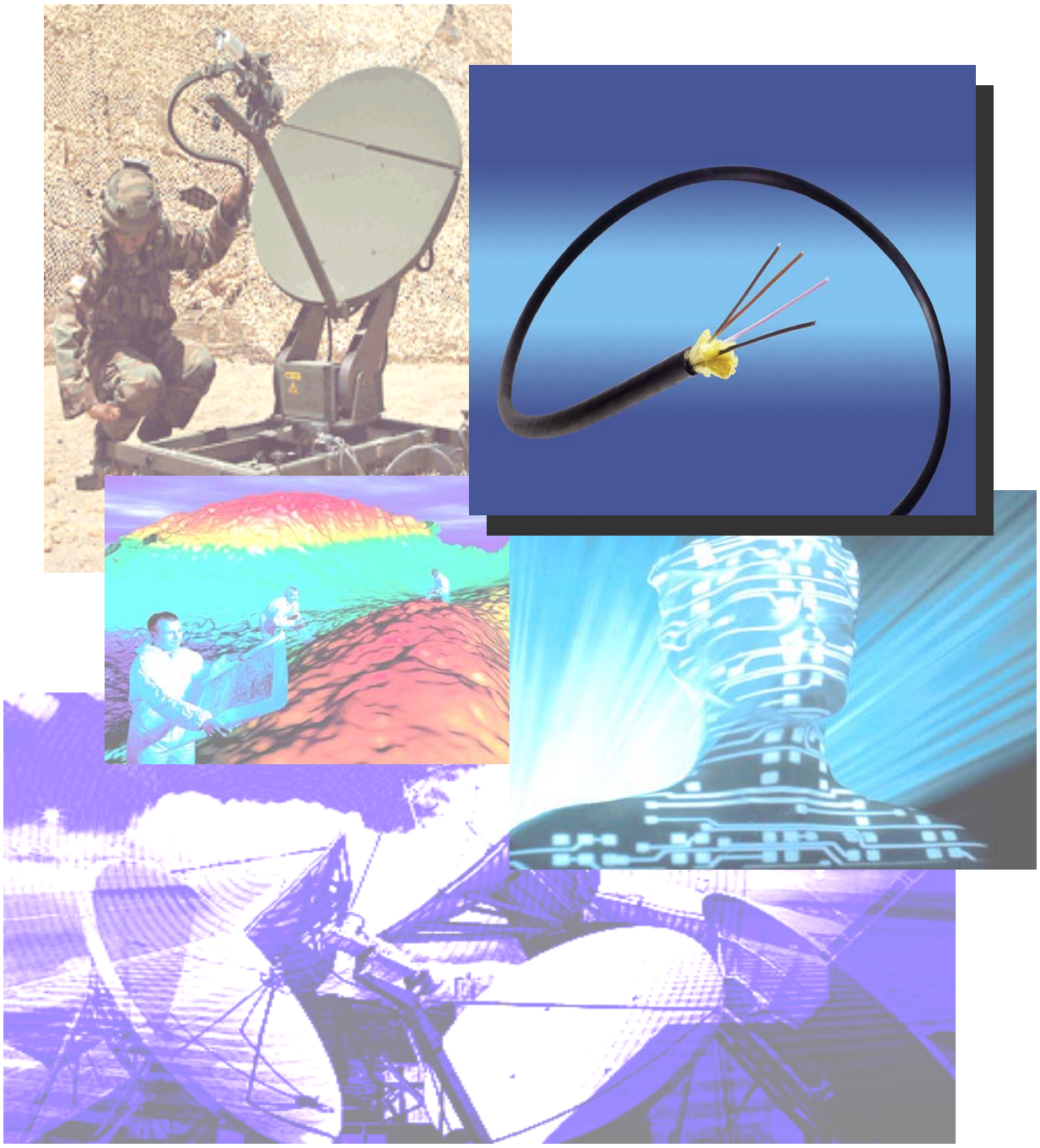
Amphenol Spectra-Strip

Fiber Optics

720 Sherman Avenue, Hamden CT, 06514 USA

161 Series
Fiber Optic Cable for Harsh Environments



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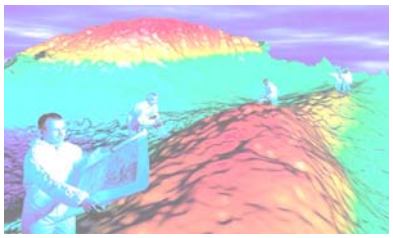
Introduction



Amphenol Corporation is a world leader in harsh environment Interconnect systems. The Spectra-Strip Division has been engineering high performance cable products for more than 30 years. The division has developed and deployed worldwide, a comprehensive range of fiber optic cables specifically to meet the various harsh environments encountered in external applications.

