-PP-BK/0925-PP-GY	0985-PP-BK/0985-PP-GY	Black/Gray
1-1/2	0926-PP-BK/0926-PP-GY	0986-PP-BK/0986-PP-GY	Black/Gray
2	0927-PP-BK/0927-PP-GY	0987-PP-BK/0987-PP-GY	Black/Gray