



SUMITOMO SPECIFICATION

FutureFLEX®

ENG - ABFFB Standard Fiber Bundle



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1.0 FIBER BUNDLE DESIGN

This specification covers the design requirements and performance standards for FutureFLEX[®] Air-Blown Fiber[®] (ABF) bundles. These fiber bundles are designed for installation into FutureFLEX[®] ABF tube cable infrastructures. The features described in this document are intended to provide information on the performance of Sumitomo Electric's FutureFLEX[®] fiber bundles and aid in handling and use.

1.1 Fiber Bundle Description

Sumitomo's standard FutureFLEX[®] fiber bundles are designed for use in an optical fiber cabling infrastructure in ABF applications. They may be used in indoor and outdoor applications. The fiber bundles are UL listed for use in fire-rated ABF tube cables. UV inked fibers are individually colored coded per TIA Standards. The fibers are contained in a clear nylon sub-unit/inner jacket. Black polyester ripcords are provided for entry into the nylon sub-units. Aerodynamic foamed polyethylene outer jackets contain the sub-units and allow for long blowing distances. These fiber bundles are blown through an ABF tube cable infrastructure to establish a point-to-point fiber link in a FutureFLEX[®] ABF 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).

2.1 GENERAL

Sumitomo's FutureFLEX® ABF bundles provide a small diameter, lightweight, aerodynamically designed method for installing optical fiber in FutureFLEX® ABF installations. FutureFLEX® ABF fiber bundles are available in Single-Mode, 50/125 micron Multimode (Standard, Laser Optimized 300 meter, and Laser Optimized 550 meter grades), and 62.5/125 micron Multimode versions with 2, 4, 6, 12, 18, or 24 fiber strand counts. One fiber bundle can be field-installed in each ABF tube.

NOTE: The design requirements and performance standards for the various Single-Mode, 50/125 micron and 62.5/125 micron Multimode types of optical fibers used in Sumitomo's FutureFLEX® ABF bundles are described in separate specification sheets.

2.2 Fiber Bundle Types

SEL Part Number	Fiber Type	Fiber Diameter	ABF Bundle Jacket Color
FBXXSX	Single-Mode (OS1)	250 µm	Yellow
FBXXM5	50/125 µm Multimode (Standard Grade) (OM2)	250 µm	White/Natural
FBXXG53	50/125 µm Multimode (Laser Optimized 300 meter Grade) (OM3)	250 µm	Aqua
FBXXG55	50/125 µm Multimode (Laser Optimized 550 meter Grade) (OM4)	250 µm	Aqua
FBXXM6	62.5/125 µm Multimode (Standard Grade) (OM1)	250 µm	Blue

2.3 Fiber Bundle Construction

2-Fiber ABF Bundles			
SEL Part Numbers	Product Description	ABF Bundle Jacket Outside Diameter	ABF Bundle Jacket Weight (lb/kft)
FR02SX	Foamed polyethylene jacket, two Single-Mode optical fibers in ribbon matrix form	2mm	1.34
FR02M5 FR02G53 FR02G55	Foamed polyethylene jacket, two (2) 50/125 µm Multimode optical fibers in ribbon matrix form	2mm	1.34
FR02M6	Foamed polyethylene jacket, two (2) 62.5/125 µm Multimode optical fibers in ribbon matrix form	2mm	1.34

