



TACTICAL FIBER OPTIC CABLE

Tactical | Tight Buffered
Rodent-Deterrent

Founded in 1984, AFL is an international manufacturer providing end-to-end solutions to the energy, service provider, enterprise, hyperscale and industrial markets as well as several emerging markets.

AFL's products are in use in over 130 countries and include fiber optic cable and hardware, transmission and substation accessories, outside plant equipment, connectivity, test and inspection equipment, and fusion splicing systems.

AFL also offers a wide variety of services supporting data center, enterprise, wireless and outside plant applications.

AFL is dedicated to bringing our customers a quality product as well as delivering superior value.





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Harsh Environments

Characterized by diverse operating conditions not found in most commercial locations, industrial applications require rugged and dependable network components. These applications must be able to transmit and receive large amounts of data reliably and across long distances in order for operations to function safely and efficiently. Research has shown that most network failures in industrial applications are a result of failed transmissions. This makes selecting the right network components including cable, a mission-critical function.

For applications requiring high-bandwidth and high-speed functionality, fiber optics can be a natural solution. Unlike copper cable, fiber optic cabling is resistant to electromagnetic interference (EMI), making it an ideal option for environments involving high voltages or machinery with variable frequency drives. Fiber optic cables do not conduct electricity, nor do they ignite in the presence of flammable materials, making them a safe alternative to traditional wiring.



Designed for extreme environmental conditions, AFL's Tactical Cable product line provides bandwidth, performance and versatility for applications where standard communication cables would never survive. Our ruggedized tactical jackets and diverse cable constructions protect cables from temperature extremes, UV/sunlight, solvents, abrasion and impact. As a leading manufacturer and innovator of fiber optic cables, AFL's Tactical Cables deliver predictable, repeatable and durable performance in the most demanding conditions.



Industrial Environments

From heavy industrial manufacturing and complex hydraulic fracturing drills to deployable broadcasting studios and positive train controls, the need for reliable high-bandwidth cable to deliver critical data transmissions is vital. Industrial applications like these require AFL's Tactical Fiber Optic Cables.

Designed for performance in the most severe conditions, AFL's family of Tactical Cables provide reliability and outstanding performance characteristics for supplying critical data. Our expertise in developing and manufacturing tactical fiber optic cables allow networks to run safer, with less disruption, and better productivity than any other system on the market. AFL's Tactical Cables have been deployed in many industries, including:



- Industrial Product Manufacturing
- Oil & Gas Refineries
- Transportation Hubs
- Chemical Plants
- Deployable Broadcasting Applications
- Automotive Manufacturing
- Avionic Communication Systems
- Distribution Pipelines
- Light Rail Monitoring
- On-Demand Broadcasts
- Military Deployable Communications
- Topside Mining Operations
- Broadcast Studios



The Right Tactical Cable for the Job

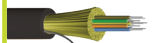











AFL’s background in fiber optic cable development has created a solid foundation for our Tactical Cable product line. However, our design services don’t just stop at the standard product line. We understand that every situation is unique. Each installation has its own environmental challenges and performance requirements. That’s why we offer customized real-problem, value-engineered solutions.

Our designers and engineers are experts in their field, offering an array of knowledge on every job with an emphasis on timeliness and quality. With years of experience in communications infrastructures, AFL provides system-wide solutions to include necessary materials, installation, testing and turnup. Some of our unique capabilities include:

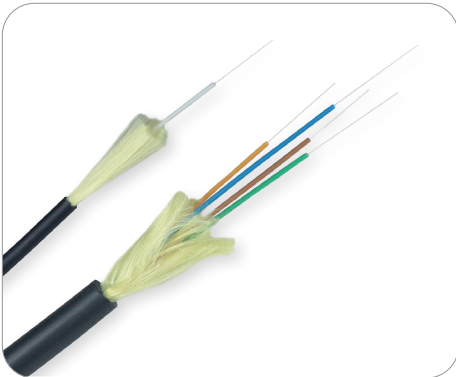
- Unique cable constructions based on existing formations to increase fiber counts or decrease OD parameters
- Cable jacket options that provide resistance to distinctive environmental conditions such as rodents or the presence of chemical solvents
- Cable additive choices that can provide increased abrasion or crush resistance

Tactical Cables At-a-Glance

Rely on AFL’s line of ruggedized tactical cables for superior performance and reliability at a smaller size.

