



ENGINEER

PRODUCTS

ALUMINUM

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## KA-FLEX TYPE M ALUMINUM CONDUCTOR

WRITE TO:  
KAISER ALUM.  
PO BOX 644 RAYSON CENTER  
RALEIGH CALIFORNIA 94604

U.L. Report  
EAS 41X1 B

U.L. Report on Kaiser Aluminum  
KA-FLEX, January, November

Kaiser Al-  
luminum Interchangeability  
with Copper Wires  
Technical Report  
December 31, 1964

U.L. Report on Scotchlock type R  
Connectors for Aluminum and Copper  
Wires, August 28, 1964

Sample of  
Conductor

Photo 510  
of homes  
of eight year service test  
Powerswood, West Virginia

OBTAINABLE FROM UNDERWRITERS  
LABORATORIES, WRITE FOR CATALOG, YOUR  
NEAREST U.L. OFFICE

U.L. 719, Non-Metallic Sheathed  
Underground Feeder Cables

U.L. Bulletin of Research  
Aluminum Building Wires 48  
Connectors

U.L. 744, Rubber Insulated  
Cables

U.L. 745  
Cables

**Another AL/CU Splice:** Since our report last issue, Ideal's "Wingnut" connectors have received Underwriters' Laboratories listing for use in splicing aluminum-to-copper wire. "Scotchlok" connectors by 3M have had this listing for some time. T&B "Piggy Pig Tails" are U/L listed for Al/Al splices.

similar metals (copper, brass and aluminum) were in contact than when similar metals were in contact."

In 1958, Underwriters' Laboratories wrote that aluminum and copper wire could be used interchangeably on all U/L approved wiring devices with screw terminals 50 amps and under.

Meanwhile, in 1957, ninety-nine homes in Ravenswood, West Virginia, were test wired with the original Kaiser Aluminum Type NM. Spot checks since then by the Kaiser Aluminum engineers and local electrical inspectors have shown the connections as good as the day they were made.

Thus there have been no electrical problems with aluminum Type NM. But —there was a problem on the job. The original wire was stiff and brittle. The electricians didn't like it.

**Made softer.** Our solution was to make the wire more workable. Easier workability is the reason for present strong acceptance of Ka-Flex.

Carefully controlled annealing of the aluminum wire made the following change in Ka-Flex:

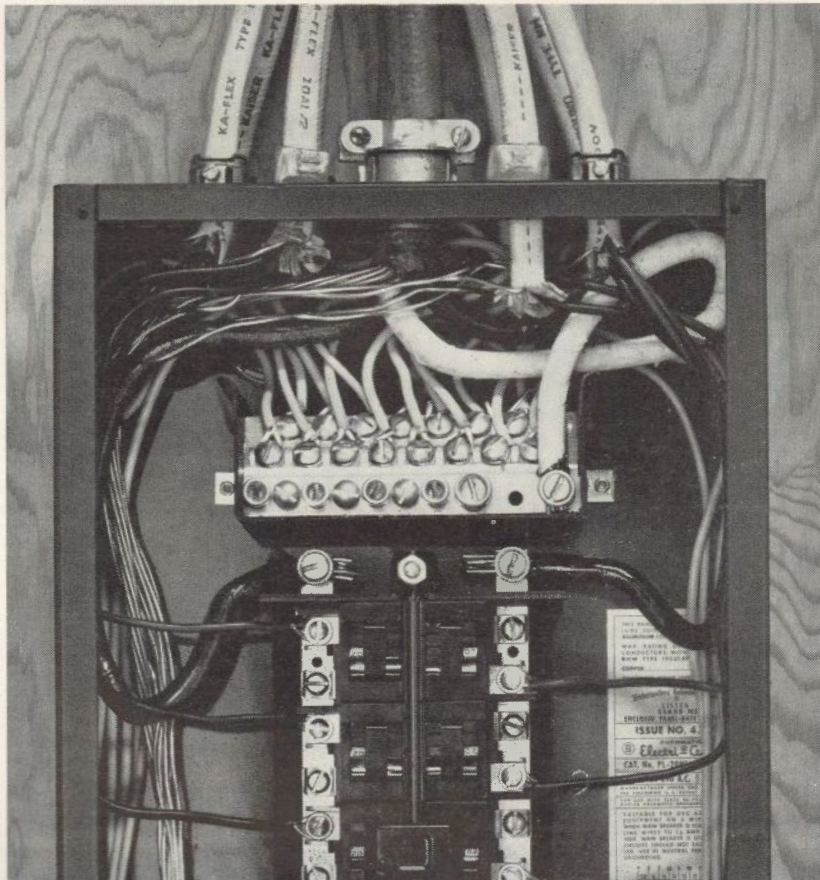
	Elongation	Tensile
ORDINARY ALUMINUM CONDUCTOR	1-2%	21-22,000 PSI
NEW "KA-FLEX"	13-18%	15-17,000 PSI

These properties meet U/L standards for insulated aluminum wire. Ka-Flex constructions meet or exceed the three hundred pound pull test on non-metallic cable in UL-719.

The greatly improved elongation-reserve—electricians call it "softness," or "toughness"—means a dramatic ability to take bend after bend without breaking. It means Ka-Flex is easier to work than the copper it replaces, even though Ka-Flex is slightly larger. Ka-Flex doesn't tend to work-harden as much as copper wire. It retains strength even after prolonged twisting.

The result is a growing preference for Ka-Flex by contractors. Easy to work. No bothersome "spring-back" in the box. Lighter to haul. 500-foot cartons. Cost savings as much as 20%.

**Good connections.** Your first inspection of a Ka-Flex connection will show



Aluminum transmission, distribution and service entrance cables bring power to this panel—and new Ka-Flex Type NM aluminum conductor completes a first rate wiring installation.

another advantage. Under screw pressure this aluminum forms a broad area in tight contact. Copper wire under the same pressure makes only tangent contact.

In November, 1964, Underwriters' reaffirmed their 1958 statement that aluminum and copper wires were interchangeable on wiring devices *with screw terminals*. This includes back wiring as well as side wiring.

Screwless devices are not approved. All leading device manufacturers are now working on this problem and should have approved screwless devices soon.

**Approved splices.** Aluminum-to-aluminum splices are made with 3M "Scotchlok," and Ideal "Wingnut" connectors listed by U/L. (Compression sleeve splices are not yet approved.)

Al/Cu splices are made with 3M "Scotchlok" and Ideal "Wingnut" connectors. (Note: Some packages will not yet show "Al/Cu" listing. See manufacturers new guide cards.)

**Connector, device development.** Manufacturers are now giving top priority to the development of new connectors and new devices for aluminum.

We are working closely with these firms with engineering assistance. Within the past year, Kaiser Aluminum has provided hundreds of samples of Ka-Flex to device, circuit breaker and connector manufacturers.

**Information offered.** To help contractors be sure Ka-Flex is used according to the Code, a fact sheet is enclosed in each carton. It explains the do's and don't's of this better wire. Hundreds of contractor crews have seen demonstrations in our mobile Ka-Flex wiring exhibits touring the country.

If you are interested in additional technical information on Ka-Flex you can get it from your Kaiser Aluminum representative. Or write us. We'll be happy to send items on the list at left—including samples of new Ka-Flex Type NM aluminum conductor—for your inspection.

**KAISER  
ALUMINUM**  
ELECTRICAL PRODUCTS