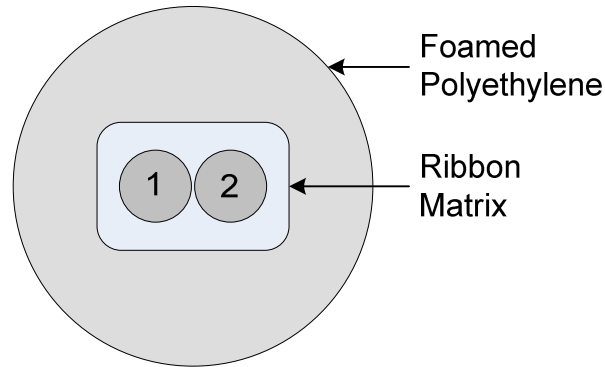
4-Fiber ABF Bundles			
SEL Part Numbers	Product Description	ABF Bundle Jacket Outside Diameter	ABF Bundle Jacket Weight (lb/kft)
FB04SX	Foamed polyethylene jacket, one (1) nylon sub-unit, four (4) Single-Mode optical fibers, and three (3) black polyester ripcords	2mm	1.34
FB04M5 FB04G53 FB04G55	Foamed polyethylene jacket, one (1) nylon sub-unit, four (4) 50/125 μm Multimode optical fibers, and three (3) black polyester ripcords	2mm	1.34
FB04M6	Foamed polyethylene jacket, one (1) nylon sub-unit, four (4) 62.5/125 μm Multimode optical fibers, and three (3) black polyester ripcords	2mm	1.34

6-Fiber ABF Bundles			
SEL Part Numbers	Product Description	ABF Bundle Jacket Outside Diameter	ABF Bundle Jacket Weight (lb/kft)
FB06SX	Foamed polyethylene jacket, one (1) nylon sub-unit, six (6) Single-Mode optical fibers, and one (1) black polyester ripcord	2mm	1.34
FB06M5 FB06G53 FB06G55	Foamed polyethylene jacket, one (1) nylon sub-unit, six (6) 50/125 μm Multimode optical fibers, and one (1) black polyester ripcord	2mm	1.34
FB06M6	Foamed polyethylene jacket, one (1) nylon sub-unit, six (6) 62.5/125 μm Multimode optical fibers, and one (1) black polyester ripcord	2mm	1.34

12-Fiber ABF Bundles			
SEL Part Numbers	Product Description	ABF Bundle Jacket Outside Diameter	ABF Bundle Jacket Weight (lb/kft)
FB12SX	Foamed polyethylene jacket, three (3) nylon sub-units, four (4) Single-Mode optical fibers per sub-unit, three (3) black polyester ripcords per sub-unit	3mm	3.35
FB12M5 FB12G53 FB12G55	Foamed polyethylene jacket, three (3) nylon sub-units, four (4) 50/125 μm Multimode optical fibers per sub-unit, and three (3) black polyester ripcords per sub-unit	3mm	3.35
FB12M6	Foamed polyethylene jacket, three (3) nylon sub-units, four (4) 62.5/125 μm Multimode optical fibers per sub-unit, and three (3) black polyester ripcords per sub-unit	3mm	3.35

18-Fiber ABF Bundles			
SEL Part Numbers	Product Description	ABF Bundle Jacket Outside Diameter	ABF Bundle Jacket Weight (lb/kft)
FB18SX	Foamed polyethylene jacket, three (3) nylon sub-units, six (6) Single-Mode optical fibers per sub-unit, and one (1) black polyester ripcord per sub-unit	3mm	3.35
FB18M5 FB18G53 FB18G55	Foamed polyethylene jacket, three (3) nylon sub-units, six (6) 50/125 μm Multimode optical fibers per sub-unit, and one (1) black polyester ripcord per sub-unit	3mm	3.35
FB18M6	Foamed polyethylene jacket, three (3) nylon sub-units, six (6) 62.5/125 μm Multimode optical fibers per sub-unit, and one (1) black polyester ripcord per sub-unit	3mm	3.35

24-Fiber ABF Bundles – NOTE: FB24XX are not approved for use in Plenum Applications			
SEL Part Numbers	Product Description	ABF Bundle Jacket Outside Diameter	ABF Bundle Jacket Weight (lb/kft)
FB24SX	Foamed polyethylene jacket, four (4) nylon sub-units, six (6) Single-Mode optical fibers per sub-unit, one (1) black polyester ripcord per sub-unit, and one (1) upcoated Central Member	3mm	3.35
FB24M5 FB24G53 FB24G55	Foamed polyethylene jacket, four (4) nylon sub-units, six (6) 50/125 μm Multimode optical fibers per sub-unit, one (1) black polyester ripcord per sub-unit, and one (1) upcoated Central Member	3mm	3.35
FB24M6	Foamed polyethylene jacket, four (4) nylon sub-units, six (6) 62.5/125 μm Multimode optical fibers per sub-unit, one (1) black polyester ripcord per sub-unit, and one (1) upcoated Central Member	3mm	3.35

