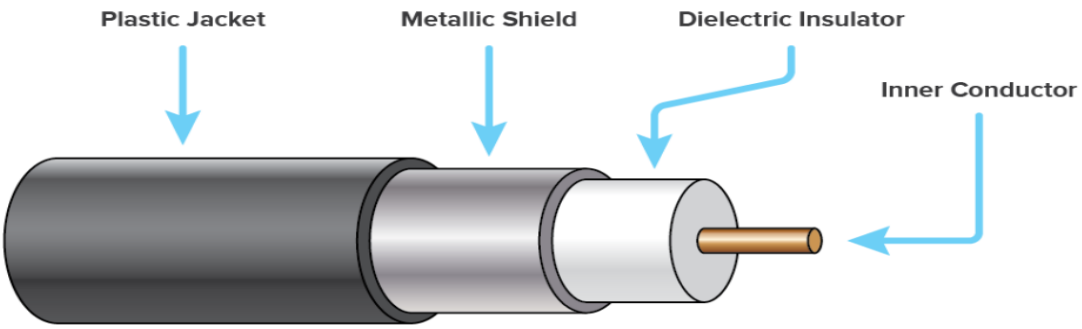
## List various network cable, also write short description.

# 1.Coaxial Cable




**Definition**:
Coaxial cable is a type of electrical cable consisting of a central **core conductor** (usually copper), surrounded by an **insulating layer**, a **metallic shield** (to block interference), and an **outer protective jacket**.

**Key Features**:

- **Shielded design**: Reduces signal interference.
- **Durable**: Suitable for outdoor and long-distance use.
- **High bandwidth**: Can carry large amounts of data.

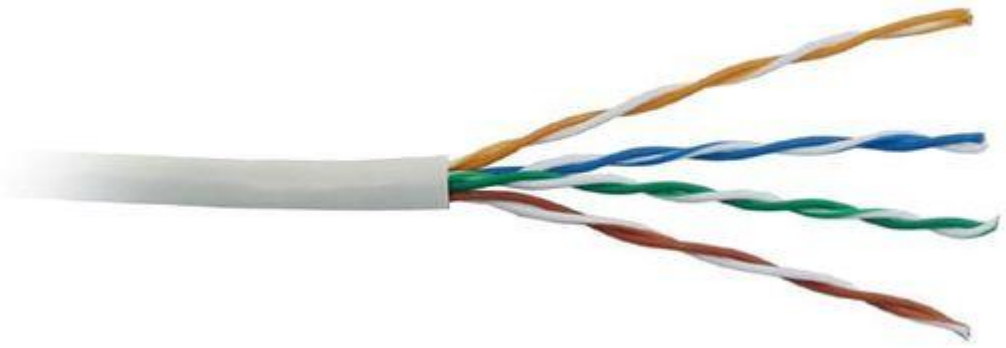
**Uses**:

- Cable TV connections
- Internet services (broadband)
- Early Ethernet (10BASE2, 10BASE5)
- CCTV and security systems

**Examples**:

- **RG-6**: Common for cable TV and internet.
- **RG-59**: Used for CCTV and short-distance video.

## 2. Unshielded Twisted Pair (UTP)



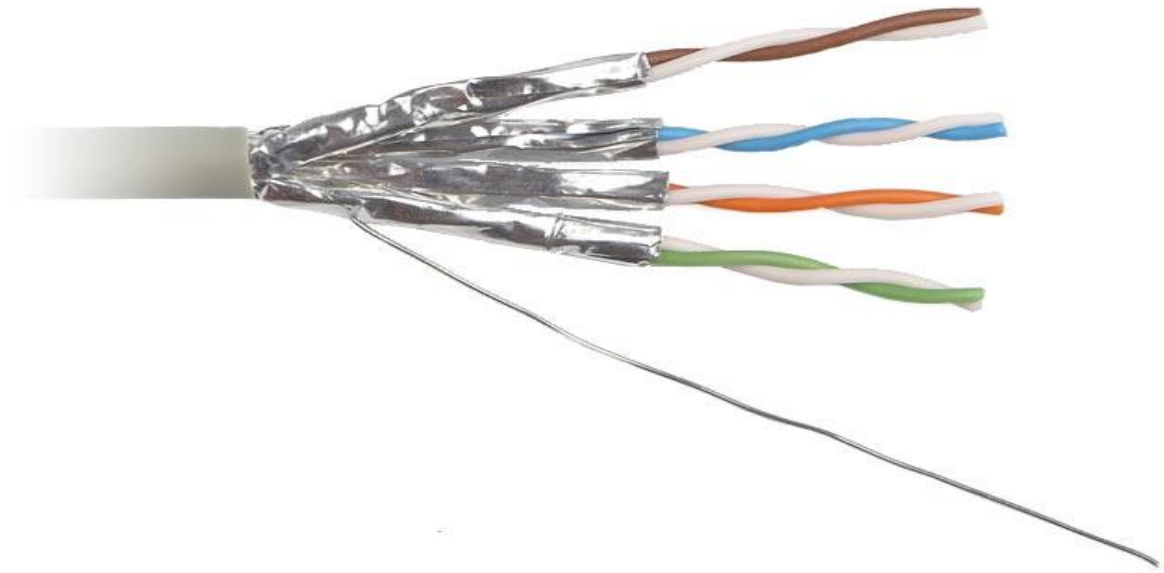
**Description**:
A cable with pairs of wires twisted together to reduce interference. Lacks additional shielding.

