

Cross Fox Condominium, Inc.

Columbia, Maryland

ALUMINUM WIRING IS REQUIRED TO BE REPAIRED BY 2021

AUGUST 2020

Dear Cross Fox Owners:

When Cross Fox was constructed in the 1970's aluminum wiring connections were used at all light switches and outlets. It was an accepted practice and complied to building codes at that time. Due to the discovered fire potential of this practice code was changed. It is now required that aluminum wiring connections such as these be repaired using AlumiConn or CopAlum². The other alternative is to have the aluminum wiring replaced entirely. Previously "pig-tail" repairs were an acceptable solution to this issue. However, that type of repair is now non-conforming and must be updated to the AlumiConn or CopAlum method. **Cross Fox's insurance company is requiring that all owners make these necessary repairs to their electrical wiring as soon as possible. Failure for the owners to do so will greatly increase the insurance premiums for Cross Fox or even make the Association un-insurable.**

Beginning around the year 2007, Cross Fox Condominium started notifying owners about the aluminum wiring issue in the condominiums. There is also information on Cross Fox's website at www.crossfoxcondos.org regarding this matter. It is imperative that owners take the time to contact their electrician to have the aluminum wiring repaired using AlumiConn, CopAlum² or replaced entirely. We are in contact with Cross Fox's insurance company to obtain a deadline on when this work will need to be completed. This could be by early 2021. **Owners selling their units must provide information to CVI and the potential buyer that the aluminum wiring has been repaired prior to selling. If an owner does not provide this report, it will be noted in the Resale Package.**

It is recommended you obtain three proposals from certified licensed electricians. If you have a preferred electrician or have already used an electrician for this work, please provide us with the name and contact information for the company so we can pass it along to your neighbors. The Board reached out to Eagle Electrical Services, Paradise Construction and Hawkins Electrical and obtained price ranges from \$850 for a 1 Bedroom AlumiConn repair up to \$7,300 for a complete wiring replacement in a townhouse.

If owners fail to make these repairs and provide documentation, Cross Fox Condominium will have no choice but to exercise the Association rights within the Documents to enter and perform the repairs and invoice the owner for all costs incurred.

If you have already had your unit's wiring repaired by a licensed electrician, please indicate that information below and provide a copy of the scope of work that was performed.

[] My Condominium _____ unit's aluminum wiring was
Address _____
repaired by _____ using **AlumiConn** or **CopAlum** on or about _____.
Name of Electrician _____ Date _____

Print Name: _____

Signature: _____ Date: _____

Return this form and your contractor's scope of work to mgatti@cviinc.com or mfowler@cviinc.com. If you have any questions please contact Marie Fowler, Community Manager, CVI at 301-596-2600 ext. 4210.

Related information:

“The **wiring** itself isn't a problem, **aluminum** conducts electricity safely. The trouble is at the connections. The U.S. Consumer Product Safety Commission (CPSC) reports that **homes with aluminum wiring** are 55 times more likely to have “fire hazard conditions” than **homes** wired with copper.” (Family Handyman)

“Completely rewiring your home isn't practical in most situations—it means tearing into walls and ceilings. But an electrician can make the connections safe by adding a short section of copper wire to the end of each aluminum wire. That way, copper rather than aluminum will be connected to each switch, outlet, or other device. COPALUM connectors are preferred by the CPSC, but they require a trained contractor and a special tool. **AlumiConn** is another brand that can be purchased from online suppliers. These connectors can be installed by any trained electrician but may require that existing junction boxes be replaced with larger ones to make room for the connectors.” (Family Handyman)

1 **Aluminum** wiring pigtails safeguard against the risk of fire in homes where **aluminum** wired homes show indications of failure and overheating at termination points. ... **Aluminum** wiring pigtails fix the potential problem of overheating that arises from weaker connections and/or the use of incompatible devices. (NOTE: THIS IS NO LONGER AN ACCEPTED REPAIR)

2 **AlumiConn** is a lug style connector with three separate ports to eliminate intermixing of conductors. It coats aluminum **wires** with a thin layer of silicone sealant to provide resistance from oxidation and uses set screws to break up surface oxides and provide a secure mechanical connection.

The **CopAlum** crimp method is the process of attaching a short section of copper wire to the ends of existing aluminum wiring using a metal **CopAlum** connector. The **CopAlum** connector is crimped using a special crimping tool that cold-welds the connector shut.

ALUMINUM WIRING UPGRADE REQUIRED IN 2021

MORE INFORMATION & FAQs - DECEMBER 2020

We would like to share more information about the Aluminum Wiring Upgrade which is required in 2021 by the Association's Master Policy Insurance Carrier.

WHY DO I NEED TO UPGRADE MY ALUMINUM WIRING CONNECTIONS?