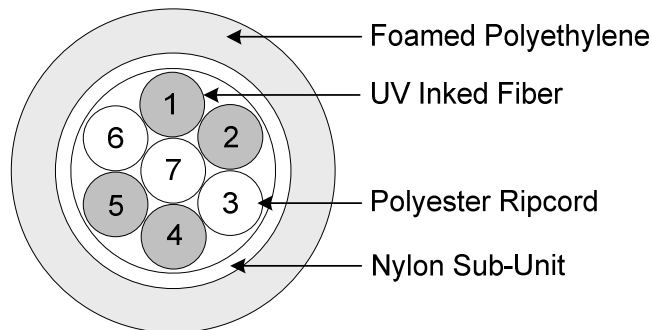


Standard
2-Fiber Ribbon Bundle

Drawing not to scale

Fiber Color Code (“OR Pos” = Outer Ring and “Ctr Pos” = Center Position)

OR Pos. #1	OR Pos. #2					
Blue	Orange					

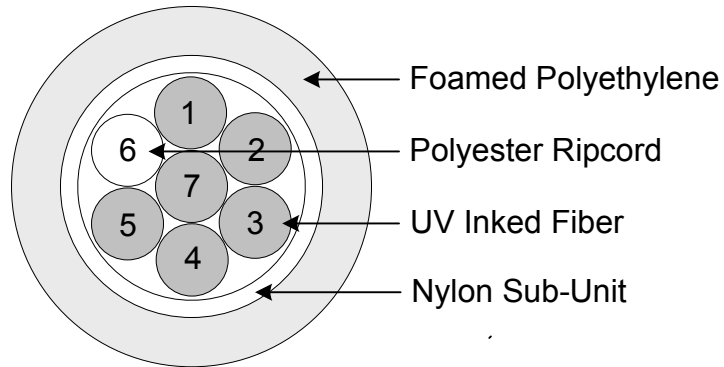


Standard
4-Fiber Bundle

Drawing not to scale

Fiber Color Code (“OR Pos” = Outer Ring and “Ctr Pos” = Center Position)

OR Pos. #1	OR Pos. #2	OR Pos. #3	OR Pos. #4	OR Pos. #5	OR Pos. #6	Ctr Pos. #7
Blue	Orange	Ripcord	Green	Brown	Ripcord	Ripcord

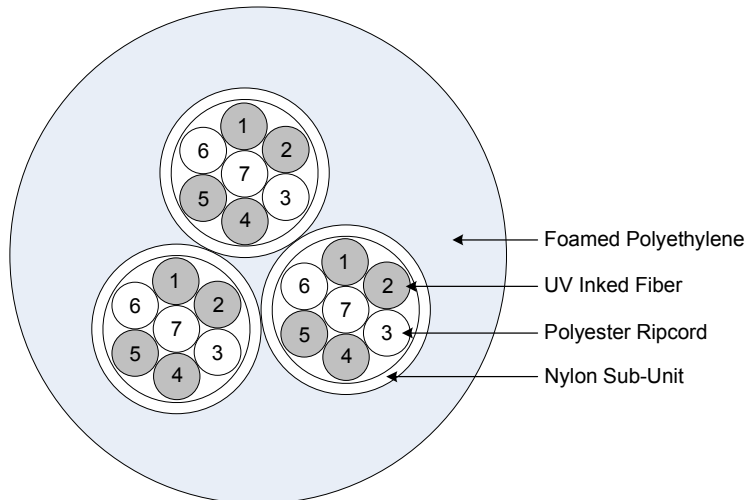


Standard
6-Fiber Bundle

Drawing not to scale

Fiber Color Code (“OR Pos” = Outer Ring and “Ctr Pos” = Center Position)

