



FutureFLEX[®]
AIR-BLOWN FIBER[®] SOLUTIONS

SUMITOMO PRODUCT SPECIFICATION

FutureFLEX[®]

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



SUMITOMO ELECTRIC LIGHTWAVE CORP.
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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. 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

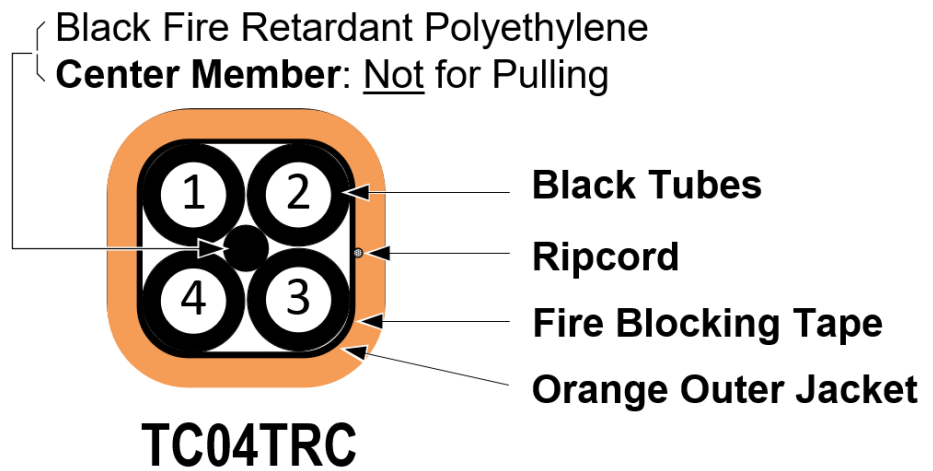
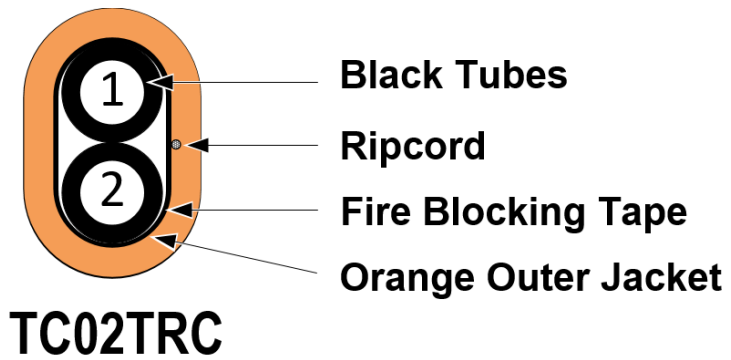
2.1 General

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 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-F04-001)

2.2 Construction

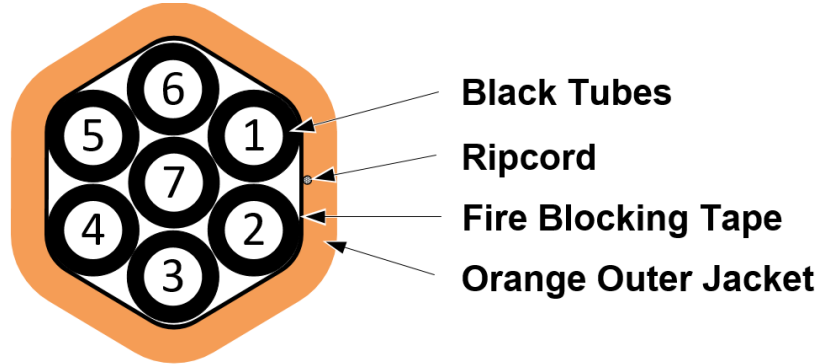
SEL Part Number	Product Description	Outside Diameter (in.)	Max. Weight (lbs./kft.)	Max. Tensile Load (lbs.)
TC02TRC	2- tubes, fire blocking tape wrap, ripcord, and orange fire retardant outer jacket	0.8	140	120
TC04TRC	4- tubes, fire blocking tape wrap, black fire retardant polyethylene center member, 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
TC12TRC	12- tubes, fire blocking tape wrap, ripcord, and orange fire retardant outer jacket	1.48	480	400
TC19TRC	19- tubes, fire blocking tape wrap, ripcord, and orange fire retardant outer jacket	1.7	574	500
TC24TRC	24- tubes, fire blocking tape wrap, ripcord, and orange fire retardant outer jacket	2.02	793	500

