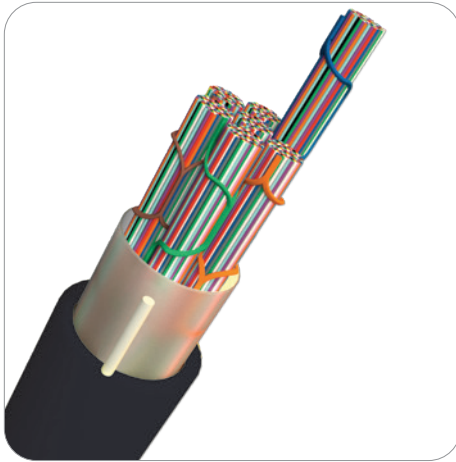




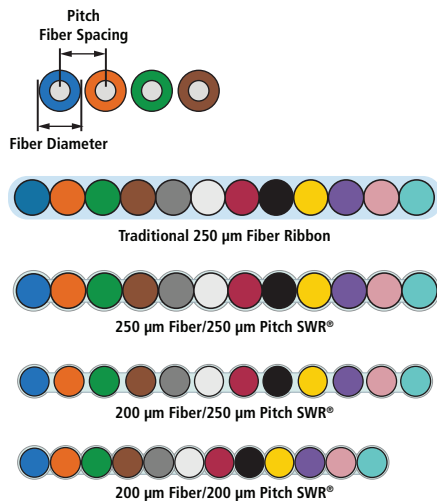
Flame-Retardant RIO Indoor/Outdoor Wrapping Tube Cable (WTC) with SpiderWeb Ribbon® (SWR®) – 200 µm Fiber/250 µm Pitch

Flame-retardant (FR) RIO Wrapping Tube Cable (WTC) with SpiderWeb Ribbon (SWR) is a high-density fiber optic ribbon cable intended for indoor/outdoor network applications where riser-rated products are required. The FR RIO-WTC-SWR incorporates the leading-edge SpiderWeb Ribbon technology in a robust, flame-retardant cable package that can be used within buildings. With the core water-blocking feature, it can also be routed outside provided the cable is housed within covered pathway spaces including duct-banks and cable trays.

SWR is a bonded fiber ribbon design allowing for either a highly efficient ribbon splicing or an individual fiber breakout splicing process. This flexibility allows a single cable design to cover diverse applications from access networks to high-fiber count mass fusion splicing. With the ability to roll and conform, the SWR provides ultra-high density packaging in cable form.

The FR RIO-WTC-SWR product set is non-armored and meets Riser, CPR, and Low-Smoke, Zero-Halogen (LSZH) standards using Fujikura 200 µm SR15E-200 fiber (144F to 3456F) with 250 µm pitch constructions. The 250 µm ribbon pitch allows simple mass-fusion splicing with traditional 250 µm diameter ribbon fibers.

Ribbon Pitch Designs



Features

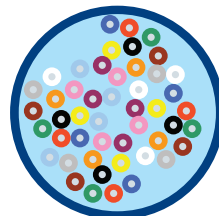
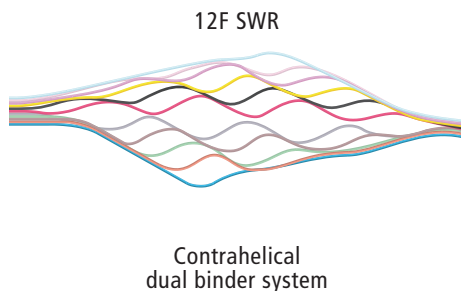
- Collapsible ribbon reduces size of cable compared to other encapsulated or pliable ribbon technologies
- High-density 200 µm diameter fibers with 250 µm ribbon pitch separation for splice compatibility with 250 µm diameter fiber ribbon
- Design optimizes the fiber packing density making WTC/SWR cables the smallest ribbon cables without compromising the robustness of the cable
- Completely gel-free for reduced time to access fiber and prep for splicing

- Small-diameter cable allows more optical fibers to be placed into crowded or limited-space pathways
- Water-blocked core
- Lightweight for easy handling in the field compared to traditional cables
- Suitable for pulling and jetting installations

Applications

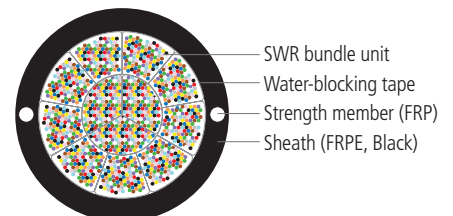
- Data Center Inter-building Connections
- Blowing or jetting in conduit