OR Pos. #1	OR Pos. #2	OR Pos. #3	OR Pos. #4	OR Pos. #5	OR Pos. #6	Ctr Pos. #7
Blue	Orange	Green	Brown	Slate	Ripcord	White

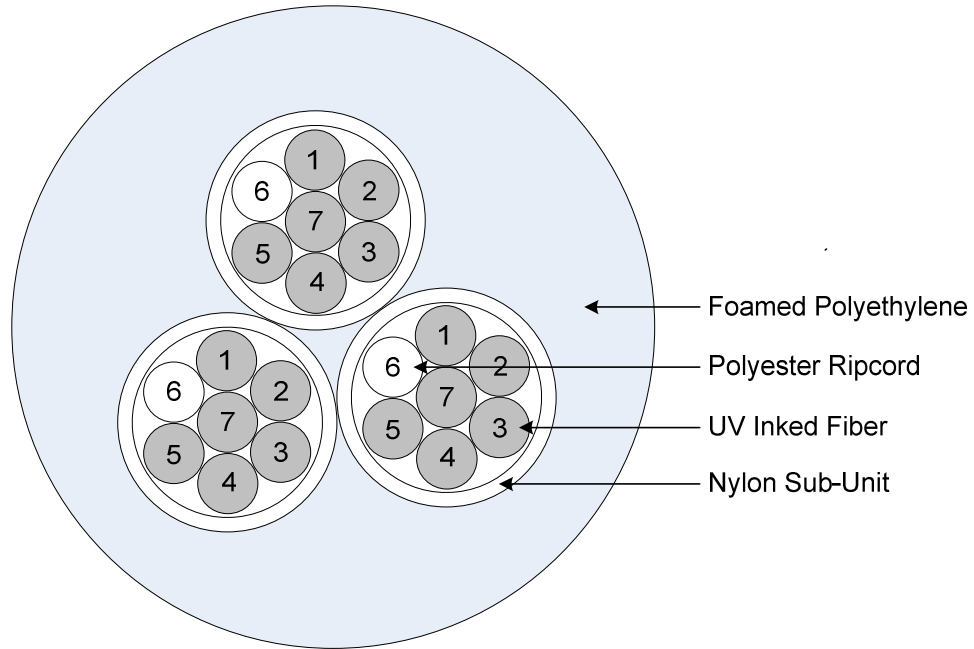


Standard
12-Fiber Bundle

Drawing not to scale

Fiber Color Code (“OR Pos” = Outer Ring and “Ctr Pos” = Center Position)

OR Pos. #1	OR Pos. #2	OR Pos. #3	OR Pos. #4	OR Pos. #5	OR Pos. #6	Ctr Pos. #7
Blue	Orange	Ripcord	Green	Brown	Ripcord	Ripcord
Slate	White	Ripcord	Red	Black	Ripcord	Ripcord
Yellow	Violet	Ripcord	Pink	Aqua	Ripcord	Ripcord

