



## SUMITOMO PRODUCT SPECIFICATION

**FutureFLEX®**

**TCxxTP2 PLENUM RATED (NFPA 262)  
JACKETED TUBE CABLE SERIES**



SUMITOMO ELECTRIC LIGHTWAVE CORP.

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SEL is a Member of the Sumitomo Electric Industries, Ltd. Group

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## **1.0 GENERAL**

This specification covers the design requirements and performance standards for FutureFLEX® Air-Blown Fiber® (ABF) TP2 plenum rated, jacketed tube cables. These tube cables are designed for indoor tube cable infrastructures. The features described in this document are intended to provide information on the performance of Sumitomo Electric's FutureFLEX® tube cables and aid in handling and use.

### **1.1 Tube Cable Description**

Sumitomo's FutureFLEX® TP2 series tube cables are designed for use as an optical fiber cabling infrastructure in ABF applications that require an Optical Fiber Nonconductive Plenum (OFNP) fire rating. TP2 tube cables are UL 910, NFPA 262 and CSA OFN FT6 listed. TP2 series tube cables may also be used in indoor applications where: 1) lesser fire ratings such as Optical Fiber Nonconductive – General Purpose (OFN) or Optical Fiber Nonconductive – Riser (OFNR) apply or 2) no fire ratings apply. The outer jacket of the core is grey. The individual tubes have an inside diameter of 5.5mm and an 8mm outside diameter. The tubes and jacket are comprised of plenum rated PVC material. The inner tube-liner material is comprised of White PVC infused with Silicone to reduce friction and provide strength/firmness preventing unnecessary flexibility of the inner-tubes. These tube cables are designed to be pulled or placed in indoor routes for the purpose of individual tube interconnection to establish pathways for FutureFLEX® fiber bundle installation. A ripcord is provided to aid in outer jacket removal.

### **1.2 Quality**

Sumitomo ensures a continuing high level of quality through ISO / TL9000 registered Quality Management Systems and our commitment to continuous improvement. Guaranteed, high quality products have been manufactured at Sumitomo's facility in Research Triangle Park, North Carolina since 1984.

### **1.3 Reliability**

Sumitomo ensures product reliability through rigorous qualification testing of each product family to meet or exceed industry standards. Both initial and periodic qualification testing are performed to assure the tube cables' performance and durability in a field environment.

Sumitomo supports industry standards organizations such as Telcordia, Telecommunications Industry Association (TIA), International Telecommunications Union (ITU), International Electrotechnical Commission (IEC), American Society for Testing and Materials (ASTM), Rural Utilities Service (RUS), The Institute of Electrical and Electronics Engineers (IEEE), and Insulated Cable Engineers Association (ICEA).

## 2.0 TUBE CABLE DESIGN

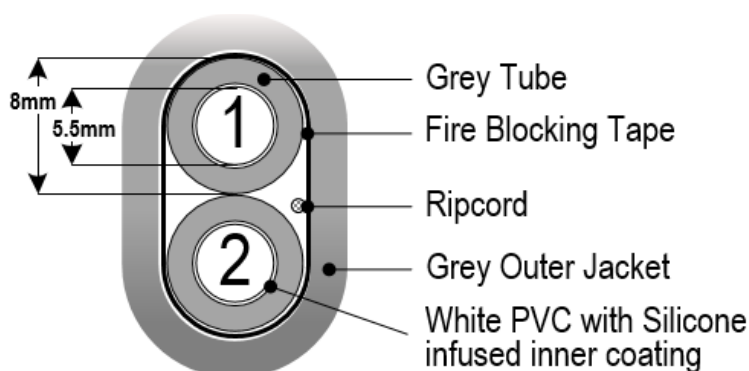
### 2.1 General

Sumitomo's FutureFLEX® TP2 series tube cables provide a small diameter indoor pathway for FutureFLEX® fiber bundle installations. FutureFLEX® ABF fiber bundles are available in Single-mode OS2, 62.5 micron Multimode OM1, 1-Gigabit 50 micron Multimode OM2, Laser Optimized 10-Gigabit 50 micron Multimode OM3, and Laser Optimized 10-Gigabit 50 micron Multimode OM4 versions with 6, 12, 24, 48 fiber strand counts. 72 fiber strand bundles are available in single-mode only. One fiber bundle can be field-installed in each tube. (Refer SEL Drawing SD-F04-003)