SWR Technology



Multiple 12F SWR bundle
72F, 144F, OR 288 bundles
depending on cable fiber count

Cable Components



OFNR-LS
Non-armored
(144F to 3456F)

continued
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Flame-Retardant RIO Indoor/Outdoor WTC with SWR® – 200 µm Fiber/250 µm Pitch

Mechanical Data—Non-Armored

AFL NO.	EN 13501-6 CLASSIFICATION	FIBER COUNT	BINDER UNIT	NOMINAL DIAMETER	WEIGHT lbs/1,000 ft (kg/km)	SHORT TERM/DYNAMIC/ INSTALLATION		LONG TERM/STORAGE/ STATIC	
				inches (mm)		MAX TENSILE LOAD lbs (N)	MIN BEND RADIUS inches (mm)	MAX TENSILE LOAD lbs (N)	MIN BEND RADIUS inches (mm)
RIO-OGNM12WTZTWBE SR15E-200 × 144 (*)	Cca-s1b,d1,a1	144	1 x 144F	0.49 (12.5)	111 (165)	300 (1330)	7.4 (188)	90 (399)	4.9 (125)
RIO-OGNM12WTZTWBE SR15E-200 × 192 (*)	Cca-s1b,d1,a1	192	1 x 192F	0.51 (13.0)	118 (175)	300 (1330)	7.7 (195)	90 (399)	5.1 (130)
RIO-OGNM12WTZTWBE SR15E-200 × 288 (*)	Cca-s1b,d1,a1	288	1 x 288F	0.51 (13.0)	128 (190)	300 (1330)	7.7 (195)	90 (399)	5.1 (130)
RIO-OGNM12WTZTWBE SR15E-200 × 432 (*)	Cca-s1b,d1,a1	432	6 x 72F	0.57 (14.5)	144 (215)	300 (1330)	8.6 (218)	90 (399)	5.7 (145)
RIO-OGNM12WTZTWBE SR15E-200 × 576 (*)	Cca-s1b,d1,a1	576	8 x 72F	0.61 (15.5)	161 (240)	300 (1330)	9.2 (233)	90 (399)	6.1 (155)
RIO-OGNM12WTZTWBE SR15E-200 × 864 (*)	Cca-s1b,d1,a1	864	12 x 72F	0.67 (17.0)	195 (290)	607 (2700)	10.0 (255)	180 (810)	6.7 (170)
RIO-OGNM12WTZTWBE SR15E-200 × 1152 (*)	Cca-s1b,d1,a1	1152	8 x 144F	0.71 (18.0)	218 (325)	607 (2700)	10.6 (270)	180 (810)	7.1 (180)
RIO-OGNM12WTZTWBE SR15E-200 × 1728 (*)	Cca-s1b,d1,a1	1728	12 x 144F	0.85 (21.5)	319 (475)	607 (2700)	12.7 (323)	180 (810)	8.5 (215)
RIO-OGNM12WTZTWBE SR15E-200 × 2880 (*)	Cca-s1,d0,a1	2880	10 x 288F	0.98 (25.0)	413 (615)	607 (2700)	14.8 (375)	180 (810)	9.8 (250)
RIO-OGNM12WTZTWBE SR15E-200 × 3456 (*)	Cca-s1,d0,a1	3456	24 x 144F	1.00 (25.5)	453 (675)	607 (2700)	15.1 (383)	180 (810)	10.0 (255)

* NOTE: To designate length markings in AFL No., replace asterisk * with (FT) for Feet or (M) for Meters.

Optical Fiber

OPTICAL FIBER TYPE	FIBER DIAMETER	FIBER RIBBON PITCH	OPTICAL FIBER STANDARD	MODE FIELD DIAMETER AT 1310 nm	MAXIMUM ATTENUATION (CABLED) dB/km	
					1383 nm	1550 nm
Fujikura SR15E-200	200 µm	250 µm	ITU-T G.652.D/G.657.A1	8.6 ± 0.4 µm	≤ 0.40	≤ 0.30