Market	Applications
Military	Field deployable communications and data links. Radiation resistant fibers are tested according to TIA/EIA 455-64 (Procedure for Measuring Radiation-Induced Attenuation in Optical Fibers), and comply with or exceed the ITU recommendations G.651 and IEC 60793-2-10 Optical Fiber Specifications
Broadcast	Excellent for deployment/retrieval applications such as video coverage of news/sporting events.
Mass Transit	Infrastructure and in-vehicle data transfer
Petro-Chemical	Hazardous area data communications
Geo-Physics	Seismic analysis and oil field exploration.

Amphenol has developed specific products to meet the conditions encountered in these applications. Tight buffered helically stranded optical fibers combined with aramid strength members and a selection of jacket materials based on the application result in extremely strong, light-weight cable that is exceptionally flexible, rugged and survivable in military tactical field use and commercial applications.

Polyurethane jacketed cables provide the highest levels of abrasion resistance, toughness, excellent low temperature properties, crush resistance, flame retardancy, and resistance to fungus and hydrolytic attack (high humidity and water contact).

In applications that do not require the highest levels abrasion resistance and toughness Spectraploy [tm] jacket is recommended. This thermoplastic material is more flexible, yet also provides excellent low temperature properties, good abrasion resistance and tear resistance as well as good resistance to oil, fuels and solvents.

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Benefits of the 161 Series Cables

Proven Reliability

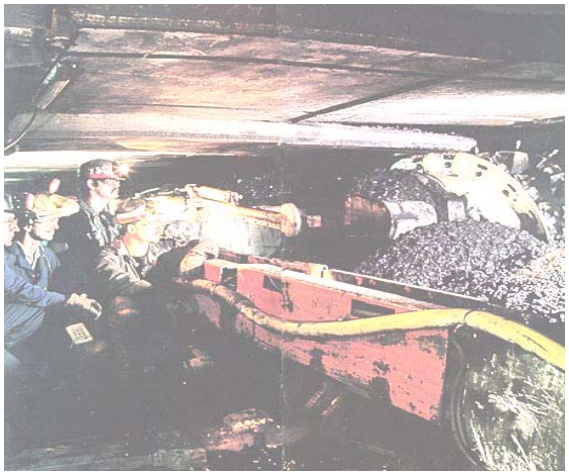
- Will meet IEC and global military standards
- In service globally for 10 years
- No shrinkage at low temperatures
- Available with Low Smoke Zero Halogen (LSZH) materials

Tough

- High tensile strength
- Abrasion resistant
- Radiation resistant fibers available
- Chemical and fluid resistant
- Crush resistant
- Meets NBC wash down needs
- Flexible

Secure

- All dielectric construction
- No radiating fields from metallic elements
- No surge or EMC issues
- No spark hazard



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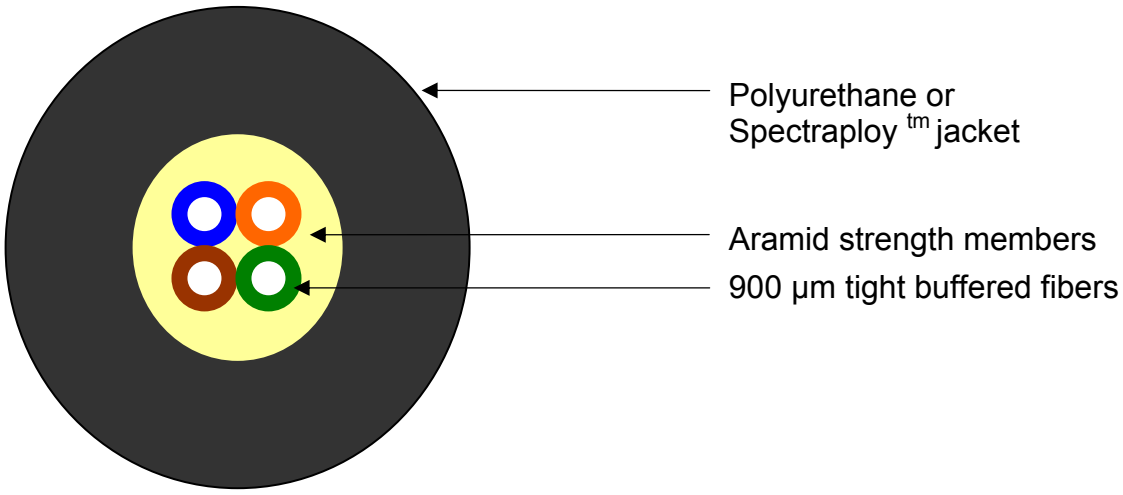
General Cable Specification

Approvals	Meets Requirements of CECOM A3159879, IEC 60794-1 and Defence Standard 60-1 Also meets or exceeds the following Standards: TIA-455-33-B, Tensile Loading & Elongation (2950N) DOD-STD-1678, Method 4050, Freezing Water Immersion TIA/EIA-455-87 Knot Test (with and without mandrel) TIA/EIA-455-88 Corner Bend (500N) MIL-STD-202, Method 108, Life Elevated Temperature (240 hours at 110°C) Additional Standards referenced in Cable Performance Segments.
Outside Diameter max. 2 or 4 fiber	5.8mm
Fiber Buffer Color Coding	TIA 598-C or customer request.
Cable Marking	Part number and length per customer option
Weight: 2 or 4 fiber	31kg/km maximum
Temperature Range: Operating	Spectraploy - 55°, + 85° C
	Polyurethane - 60°, + 85° C
Temperature Range: Storage	Spectraploy - 60°, + 85° C
	Polyurethane - 60°, + 85° C



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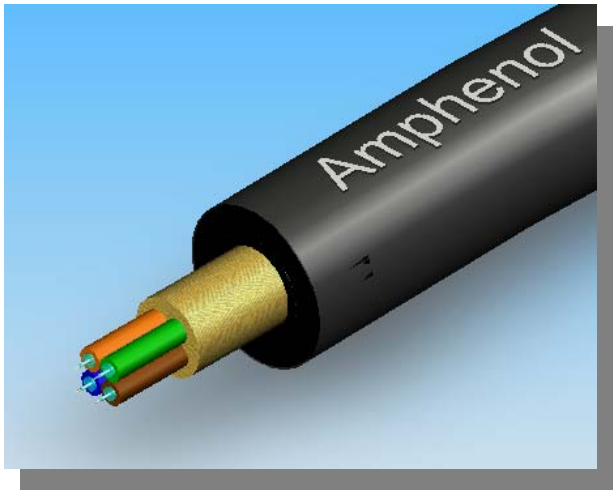
Optical Performance of Cable

Characteristics	FIBER TYPE		
	9/125 SM	**50/125 MM**	**62.5/125 MM**
Core Diameter	9.0 µm ± 0.7	50µm ± 2.5	62.5 µm +/- 2.5
Cladding Diameter	125 µm ± 1.0	125 µm ± 1.0	125 µm +/- 1.0
Coating Diameter	500 µm ± 15	500 µm ± 15	500 µm +/- 15
Buffer Diameter	900 µm ± 50	900 µm ± 50	900 µm +/- 50
Core Material	Dispersion-unshifted glass core	Graded Index:, Glass Core	Graded Index:, Glass Core
Cladding Material	Glass Coating	Glass Coating	Glass Coating
Buffer Material	Hard Elastomer	Hard Elastomer	Hard Elastomer
Attenuation @ 1310nm @ 1550nm	≤1.0 dB/km ≤1.0 dB/km	NA	NA
Attenuation @ 850nm @ 1300nm	NA	≤3.50 dB/km ≤1.25 dB/km	≤3.50 dB/km ≤1.25 dB/km
Overfill Bandwidth @ 850nm @ 1300nm	NA	 ≥500MHz·km ≥500MHz·km	 ≥300MHz·km ≥600MHz·km
RML/EMB_c Bandwidth @ 850nm @ 1300nm	NA	 ≥500MHz·km ≥600MHz·km	 ≥385MHz·km ≥700MHz·km
Mode Field Diameter	9.2 ± .0.7µm	NA	NA
Numerical Aperture	Not applicable	0.230 ± 0.15	0.275 ± 0.15
Fiber Tensile Strength	≥ 690 MPa	≥ 690 MPa	≥ 690 MPa

