

Rehabbing a Home That Has Aluminum Wiring

Disclaimer: *The information in this handout are suggestions only and intended to give the reader a better understanding of some options that may be helpful to them. Up Close Inspections LLC is not liable for any actions taken by any individual reading this hand out.*

Rehabbing a home built between 1965 - 1973? Chances are the house has aluminum wiring. If so, you need to know how to deal with this situation, so your costs are covered and make sure the home is safe since working with aluminum wiring has to be treated differently than with copper wiring.



Why did they start using aluminum in the first place?

Aluminum wiring was installed in most of the homes built between 1965 - 1973 because the high use of copper by the military during the Vietnam War. This made obtaining copper wire difficult and expensive. The alternative was aluminum wiring which was plentiful and cheap, but the potential danger it posed was not recognized at the time.

What makes aluminum wiring more dangerous than copper?

Aluminum by nature is a softer metal than copper, it contracts and expands more when heated and is more susceptible to oxidation, which is a thin film on its surface caused by oxygen. It should be noted that this pertains to only the smaller single wires that you see on wall receptacles and switches. The aluminum stranded wiring you see on the 220 volt appliance and air conditioning circuits do not pose a problem. When aluminum wires are only twisted together, like you would with copper, the wires expand and contract then current flows through them which produces heat from the poor connection and if the wires have oxidized, this will heat up the connection even further, causing a potential for overheating and a possible fire.

How can I tell if the house has aluminum wiring?

The best way to know is to have it verified by an electrician or home inspector. You can check yourself but of course, you need to be careful. I do not suggest that you remove the breaker panel cover which will show all the wiring from the circuits, but you could turn the breaker off to a room and remove the cover plates to the light switches and receptacles and loosen the screws that hold them in the electrical box. Pull the switch or receptacle out and look at the bare wire around the connection screw. Aluminum will be bright silver. This is not to be confused with tinned copper wiring which has a dull silver finish, but this was used in a much earlier time.

What special precautions need to be taken when working with aluminum wiring?

My best advice is to have all the wiring evaluated by a licensed electrician for safety, preferably one that is familiar with aluminum and if you can keep from changing out receptacles, switches and lighting that would be best, just don't mess with it. I know if you are doing a complete rehab, you will want to change

out lights, old and dirty light switches and receptacles with many coats of paint, but if you can clean them up, you are better off.

Other options are:

1. Rewire the house with copper wiring. This is not much of a choice since a typical house could cost ten thousand dollars or more.

2. You can connect copper to a typical outlet or switch and attached to it to the aluminum wire in the wall. You would need to hire an electrician to make the connections using the approved method called Copalum, which utilized a special connector and a high pressure crimping tool to make the connection. This would be very expensive if you even could find an electrician that still has the equipment. I have heard of around \$10.00 - \$15.00 per connection.

3. Change out switches and receptacles with special aluminum rated ones. You can get them at electrical supply companies, online or I have found them at Lowes. The problem is they are more expensive. You will pay about \$2.00 for a normal copper rated wall outlet, but an aluminum rated one will cost about \$5.50 and a wall switch is about \$6.50. Needless to say, this will add up costs to your bottom line, but still cheaper.

4. There is a connector sold that has had good testing results named Alumiconn. These are still about \$3.00.



The other precaution to take is to use an anti-oxidant paste on all connections. This is a thick grey paste that keeps the wire from oxidation and help prevent resistive heat.

The important thing to remember when working with aluminum wiring is that it is not the wiring itself that is makes it dangerous, it is the wiring connections. I am reminded of last year when I inspected a home that was featured on the TV show "Flip this House" and the guys that did the rehab, did their own wiring and just used a normal twist connector to join wires together. A licensed electrician had to be called in to rewire the entire home and the price of the home had to be lowered to allow for these repairs. They didn't want to spend the extra money on the proper outlets and switches, and it wound up costing them more in the long run. You want to put out a quality and safe home and not put others at risk, so please be careful when dealing with homes with aluminum wiring.