Stripe Ring Fiber Identification

R NO.	STRIPE RING MARKING	R NO.	STRIPE RING MARKING	R NO.	STRIPE RING MARKING	R NO.	STRIPE RING MARKING
1	■	7	■ ■ ■	13	■ ■ ■ ■ ■	19	■ ■ ■ ■ ■ ■ ■
2	■ ■	8	■ ■ ■ ■	14	■ ■ ■ ■ ■ ■	20	■ ■ ■ ■ ■ ■
3	■ ■ ■	9	■ ■ ■ ■ ■	15	■ ■ ■ ■ ■ ■	21	■ ■ ■ ■ ■ ■ ■
4	■ ■ ■ ■	10	■ ■ ■ ■ ■	16	■ ■ ■ ■ ■ ■	22	■ ■ ■ ■ ■ ■ ■
5	■ ■ ■	11	■ ■ ■ ■ ■	17	■ ■ ■ ■ ■ ■ ■	23	■ ■ ■ ■ ■ ■ ■ ■
6	■ ■ ■ ■	12	■ ■ ■ ■ ■ ■	18	■ ■ ■ ■ ■ ■ ■	24	■ ■ ■ ■ ■ ■ ■ ■

FIBER COUNT	BINDER UNIT	BINDER UNITS (BU)																RING MARKINGS
144	1 x 144F	No Binder Unit																1-12 Ring Marking
192	1 x 192F	No Binder Unit																1-16 Ring Marking
288	1 x 288F	No Binder Unit																1-24 Ring Marking
432	6 x 72F	6 Binder Units	1	2	3	4	5	6										1-6 Ring Marking
576	8 x 72F	8 Binder Units	1	2	3	4	5	6	7	8								
864	12 x 72F	12 Binder Units	1	2	3	4	5	6	7	8	9	10	11	12				1-12 Ring Marking
1152	8 x 144F	8 Binder Units	1	2	3	4	5	6	7	8								
1728	12 x 144F	12 Binder Units	1	2	3	4	5	6	7	8	9	10	11	12				1-24 Ring Marking
2880	10 x 288F	10 Binder Units	1	2	3	4	5	6	7	8	9	10						
3456	24 x 144F	24 Binder Units*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	1 - 12 Ring Marking

*For binder units 13-24, the second binder unit is clear

continued
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Flame-Retardant RIO Indoor/Outdoor WTC with SWR® – 200 µm Fiber/250 µm Pitch

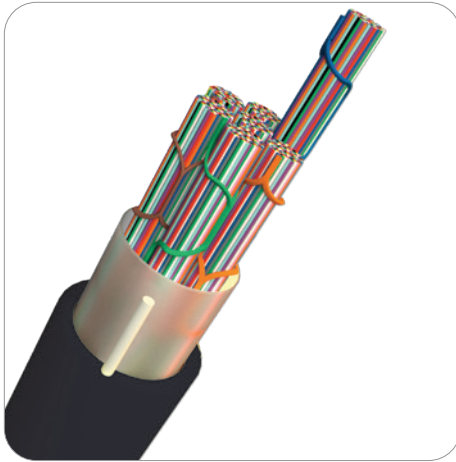
Temperature Specifications

TEMPERATURE RANGE	
INSTALLATION	-14°F to +140°F (-10°C to +60°C)
OPERATING	-40°F to +158°F (-40°C to +70°C)
STORAGE	-40°F to +158°F (-40°C to +70°C)

Qualifications

GOVERNING BODY	STANDARD CODE
UL	1666 (OFNR) 1685 (OFNG-LS)
ANSI/ICEA	S-83-596
IEC	60794-1-22
EU	EN 13501-6 (CPR)

Contact AFL for further details.



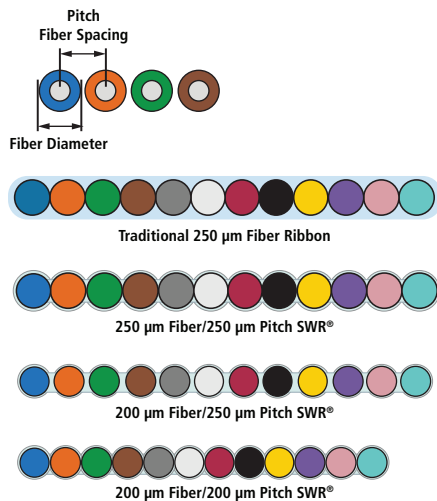
Flame-Retardant RIO Indoor/Outdoor Wrapping Tube Cable (WTC) with SpiderWeb Ribbon® (SWR®) – 200 μm Fiber/200 μm Pitch

Flame-retardant (FR) RIO Wrapping Tube Cable (WTC) with SpiderWeb Ribbon (SWR) is a high-density fiber optic ribbon cable intended for indoor/outdoor network applications where riser-rated products are required. The FR RIO-WTC-SWR incorporates the leading-edge SpiderWeb Ribbon technology in a robust, flame-retardant cable package that can be used within buildings. With the core water-blocking feature, it can also be routed outside provided the cable is housed within covered pathway spaces including duct-banks and cable trays.

