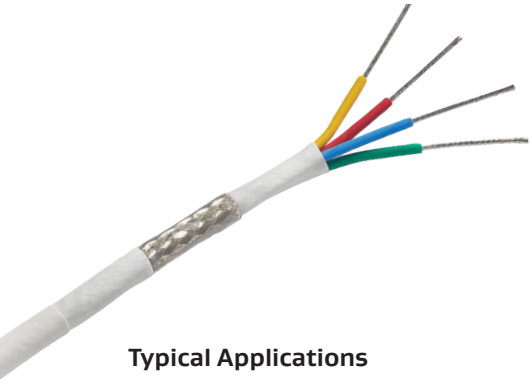
GORE® Ethernet Cables (Cat5e)



Typical Applications

- Avionics/vetronics digital networks
- Box-to-box systems
- Cabin management systems
- Digital video interface (DVI)
- Ethernet backbone
- Flight/propulsion control
- HD camera/video systems
- Mission systems
- Radio/radar/communications systems
- Sensor data collection & processing
- Serial buses
- Tactical links

Standards Compliance

- ABD0031 (AITM 2.0005); BSS7230; FAR Part 25, Appendix F, Part I: Flammability
- ABD0031 (AITM 3.0005); BSS7239: Toxicity
- ABD0031 (AITM 3.0008B); BSS7238; FAR Part 25, Appendix F, Part V: Smoke Density
- AFDX/ARINC 664, Part 7: Ethernet Networks
- ANSI/NEMA WC 27500: Environmental Testing, Jacket and Marking
- IEEE 802.3: Ethernet 100BASE-T / 1000BASE-T (2 cables)
- SAE AS4373™: Test Methods for Insulated Electric Wire (Contact Gore for available data)

To meet Cat5e requirements in advanced avionics and vetronics, Gore offers an Ethernet quadrax version as a reliable substitute for dual twisted pairs (Table 1). These dual differential pairs transmit continuous bi-directional, high-speed signals up to 100 MHz at lengths up to 70 m (230 ft) using size 24 AWG and 50 m (164 ft) using size 26 AWG. Also, positioning two of these cables side by side can achieve Ethernet 1000BASE-T performance for more system design options.

Gore is the original inventor of this pioneering cable geometry that is approximately 40% smaller and up to 30% lighter than dual twisted pair constructions. (Figure 1). Our cable's lightweight build is also proven to save more than 5.0 kg (11 lb) on aircraft such as the fifth-generation F-35.

Table 1: Cable Properties

Electrical

Property	Value
Signal Transmission Speed MHz	Up to 100
Standard Impedance Ohms	100 ± 10
Typical Operating Voltage V	< 48
Nominal Velocity of Propagation %	80
Nominal Time Delay ns/m (ns/ft)	4.10 (1.25)
Capacitance pF/m (pF/ft)	45.0 (13.7)
Minimum Near-End Crosstalk (NEXT) dB	
10 MHz	50.0
100 MHz	35.0
Shielding Effectiveness dB	> 55
Dielectric Withstanding Voltage Vrms	
Conductor-to-Conductor	1500
Conductor-to-Shield	1000

Mechanical / Environmental

Property	Value
Jacket Material	Engineered Fluoropolymer
Jacket Color	White (Laser Markable)
Conductor	SCA (Silver-Plated High-Strength Copper Alloy)
Conductor Color-Coding	Blue/Red, Green/Yellow
Dielectric Material	Expanded PTFE/PTFE
Temperature Range °C	-65 to +200