Drawings Not to Scale

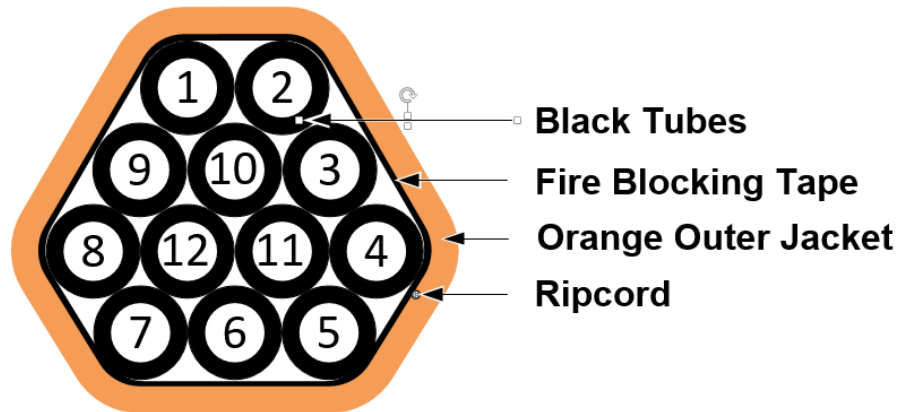


Drawings Not to Scale

Drawings Not to Scale



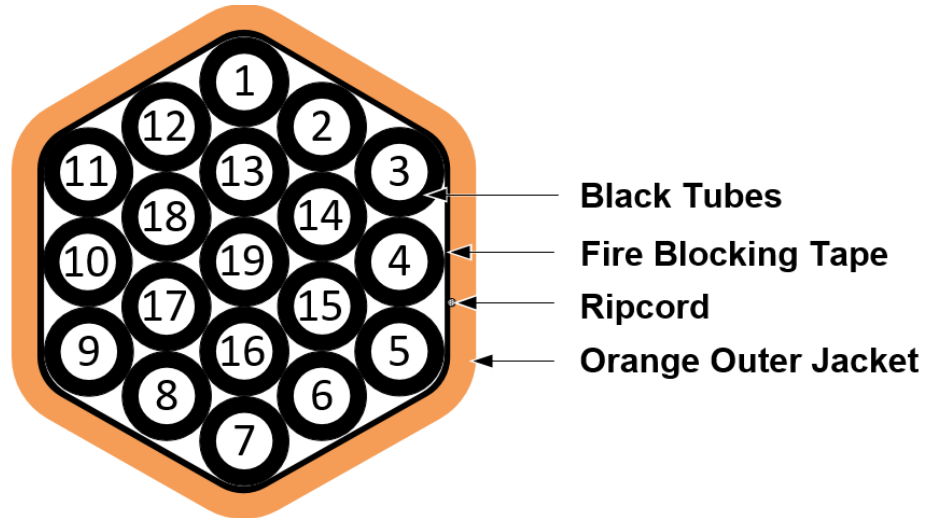
TC07TRC



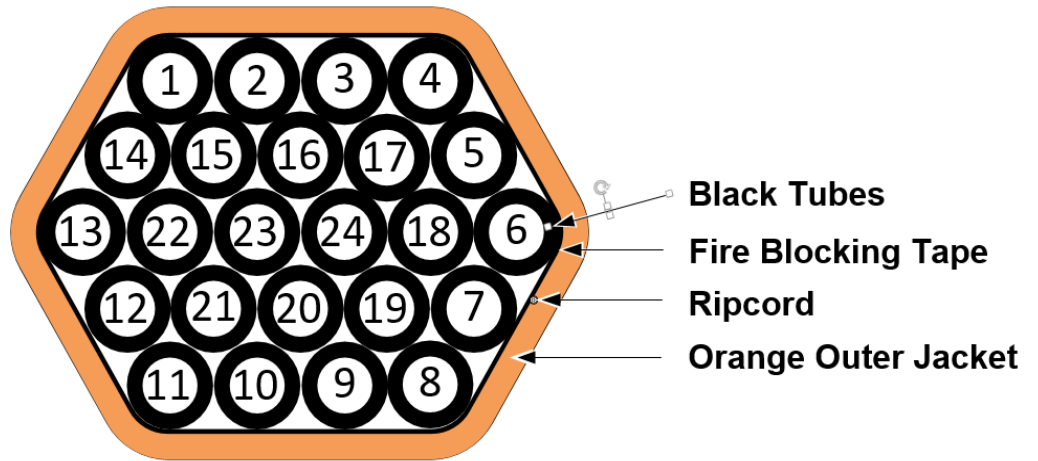
TC12TRC

Drawings Not to Scale

Drawings Not to Scale



TC19TRC



TC24TRC

Drawings Not to Scale


3.0 TUBE CABLE CHARACTERISTICS

3.1 Performance

Property	Specification
Operation Temperature Range	-4° F to +158° F (-20° C to +70° C) (ICEA 596)
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:

 **SEL FutureFLEX® TC##TRC Type OFNR (UL) c(UL) E146200 -1 Field Assembled Optical Fiber Cable (Vendor Code) (Manuf. Lot #) (Seq. Ftg.)**
1-877-356-FLEX WWW.SUMITOMOELECTRICLIGHTWAVE.COM ←

The outside surface of each tube is marked every two (2) inches with the tube designation number (1 through 24) 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 16	40	116	256
TC02TRC	3000	60 x 42	40	420	840
TC04TRC	1000	54 x 16	40	116	326
TC04TRC	3000	60 x 42	40	420	1050
TC07TRC	1000	60 x 28	40	137	447
TC07TRC	3000	60 x 42	40	420	1350
TC012TRC	1000	60 x 42	40	420	890
TC012TRC	3000	72 x 45	36	543	1953
TC19TRC	1000	60 x 42	40	420	994
TC19TRC	3000	72 x 45	40	543	2265

TC24TRC	1000	72 x 45	36	543	1336
TC24TRC	2000	72 x 45	36	543	2129

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-spoiled, 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 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: <mailto:info@SumitomoElectric.com>
 URL: 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.