SWR is a bonded fiber ribbon design allowing for either a highly efficient ribbon splicing or an individual fiber breakout splicing process. This flexibility allows a single cable design to cover diverse applications from access networks to high-fiber count mass fusion splicing. With the ability to roll and conform, the SWR provides ultra-high density packaging in cable form.

The FR RIO-WTC-SWR product set is non-armored and meets Riser, CPR, and Low-Smoke, Zero-Halogen (LSZH) standards using Fujikura 200 μm SR15E-P200 fiber (144F to 6912F) with 200 μm pitch constructions.

Ribbon Pitch Designs



Features

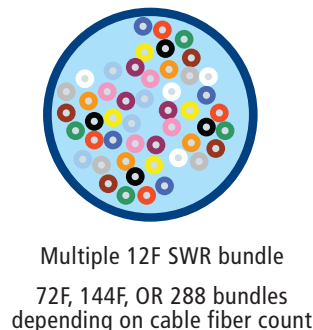
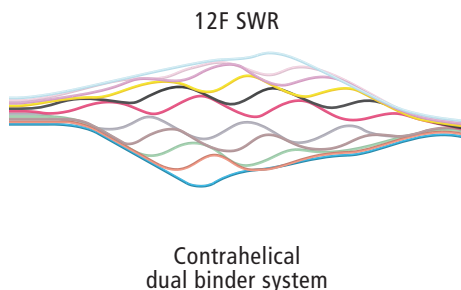
- Collapsible ribbon reduces size of cable compared to other encapsulated or pliable ribbon technologies
- Design optimizes the fiber packing density making WTC/SWR cables the smallest ribbon cables without compromising the robustness of the cable
- Completely gel-free for reduced time to access fiber and prep for splicing
- Small-diameter cable allows more optical fibers to be placed into crowded or limited-space pathways

- Water-blocked core
- Lightweight for easy handling in the field compared to traditional cables
- Suitable for pulling and jetting installations

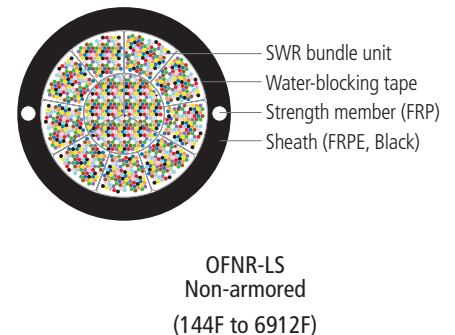
Applications

- Data Center Inter-building Connections
- Blowing or jetting in conduit

SWR Technology



Cable Components



continued
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Flame-Retardant RIO Indoor/Outdoor WTC with SWR® – 200 µm Fiber/200 µm Pitch