The aluminum wiring itself is not a problem; aluminum conducts electricity safely, however connections in outlets, switches and light fixtures containing aluminum wiring become increasingly dangerous over time. Poor connections cause wiring to overheat, creating a potential fire hazard. Insurance carriers are requiring these connections be upgraded.

Without the upgrade, the Master Insurance Policy premium will skyrocket and/or the condo may become un-insurable.

- The insurance standard is explained in detail in the US Consumer Products and Safety Commission's Aluminum Wiring Repair publication - <https://www.cpsc.gov/s3fs-public/516.pdf>
- Miller's Mutual, the Master Policy Insurance Carrier, has also provided information in "Dangers of Aluminum Wiring". (Enclosed)
- These publications are posted on the Cross Fox Website at www.crossfoxcondos.org

WHAT NEEDS TO BE UPGRADED?

All light switches, outlets, and receptacles (can/recessed lights, ceiling mounted fans).

WHAT METHODS CAN I USE TO UPGRADE?

Only three methods for a permanent repair of the aluminum wiring are acceptable:

- 1) Complete Replacement
- 2) COPALUM Method of Repair
- 3) AlumiConn Connector

These methods cannot be used to meeting the requirement:

- CO/LAR rated devices are an emergency/temporary repair option and cannot be used for permanent repair.
- "Pig-tailing" using an anti-oxidant compound (such as Noalox Anti-Oxidant Compound, Garder Bender Ox-Gard Anti-Oxidant, Burndy Penetrox Oxide-Inhibiting Joint Compound, etc.) is not a permanent repair for aluminum wiring.

HOW MUCH DOES IT COST?

\$850-\$3500 (average) depending on the size of the home for COPALUM and AlumiConn. 7,300 or more for complete replacement.

Managed by

CVI • 6300 Woodside Court, Suite 10 • Columbia, M 210 6-3212 • 301-596-2600

WHO CAN I GET TO DO THE WORK?

Use a licensed electrician who specializes in updating aluminum wiring connections using COPALUM or AlumiConn.

- A list of electricians Cross Fox Qwners have used/recommended are on the website: <https://www.crossfoxcondos.org/hired-help>
- If you have an electrician to recommend to your neighbors, forward the information to mgatti@cviinc.com

WHAT IS THE DIFFERENCE BETWEEN COPALUM AND ALUMICONN?

- The **COPALUM** crimp method is the process of attaching a short section of copper wire to the ends of existing aluminum wiring using a metal COPALUM connector. The COPALUM connector is crimped using a special crimping tool that cold-welds the connector shut.
- **AlumiConn** is a lug style connector with three separate ports to eliminate intermixing of conductors. It coats aluminum wires with a thin layer of silicone sealant to provide resistance from oxidation and uses set screws to break up surface oxides and provide a secure mechanical connection.

DEADLINE FOR COMPLETION?

The Master Insurance Policy renews February 2021. Renewal rates have not been received to date and may be impacted. A request for an extension has been submitted to the insurance carrier and they have stated they will “work with us” in 2021. A specific deadline has not been provided. As more information becomes available, it will be forwarded to the community.

Bottom line:

This work has to be done and it is costly.

Homeowners need to plan for it and move forward as soon as possible.

WHAT DO I NEED TO SUBMIT TO PROVE THE WORK IS DONE?

Submit the following to Marie Gatti, CVI Community Administrator, at mgatti@cviinc.com

- 1) Signed Acknowledgement Form (at the bottom of *Aluminum Wiring is Required to be Repaired by 2021 – August 2020*). This has been forwarded in the past, is enclosed for your reference and also available at www.crossfoxcondos.org
- 2) Paid receipt (not a quote or invoice) notating your Cross Fox address where the work was completed and details of the work done.



There's more for you at Millers.SM

Dangers of Aluminum Wiring

In the late sixties and early seventies aluminum wiring was often substituted for copper wiring in electrical systems due to the surge in the price of copper. Ten short years of use by homeowners and electricians, revealed the inherent weaknesses the metal that lead to its disuse as wiring material.

Aluminum becomes defective and degrades faster than copper due to certain qualities in the metal. Outlets, switches and light fixtures containing aluminum wiring can become potentially dangerous over time. The degraded and poor connections cause aluminum wiring to overheat, creating a potential fire hazard.

In most cases to rewire the entire home with copper wire is expensive and impractical. Miller Mutual approved methods of remediation include Copalum and Alumicon.

The Copalum crimp method is the process of attaching a short section of copper wire to the ends of existing aluminum wiring using a metal Copalum connector. The Copalum connector is crimped using a special crimping tool that cold-welds the connector shut. The Consumer Product Safety Commission (CPSC) has found that Copalum is a safe and permanent fix to common aluminum wiring problems, and for more than thirty years electricians have been using Copalum because it's an affordable and permanent solution.