### 2.2 Construction

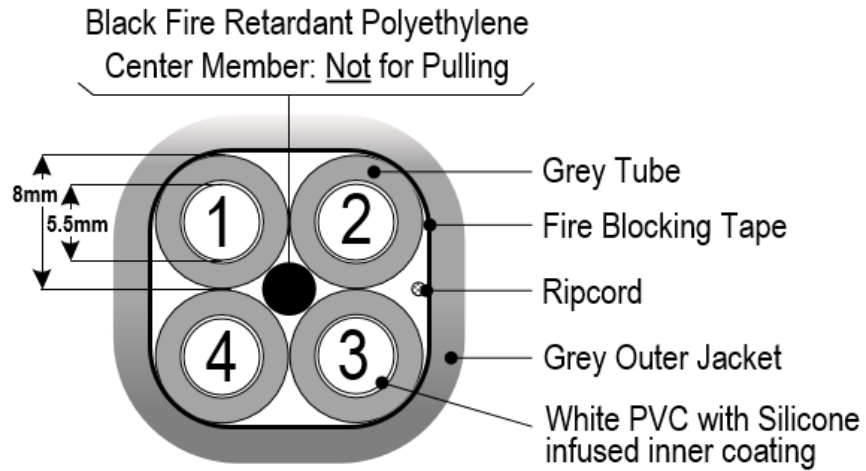
SEL Part Number	Product Description	Outside Diameter (in.)	Max. Weight (lbs./kft.)	Max. Tensile Load (lbs.)
TC02TP2	2- plenum rated tubes, fire blocking tape, ripcord, jacketed	.81	140	120
TC04TP2	4- plenum rated tubes with a center member, fire blocking tape, ripcord, jacketed	.95	210	200
TC07TP2	7- plenum rated tubes, fire blocking tape, ripcord, jacketed	1.0	310	400
TC12TP2	12- plenum rated tubes, fire blocking tape, ripcord, jacketed	1.49	480	500
TC19TP2	19- plenum rated tubes, fire blocking tape, ripcord, jacketed	1.77	574	500

