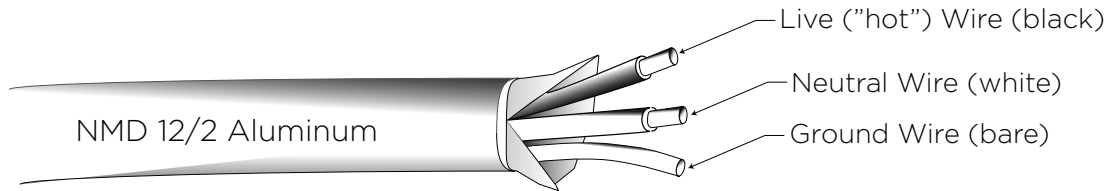


Aluminum Branch-Circuit Wiring

If you ask three electricians about the uses and safety of aluminum wiring, you will likely get at least three different answers. Furthermore, opinion varies again depending on where you live in North America. The more you research into aluminum wiring, the more frustrated you may become. We hope this article will clear up any confusion and end the frustration.



What's the Problem with Aluminum Wiring?

From the mid 1960s to the late 1970s, aluminum wire was used as a less expensive alternative to copper. Aluminum is not a direct replacement for copper since it has different physical properties. Aluminum's properties proved problematic for reasons no one had anticipated. What you need to know is the following: with aluminum wiring it is possible that, over time, a high resistance connection and/or arcing could develop somewhere in the electrical system, resulting in a connection that gets very hot and increases risk of fire.

The problems associated with aluminum wiring are well understood. A knowledgeable electrician with aluminum wiring experience can check for safety and correct.

Solutions

Re-wire the Home

If you are renovating, or the configuration of your home is such that stringing new wiring is relatively easy, re-wiring your home may be a good idea. In most cases re-wiring is an expensive and disruptive undertaking.

COPALUM® Crimp Connection

COPALUM® is a proprietary system that involves crimping a copper wire to existing aluminum wire using a special crimp connection tool that exerts extremely high pressure on the joint. This kind of connection is called "cold welding." The copper wire is then connected to fixtures and outlets, etc. Once you "convert" the aluminum to copper with the cold-weld method, the repair is considered permanent. This solution, however, is expensive and requires an electrician certified in this system.

Pigtail Repair

Similar to the COPALUM® connection described above, the pigtail repair method involves attaching copper wire to the existing aluminum. Pigtailing uses special twist connectors compatible with both aluminum and copper. While the pigtailing parts are inexpensive and readily available, the pigtailing technique requires specialized knowledge and experience. Furthermore, although pigtailing is cheaper than the COPALUM® system, its success depends entirely on how well the electrician executes the repair. Some believe that a poorly executed pigtail is worse than doing nothing. In some geographical areas, pigtailing is not considered an acceptable solution.

Retrofit all Connections with Aluminum Compatible Devices

Standard electrical outlets and light switches are not compatible with aluminum wiring. Fortunately, tested and approved replacement devices and connectors are available from electrical supply shops. Some devices, such as ceiling-mounted light fixtures not rated for aluminum wire, still require an electrician who knows the pigtailing technique.

A Few More Points

In 1972, a new aluminum alloy, and aluminum-compatible devices, entered the market. Homes wired with aluminum after 1972 are more likely to have this new aluminum. This new aluminum solved many of the problems associated with the original aluminum wiring. These homes still require an experienced electrician for a wiring retrofit.

Also, generally speaking, the problems associated with aluminum wiring have to do with branch-circuit wiring smaller than 8 gauge. Anything 8 gauge and bigger, such as wiring for a dryer or stove, does not present a problem.

Most important to remember: if you have aluminum wiring, a licensed and experienced electrician should perform all electrical work.

The Best Course of Action

Since even amongst electricians misinformation and confusion persist, an electrician with specific knowledge and experience should evaluate each home on a case-by-case basis.

The good news is, aluminum wiring can be made safe, but seek the advice of an expert.