AlumiConn Aluminum to Copper Lug is approved by the Consumer Product Safety Commission (CPSC) and numerous insurance companies as a safe method for aluminum wiring repair. AlumiConn is a lug style connector with three separate ports to eliminate intermixing of conductors. It coats aluminum wires with a thin layer of silicone sealant to provide resistance from oxidation and uses set screws to break up surface oxides and provide a secure mechanical connection.

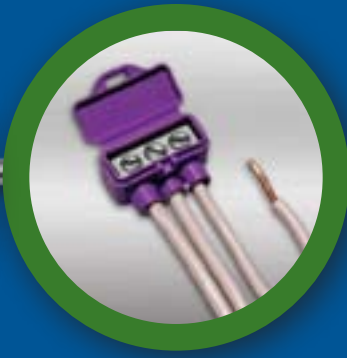
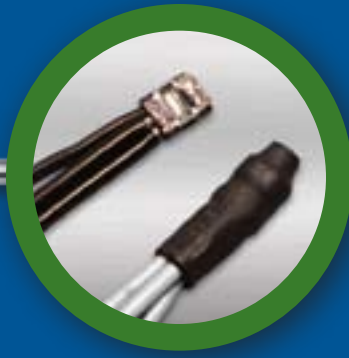
Aluminum wiring should be evaluated by a qualified electrician who is experienced in evaluating and correcting aluminum wiring problems. The best course of action when considering remediation is to contact a local licensed electrician for an estimate and recommendations.

References:

<https://www.nachi.org/aluminum-wiring.htm#:~:text=Aluminum%20will%20become%20defective%20faster,creating%20a%20potential%20fire%20hazard.>

<http://completeelectrical.biz/can-copalum-crimping-fix-aluminum-wiring-in-homes/>

https://inspectapedia.com/aluminum/Aluminum_Wire_Identification.php



REPAIRING ALUMINUM WIRING



U.S. Consumer Product Safety Commission
Bethesda, MD
www.cpsc.gov
www.SaferProducts.gov

Publication 516

ALUMINUM WIRING

The U.S. Consumer Product Safety Commission (CPSC) staff and other government officials have investigated numerous hazardous incidents and fires throughout the nation involving aluminum branch circuit wiring. A national survey conducted by Franklin Research Institute for CPSC showed that homes built before 1972, and wired with aluminum, are 55 times more likely to have one or more wire connections at outlets reach “Fire Hazard Conditions”¹ than homes wired with copper. That survey encompassed only the wire connections at outlets. It did not address other types of aluminum wire connections and splices in homes that are also prone to fail. No information was developed for aluminum-wired homes built after 1972.

The fire hazard investigated by CPSC occurs at connections with aluminum wire, including receptacles or switches and junction boxes; or the hazards occur with major appliances, including dishwashers or furnaces, for example. There are several deterioration processes in aluminum wire connections that cause increased resistance to the flow of electric current, resulting in damage that is cumulative in effect. That increased resistance causes overheating, sometimes at hazardous levels, when current is flowing in the circuit.

A shortage of copper in the mid 1960s caused builders to increase the use of aluminum wire in residential electrical distribution systems from the few large-power circuits (i.e., for electric clothes dryers and ranges), to general purpose 15- and 20-ampere-rated circuits. Homes built before 1965 are unlikely to have aluminum branch circuit wiring. Electrical cables installed between 1965 and the mid 1970s in new homes, in additions, and as part of rewired/new circuits may contain aluminum wiring. On April 28, 1974, two people died in a home in Hampton Bays, N.Y. Fire officials determined that the fire was caused by an overheating aluminum wire connection at a wall receptacle.

¹ The survey conducted by the Franklin Research Institute defined “Fire Hazard Conditions” to occur when receptacle cover plate mounting screws reached 149°C (300°F), or sparks were emitted from the receptacle, or materials around the receptacle were charred.

TROUBLE SIGNS

Unfortunately, failing aluminum-wired connections seldom provide easily detected warning signs. Aluminum-wired connections and splices have been reported to fail and overheat without any prior indications or problems.

If you notice any signs of a problem, have a qualified electrician determine the cause. **DO NOT TRY TO DO IT YOURSELF.** You could be electrocuted, or you could make the problem worse. Signs of electrical system problems include hot-to-the-touch face plates on receptacles or switches; flickering lights; circuits that don't work; or the smell of burning plastic at outlets or switches.