PRODUCT	OD & WEIGHT	FIBER COUNT	CRUSH/IMPACT RESISTANCE	ABRASION/CUT RESISTANCE	FLEXIBILITY
 TRADITIONAL TIGHT BUFFERED					
 TACTICAL					

 GOOD
  BETTER
  BEST



Tactical Tight Buffered Cable

AFL Tactical Tight Buffered Cables are ideal for use in installations where extreme environmental conditions are present. Designed to be deployed and retrieved in the field, AFL's Tactical Tight Buffered Cables are highly resistant to damage caused by repeated impacts crushing forces, abrasion and extreme temperatures.

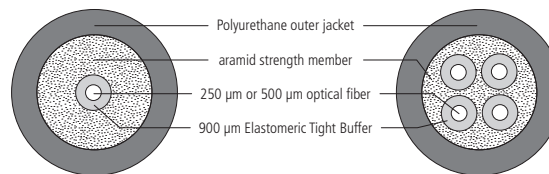
Features

- Cut resistant, fire retardant, LSZH polyurethane jacket
- Highly flexible construction allows for multiple deployments
- All aramid strength members
- Performance in wide temperature range
- UV, Fungus and water resistant
- High impact and crush resistance
- Durable in high traffic areas
- MIL-PRF-49291 qualified fiber available (-RH designation)

Applications

- Field deployment in abusive environments
- Temporary installation of critical communications lines where quick retrieval and re-use is necessary
- High Traffic areas
- Security and Sensing applications
- Broadcast deployments
- Installations in harsh environments

Cable Components



Specifications

CHARACTERISTIC	TEST PROCEDURE	PERFORMANCE
Tensile and elongation	EIA/TIA-455-33	
Operating tensile strength	EIA/TIA-455-33	
Low-temp flexibility	EIA/TIA-455-37	
Cyclic flexing	EIA/TIA-455-104	2000
Crush resistance	EIA/TIA-455-41	1800 N/cm or greater
Impact	EIA/TIA-455-25	200
Temperature cycling	EIA/TIA-455-3	-46°C to 85°C
Temperature/humidity cycling	EIA/TIA-455-5 Method B	
Life aging	EIA/TIA-455-4	
Freezing water immersion	EIA/TIA-455-98	



Tactical Tight Buffered Cable

Mechanical Data

AFL NO.	FIBER COUNT	NOMINAL DIAMETER		NOMINAL WEIGHT		MAXIMUM TENSILE LOAD		MINIMUM BEND RADIUS	
		INCHES	(MM)	LBS/1000FT	(KG/KM)	LBS (N)		INCHES (CM)	
						INSTALLATION	LONG TERM	INSTALLATION	LONG TERM
X5002*551#0H	2	0.22	(5.5)	16.2	(25)	400 (1780)	130 (578)	2.2 (5.5)	1.1 (2.8)
X5004*551#0H	4	0.22	(5.5)	16.2	(25)	400 (1780)	130 (578)	2.2 (5.5)	1.1 (2.8)
X5002*581#0H	2	0.23	(5.8)	21.5	(32)	400 (1780)	130 (578)	3.4 (8.7)	2.3 (5.8)
X5004*581#0H	4	0.23	(5.8)	21.5	(32)	400 (1780)	130 (578)	3.4 (8.7)	2.3 (5.8)
X5006*611#0H	6	0.24	(6.1)	22.2	(33)	400 (1780)	130 (578)	3.6 (9.2)	2.4 (6.1)
X5008*641#0H	8	0.25	(6.4)	28.8	(44)	470 (2090)	160 (712)	2.5 (6.4)	1.3 (3.2)
X5012*641#0H	12	0.25	(6.4)	30.8	(47)	470 (2090)	160 (712)	2.5 (6.4)	1.3 (3.2)

Note: Diameter and weight subject to change without notice

500 µm primary coated fiber available, replace H in AFL number with number corresponding below.