Mechanical Data—Non-Armored

AFL NO.	EN 13501-6 CLASSIFICATION	FIBER COUNT	BINDER UNIT	NOMINAL DIAMETER	WEIGHT lbs/1,000 ft (kg/km)	SHORT TERM/DYNAMIC/ INSTALLATION		LONG TERM/STORAGE/ STATIC	
				inches (mm)		MAX TENSILE LOAD lbs (N)	MIN BEND RADIUS inches (mm)	MAX TENSILE LOAD lbs (N)	MIN BEND RADIUS inches (mm)
RIO-OGNM12WTZWBE SR15E-P200 × 144 (*)	Cca-s1b,d1,a1	144	1 x 144F	0.49 (12.5)	111 (165)	300 (1330)	7.4 (188)	90 (399)	4.9 (125)
RIO-OGNM12WTZWBE SR15E-P200 × 192 (*)	Cca-s1b,d1,a1	192	1 x 192F	0.51 (13.0)	124 (185)	300 (1330)	7.7 (195)	90 (399)	5.1 (130)
RIO-OGNM12WTZWBE SR15E-P200 × 288 (*)	Cca-s1b,d1,a1	288	1 x 288F	0.51 (13.0)	124 (185)	300 (1330)	7.7 (195)	90 (399)	5.1 (130)
RIO-OGNM12WTZWBE SR15E-P200 × 432 (*)	Cca-s1b,d1,a1	432	6 x 72F	0.55 (14.0)	141 (210)	300 (1330)	8.3 (210)	90 (399)	5.5 (140)
RIO-OGNM12WTZWBE SR15E-P200 × 576 (*)	Cca-s1b,d1,a1	576	8 x 72F	0.59 (15.0)	158 (235)	300 (1330)	8.9 (225)	90 (399)	5.9 (150)
RIO-OGNM12WTZWBE SR15E-P200 × 864 (*)	Cca-s1b,d1,a1	864	12 x 72F	0.65 (16.5)	188 (280)	607 (2700)	9.7 (248)	180 (810)	6.5 (165)
RIO-OGNM12WTZWBE SR15E-P200 × 1152 (*)	Cca-s1b,d1,a1	1152	8 x 144F	0.69 (17.5)	208 (310)	607 (2700)	10.3 (263)	180 (810)	6.9 (175)
RIO-OGNM12WTZWBE SR15E-P200 × 1728 (*)	Cca-s1b,d1,a1	1728	12 x 144F	0.83 (21.0)	306 (455)	607 (2700)	12.4 (315)	180 (810)	8.3 (210)
RIO-OGNM12WTZWBE SR15E-P200 × 3456 (*)	Cca-s1,d0,a1	3456	24 x 144F	1.00 (25.5)	453 (675)	607 (2700)	15.1 (383)	180 (810)	10.0 (255)
RIO-OGNM12WTZWBE BIS-B-P200 × 6912 (*)	Cca-s2,d0,a1	6912	24 x 288F	1.22 (31.0)	645 (960)	607 (2700)	18.3 (465)	180 (810)	12.2 (310)
RIO-OGNM12WTZWBE SR15E-P200 × 6912 (*)	Cca-s1,d0,a1	6912	24 x 288F	1.32 (33.5)	689 (1025)	607 (2700)	19.8 (503)	180 (810)	13.2 (335)

* NOTE: To designate length markings in AFL No., replace asterisk * with (FT) for Feet or (M) for Meters.

Optical Fiber

OPTICAL FIBER TYPE	FIBER DIAMETER	FIBER RIBBON PITCH	OPTICAL FIBER STANDARD	MODE FIELD DIAMETER AT 1310 nm	MAXIMUM ATTENUATION (CABLED) dB/km	
					1383 nm	1550 nm
Fujikura SR15E-P200	200 µm	200 µm	ITU-T G.652.D/G.657.A1	8.6 ± 0.4 µm	≤ 0.40	≤ 0.30

Stripe Ring Fiber Identification

R NO.	STRIPE RING MARKING	R NO.	STRIPE RING MARKING	R NO.	STRIPE RING MARKING	R NO.	STRIPE RING MARKING
1	█	7	███	13	██████	19	██████████
2	██	8	████	14	███████	20	█████████
3	███	9	█████	15	███████	21	██████████
4	████	10	█████	16	███████	22	██████████
5	█████	11	█████	17	███████	23	██████████
6	█████	12	█████	18	███████	24	██████████

FIBER COUNT	BINDER UNIT (BU)												RING MARKINGS
288	4 Binder Units	1	2	3	4								1 - 6 Ring Marking
432	6 Binder Units	1	2	3	4	5	6						
576	8 Binder Units	1	2	3	4	5	6	7	8				
864	12 Binder Units	1	2	3	4	5	6	7	8	9	10	11	
1152	8 Binder Units	1	2	3	4	5	6	7	8				1 - 12 Ring Marking
1728	12 Binder Units	1	2	3	4	5	6	7	8	9	10	11	
2880	10 Binder Units	1	2	3	4	5	6	7	8	9	10		
3456	24 Binder Units*	1	2	3	4	5	6	7	8	9	10	11	
6912	24 Binder Units	1	2	3	4	5	6	7	8	9	10	11	1 - 24 Ring Marking

*For binder units 13-24, the second binder unit is clear

continued
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Flame-Retardant RIO Indoor/Outdoor WTC with SWR® – 200 µm Fiber/200 µm Pitch

Temperature Specifications

TEMPERATURE RANGE	
INSTALLATION	-14°F to +140°F (-10°C to +60°C)
OPERATING	-40°F to +158°F (-40°C to +70°C)
STORAGE	-40°F to +158°F (-40°C to +70°C)

Qualifications

GOVERNING BODY	STANDARD CODE
UL	1666 (OFNR) 1685 (OFNG-LS)
ANSI/ICEA	S-83-596
IEC	60794-1-22
EU	EN 13501-6 (CPR)

Contact AFL for further details.