IDENTIFYING ALUMINUM WIRING

Virtually all of the aluminum wiring was installed as plastic-sheathed cable (type NM, often called “Romex”) with no readily discernable distinction from a cable with copper conductors. Look at the printed or embossed markings on the outer jacket of the electric cables, which are visible in unfinished basements, attics, or garages. If necessary, use a flashlight shining on the surface at a low angle to help make the embossed markings readable. Cable with aluminum conductors will have “Al”

or “Aluminum” and other information marked on one side of the cable jacket every few feet along its length. (Note: be sure to read as much of the marking as possible because the marking “CU-clad” or “Copper-clad,” in addition to the “Al” or “Aluminum,” means that the cable uses copper-coated aluminum wire and is not covered by the repair recommendations outlined in this publication).^{2,3}

If you are unable to identify the type of wire in your home by this method, but you suspect that you have aluminum wire, have a qualified electrician make the determination.

If your home has aluminum wiring that has not been remediated, CPSC recommends a permanent repair of the connections, as described in the following sections.

FIXING THE PROBLEM

Aluminum wiring can be replaced or repaired to effectively and permanently reduce the possibility of fire and injury due to failing (overheating) wire connections and splices. It is highly recommended that you hire a qualified electrician to perform this remediation.

Other than complete replacement of aluminum wire with copper wire, there may

² Aluminum and copper-clad aluminum cables are sized at No.10 and No.12 AWG for 20-ampere and 15-ampere rated circuits, respectively, as opposed to No.12 and No.14 AWG for copper conductors.

³ The repairs outlined in this publication do not apply to larger gauge aluminum wire circuits and connections used for service entrance cables, electric clothes dryers, and cooking ranges.

be numerous potential solutions for the permanent repair of hazardous aluminum wire connections and splices. However, CPSC can recommend repair methods or products only where there is satisfactory, documented evidence that the methods or products meet the following criteria:

- **Safe.** The method or product must be safe and not increase the risk of fire or other hazards.
- **Effective.** The method or product must be effective and successfully eliminate or substantially mitigate the fire hazard.
- **Permanent.** The method or product must affect a permanent repair. Methods or products designed to address temporary or emergency repair situations, but which may fail over time, are not considered permanent.

Based on these standards, as of the date of this publication, CPSC approves of only three methods for a permanent repair.⁴

1) Complete Replacement of Copper Cable

2) COPALUM Method of Repair

3) Acceptable Alternative Repair Method/AlumiConn Connector

1) Complete Replacement with Copper Cable

Replacement of the aluminum branch circuit conductors with copper wire eliminates the primary cause of the potential hazards, the aluminum wire itself. Depending on the architectural style of your home and the number and locations of unfinished spaces (e.g., basements and attics), it may be relatively easy for a qualified electrician to rewire your home. A new copper wire branch circuit system would be installed, and the existing aluminum wire could be abandoned inside the walls. This is the best method available; but for many homes, rewiring with copper is impractical and/or prohibitively expensive.

⁴ Any individual or company that develops a method or product that meets these CPSC standards for a safe, effective, and permanent repair of aluminum wire connections and splices and desires that the CPSC consider recommending the method or product may submit documentation of compliance with such standards to: CPSC, 4330 East West Highway, Bethesda, MD 20814. Recommendation of products or methods is rare and is solely within the discretion of the CPSC. The burden and costs of establishing compliance with such standards is the responsibility of the requestor. Consideration of a product or method is not intended and does not create any right or benefit, substantive or procedural, enforceable at law or in equity, by any party against the U.S. Consumer Product Safety Commission or the United States, its officers, employees, or agents, or any other person.

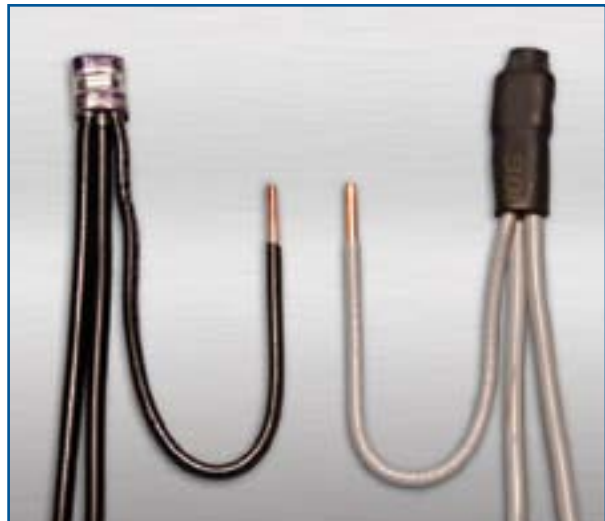
2) COPALUM Method of Repair

As an alternate to rewiring with copper, CPSC recommends attaching a short section of copper wire to the ends of the aluminum wire at connection points (a technique commonly referred to as “pig-tailing”), using a special connector named COPALUM to join the wires. CPSC staff considers pig-tailing with a COPALUM connector to be a safe and permanent repair of the existing aluminum wiring. The repair should include every connection or splice involving aluminum wire in the home, including outlets, dimmers, switches, fixtures, appliances, and junction boxes. The repaired system, with short copper wire extensions at every termination throughout the home, permits the use of standard wiring devices, including receptacles and switches.