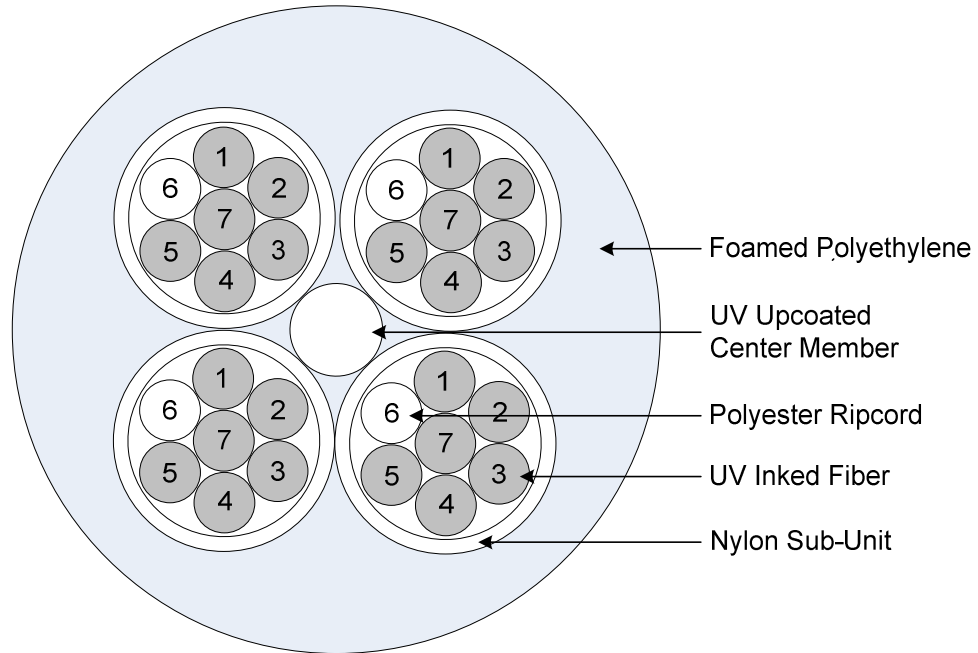


Standard
18-Fiber Bundle

Drawing not to scale

Fiber Color Code (“OR Pos” = Outer Ring and “Ctr Pos” = Center Position)

OR Pos. #1	OR Pos. #2	OR Pos. #3	OR Pos. #4	OR Pos. #5	OR Pos. #6	Ctr Pos. #7
Blue	Orange	Green	Brown	Slate	Ripcord	Red
Blue	Orange	Green	Brown	Slate	Ripcord	Yellow
Blue	Orange	Green	Brown	Slate	Ripcord	Violet



Standard
24-Fiber Bundle

Drawing not to scale

Fiber Color Code (“OR Pos” = Outer Ring and “Ctr Pos” = Center Position)

OR Pos. #1	OR Pos. #2	OR Pos. #3	OR Pos. #4	OR Pos. #5	OR Pos. #6	Ctr Pos. #7
Blue	Orange	Green	Brown	Slate	Ripcord	Red
Blue	Orange	Green	Brown	Slate	Ripcord	Yellow
Blue	Orange	Green	Brown	Slate	Ripcord	Violet
Blue	Orange	Green	Brown	Slate	Ripcord	Rose

3. FIBER BUNDLE CHARACTERISTICS

3.1 Performance

Property	Specification
Operation Temperature Range	-40° to +158°F
Minimum Bend Radius of Fiber Bundle	1.5"

3.2 Fiber Bundle Markings

The outside surface of the fiber bundle jacket is not marked.

3.3 Reel Markings

A sticker with the Sumitomo fiber bundle part number is attached to the outside of the reel flange.

3.4 Fiber Bundle Ends

On the large Sumitomo fiber bundle reels, one end of the fiber bundle is exposed and accessible. On the small Sumitomo fiber bundle reels, both ends of the fiber bundle are accessible. Each reel has a reusable plastic cover (clamshell) installed to protect the fiber bundle from damage and contamination during storage and handling.

Sumitomo Part No.	Fiber Bundle OD (mm)	Reel Length (ft)	Reel Weight (lbs) (Empty)	Reel Weight (lbs) (Full)	Reel H x W (in)
FR02XX	2	14000	13.2	36	19.5 x 11.8
FB04XX	2	14000	13.2	36	19.5 x 11.8
FB06XX	2	14000	13.2	36	19.5 x 11.8
FB12XX	3	7000	13.2	41	19.5 x 11.8
FB18XX	3	7000	13.2	41	19.5 x 11.8
FB24XX	3	7000	13.2	28.14	19.5 x 11.8

Notes:

- Large Reel Length tolerances are +2% / -0%.
- All Empty and Full Reel Weights shown are approximate values only

4. BLOWING PERFORMANCE / TESTING

The Sumitomo Blowing Head Kit is used to propel the compact FutureFLEX® ABF fiber bundles through an ABF tube cable on a stream of nitrogen gas or compressed air at speeds up to 150 feet per minute.

5. 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. 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.
78 Alexander Drive
Research Triangle Park, NC 27709
Attn: Customer Service Department

Phone: 800-358-7378

919-541-8100

Fax: 919-541-8265

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.