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Application and Installation Guidelines for Armored Cable and Metal-Clad Cable

National Electrical Manufacturers Association

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Foreword

These application and installation guidelines offer practical information on correct usage and industry recommended practices for the installation of Type AC and Type MC cables in accordance with the *National Electrical Code*®.

These guidelines have been developed by the NEMA Building Wire and Cable Section, which has committed to periodically reviewing them for any revisions necessary to address changing conditions, product listing and installation requirements, and technical progress. Comments for proposed revisions are welcomed and should be submitted to:

Vice President, Technical Services
National Electrical Manufacturers Association
1300 North 17th Street, Suite 1752
Rosslyn, VA 22209

At the time of approval, the Building Wire and Cable Section of the National Electrical Manufacturers Association had the following members:

AFC Cable Systems—New Bedford, MA
Alcan Cable—Atlanta, GA
Alflex Corporation—Long Beach, CA
Amercable—El Dorado, AR
American Insulated Wire Corporation—Pawtucket, RI
Cerro Wire, Inc - Hartselle, AL
Colonial Wire & Cable, Inc.—Hauppauge, NY
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Service Wire Corporation—Culloden, WV
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The Okonite Company—Ramsey, NJ
United Copper Industries—Denton, TX

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Section 1
APPLICATION GUIDELINES FOR ARMORED CABLE

1.1 CONSTRUCTION

1.1.1 General

Type AC cables are constructed in accordance with the *National Electrical Code*® (*NEC*®) and comply with the safety requirements of Underwriters Laboratories (UL) *Standard for Safety for Armored Cable*, UL 4. These cables employ copper, copper-clad, or acceptable aluminum alloy conductors. Copper conductors are of sizes 14–1 AWG. Aluminum or copper-clad aluminum conductors are of sizes 12–1 AWG. All conductors 6–1 AWG are stranded. The *NEC*® recognizes three AC Cable types—Types ACHH, ACTH, and ACTHH. Type ACTHH is the most common of these.

1.1.2 Circuit Conductors

Circuit conductors in Type ACHH are rated 90ºC and comply with UL 44, *Standard for Safety for Thermoset-Insulated Wires and Cables*. In Type ACTH Cable, circuit conductors are rated 75ºC and comply with UL 83, *Standard for Safety for Thermoplastic-Insulated Wires and Cables*. As with Type ACTH Cable, the circuit conductors of Type ACTHH Cable also comply with UL 83, but are rated 90ºC.

1.1.3 Equipment Grounding Conductors

Although not required in Type AC cables, one or more equipment grounding conductors are permitted. One bare copper or aluminum equipment grounding conductor is permitted and can have a paper covering. Insulated equipment grounding conductors are always of the same material as the circuit conductors. Type AC cable with an equipment grounding conductor is most commonly used where redundant, dedicated, or isolated grounding is required, such as in patient care areas.

1.1.4 Fibrous Coverings

Fibrous coverings (paper wrap) for Type AC cable consist of 30-pound or heavier paper, saturated with a preservative and moisture-resistant compound. Each of the thermoplastic-insulated circuit conductors and any insulated equipment grounding conductor in Type ACTH and ACTHH Cable have an individual paper covering applied directly over the insulation. The rubber-insulated conductors of Type ACHH Cable have an overall fibrous material over the grouped conductors.

Where Type ACTH and ACTHH Cable employ a bare equipment grounding conductor without a paper covering, an overall covering is applied directly over the grouped circuit and equipment grounding conductors to keep the bare conductor from contacting the armor.

1.1.5 Armor

The armor of Type AC cable is constructed of interlocked corrosion-resistant steel or aluminum strip, and is applied over the conductors. The external diameter of the armor is at least 0.415 in., but there are no requirements on the internal diameter.

1.1.6 Bonding Strip

The required bonding strip is made of aluminum, and is located between the armor and conductor assembly to enhance grounding ability. The bonding strip can be no smaller than 16 AWG.