G = 500 µm Coated Optical Fiber

H = 250 µm Coated Optical Fiber

Replace asterisk (*) in AFL No. with corresponding fiber type below.

5 = 50/125 µm multimode GIGA-Link™ 600

6 = 62.5/125 µm multimode GIGA-Link™ 300

9 = Bend Insensitive G.657A1 single-mode

L = 50/125 µm OM3

C = 50/125 µm OM4

Replace hashtag (#) in AFL No. with jacket color. See Tactical Cable Ordering Guide.

Customer specified print available.

See Tactical Cable Ordering Guide AFL No. designations.

Qualifications

GOVERNING BODY	STANDARD CODE	COMPONENT
EIA/TIA	EIA/TIA-455-33, EIA/TIA-455-37, EIA/TIA-455-104, EIA/TIA-455-41, EIA/TIA-455-25, EIA/TIA-455-3, EIA/TIA-455-5 Method B, EIA/TIA-455-4, EIA/TIA-455-98	Fiber Optic Cable
U.S. Department of Defense	MIL-PRF-49291 MIL-PRF-85045	Optical Fiber Fiber Optic Cable

Temperature Specifications

TEMPERATURE RANGE	
INSTALLATION	-46°C to +85°C
OPERATION	-46°C to +85°C
STORAGE	-55°C to +85°C

Contact AFL for further details.



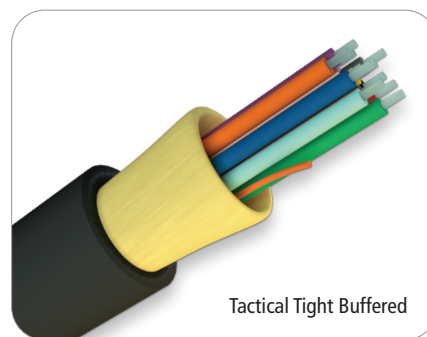
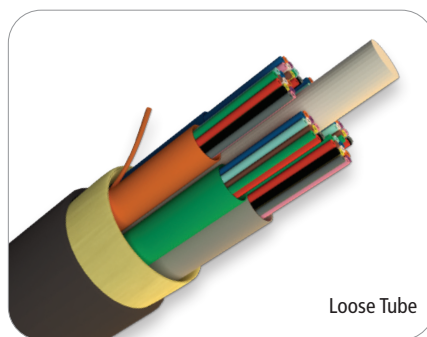
Rodent-deterrent Cable Jackets

Cables placed in outside plant or harsh environment applications are designed to endure the extreme challenges associated with temperature fluctuations, crush and impact, tensile loading, and even immersion or burial applications. Yet, surprisingly one of the biggest threats to fiber optic cable signal integrity is rodents chewing on cables to whittle down their incisors hence damaging the fibers within. The result is exposed or broken fiber links causing increased maintenance costs, reduced productivity and possibly lost revenue.

To combat these furry attacks, AFL has developed a new Rodent-deterrent enhancement option for its tactical and OSP fiber optic cables. These new jacket options significantly reduce cable damage from gnawing rodents. Tests show that the AFL bittering agent used in our new Rodent-deterrent Tactical and OSP cables repel rodents for far longer than cables without it.

