ALUMINUM WIRING

According to the US Consumer Product Safety Commission (CPSC), homes wired with aluminum wire are fifty-five times more likely to have one or more connections reach fire hazard conditions than homes wired with copper

Aluminum wire was used for branch circuits starting in the early 1960s and used through the mid-1970s, largely because of the copper shortage during those years. Experience has proven, however, that solid aluminum wire is not nearly as reliable as copper wiring. Older aluminum wire is soft and has a greater tendency for thermal expansion than copper wire. The aluminum wire expands and the dimension changes as current heats it. When the current stops and the wire cools, it contracts and leaves gaps between the conductor and the terminal. This process, referred to as "cold flow," is typically the cause of arcing and overheating.

Aluminum also oxidizes much more readily than copper. Aluminum oxide, which acts as an insulator, can also result in poor connections and cause arcing and overheating. It is always a good idea to have anti-oxidant paste on aluminum wire terminations.

If the electrical system in your home has aluminum wiring, there are a number of options for repair. Connecting a copper wire "pigtail," which terminates at the device to the aluminum wire is a commonly employed technique. This practice requires the use of a special UL listed wire nut (the purple Ideal 65). "Crimping" is another popular repair technique. The Copalum system from Amp Industries connects the copper to the aluminum with a special crimping die tool. The die acts as a conductor so the copper and the aluminum do not have contact with each other. The connection is then insulated with heat-shrink tubing. The most significant drawback to both of these methods is the probable overcrowding of the boxes that contain the connections.

Changing the outlets and switches to devices that are rated for direct contact to aluminum wire can also be effective. The devices must be labeled "CO/ALR." Devices that are labeled "CU Only," "Cu/Al," or devices that are not labeled at all, are not acceptable and should be replaced with devices that have the "CO/ALR" label.

All of these methods have been used with varying degrees of success and failure. Who performs the work is just as important as which method is used. Even copper wire systems fail if not installed correctly by qualified personnel. We recommend that any modification to an existing electrical system be performed by a licensed electrician.

For further information, we suggest that you visit the following website:

www.inspect-ny.com/aluminum.htm.