FREE HOMEOWNER GUIDE

Aluminum wiring: is it safe, and what do I do about it?

The short version

Solid aluminum branch wiring, the kind run to outlets and switches in a lot of homes built between about 1965 and 1973, is a real fire risk at the connections, not in the middle of the wire. It does not automatically have to be torn out of your walls, but it does have to be corrected at every device, and more insurers are asking about it before they will write a policy.

The danger is the terminations. Aluminum expands, contracts, and oxidizes more than copper, so over years the connection at each outlet and switch loosens, builds resistance, and heats up. That heat is what starts fires behind a cover plate. If you know or suspect you have aluminum wiring, get it evaluated by a licensed electrician rather than living with it untouched.

How to tell if you have it

You cannot always tell from the panel alone, because some homes have aluminum only on certain circuits. A licensed electrician confirms it by pulling a few devices and reading the conductor. There are signs worth knowing before that.

- [ ] The home was built or rewired between roughly 1965 and 1973, the window when copper prices pushed builders to aluminum
- [ ] The word ALUMINUM, or the abbreviation AL, is printed on the cable jacket where it enters the panel
- [ ] Wires under the breakers or at outlets are a dull silver rather than copper-orange
- [ ] Warm or discolored cover plates, outlets that stop working, or a faint burning smell at a receptacle

Why it is a hazard

Aluminum is not a bad conductor. The problem is everything that happens where it connects to a copper-rated device. Older outlets and switches were never designed for aluminum, so the two metals expand at different rates, work the connection loose, and let it oxidize. A loose, oxidized joint has resistance, resistance makes heat, and heat at a splice inside a wall is how the connection eventually chars or arcs.

- [ ] Oxidation: aluminum forms an insulating oxide layer that copper does not, quietly raising resistance
- [ ] Thermal expansion: the connection loosens a little with every heating and cooling cycle
- [ ] Cold creep: aluminum keeps deforming under the pressure of a terminal screw, so a tight joint slowly relaxes
- [ ] Backstabbed connections and standard receptacles make all of the above worse

What insurers say

This is where a lot of Portland-area homeowners run into it, at renewal or when buying. Many insurers will decline a home with active aluminum branch wiring, add a surcharge, or require an inspection and a remediation plan before they will write the policy. Some will accept the home only after the connections are corrected by a licensed electrician and will want documentation that the work was done. If it is holding up a sale or a policy, correcting the terminations is usually what clears it.

Pigtailing versus a full rewire

There are two real fixes, and which one makes sense depends on the condition of the wiring and your budget. A full rewire, pulling new copper through the walls, is the permanent answer and the one that ends the question for good, but it is the larger job. For most homes, correcting every connection is the accepted middle path.

Correcting the connections means pigtailing: at every outlet, switch, and junction, a short copper tail is joined to the aluminum with an approved connector, and the device lands on copper. The method matters. The connectors recognized as permanent repairs are the COPALUM crimp and the AlumiConn lug, not the purple twist-on wire nuts people grab off the shelf. Where a device is wired directly, it has to be one rated CO/ALR. This is not a DIY project. A bad pigtail is worse than the original problem because it adds another connection to fail. Have a licensed electrician handle it and document it for your insurer.

- [ ] Pigtailing with COPALUM or AlumiConn connectors: correct every termination, keep the existing wire in the walls
- [ ] Full rewire in copper: the permanent fix, worth it when the wiring is damaged or the walls are already open in a remodel
- [ ] Replacing devices with CO/ALR-rated outlets and switches alone is not considered a reliable long-term repair on its own

Stop and call right now if

Some signs mean the heating has already started behind the wall. Do not wait for a scheduled visit. If you see smoke or flame, get out and call 911 first.

- [ ] A burning or hot-plastic smell at any outlet or switch
- [ ] A cover plate, outlet, or switch that is warm or hot to the touch
- [ ] Scorch marks, discoloration, or melted plastic on a device
- [ ] Sparking, buzzing, or an outlet that has quit working

Frequently asked questions

Is aluminum wiring illegal or does it have to be removed?

It is not illegal, and it does not automatically have to be removed. The recognized problem is the connections, not the wire itself. Correcting every termination with an approved method, such as COPALUM or AlumiConn

pigtails, is an accepted repair. A full copper rewire is the permanent fix and is often chosen when walls are already open or the wiring is damaged.

Will insurance cover a house with aluminum wiring?

It varies by insurer. Many will decline, surcharge, or require an inspection and remediation before writing a policy on a home with active aluminum branch wiring. Correcting the connections with a licensed electrician and documenting the work is usually what satisfies them. If it is holding up a policy or a sale, that is the path that clears it.

Do the purple wire nuts fix aluminum wiring?

No. The twist-on connectors sold for aluminum-to-copper are not recognized as a permanent repair. The methods considered reliable long-term are the COPALUM crimp and the AlumiConn lug, installed by a qualified electrician. A poorly made connection adds another point of failure, which is why this is not a DIY repair.

How much does it cost to fix aluminum wiring?

It depends on the size of the home and how many devices need correcting, since pigtailing is priced by the connection count, while a full rewire is a larger project. We give a free ballpark by phone once we know the scope, and confirm the price in writing before any work. For a hands-on look, we schedule a project consultation and give you a firm, written estimate.

Sources

1. Repairing Aluminum Wiring (Publication 516), U.S. Consumer Product Safety Commission. https://www.cpsc.gov/s3fs-public/516.pdf

> **Need a licensed electrician in the Portland area?**
> Call Smiley Electric at (503) 484-7556 (Mon–Sat, 7am–5pm) or visit smileyelectric.net/contact. For sparks, smoke, a burning smell or a hot panel, turn off the power if it is safe and call right away.

Reviewed by Joshua Smiley, owner & master electrician, Smiley Electric. Last reviewed November 13, 2026. Online version: smileyelectric.net/help/aluminum-wiring-safety/. General information, not a substitute for an on-site inspection.

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