



## SUMITOMO PRODUCT SPECIFICATION

FutureFLEX®

### TCxxTRC SINGLE-JACKETED RISER RATED (OFNR) TUBE CABLE SERIES



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## 1.0 GENERAL

This specification covers the design requirements and performance standards for FutureFLEX® Air-Blown Fiber® (ABF) single-jacketed Riser-rated 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® tubes and aid in handling and use.

### 1.1 Tube Cable Description

Sumitomo's FutureFLEX® TRC single-jacketed Riser-rated series tube cables are designed for use as an optical fiber cabling infrastructure in ABF applications that require Optical Fiber Nonconductive Riser (OFNR) fire rating. The riser rated tube cables are UL 1666 and CSA OFN FT4 listed. They may also be used in indoor applications where: 1) lesser fire ratings, such as Optical Fiber Nonconductive – General Purpose (OFN) apply or 2) no fire ratings apply. The individual tubes have a 6mm inside diameter and 8mm outside diameter. A non-woven glass fiber tape surrounds the tubes. The outer jackets are made of orange fire-retardant PVC. Ripcords are provided to aid in jacket removal. These tube cables are pulled or placed in indoor routes for the purpose of individual tube connections to establish pathways for FutureFLEX® fiber bundle installation.

### 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 Bell Communications Research (Bellcore), 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).

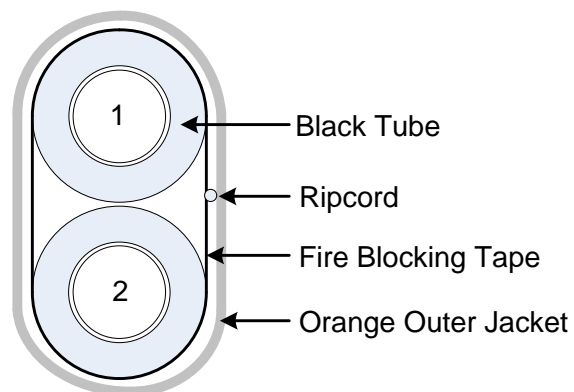
## 2.0 TUBE CABLE DESIGN

### 2.1 General

Sumitomo's FutureFLEX® TRC single-jacketed Riser-rated series tube cables provide a small diameter indoor pathway for FutureFLEX® fiber bundle installations. FutureFLEX® ABF fiber bundles are available in Single-mode OS1, 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 2, 4, 6, 12, 18, or 24 fiber strand counts. One fiber bundle can be field-installed in each tube.

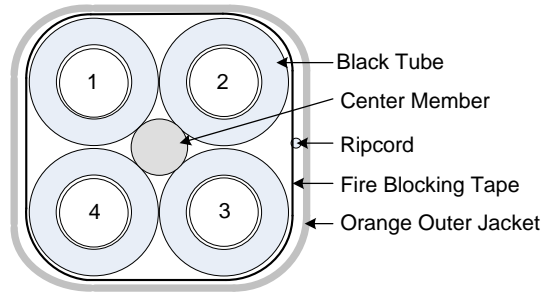
### 2.2 Construction

SEL Part Number	Product Description	Outside Diameter (in.)	Max. Weight (lbs./kft.)	Max. Tensile Load (lbs.)
TC02TRC	2- tubes, fire blocking tape wrap, ripcord, and orange fire retardant outer jacket	0.8	140	120
TC04TRC	4- tubes, fire blocking tape wrap, black fire retardant polyethylene center member, ripcord, and orange fire retardant outer jacket	0.9	210	200
TC07TRC	7- tubes, fire blocking tape wrap, ripcord, and orange fire retardant outer jacket	1.0	310	400
TC19TRC	19- tubes, fire blocking tape wrap, ripcord, and orange fire retardant outer jacket	1.7	574	500



