List of materials for electrical distribution boxes in shopping malls

Overview

What Are the Main Materials Used in Distribution BoxesDistribution box material options include steel, aluminum, PVC, polycarbonate, and SMC, each offering.

Key Takeaways

Electrical distribution boxes in shopping malls are typically made from steel, aluminum, polycarbonate, or thermoset plastics like SMC, chosen for safety, durability, and fire resistance.Common Materials

1. Metals

• Steel: Often used for its high strength, impact resistance, and durability. Steel boxes can withstand accidental impacts in high-traffic areas and provide excellent protection for internal components. Epoxy-coated steel is preferred for indoor commercial use to prevent corrosion and maintain electrical safety .

• Aluminum: Lightweight and corrosion-resistant, aluminum is easier to install and move. It also provides good protection against electromagnetic interference, which can be important in commercial environments with multiple electronic devices . 2. Thermoset Plastics

• Sheet Molding Compounds (SMC): These are strong, fire-resistant, and provide excellent insulation. SMC boxes are suitable for areas where fire safety is a priority and can handle high temperatures and surge voltages . 3. Engineering Thermoplastics

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• Polycarbonate (PC) and Acrylonitrile Styrene Acrylate (ASA): Lightweight, impact-resistant, and flame-retardant, these plastics are ideal for indoor use in shopping malls. They are easy to install and maintain while providing sufficient protection for low-voltage distribution systems .
Key Material Considerations
• Flame Retardancy: Materials should meet standards like UL 94 or IEC 60695 to prevent fire hazards .

• Impact Resistance: High-traffic areas require materials that can withstand accidental knocks or bumps without cracking .

• Electrical Insulation: Plastics and thermoset materials provide excellent insulation, reducing the risk of electrical shock .

• Corrosion Resistance: Metals should be coated or treated to prevent rust, especially in areas with humidity or cleaning exposure .

• IP Rating: Ensures protection against dust and water ingress, which is important for maintaining safety and reliability in commercial environments .
Summary

For shopping malls, polycarbonate or ASA boxes are commonly used for indoor low-voltage applications due to their lightweight, fire-resistant, and impact-resistant properties. Epoxy-coated steel or aluminum boxes are also used where additional mechanical strength or electromagnetic shielding is required. Selecting the right material ensures safety, durability, and compliance with electrical standards while accommodating the high-traffic commercial environment .

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