The COPALUM repair method is recommended by CPSC on the basis of CPSC-sponsored research, laboratory tests, and demonstration projects. This repair method has been thoroughly proven by more than a quarter of a century of field experience to provide a permanent, low-resistance electrical connection to aluminum wire. The COPALUM repair method eliminates the aluminum connection failure problems and still uses the existing, installed aluminum wire. The COPALUM repair method has been shown to be practical for installation in an occupied and furnished home.

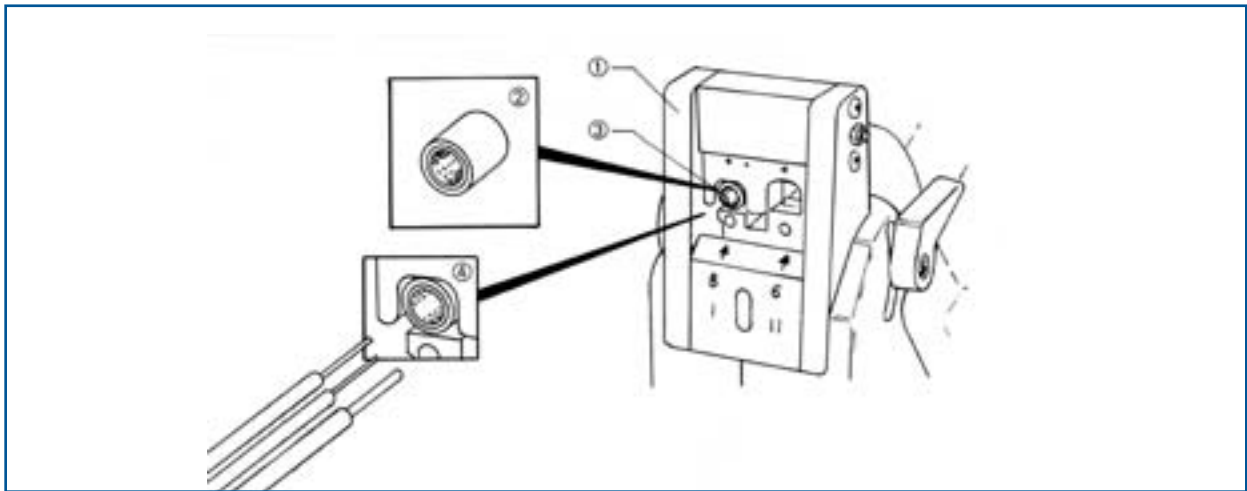
Every connection of aluminum-to-aluminum or aluminum-to-copper wire should be repaired in order to obtain the maximum benefit from such repair work. All appliances connected directly to No.12 or No.10 AWG aluminum branch circuit wiring (e.g., dishwashers, cooling equipment, heaters, air conditioners, and light fixtures) must be repaired in addition to wall outlets, switches, junction boxes, and panel boxes.

The COPALUM connector is a specially designed system that includes a metal sleeve intended to be installed only with a dedicated power tool and crimping die to make a permanent connection, that is, in effect, a cold weld (the precision dies in the COPALUM tool compress the connector and wires using upwards of 10,000 pounds of force, as required to make the permanent aluminum wire connection).