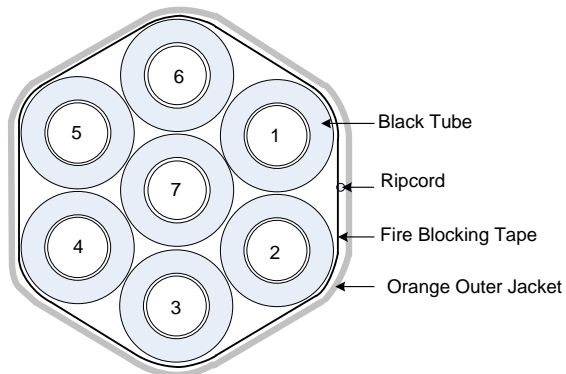
2-Tube  
Riser-Rated  
TC02TRC

Drawing Not to Scale



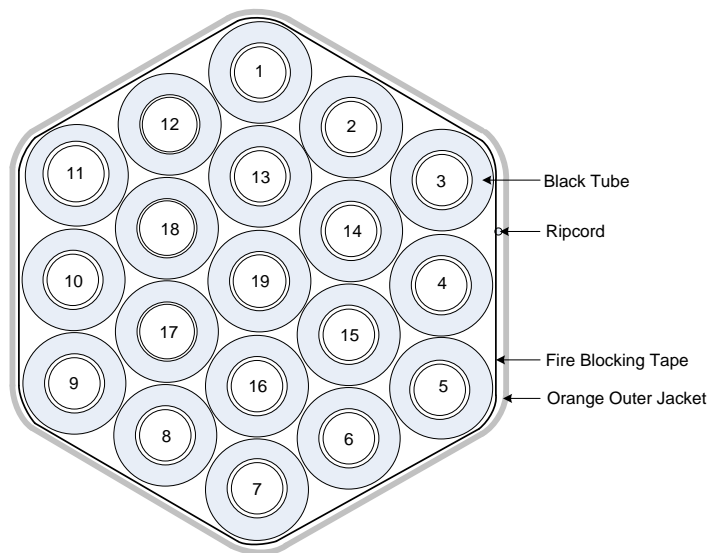
4-Tube  
Riser-Rated  
TC04TRC

Drawing Not to Scale



7-Tube  
Riser-Rated  
TC07TRC

Drawing Not to Scale



19-Tube  
Riser-Rated  
TC19TRC

Drawing Not to Scale

### 3.0 TUBE CABLE CHARACTERISTICS

#### 3.1 Performance

Property	Specification
Operation Temperature Range	10° to +140° F
Minimum Bend Radius (During / After Installation)	20 / 10 x tube cable outside diameter

#### 3.2 Tube Markings

The outside surface of each jacketed cable is marked every two (2) feet with the following information:

**"Phone Receiver" SEL FutureFLEX® (SEL Part No.) Type OFNR (UL) c (UL) E146200 Field Assembled Optical Fiber Cable CSA 238147 OFN FT4 (Manufacturing Lot #) (Seq. Ftg.) 1-877-356-FLEX WWW.FUTUREFLEX.COM ←**

The outside surface of each tube is marked every two (2) inches with the tube designation number (1 through 19) approximately every two inches.

#### 3.3 Reel Markings

The outside of each 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" and "Forklift from Flanges Only."

#### 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 Lengths

Sumitomo Part No.	Reel Length (feet)	Reel F x W (inches)	Minimum Drum Diameter (inches)	Empty Reel Weight (lbs)	Full Reel Weight (lbs)
TC02TRC	1000	54 x 20	40	116	256
TC02TRC	3000	60 x 49	40	420	840
TC04TRC	1000	54 x 20	40	116	326
TC04TRC	3000	60 x 49	40	420	1050
TC07TRC	1000	54 x 36	40	137	447
TC07TRC	3000	60 x 49	40	420	1350
TC19TRC	1000	60 x 49	40	420	994
TC19TRC	3000	72 x 49	40	523	2245

**Notes:**

- Standard Reel Lengths are 1,000-feet and Maximum Reel Lengths are 3,000-feet unless otherwise noted.
- 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 5mm diameter steel 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 CORPORATION**

201 South Rogers Lane

Suite 100 Raleigh, NC 27610

Attn: Customer Service Department

Phone: 800-358-7378

919- 541-8100

Fax: 919- 541-82265

E-mail: info@sumitomoelectric.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.