



## SUMITOMO PRODUCT SPECIFICATION

FutureFLEX®

**TCxxTRC-1 SINGLE-JACKETED RISER RATED (OFNR)  
TUBE CABLE SERIES  
WITH GALVANIZED STEEL INTERLOCKED ARMORING**



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

*Sumitomo Electric Lightwave reserves the right to improve or modify these specifications without notice.*

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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 with galvanized steel interlocked armoring. 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-1 single-jacketed Riser-rated tube cables are designed for use as an optical fiber cabling infrastructure in ABF applications that require OFNR fire rating plus armored protection. The TR3-1 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 but armored protection is required. The individual tubes have a 6mm inside diameter and 8mm outside diameter. A non-woven glass fiber tape wrap surrounds the tubes. The outer jacket of the core is made of orange fire-retardant PVC. Ripcords are provided to aid in jacket removal. The tube cable core is encased in an interlocked galvanized steel armor. 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**

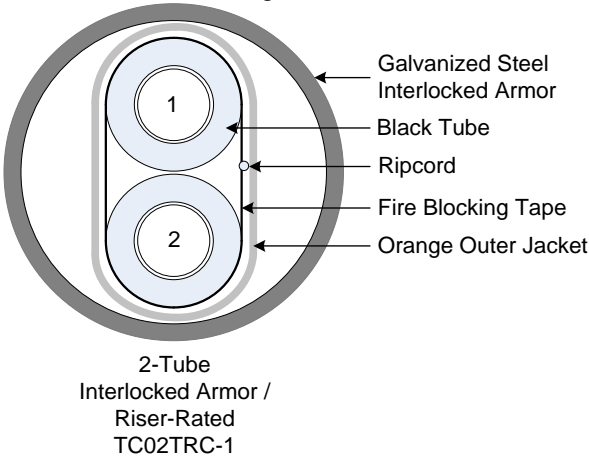
**2.1 General**

Sumitomo’s FutureFLEX® TRC-1 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.

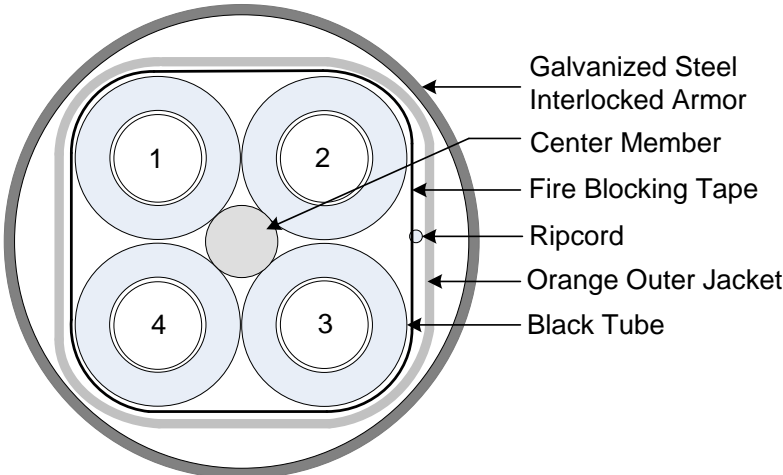
**2.2 Construction**

<b>SEL Part Number</b>	<b>Product Description</b>	<b>Outside Diameter (in.)</b>	<b>Max. Weight (lbs./kft.)</b>	<b>Max. Tensile Load (lbs.)</b>
TC02TRC-1	2- tubes, fire blocking tape wrap, ripcord, orange fire retardant outer jacket, encased in a galvanized steel interlocked armor	1.07	502	500
TC04TRC-1	4- tubes, fire blocking tape wrap, black fire retardant polyethylene center member, ripcord, orange fire retardant outer jacket, encased in a galvanized steel interlocked armor	1.17	608	500
TC07TRC-1	7- tubes, fire blocking tape wrap, ripcord, and orange fire retardant outer jacket, encased in a galvanized steel interlocked armor	1.37	887	600
TC19TRC-1	19- tubes, fire blocking tape wrap, ripcord, and orange fire retardant outer jacket, encased in a galvanized steel interlocked armor	2.02	1.541	600