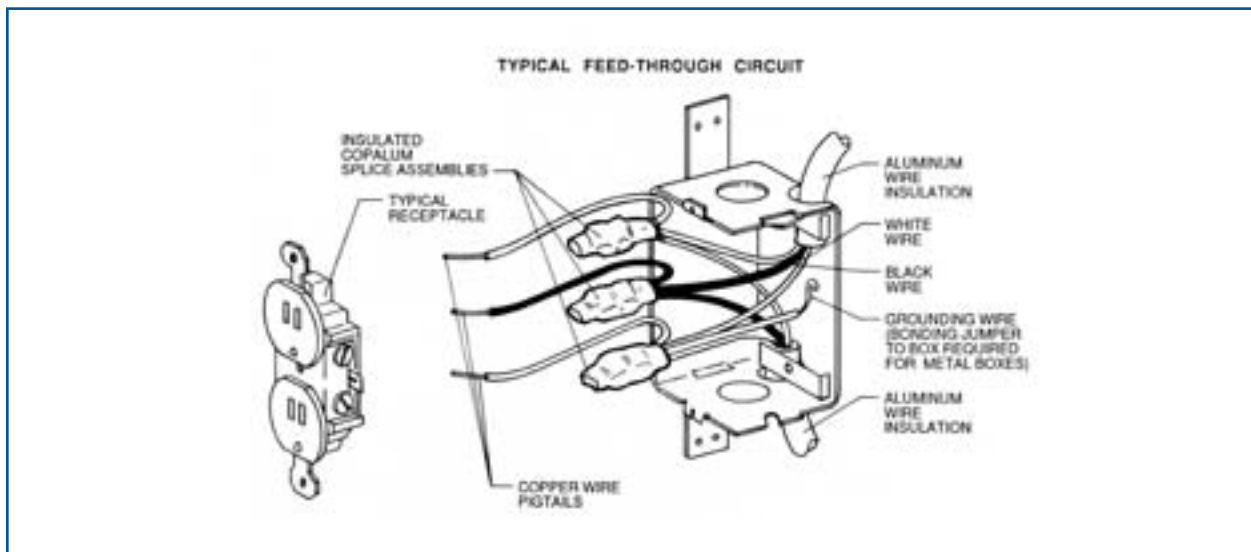


The tool is shown in the illustration below. An insulating sleeve is placed around the crimp connector to complete the repair. The copper wire pigtail is then connected to the switch, receptacle, or other termination device. An example of a repaired receptacle outlet is also illustrated below.

Only electricians who are trained by the manufacturer to use the tool properly are authorized to install COPALUM connectors. CPSC staff emphasizes that this training is necessary to ensure that the electrician uses the careful, professional workmanship and thoroughness required to make the crimp connector repair safe and permanent.



COPALUM Crimp Connector and its Specialized Installation Tooling



Recommended COPALUM Connector Repair

To determine if there is a COPALUM installer in your region, visit: http://tooling.tycoelectronics.com/copalum/copalum_home.asp, or contact the manufacturer at (800) 722-1111 or at the following address:

TE Connectivity
Attn: COPALUM Aluminum Wire Repair Program
P.O. Box 3608
Harrisburg, Pa. 17105

3) Acceptable Alternative Repair Method

CPSC staff recognizes that copper replacement may be cost prohibitive and that the COPALUM repair may be unavailable in a locality. Based upon an evaluation that was, in part, CPSC supported,⁵ consumers are advised that, if the COPALUM repair is not available, the AlumiConn connector may be considered the next best alternative for a permanent repair. This repair method involves pigtailing using a setscrew type connector instead of the COPALUM crimp connector in the repaired connections. The AlumiConn connector has performed well in initial tests, but is too new to have developed a significant long-term safe performance history as the COPALUM repair. The repair should be conducted by a qualified electrician because careful, professional workmanship and thoroughness are required to make the AlumiConn connector repair safe and permanent.



The AlumiConn Connector

For additional information on the AlumiConn connector, visit: <http://www.kinginovation.com/products/alumiconn>, or contact the manufacturer at (800) 633-0232, or write to the firm at the following address:

King Innovation
42 N. Central Drive
O'Fallon, Mo. 63366

RECOMMENDATIONS AGAINST USING OTHER REPAIR METHODS

Non-COPALUM Crimp Connectors

There are many other brands and types of crimp connectors – including those intended to be installed with a pliers-type of handtool – which are readily available to consumers at common retailers.

No other crimp connectors have been evaluated for connecting copper and aluminum conductors. CPSC staff strongly recommends against their use as a repair method.

⁵ CPSC's contractor self-funded the fundamental part of this research. The CPSC contract provided funds for additional longer term testing and recommendations requested in the CPSC contract.



Do Not Use Common Hand-Crimped Connectors with Aluminum Wire

Two other repair methods described below are often recommended by some electricians because they are substantially less expensive than COPALUM crimp connectors. CPSC staff does not consider either of these repairs an acceptable permanent repair.

Twist-on Connectors

The first temporary repair involves pigtail with a twist-on connector. The effectiveness of “pigtail” using twist-on connectors has been evaluated by CPSC staff. In CPSC-sponsored laboratory testing and life tests, substantial numbers of these connectors overheated severely.

Surveys of and statements made by electricians and electrical inspectors confirm the highly variable and often poor performance

of twist-on connectors with aluminum wire. It is possible that some pigtail “repairs” made with twist-on connectors may be prone to even more failures than the original aluminum wire connectors. Accordingly, CPSC staff believes that this method of repair does not solve the problem of overheating present in aluminum-wired branch circuits.



“Pigtail” with Twist-on Connectors Is Not a Recommended Repair

“CO/ALR” Switches and Receptacles

The other repair recommended by the industry is to use switches and receptacles labeled “CO/ALR.” These devices are intended for direct connection to aluminum wire, although they can be used with copper or copper-clad wire. CO/ALR devices perform better with aluminum wire than non-CO/ALR devices when

installed carefully and according to best electrical practices. However, CO/ALR wiring devices have failed in laboratory tests when connected to aluminum wire typical of that installed in existing homes. The test conditions simulated actual use conditions; no “overstress” type of testing was used. Further, CO/ALR connectors are not available for all parts of the wiring system (e.g., for the permanently wired appliances and ceiling mounted light fixtures). In the opinion of CPSC staff, CO/ALR devices must be considered, at best, an incomplete repair.