Physical barriers like conduit can be effective for direct burial applications but they increase installation and material costs. Armoring tapes included in the cable construction can be effective as well but increase the diameter and weight of the cable. They will also require gloves for installation and electrical grounding and bonding become necessary concerns. Electrical current applied to the outside of the cable has been known to be used but holds little success and can be hazardous to technicians and installers. As a last resort, some installers have turned to rodenticides or lethal poisons to prevent rodent damage. Of course these are never a good idea due to the toxicity to humans and their environmental effects. AFL now offers an optimal alternative to these less than ideal methods. They provide a much safer and economical method of preventing rodent damage and since the bittering agents are incorporated directly into the cable jacket, there is no significant size or weight increase.

While there have been many methods to prevent rodents from chewing on fiber optic cables, by utilizing AFL's new Rodent-deterrent cable jackets, customers can realize reduced maintenance costs and longer cable life cycles. Overall, these new cable jacket options offer a non-toxic, safe and effective method of controlling damage caused by rodents while still offering the ruggedness expected from AFL's tactical and OSP fiber optic cables. AFL Rodent-deterrent bittering agents are available in outside plant loose tube cables, outdoor tight buffered cables, and our complete line of tactical tight-buffered cables. Contact AFL for specific ordering or specification information.



**AFL offers a variety of cables that offer the Rodent-deterrent Jacket.
Visit www.AFLglobal.com/rodent for more information.**

continued
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Rodent-deterrent Cable Jackets

