

Prevent Electrical Fires

Fires of electric origin represent 26% of all recorded building fires in the United States. Forty-six percent of the electrical fires were due to poor or inadequate maintenance. In any location where electrical energy is distributed and used, components and connections that are not properly selected, located and maintained can become potential fire hazards to life and property.

A high percentage of businesses that suffer a major fire are not able to resume operations. To avoid a personal and/or economic loss in your business, we suggest you carefully review the recognized procedures for keeping the various types of electrical apparatus in safe and reliable operating condition. The following describes some of the more common causes of electrical fires and the action that can be taken to prevent electrical fires.

Examples of approved electrical wiring

1. Nonmetallic sheathed cable

For indoor use. Has a moisture-resistant, flame-resistant covering. It is made with and without a ground wire. The wires are copper or aluminum. No. 6 and larger are stranded.

2. Thin-wall steel conduit

Required by some towns. Installed same way as piping; wires are pulled through afterward. Acts as its own grounding conductor. Made in 10 ft. lengths; joined by special connectors.

Design limitations and age

The original design of every electrical system has a built-in safety margin. Over the years, as additional appliances/equipment is added, as wire insulation dries out, or as you expand your operations, the safety margin is reduced and the potential for fire increases. Electrical wiring, insulation and connections require frequent inspections.

Conditions to look for:

- System subject to mechanical injury.
- Poor workmanship and maintenance.
- Excessive heat and moisture near electrical equipment.
- Excessive vibration.
- Temporary wiring used where permanent installation is required.
- Overloading circuits.
- Deterioration caused by old age, oils, acids and solvents.

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Proper over-current protective devices (fuses) prevent electrical fires

Devices of this type are designed to restrict amperage to electrical conductors (wires) to its designed limitations. If the amperage capacity of the fuse is not correct, excessive temperatures will break-down wire insulation and eventually start a fire. No feature of the electrical installation should have more careful attention and supervision. Overcurrent protection must be matched to wire size.

Allowable current carrying capacities of wire in amperes

Wire Size	Fuze Size
14	15 amp.
12	20 amp.
10	30 amp.

If your building is equipped with “plug fuses” that can be replaced with fuses of larger capacity, we suggest the use of a tamper proof “Fusetron”, designed with adapters to prevent the “over fusing” of an electrical circuit.

If you have motors that frequently “blow fuses” on start-up, “time delay” fuses of the proper design should be used.

- Deficiencies commonly found in overcurrent protective devices.
- Fuses too large or circuit breakers set too high for existing wiring.
- Pennies or other devices installed behind blown fuses.
- Fuses or circuit breakers in poor mechanical condition.
- The use of non-approved fuses or circuit breakers.

Consult a licensed electrician if there is any doubt that the fuses are improperly installed or oversized.

Preventive maintenance

The cost of preventive maintenance is small compared to the cost of repairing extensive damage and costly nonproductive time. Wiring insulation dries out and breaks down, receptacles become loose and wear with age. Dirt, oil and debris accumulate on motors, transformers and other electrical equipment causing overheating.

A planned and organized maintenance program should include the following:

- Keep equipment clean, dry, tight and friction free.
- Check frequently for signs of overheating.
- Lubricate bearings and moving parts regularly and properly.
- Keep protective devices in good operating condition. Check ratings or settings to be sure they are correct for the wiring or equipment.
- Set up a maintenance schedule for important equipment.
- Periodically reevaluate the maintenance program to determine if it is accomplishing the desired results.

The program should be handled by qualified personnel familiar with electrical systems and manufacturer’s instruction on important equipment.

Hazardous locations

If your operation requires the use of electrical lights and motors in locations which are hazardous because of the presence of flammable liquids, gas, dust or corrosive materials, approved electrical equipment designed for use in hazardous locations must be provided. Consult your licensed electrician for details.

Minor electrical defects

Electrical defects that appear minor are responsible for numerous losses and prompt corrective measures should be taken as soon as they are observed.

- Loose open wiring hanging on pipes, beams, or nails; wiring touching each other subject to short circuits.
- Conduit or electrical metallic tubing loose, poorly supported, badly corroded or has broken fittings.
- Flickering lights may indicate loose wiring connections or overheating condition.
- Makeshift paper lamp shades over lights.
- Excessive extension cords, badly worn.
- Fluorescent fixtures, motors, transformers and other heat producing devices mounted on or too close to combustibles.
- Wiring or protective devices hot to the touch.
- Missing guards or vapor proof globes on lamps in occupancies with combustible or readily ignitable materials or gases.
- Combustible storage in direct proximity to electrical panel boxes or transformers.

Keep your electrical system safe. Contact a licensed electrician to perform required corrections.

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