Recommendations on Temporary Repairs

AL/CU twist-on connector pigtails or CO/ALR devices may be used as an emergency, temporary repair for a failed aluminum termination. Should such a repair be performed, CPSC staff recommends that a complete repair of the aluminum-wired system be performed using the CPSC-recommended methods as soon as possible.

CODE COMPLIANCE AND INSPECTION

All modifications and additions to installed wiring should be performed and inspected in accordance with local regulations.

This pamphlet is available on the Web at: www.cpsc.gov/CPSCPUB/PUBS/516.pdf.

The U.S. Consumer Product Safety Commission is charged with protecting the public from unreasonable risks of serious injury or death from thousands of types of consumer products under the agency's jurisdiction. CPSC is committed to protecting consumers and families from products that pose a fire, electrical, chemical, or mechanical hazard. CPSC's work to ensure the safety of consumer products—such as toys, cribs, power tools, cigarette lighters, and household chemicals—contributed significantly to the decline in the rate of deaths and injuries associated with consumer products over the past 30 years.

To report a dangerous product or a product-related injury, visit: www.SaferProducts.gov, call CPSC's hotline at (800) 638-2772, or CPSC's teletypewriter at (301) 595-7054. To join a CPSC email subscription list, please go to: <https://www.cpsc.gov/cpsclist.aspx>. Consumers can obtain this release and recall information at the CPSC's website at: www.cpsc.gov.



THIS INFORMATION IS OBSOLETE. IT IS INCLUDED TO PROVIDE THE HISTORY OF ALUMINUM WIRING AWARENESS IN THE COMMUNITY.

Cross Fox Condominium, Inc

June 2007; June 2015 Reissue; May 2016 Reissue

Columbia, Maryland 21044

To: All Cross Fox Owners and Tenants

Subject: Aluminum Wiring Awareness

Cross Fox Condominiums were built in 1969 at which time aluminum wiring was used as a common practice within Howard County, Maryland, and throughout the country. Several years later, it was determined that problems existed with aluminum wiring. New construction homes went back to using copper wiring except for certain devices such as electric dryers and electric ranges that use large gauge aluminum wires.

Sometime in the early 1980s, all electrical wiring at Cross Fox was pig tailed. The Cross Fox pig tailing also included the use of an anti-oxidation flux which makes this an acceptable method even today. Pig tailing is a process of using wire nuts to connect a copper wire to existing aluminum wires. The copper wire is then used to connect to the switch or receptacle so standard switches and receptacles can be used. As a result of this pig tailing, owners may use standard electrical switches and outlets rather than the more expensive and hard to find switches and outlets approved for connecting to aluminum wire.

Switches/outlets that are used frequently for high current/high wattage devices such as space heaters, hair dryers, refrigerators, etc. are usually, but not always, the most susceptible to electrical problems. Symptoms of electrical problems include:

- A. Warm/hot or inoperable electrical switches or outlets.
- B. Lights that flicker or dim for no apparent reason.
- C. Smoke or crackling sounds coming from electrical switches or outlets.

Owners are responsible for repair of electrical problems associated with their unit while the Condominium Association is responsible for repair of common area wiring. If any of the above symptoms exist within your unit, call a licensed electrician immediately. If you observe these symptoms within a common area, contact CVI at 301-596-2600. Provide your name and exact location of the electrical problem so repairs can be made. Failure to correct or report such problems could result in fire hazards so please be vigilant about this matter. See next page for Cross Fox specific aluminum wiring mitigation recommendations.

Thank you for your cooperation with this matter.
Cross Fox Board of Directors

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Aluminum Wiring Mitigation Recommendations¹

The Cross Fox Board of Directors has reviewed the Aluminum Wiring Mitigation Study. The resulting recommendation can be described as ARM (**A**wareness, **R**epair as necessary and **M**onitor aluminum wiring mitigation methods). Accordingly, the Board makes the following recommendations to unit owners:

- A) The current pig tailing at Cross Fox is still effective and does not require drastic remediation at this time. This recommendation, of course, would change if electrical problems arise at Cross Fox in the future.
- B) If an owner decides to further mitigate the aluminum wiring within a Cross Fox unit, the recommended approach is to have a qualified, certified electrician use either the COPALUM process by Tyco or AlumiCon connectors by King Innovation. One contractor certified for the COPALUM process is Hawkins Electric in Beltsville (301-210-3215). To COPALUM an entire unit, one bedroom (1 BR) units will cost in the neighborhood of \$2750.00, two bedroom (2 BR) units ~\$3000.00 and townhouse (TH) units ~\$3800.00 according to an estimate made in March, 2007. AlimuCon mitigation is approximately \$1035 (1BR), \$1275 (2 BR) and \$2650 (TH) according to a March 2016 estimate. For AlumiCon mitigation, contact Kolb Electric (410-579-5800, ask for Will). Both of these processes are most effective when ALL aluminum wiring is mitigated within the unit.
- C) Owners and tenants should be **aware** of the warning signs of electrical wiring problems.
- D) **Repair** electrical problems as soon as possible. Owners are responsible for repair of electrical problems associated with their unit while the Condominium Association is responsible for repair of common area wiring. If any of the above symptoms exist within your unit, call a licensed electrician immediately. If you observe these symptoms within a common area, contact CVI at 301-596-2600. Provide your name and exact location of the electrical problem so repairs can be made. Failure to correct or report such problems could result in fire hazards so please be vigilant about this matter.
- E) **Monitor** electrical problems at Cross Fox and take any necessary corrective action if problems arise.
- F) Annually **monitor** the technology of Aluminum Wiring Mitigation and consult with the Howard County Electric Code Inspectors to see if any new technology exists that could reasonably be used at Cross Fox in the future.

¹ These recommendations are made with the understanding that the pig tailing done at Cross Fox in the 1980s used anti-oxidation flux as part of that process.

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Cross Fox Aluminum Wiring Primer

Introduction

Nationally, several building practices have proven to be failures. They include¹

- Aluminum wiring
- Fire retardant treated (FRT) plywood
- Polybutylene pipes
- Federal Pacific “Stab-Lok” electrical panels
- Asbestos insulation

Aluminum branch wiring that runs from the service panel to each room was common practice during 1964 through 1976. Since Cross Fox was constructed in 1969, aluminum wiring was used. At the time of construction, aluminum wiring met county building codes. However, over time, it was determined that aluminum wiring can be problematic if not maintained properly.

The purpose of this document is to provide some background on aluminum wiring relative to Cross Fox Condominiums as related to the *Cross Fox Aluminum Wiring Resolution*.

This article was written by a Cross Fox unit owner who is not a licensed electrician. Every attempt was made for accuracy but owners taking action regarding aluminum wiring should consult with a licensed electrician for preventive or corrective maintenance.

Discussion

The problem with aluminum wiring is that wire connections can become hot, arcing can occur and fires can possibly result². There are several methods of mitigating this problem. They are:

- 1) Complete re-wiring by replacing aluminum wiring with copper wiring. This method is approved by the US Consumer Product Safety Commission (CPSC) if the work is performed by a licensed electrician.
- 2) Using the COPALUM system developed by AMP (now Tyco). This method is also approved by the CPSC if the work is performed by a licensed electrician certified to use the COPALUM system. See <http://www.cpsc.gov/cpscpub/pubs/516.pdf>.

¹ Five That Failed, Washington Post January 13, 2007 Real Estate Section

² See <http://www.inspect-ny.com/aluminum/aluminum.htm> for an excellent reference on aluminum wiring

THIS INFORMATION IS OBSOLETE. IT IS INCLUDED TO PROVIDE THE HISTORY OF ALUMINUM WIRING AWARENESS IN THE COMMUNITY.

- 3) Use of Ideal Industries wire nuts and flux. Many local licensed electricians use this method but it is not approved by the CPSC as a permanent solution to the aluminum wiring problem.
- 4) Use of other connectors such as the 3M Scotchlok wire nuts or the UL Listed AlumiConn Lug manufactured by King Innovation. These connectors, however, are not allowed under the present Howard County Electrical Code.
- 5) Use of COALR switches and electrical outlets. This type of device should always be used when replacing either a switch or outlet that connects directly to an aluminum wire. While the use of COALR switches and electrical outlets is necessary when a connection is made to and aluminum wire, it does not result in a permanent solution and is, therefore, not approved by the CPSC as a permanent fix. *[Note - Since Cross Fox switch and receptacle wires have been pigtailed, COALR devices are not required. Standard switches and receptacles designed to connect with copper wire should be used.]*

The COPALUM procedure can only be performed by certified electricians using approved tools. One such contractor is Hawkins Electric Services, Inc in Beltsville, Maryland (301) 927-0900. For a list of other approved contractors, contact Tyco, Inc at (800) 522-6752.

If an owner decides to further remediate all the aluminum wiring within a Cross Fox unit, the recommended approach is to have a qualified, certified electrician use the COPALUM process. For a complete COPALUM repair, all wall outlets, switches, junction boxes and panel boxes must be corrected. This can be an expensive proposition.

Symptoms of problems with aluminum wiring include:

- A. Warm/hot electrical switches or outlets.**
- B. Lights that flicker or dim for no apparent reason.**
- C. Smoke or crackling sounds coming from electrical switches or outlets.**

The most critical switches/outlets are ones that are used frequently for high current/high wattage devices such as space heaters, hair dryers, refrigerators, etc.