**Used in**:
LAN (Ethernet), telephone lines, modern networking.

**Example**:

- Cat5 – up to 100 Mbps
- Cat5e – up to 1 Gbps
- Cat6 – up to 10 Gbps over short distances
- Cat6a/Cat7 – better shielding and higher speeds

# 3. Shielded Twisted Pair (STP)

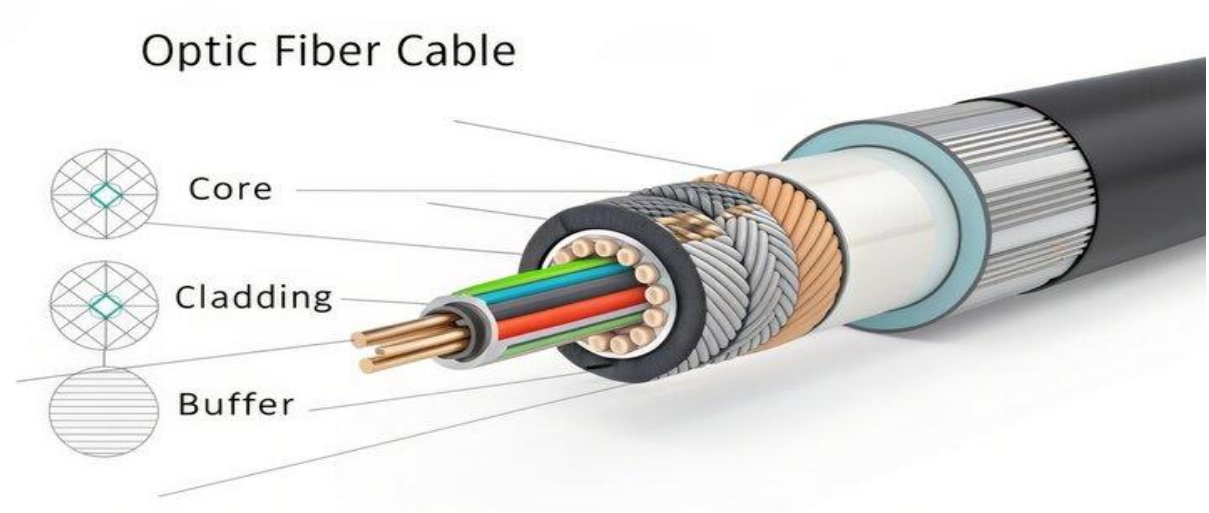


**Description**:
Similar to UTP but includes foil or braided shielding to reduce electromagnetic interference.

**Used in**:
High-interference areas like factories or hospitals.

**Benefit**:
Provides better noise immunity than UTP.

# 4. Fiber Optic Cable




**Definition**:
A **Fiber Optic Cable** is a type of network cable that transmits data using **light signals** through **glass or plastic fibers**, instead of electrical signals over copper wires.

🔍 **Key Features:**

- **High Speed**: Supports very high data transfer rates (up to Tbps).
- **Long Distance**: Can transmit signals over **kilometers** without signal loss.
- **Immune to Electromagnetic Interference (EMI)**: Ideal for environments with high interference.
- **Thin and Lightweight**: Fibers are thinner and more flexible than copper cables.

📌 **Applications:**

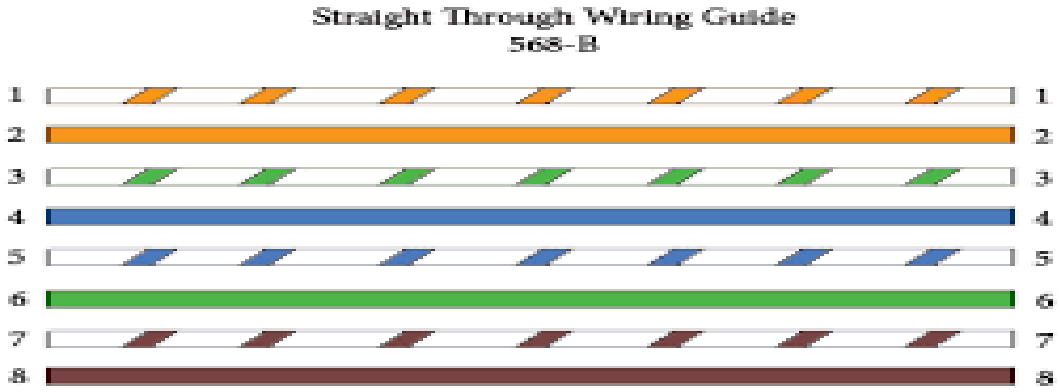
- Internet backbone and broadband networks
- High-speed LAN connections
- Cable TV transmission
- Medical imaging and military communications

# Different between guided and unguided media.

| Basis | Guided/ Bounded Media | UnGuided/ UnBounded Media |
|---|---|---|
| **Transmission** | Guided is wired transmission, in which data signals are guided along a physical path i.e. within a wire | Unguided/ Unbounded communication is wireless transmission. To exchange bits of data for laptop, notebook, smart watch, without wires, you need wireless communication. |
| **Also, called?** | Guided transmission is also known as Bounded Transmission Media. | UnGuided transmission is also known as UnBounded Transmission Media. |
| **Media Types** | Some well-known Guided Transmission media includes Twisted Pair Cable, Coaxial cable, fiber optic cable, etc. | UnGuided Transmission media includes Microwave Transmission, Satellite Communication, etc. |
| **Media** | The media can be seen and touched i.e. tangible. | The media is wireless and cannot be seen and touched i.e. intangible. |
| **Distance** | Used for shorter distance. | Used for larger distance. |
| **Penetration** | Guided Media cannot penetrate through the buildings | UnGuided Media can penetrate through the buildings. |

## Give cross wire cable and straight cable diagram (colour coded wise).

A. straight cable:




B. cross wire: