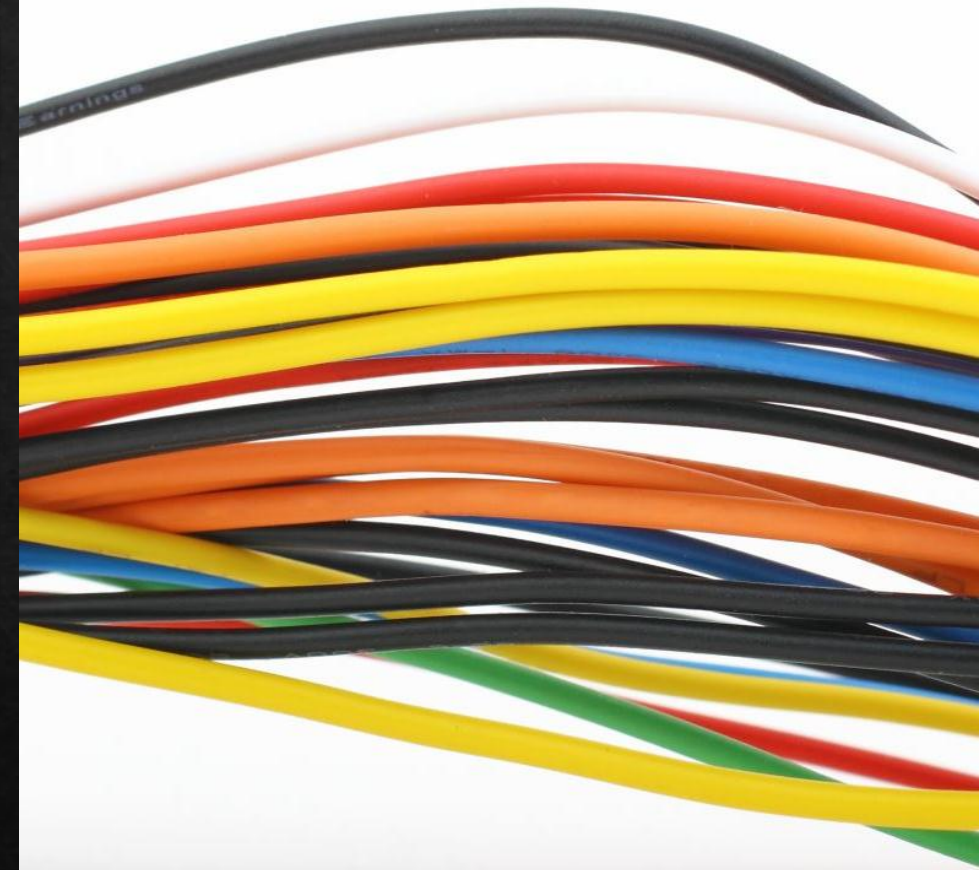
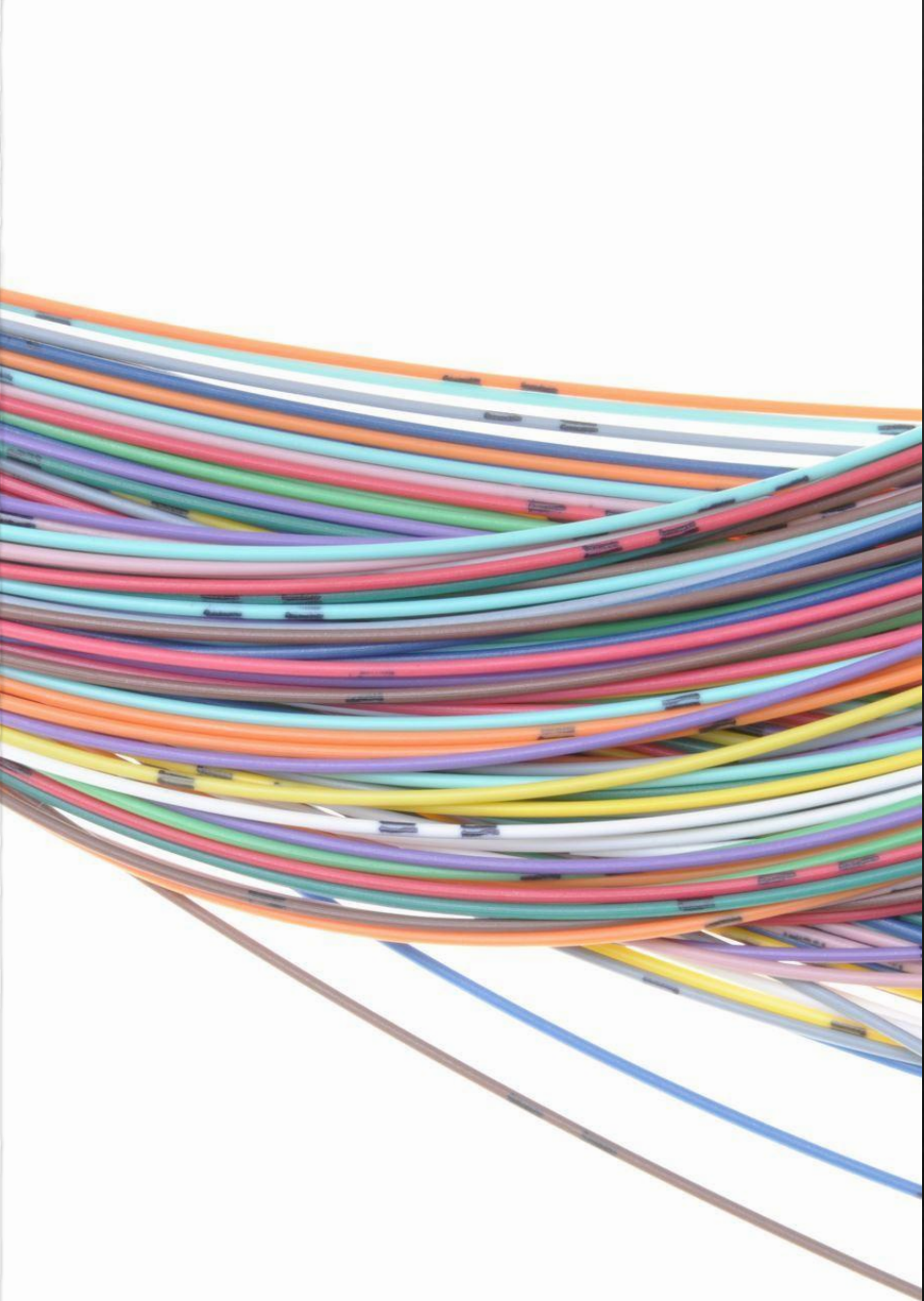
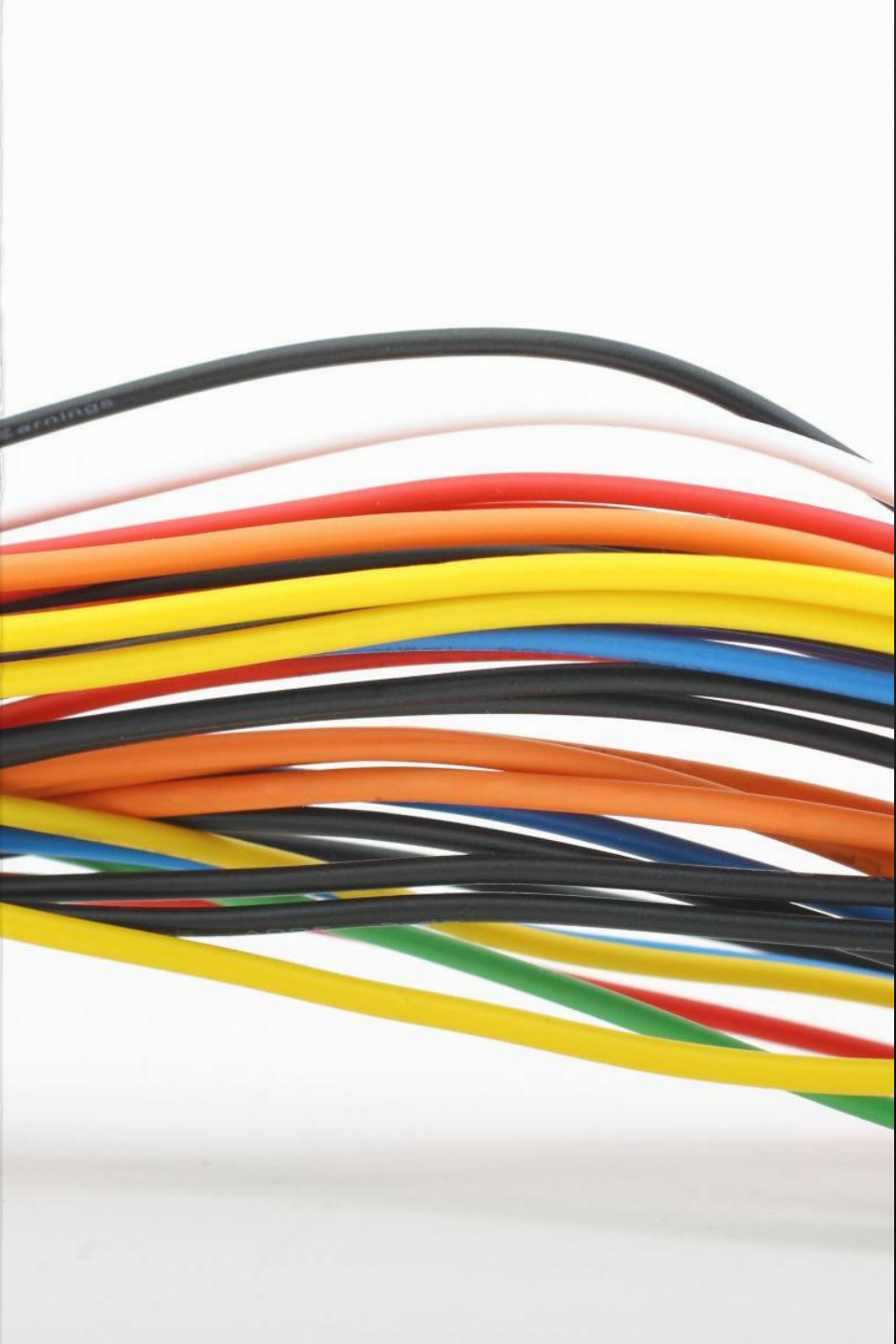


Slide 1: Title: Selection
of Cable, Materials Used
in Cables and
Conductors

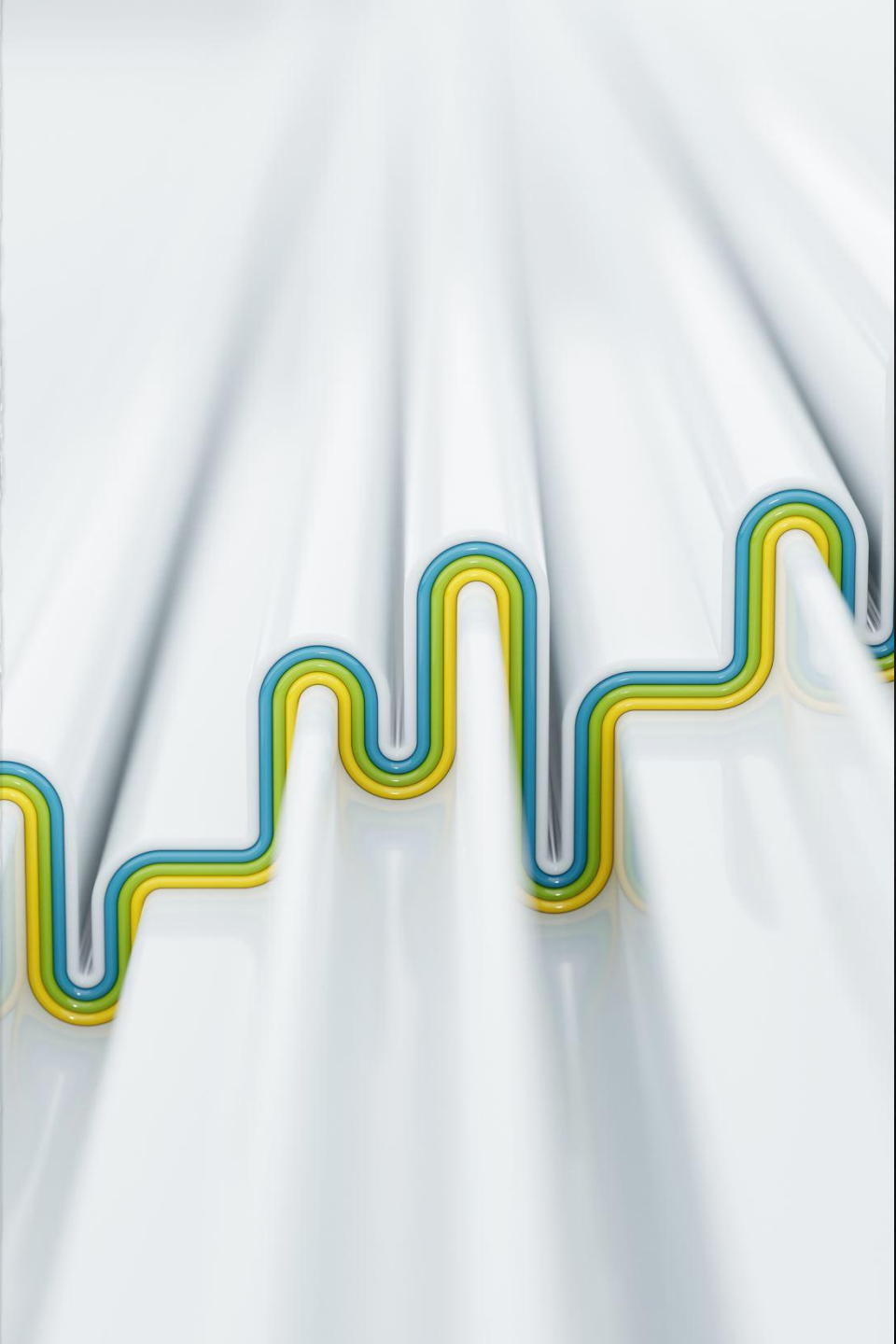




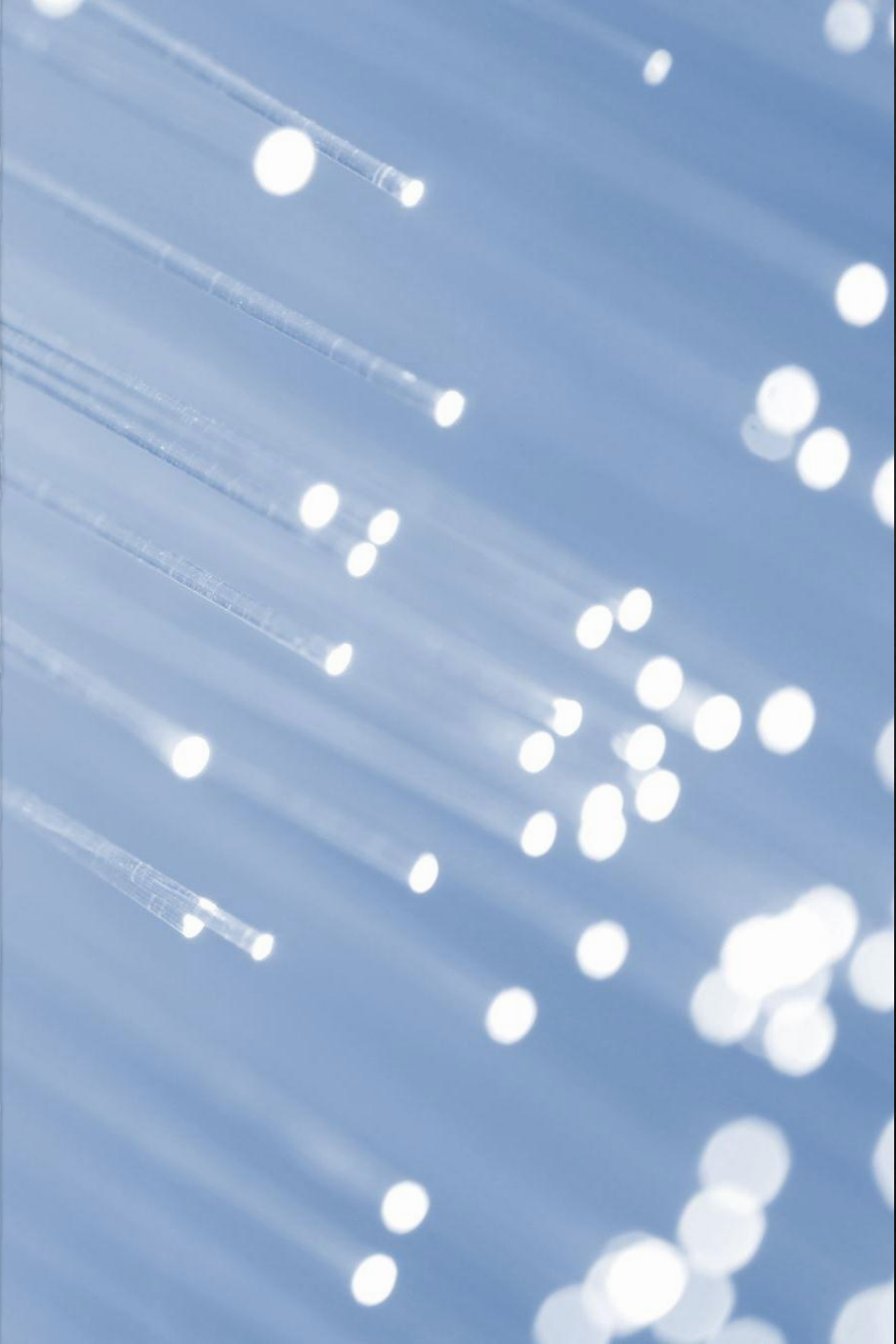
- ◇ Importance of cable selection in electrical systems
- ◇ Overview of materials used in cables and conductors
- ◇ Power cables: Used for transmitting electrical power
- ◇ Control cables: Used for controlling and signaling purposes
- ◇ Communication cables: Used for data transmission
- ◇ Current Carrying Capacity
- ◇ Determine the maximum current the cable can carry without overheating
- ◇ Depends on conductor material, size, and insulation rating
- ◇ Voltage Rating
- ◇ Appropriate voltage rating to handle the system voltage



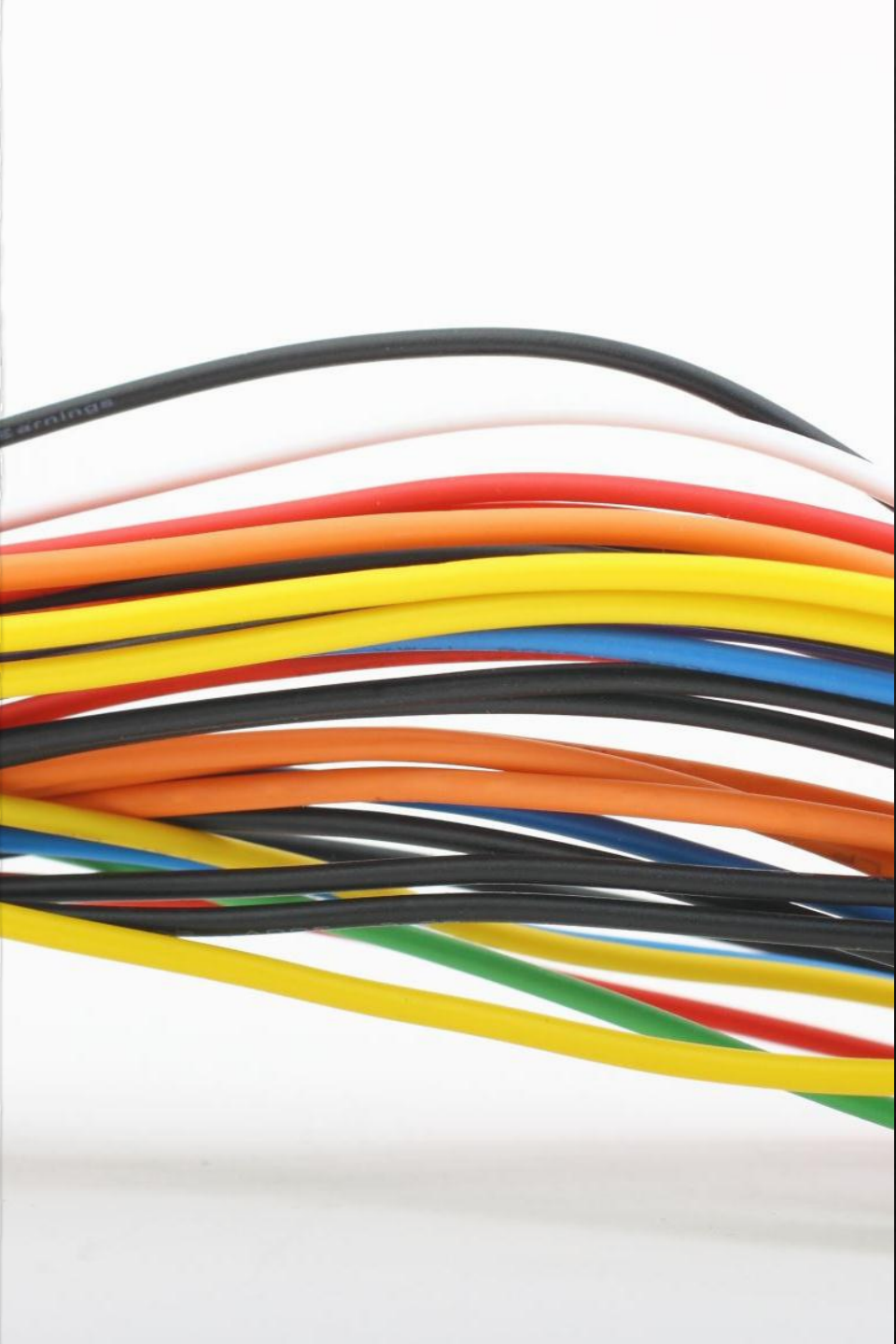
- ◇ Prevent insulation breakdown and electrical failures