*Enhanced Bandwidth Options available



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Mechanical Performance
FR Polyurethane Jacket

Operating Tensile strength	4450N
Crush Resistance.	>2000N/cm (EIA/TIA-455-41)
Abrasion	1000 strokes at 85°C
Impact	>100 impacts (DOD-STD-1678, Method 2030)
Bend Radius, Long Term Load	5X outside diameter
Bend Radius, Installation Load	16X outside diameter
Cyclic Flexing	2000 cycles each at -46°C, +25°C, +71°C with maximum attenuation change of 0.1 dB, per DOD-STD-1678, Method 2010, Procedure II
Tear Resistance	96N/mm
Cold Bend tests	Exceeds requirements at – 47°C (DOD-STD-1678, Method 2020, Procedure III)
UV Aging	No change in tensile strength after 800 hours exposure in Xenon Weatherometer Test
Fungus	No growth after 28 days exposure (MILSTD-810F, Method 508.5)
Flame Test	Passes 60° Angle Flammability Test perMIL-PRF-85045F
Connector Retention	Used with ruggedized military tactical field connectors for maximum connector retention (1000 lbs)
Color	Black Matte (Standard)

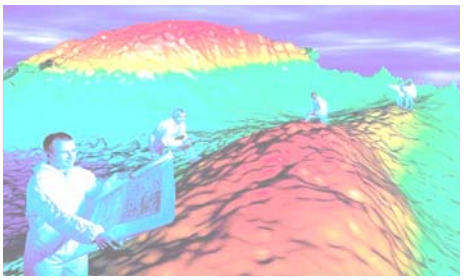
Part Number Generation

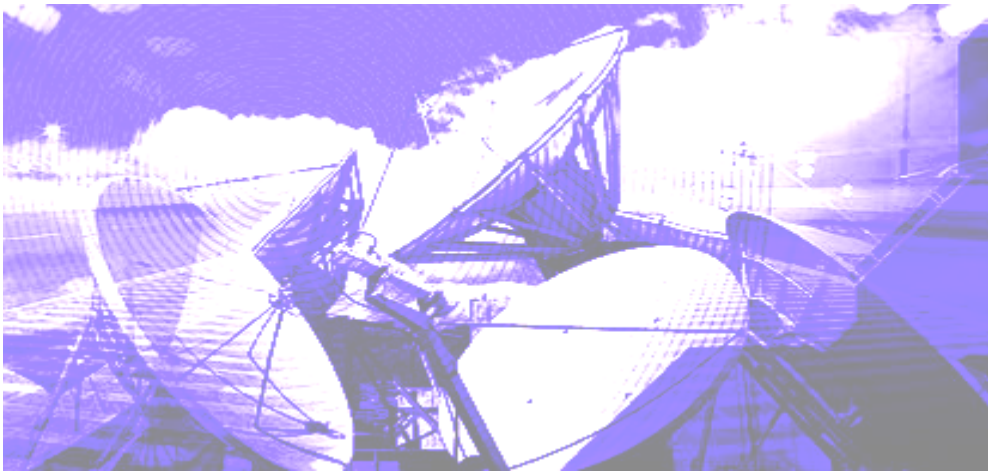
161 - D E F G - H I J

Fiber count for standard products
002 = 2 fibers
004 = 4 Fibers
XXX = Special Constructions

Outside Jacket Material
00 = Polyurethane
01 = Spectraploy
99 = Special Construction

Fiber Type:
01 = Single Mode 9/125, Non Rad-Hard
02 = Single Mode 9/125, Rad-Hard
03 = Multi Mode 50/125, Non Rad-Hard
04 = Multi Mode 50/125, Rad-Hard
05 = Multi Mode 62.5/125, Non Rad-Hard
06 = Multi Mode 62.5/125, Rad-Hard





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