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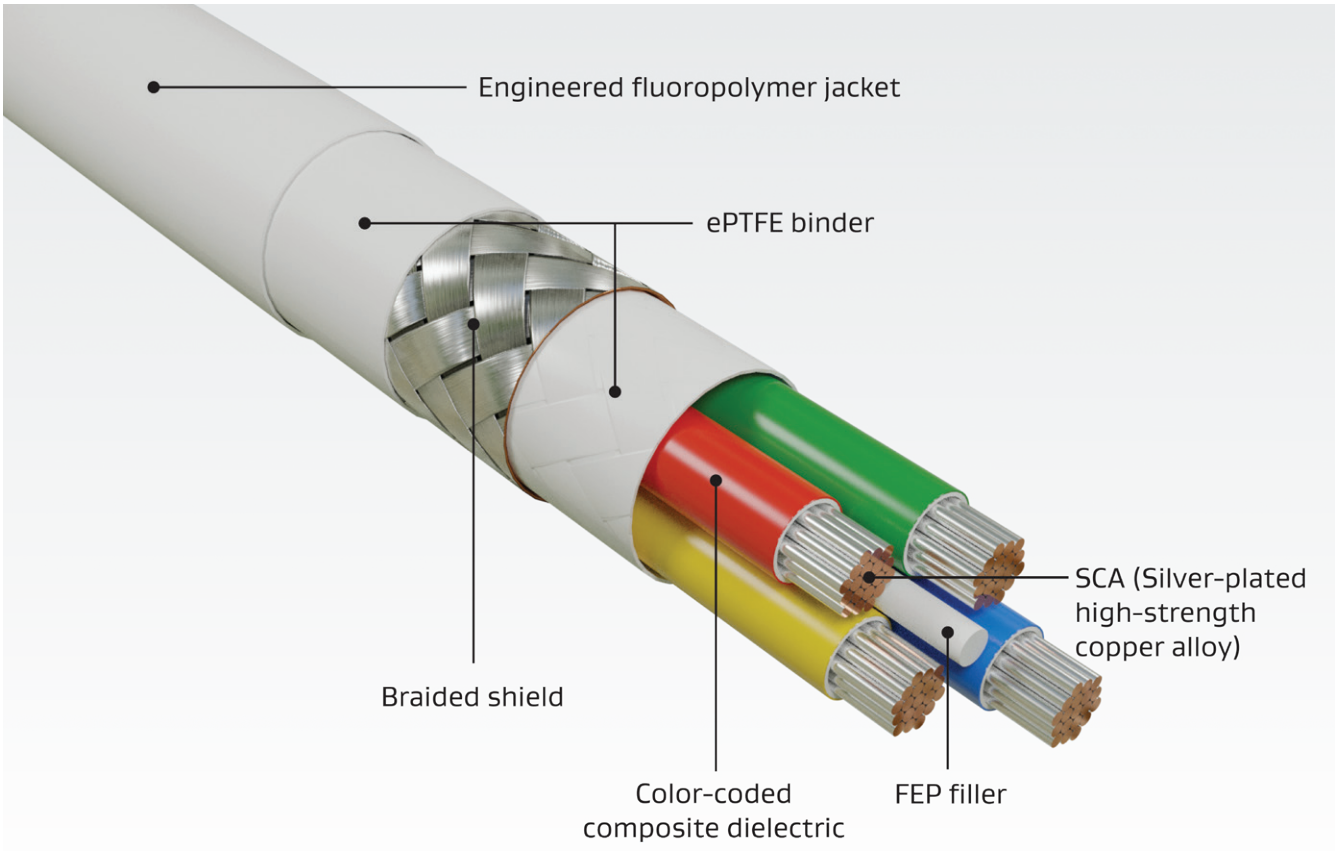
Figure 1: Lightweight Build



Cable Preparation

Laser stripping is the ideal method to prep GORE® Ethernet Cables. Alternatively, Gore recommends using thermal or sharp mechanical strippers. Also, a unique method is to make a short, horizontal slit in the jacket material, peel it back to allow for contact termination and return the jacket to its original position for a neat closure (Figure 2). For more information regarding cable preparation, contact a Gore representative.

Connector Systems & Backshells

GORE® Ethernet Cables are designed to fit a variety of high-speed aerospace and defense connector systems and backshells such as ARINC and MIL-STD-38999 with size 8 contacts. Contact the specific manufacturer such as Amphenol® and Glenair® for exact part numbers, tooling information, and termination instructions.

Figure 2: Peel-Back Method

Table 2: Cable Characteristics

Typical insertion loss values are based on the maximum recommended Cat5e use lengths.

Gore Part Number	AWG Size (Stranding)	Nominal Outer Diameter mm (in)	Minimum Bend Radius mm (in)	Nominal Weight kg/km (lb/1000 ft)	Maximum Insertion Loss dB/30 m (100 ft)	
					10 MHz	100 MHz
GSC-03-84608-00	24 (19/36)	4.1 (0.16)	20.0 (0.79)	33.0 (22.0)	2.8	9.4
GSC-03-84820-00	26 (19/38)	3.3 (0.13)	15.0 (0.59)	23.0 (15.0)	3.9	13.2

Samples & Ordering Information

The quadrax version of GORE® Ethernet Cables is available in standard sizes (Table 2). To place an order, contact an authorized distributor for in-stock availability at **gore.com/cable-distributors.** To view our full inventory and order complimentary samples of selected products for prototyping and evaluation in your application, visit **gore.com/hsdc-sample-inventory-air-defense.**

For more information or to discuss specific characteristic limits and application needs, contact a Gore representative for aerospace and defense today.

For Ethernet Cat5e protocol, Gore's 2-pair cable is an ideal solution in place of a 4-pair or quadrax design in your system architecture.

W. L. Gore & Associates
gore.com

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