- ◇ Environmental Conditions
 - ◇ Temperature: Consider ambient and operating temperatures
 - ◇ Moisture: Choose cables with suitable moisture resistance
 - ◇ Chemicals: Select cables resistant to specific chemicals if required
- ◇ Mechanical Strength
 - ◇ Consider mechanical stress, tension, and bending requirements
 - ◇ Choose cables with appropriate strength and flexibility
- ◇ Conductors
 - ◇ Copper: Excellent conductivity and widely used



- ◇ Aluminum: Lighter and cheaper alternative to copper
- ◇ Copper-clad Aluminum : Combination of copper and aluminum
- ◇ Insulation Materials
 - ◇ PVC : Commonly used, cost-effective
 - ◇ XLPE : Improved thermal and mechanical properties
 - ◇ Rubber: Suitable for flexible cables
- ◇ Shielding Materials
 - ◇ Aluminum Foil: Provides electromagnetic interference shielding
 - ◇ Copper Braid: Enhanced EMI shielding and flexibility
 - ◇ Conductive Polymer: Offers high EMI shielding and flexibility



- ◇ Fiber Optic Cables
- ◇ Transmit data using light signals
- ◇ Made of glass or plastic fibers
- ◇ High-Temperature Cables
- ◇ Designed for applications with extreme heat
- ◇ Use materials with high melting points and insulation ratings
- ◇ Armored Cables
- ◇ Provide additional mechanical protection
- ◇ Suitable for harsh environments and areas prone to physical damage
- ◇ Proper cable routing and support



- ◇ Adequate clearance and separation from other cables
- ◇ Compliance with electrical codes and standards
- ◇ Cable selection is crucial for reliable and efficient electrical systems
- ◇ Consider factors such as current carrying capacity, voltage rating, environmental conditions, and mechanical strength
- ◇ Choose appropriate materials based on conductor type, insulation, shielding, and special requirements