Drawing Not To Scale

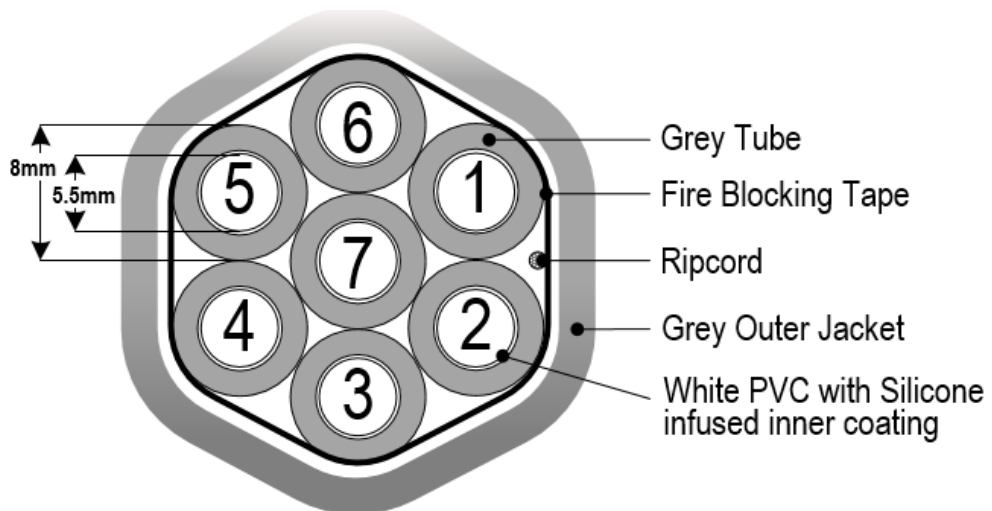


**TC02TP2**

Drawings Not To Scale

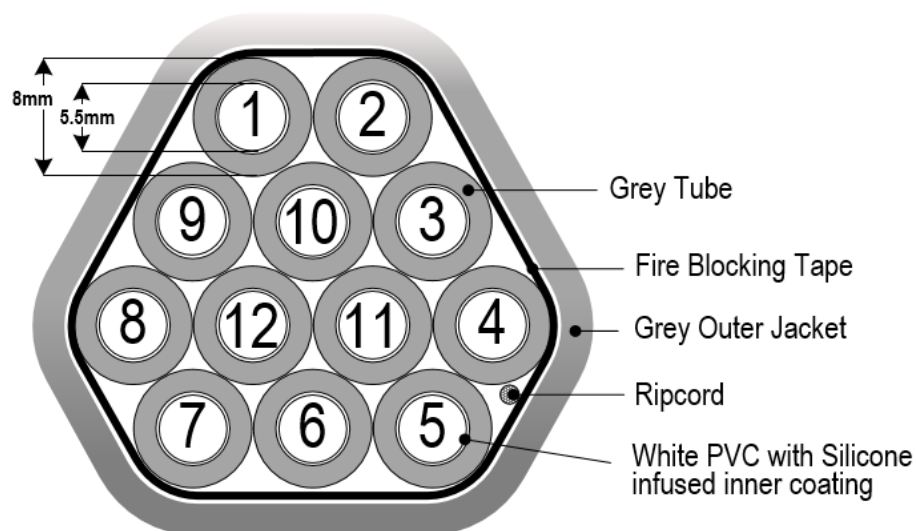


**TC04TP2**

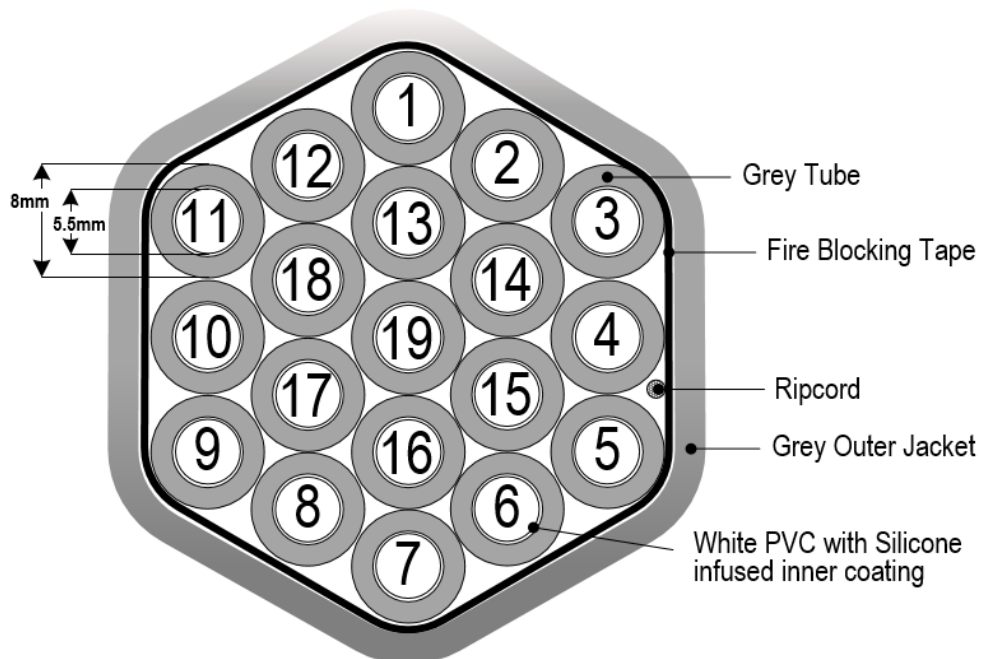


**TC07TP2**

Drawings Not To Scale



**TC12TP2**



**TC19TP2**

### 3.0 TUBE CABLE CHARACTERISTICS

#### 3.1 Performance


Property	Specification
Operation Temperature Range	+32° to +158° F (0° to + 70° C) per ICEA 596
Minimum Bend Radius (During / After Installation)	20 / 10 x tube cable outside diameter

#### 3.2 Tube and Jacket Markings

The outside surface of each tube shall be marked every 2.0 (+/- 0.5) inches with the tube designation number (1 through 24).

