

# ETHERNET CABLE BUYING GUIDE: CATEGORIES, RATINGS, BULK OPTIONS AND USE CASES

## Introduction:

Ethernet cable connects networked devices like routers, switches and computers, forming the physical foundation of wired networks. Cable selection affects network performance, safety compliance and long-term scalability across home networks, small businesses and enterprise environments.

This guide breaks down Ethernet cable categories, ratings, bulk options and common use cases to help installers, IT professionals and informed buyers select the right cabling for your project.

## Common Applications for Ethernet Cable

Ethernet cable is used across residential, commercial and industrial environments, with application requirements directly influencing cable category, rating and construction.

### TYPICAL APPLICATIONS INCLUDE:

- ✓ Structured cabling systems
- ✓ Data centers and server rooms
- ✓ Commercial offices and retail spaces
- ✓ Educational and healthcare facilities
- ✓ Home networking and smart home installations
- ✓ IP cameras, access control, and AV systems

## Ethernet Cable Categories (Cat Ratings)

Ethernet cable categories define performance capabilities such as maximum speed, bandwidth, and supported distance. Selecting the appropriate category ensures your network meets current needs while allowing for future growth.

Category	Maximum Speed	Bandwidth	Maximum Distance	Typical Use Cases
Cat5e	1 Gbps	100 MHz	100 m	Home networks, small offices
Cat6	10 Gbps (up to 55 m)	250 MHz	100 m	Modern offices, PoE devices
Cat6a	10 Gbps	500 MHz	100 m	Data centers, enterprise networks

## SHIELDED VS UNSHIELDED ETHERNET CABLE

Shielding protects Ethernet signals from electromagnetic interference (EMI), which can degrade performance in certain environments.

Feature	UTP or Unshielded Twisted Pair	Shielded Ethernet Cable (e.g., F/UTP)
EMI Protection	Minimal	Improved
Installation Complexity	Easier	More complex
Typical Environment	Offices, homes	Electrically noisy environments, industrial areas, data centers

## CABLE JACKET RATINGS & FIRE SAFETY

Cable jacket ratings determine where Ethernet cable can be safely installed and help ensure compliance with building and fire codes.

Jacket Rating	Fire Resistance	Approved Installation Locations
CM/CMG	Standard	General purpose installations where fire rating is not required
CMR (Riser)	Flame-resistant	In-wall including vertical floor-to-floor runs
CMP (Plenum)	Low smoke, fire-resistant	Air-handling and plenum spaces used for ventilation, such as above drop ceilings or below raised floors

Plenum spaces are areas used for air circulation in a building, commonly found above suspended ceilings or below raised floors.

**Pro Tip:** Always verify local building codes before installation.

## SOLID VS STRANDED CONDUCTORS

Feature	Solid Conductor	Stranded Conductor
Performance	More consistent signal over longer distances	Designed for reliable performance in short connections
Flexibility	Less flexible	Highly flexible
Typical Use	Permanent infrastructure, PoE	Patch cables and short runs

## COPPER QUALITY: SOLID COPPER VS CCA

Feature	Solid Bare Copper	Copper-Clad Aluminum (CCA)
Conductivity	Excellent	Reduced
PoE Support	Fully supported	Limited
Code Compliance	Meets industry standards	May not meet local codes
Recommended Use	Professional installations	Budget-conscious, limited use

## POWER OVER ETHERNET (POE) COMPATIBILITY

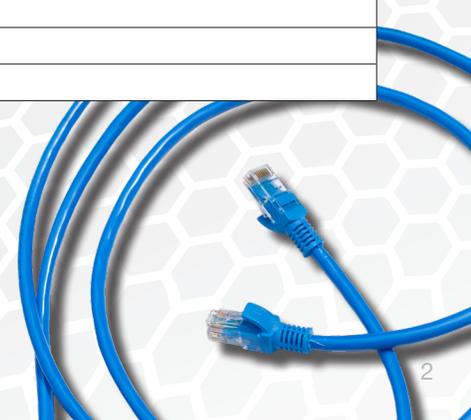
Power over Ethernet allows Ethernet cable to deliver both data and power to connected devices.

PoE Standard	Maximum Power	Recommended Cable
PoE (802.3af)	Up to 15.4W	Cat5e or Cat6
PoE+ (802.3at)	Up to 30W	Cat6
PoE++ (802.3bt)	Up to 90W	Cat6a

## QUICK SELECTION GUIDE

Environment	Recommended Cable
Home or small office	Cat5e or Cat6, CM, UTP
Commercial, office or in-wall	Cat6, CMR, UTP or Shielded
Data center, or in-ceiling/floor	Cat6a, CMP, Shielded
PoE-heavy installations	Cat6 or Cat6a, solid copper

**Pro Tip:** Always verify local building and fire code requirements before selecting cable.





## Choosing the Right Ethernet Cable for Your Project

Many Ethernet cabling issues originate before installation begins. Selecting the right cable requires balancing performance requirements, environment, safety ratings, interference exposure and PoE load. Overlooking these factors can lead to code violations, reduced performance or costly rework.

### COMMON MISTAKES TO AVOID (AND HOW TO FIX THEM)

Mistake	Why It's a Problem	Recommended Solution
Using patch cable for in-wall runs	Stranded conductors are not designed for permanent installation and may not meet fire/safety codes	Use solid-conductor bulk Ethernet cable
Installing CM cable in plenum spaces	Violates fire and building safety codes	Use CMP-rated plenum cable
Choosing CCA for PoE devices	Can overheat or underperform under high power loads	Select solid bare copper cable
Ignoring EMI sources	Causes signal degradation and performance issues	Use shielded cable or reroute away from interference
Exceeding bend radius	Damages internal conductors	Follow manufacturer bend radius guidelines
Failing to test cable runs	Undetected faults can cause downtime	Certify and test every run after termination

Careful planning and proper cable selection help ensure long-term network reliability, safety compliance and performance.

## NavePoint Ethernet Cable Solutions

NavePoint Ethernet cables are designed to support reliable network performance across residential, commercial, and enterprise environments.

### Selecting the Right Ethernet Cable

Selecting the right Ethernet cable comes down to matching category, jacket rating and construction to the installation environment and performance requirements. Taking time to evaluate these factors helps avoid rework, compliance issues and performance limitations over the life of the network. In a large-scale network, NavePoint Ethernet cable solutions provide the confidence and performance your projects demand.

#### WHY INSTALLERS CHOOSE NAVEPOINT:

- ✓ Industry-standard performance ratings across Ethernet categories
- ✓ Consistent materials and manufacturing for dependable installations
- ✓ Compatibility with racks, patch panels and structured cabling systems
- ✓ Options available for both bulk Ethernet cable and pre-terminated patch cables