Drawing Not to Scale

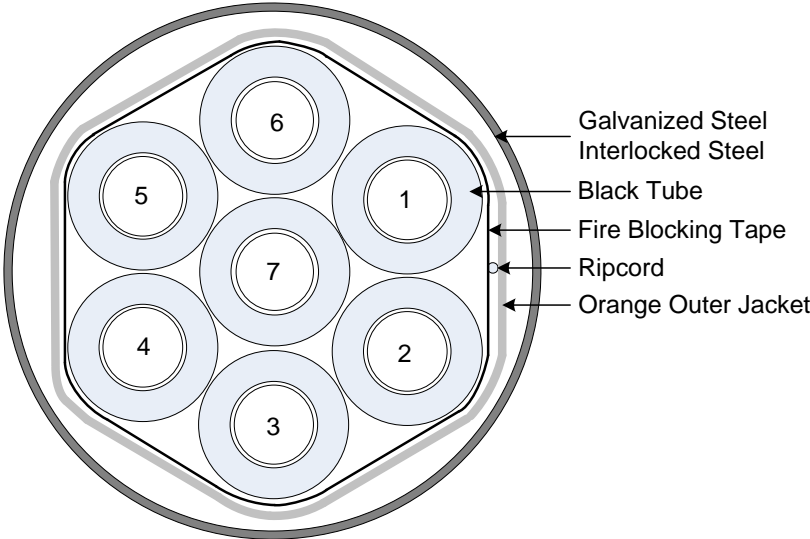


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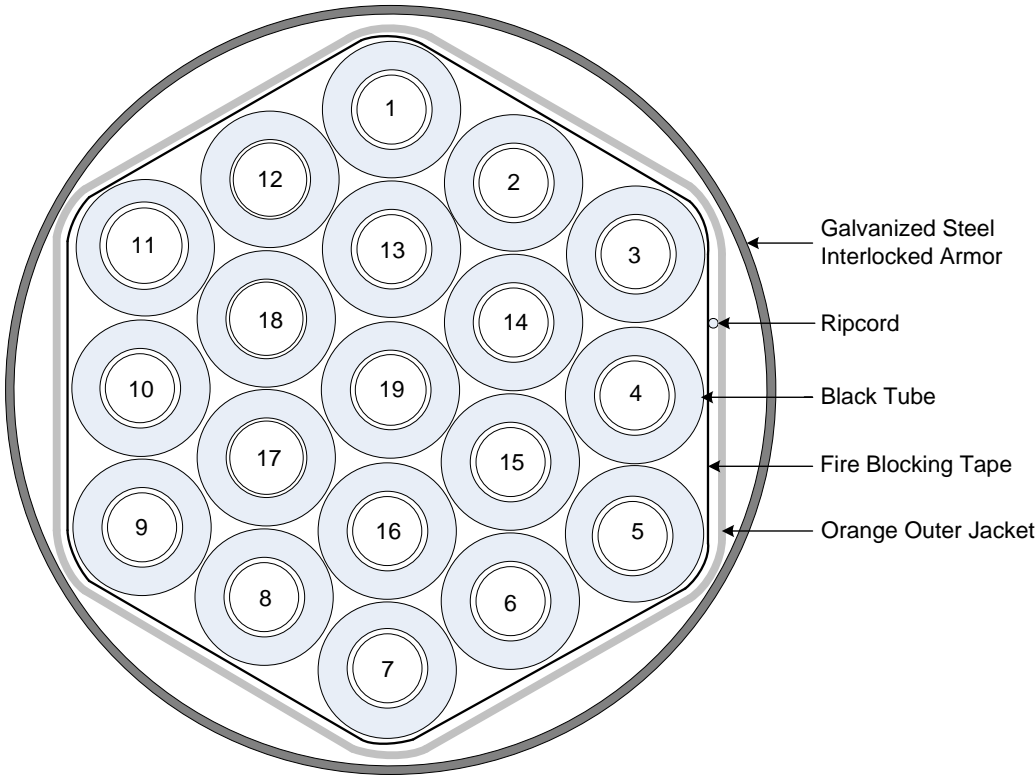


4-Tube  
Interlocked Armor /  
Riser-Rated  
TC04TRC-1

Drawing Not to Scale



7-Tube  
Interlocked Armor /  
Riser-Rated  
TC07TRC-1



19-Tube  
Interlocked Armor /  
Riser-Rated  
TC19TRC-1

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 tube in multi-tube configurations is marked every two (2) inches with a tube number designation number (1 through 19).

In accordance with UL requirements, the outside surface of each cable jacket, under the armoring, is marked every two (2) feet with the following product identification information:

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

#### 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 Data

Sumitomo Part No.	Reel Length (feet)	Reel F x W (inches)	Minimum Drum Diameter (inches)	Empty Reel Weight (lbs)	Full Reel Weight (lbs)
TC02TRC-1	1000	60 x 39	30	410	963
TC02TRC-1	1500	60 x 39	30	410	1240
TC02TRC-1	2000	60 x 39	30	410	1516
TC02TRC-1	2500	60 x 39	30	410	1793
TC02TRC-1	3000	60 x 39	30	410	2069
TC04TRC-1	1000	60 x 39	30	410	1090
TC04TRC-1	1500	60 x 39	30	410	1430
TC04TRC-1	2000	60 x 39	30	410	1770
TC04TRC-1	2500	60 x 39	30	410	2110
TC04TRC-1	3000	60 x 39	30	410	2450
TC07TRC-1	1000	60 x 39	30	410	1214
TC07TRC-1	1500	60 x 39	30	410	1616
TC07TRC-1	2000	60 x 39	30	410	2018
TC07TRC-1	2500	72 x 49	36	652	2662
TC07TRC-1	3000	72 x 49	36	652	3064
TC19TRC-1	1000	72 x 49	36	652	1996
TC19TRC-1	1500	72 x 49	36	652	2668
TC19TRC-1	2000	72 x 49	36	652	3340
TC19TRC-1	2500	84 x 61	42	930	4290
TC19TRC-1	3000	84 x 61	42	930	4962

**Notes:**

- TCxxTRC-1 Armored Riser Tube Cable Designs are available in Reel Lengths of 1,000-, 1,500-, 2,000-, 2,500-, and 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 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)

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.