##### 3.2.1 Cable Jacket

The outside surface of each cable jacket is marked every two feet with the following product print string:

 **SEL FutureFLEX® (SEL Part No.) Type OFNP (UL) c(UL) E146200 Field Assembled Optical Fiber Cable CSA 238147 OFN FT6 (Manufacturing Lot #) (Sequential footage) 1-877-356-FLEX**  
[WWW.SUMITOMOELECTRICLIGHTWAVE.COM](http://WWW.SUMITOMOELECTRICLIGHTWAVE.COM) ←

#### 3.3 Reel Markings

The outside of each reel flange is marked with the Sumitomo Electric Lightwave Corp. product part number, the tube cable manufactured length in feet, and the text "Do Not Lay Flat."

#### 3.4 Tube Cable Ends

Both ends of the tube cable are accessible on the reel. Each tube is sealed with a plastic cap or plug. Tube cable ends are sealed with a heat shrink end cap.

#### 3.5 Tube Cable Reel Data

Sumitomo Part No.	Reel Length (ft)	Reel F x W (in)	Minimum Drum Diameter (in)	Reel Weight (lbs) Empty	Reel Weight (lbs) Full
TC02TP2	1000	54 x 20	40	116	256
TC04TP2	1000	54 x 20	40	116	326
TC07TP2	1000	54 x 36	40	137	447
TC12TP2	1000	60 x 42	40	420	900
TC19TP2	1000	60 x 49	40	420	994

#### Notes:

- TCxxTP2 Plenum Tube Cable Designs are only available in 1,000-foot Reel Lengths.
- All Reel Length tolerances are  $\pm 5\%$ .
- Cut Lengths are available. Contact FutureFLEX® Distributor for additional information.
- If tube cable is re-spooled, the minimum Drum Diameter of the new reel SHALL be no less than that specified herein to avoid damaging tube cable product.
- All Reel Widths shown are approximate values only and measured from outside-of-flange to outside-of-flange plus an allowance for fastener hardware protrusions.
- All Empty and Full Reel Weights shown are approximate values only.

#### 4.0 TESTING

Each finished tube cable is required to pass a 4.5mm diameter ball from end to end using 70 psi (+/-10 psi) gas pressure.

#### 5.0 INSTALLATION / HANDLING PRACTICES

Sumitomo has incorporated a wide range of technical support and training services for our tube cable products into our Technical Support Services (TSS) program. TSS offers training in the areas of cable installation, sheath entry, splicing, testing, and system troubleshooting. The services are available in a variety of media formats and can be customized to better accommodate individual training needs. The TSS program consists of an extensive series of recommended procedure documents, training courses with classroom and hands-on instruction. Please contact Sumitomo's Customer Service department for more information.

#### 6.0 ORDERING INFORMATION

To learn more about Sumitomo's cables or to place an order, call, fax, e-mail, or write us at:

Sumitomo Electric Lightwave Corp  
201 South Rogers Lane  
Suite 100, Raleigh, NC 27610  
Attn: Customer Service Department  
Phone: 800-358-7378  
919-541-8100  
Fax: 919-541-8265  
E-mail: [info@SumitomoElectric.com](mailto:info@SumitomoElectric.com)  
URL: [www.sumitomoelectriclightwave.com](http://www.sumitomoelectriclightwave.com)

Sumitomo Electric Lightwave reserves the right to improve, enhance, or modify the cable's features and specifications. For special requirements different than those shown above, please contact our Inside Sales Department. Each Sumitomo Electric Lightwave Corp. optic cable and/or its manufacture may be covered by one or more of the following US Patents: 4,715,677 4,729,629 4,763,983 4,770,489 4,828,349 4,953,945 5,043,037 5,082,347 5,165,003 D331,567 5,247,599 5,410,901 5,471,555 5,642,452.