



Public Safety Tips
Aluminum Wiring

The facts about aluminum wiring in the home

Do you have aluminum wiring in your home?

How to find out! It is estimated that there are over 450,000 homes in Canada that are wired with aluminum wiring. How do you find out what type of wiring has been installed in your home? Well, if you weren't told when the sale was made, you can probably check the wiring yourself. This can usually be done by looking at the electrical wiring, either between the open floor joists, in the basement, up in the attic, or at the service panel. If the wiring is aluminum and was manufactured before May 1977, the outer covering of the cable will be marked, at least every 12 inches, with the word ALUMINUM, or an abbreviation, ALUM, or AL. If the cable was manufactured after May 1977, the marking may be either ALUMINUM ACM, ALUM ACM, or AL ACM.

Where a home has an electrical range, dryer, or other equipment using heavy electrical loads, there will be a mixture of wire sizes installed in the home. Larger gauge wire will be used for feeding the heavy loads, while the smaller gauge will supply electricity to the lights and wall plugs.

You may find that aluminum wiring has been used for all the wiring, including the heavy appliances, or alternatively, copper wiring may have been used throughout the residence. However, sometimes a mixture of aluminum and copper wiring is installed. If you find that the wiring installed for lights and wall plugs is aluminum, then it's important that the CO/ALR devices, described below, be used for replacement of wall switches and receptacles.

Aluminum wiring is safe if properly installed

In 1977, the Government of Ontario established a Commission of Inquiry on the use of aluminum wiring in the home. Following a thorough investigation, which included hearings and testimonies conducted over a period of 18 months, the Commission recommended that aluminum wiring should continue to be authorized for residential use.

Use only CO/ALR wall switches and receptacles

If your home has aluminum wiring and you need to replace a switch or wall receptacle, the replacement device to install should be of a type that is specifically approved for use with aluminum wiring. Devices approved for the use bear the marking "CO/ALR". This means "Copper Aluminum Revised" to differentiate these devices from earlier models. The CO/ALR marking identifies the equipment as having been tested and found suitable for use with

aluminum or copper wiring by the Canadian Standards Association (CSA), a standards organization whose certification is accepted by inspection authorities across Canada.

Why is it important to install only CO/ALR devices?

One of the reasons is that when the insulation is stripped from aluminum wire and the wire is exposed to air, an insulating film immediately forms on the wire. This means that a poor connection and overheating may result at the switch or receptacle unless the terminal or the device is built with the right contacts designed to break through the film and ensure a good connection at the device. Devices marked CO/ALR are specifically designed and approved to ensure a good connection through the use of a larger contact area and compatible materials.

When connecting to switches and receptacles, the wire should be formed in a clockwise direction around the screw into three fourths of a complete loop.

Wire connectors

When buying wire connectors for connecting aluminum wires, purchase those specifically certified for use with aluminum wiring.

Marking on the packages will indicate if the connectors are suitable for connection of aluminum to aluminum wire, aluminum to copper wire, or copper to copper wire.

When connecting solid aluminum wire to stranded wire, "Special Service" connectors are recommended. These should also be used with baseboard heaters, hot water tanks and similar types of cycling loads. A number of manufacturers make these heavy duty connectors with contrasting coloured insulating caps, such as purple or brown, for easy identification.

Please Note: For devices other than switches and standard receptacles, the marking, which indicates that equipment is suitable for use with aluminum wiring, is CU-AL. This marking would appear on circuit breakers, packages for wire connectors, etc.

Installing aluminum wiring

ALERT

Because of the specialized knowledge and techniques required for working with aluminum wiring, it is recommended that it be installed only by qualified electricians.

If you notice any of the following conditions in your home, the causes should be investigated:

- warm faceplates on switches or receptacles;
- strange or distinctive odours in the vicinity of receptacles or switches;
- persistent but intermittent flickering of lights that can't be traced to appliance or other external causes; and
- unusual static on radio or television.

For more information:

For assistance regarding other aspects of an aluminum wiring installation, check with the safety officer in your area. A number of cities and districts in B.C. maintain their own electrical inspection service. Please see the list for these electrical jurisdictions.

A booklet providing general information regarding residential electrical installations, titled "Electrical Safety Homeowner Information Guide" is available at any British Columbia Safety Authority or at Government Agent offices that issue electrical permits.