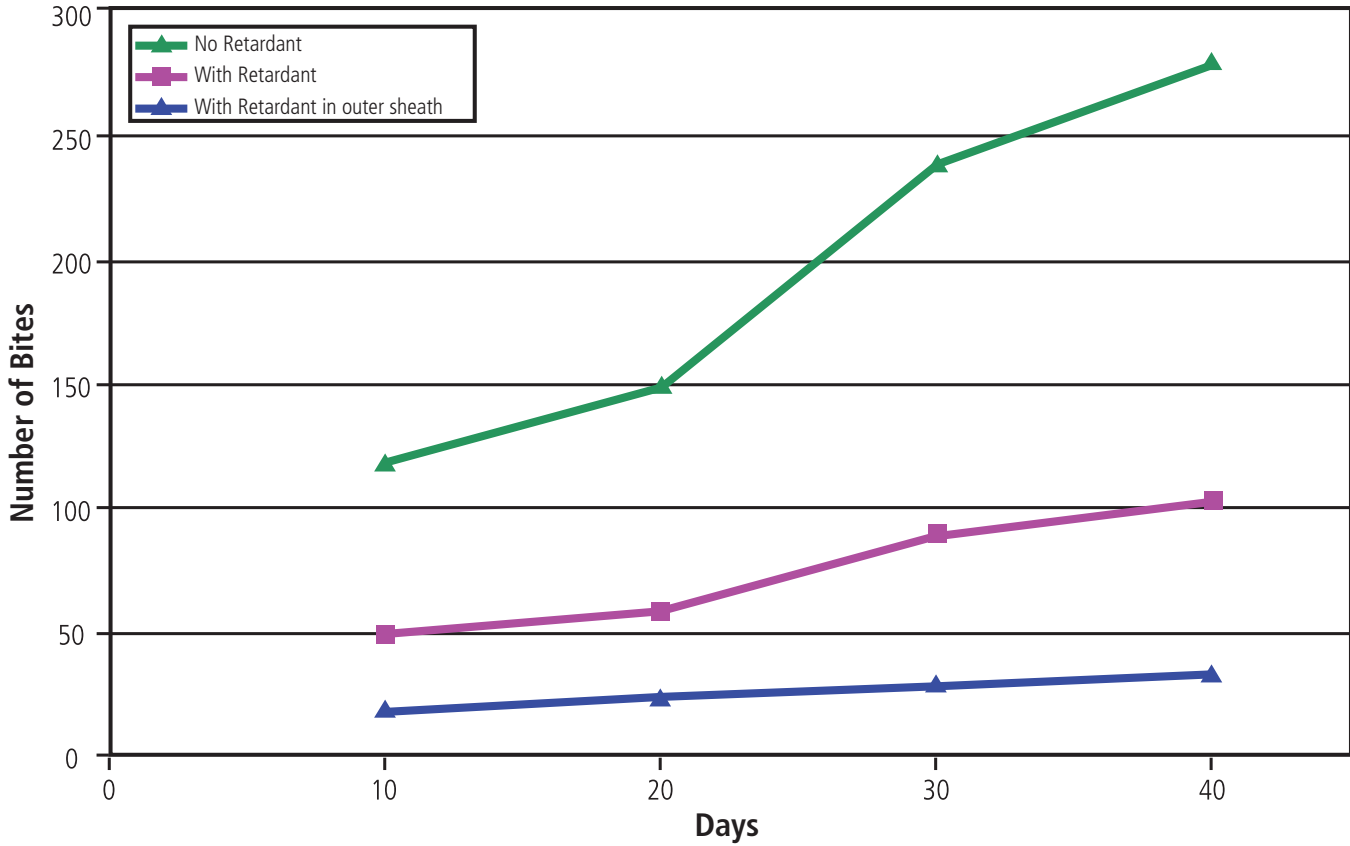


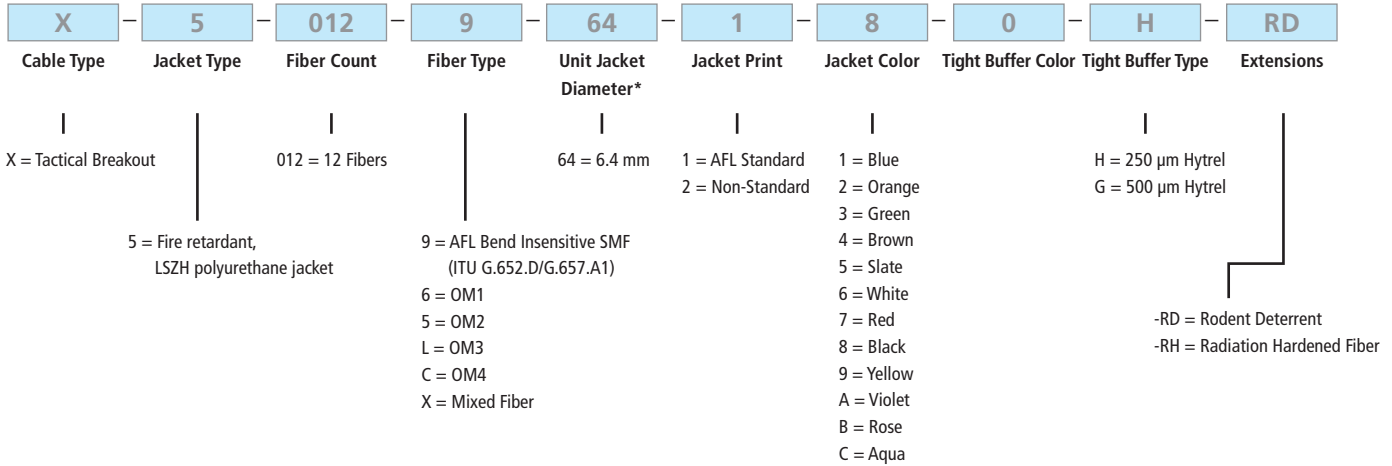
Figure 1 – Rodent-deterrent Greatly reduces “rodent bites” on cables with additives in outer jacket

* The above data is for comparison value only and does NOT represent, constitute nor warrantee customer application performance.

Tactical Cable Ordering Guide

X5012964188H-RD

Fiber Optic Cable



* Unit Jacket Diameter will vary based upon fiber count

Please contact your AFL Sales Representative for information about our other products or services.

**FIBER OPTIC CABLE
(OPGW, ADSS, Loose Tube)**



**FIBER OUTSIDE PLANT
EQUIPMENT**



**FUSION SPLICING
SYSTEMS AND ACCESSORIES**



**TEST AND INSPECTION
EQUIPMENT**



