

Risk Insights

Advice for you and your business

Electrical Fire Prevention and Safety



Electrical fires account for 20% of all fires in Canada.¹ Electrical fires are more common than is generally thought, and account for a significant amount of property damage and serious injuries.

Many fires are the result of poor electrical maintenance; however, incorrectly installed electrical components are also potential fire hazards.

Electrical systems are designed for the various needs of building occupants and have built-in safety margins. As needs change and electrical equipment and motors are added, and as electrical components age and deteriorate, the possibility for failure increases. Over time, the inspection and maintenance of electrical systems becomes increasingly important.

We suggest that the regular system checks include checks for:

- Electrical components damaged or subject to damage
- Electrical components subject to heat and moisture
- Circuit load
- Temporary wiring used instead of permanent wiring
- Electrical components deteriorated due to age or conditions
- Electrical components poorly installed and maintained

● **Over current protection**

Circuit breakers and fuses are designed to restrict the amperage to electrical wiring according to their design limitations. If the amperage capacity is not correct, excessive temperatures will break down wire insulation and start a fire. Over current protection must always match the wire size.

Wire Size (A.W.G.)	Maximum Current (AMPS)
14	15
12	20
10	30

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¹ Mike Holmes on Electrical Dangers. Retrieved from <http://www.hgtv.ca/holmesmakesitright/article/holmes-on-electrical-dangers/> [3584-008-ed02E | 09.2017]

Electrical Fire Prevention and Safety *(continued)*

● Some possible hazardous locations

Special electrical components including motors, lights, or switches are required in locations where flammable gas or vapours, dust or fibrous material are present or may be present. These components are commonly referred to as explosion proof, dust ignition proof or fiber ignition proof. A qualified electrical contractor should be consulted to determine the necessary components for the application.

● Preventive maintenance tips

Electrical systems deteriorate over time and require preventive maintenance. For example, wire insulation dries out, receptacles and switches become loose, and equipment accumulates dirt and oil, which can lead to overheating. A qualified electrical contractor should routinely inspect the system.

Thermal infrared imaging is becoming an increasingly popular method of identifying problem areas within an electrical system.

A thermal infrared imaging camera identifies hot spots, which indicates a problem that may result in a fire if not corrected. Any abnormal condition should be investigated immediately.

Tips

General fire prevention and safety tips

- Do not plug several power cords into one outlet.
- Never break off the third prong on a plug. Replace broken three-prong plugs and make sure the third prong is properly grounded.
- Never use extension cords as permanent wiring. Use extension cords only to temporarily supply power to an area that does not have a power outlet.
- Keep power cords away from heat, water and oil. They can damage the insulation and cause a shock.
- Do not allow vehicles to pass over unprotected power cords. Cords should be put in a conduit or protected by placing planks alongside them.
- Inspect tools, power cords, and electrical fittings for damage or wear prior to each use. Repair or replace damaged equipment immediately.
- Always tape cords to walls or floors when necessary as nails and staples can damage cords causing fire and shock hazards.
- Use cords or equipment that is rated for the level of amperage or wattage that you are using.
- Always use the correct fuse size. Replacing a fuse with one of a larger size can cause excessive currents in the wiring and possibly start a fire.
- Be aware that unusually warm or hot outlets may be a sign that unsafe wiring conditions exist. Unplug any cords to these outlets and do not use until a qualified electrician has checked the wiring.
- Always use ladders made of wood or other non-conductive materials when working with or near electricity or power lines.

Electrical Fire Prevention and Safety *(continued)*

Tips

General fire prevention and safety tips (continued)

- Place halogen lights away from combustible materials such as cloths or curtains. Halogen lights can become very hot and may be a fire hazard.
- Risk of electric shock is greater in areas that are wet or damp. Install Ground Fault Circuit Interrupters (GFCIs) as they can help interrupt the electrical circuit before a current sufficient to cause death or serious injury occurs.
- Make sure that exposed receptacle boxes are made of non-conductive materials.
- Know where the breakers and boxes are located in case of an emergency.
- Label all circuit breakers and fuse boxes clearly. Each switch should be positively identified as to which outlet or appliance it is for.
- Do not use outlets or cords that have exposed wiring.
- Do not use power tools with the guards removed.
- Do not block access to circuit breakers or fuse boxes.
- Do not touch a person or electrical apparatus in the event of an electrical accident. Always disconnect the current first.

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