

What's the Risk?

Aluminum Wiring Dangers



THE ISSUE

From the mid-1960s until the mid-1970s, aluminum branch circuits were common in residential wiring. Only after numerous fires attributed to aluminum wiring, was the code changed barring its use. Aluminum conductors are currently only used as service feed wiring.



WHAT'S THE RISK?

The National Fire Protection Agency (NFPA) states: "Houses with aluminum wiring manufactured before 1972 are 55 times more likely to have connections reach fire hazard condition than houses wired with copper." They note the following concerns:

- Aluminum wire expands and contracts more than copper wire and the connections on electrical equipment loosens over time which can lead to fires.
- Aluminum wire is softer than copper so it is more easily damaged during installation which can lead to fires.
- Aluminum wire melts at a much lower temperature and will reach fire hazard conditions quicker than copper.
- Combining aluminum and copper wire on the same equipment can result in a galvanic reaction between the two dissimilar metals. Galvanic reactions cause corrosion which increases the chance of fire.



WHAT CAN BE DONE?

Aluminum conductors are marked with the word aluminum, AL, ALUM or ACM on the sheathing. The conductor wire will be silver in colour rather than the reddish bronze colour of copper wire. Another tell tale sign on a 15 amp circuit is the aluminum conductors can be 12 gauge rather than a typical 14 gauge copper wire.

A qualified electrician should upgrade the circuits with new copper conductors however, this is not always practical. The NFPA and the Electrical Safety Association (Ontario) allow other repair options that include installing pigtail connections using copper wire, using special connectors that reduce corrosion, using antioxidant compound on the conductors, using heat shrink insulation, or annual inspections of all connections by a qualified electrician. Lastly only CO/ALR rated electrical equipment can be used on branch circuits.

Different rules and acceptable methods for addressing aluminum wiring may exist in your area. Please consult with your local electrical authority to determine the appropriate solution.

