

INCH-POUND

A-A-59544A

November 17, 2008

SUPERSEDING

A-A-59544

July 10, 2000

## COMMERCIAL ITEM DESCRIPTION

### CABLE AND WIRE, ELECTRICAL (POWER, FIXED INSTALLATION)

The General Services Administration has authorized the use of this commercial item description for all federal agencies.

1. SCOPE. This commercial item description (CID) covers the general requirements for cable and wire, electrical (power, fixed installation). Cable and wire, electrical (power, fixed installation) covered by this CID are intended for commercial/industrial applications.

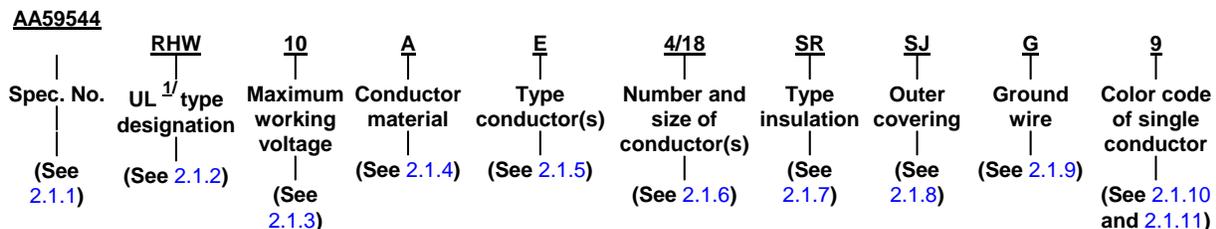
2. CLASSIFICATION/PART OR IDENTIFICATION NUMBER (PIN). This CID uses a classification system which is included in the PIN shown in the following example (see 7.1).

The PIN is made up of the basic CID number and a nine element alphanumeric number.

The fixed installation electrical power cable and wire shall conform to the types specified in table I.

2.1 Type designation. Cables and wires covered by this specification shall be identified by a type designation, constructed as illustrated below. This type designation is intended for cataloging and ordering purposes, and not for surface printing on the wire or cable.

Example of PIN: AA59544RHW10AE4/18SR SJ G 9



1/ UL (Underwriters Laboratories, Inc.)

Beneficial comments, recommendations, additions, deletions, clarifications, etc., and any data that may improve this document should be sent to: Defense Supply Center, Columbus, ATTN: DSCC-VAI, P.O. Box 3990, Columbus OH 43218-3990, or email to [WireCable@dsc.dla.mil](mailto:WireCable@dsc.dla.mil). Since contact information can change you may want to verify the currency of the address information using the ASSIST Online database at <http://assist.daps.dla.mil>.

TABLE I. Cable and wire types.

UL type	UL standard	Description	Maximum working voltage	Temp °C.
ACHH	4	Heat resistant armored	600	90
ACHHL	4	Heat resistant armored, lead sheath	600	90
ACTH	4	Heat resistant, armored	600	75
ACTHH	4	Heat resistant, armored	600	90
ACT	4	Dry locations, armored	600	60
ACL	4	Armored, lead sheath	600	75
ACHL	4	Heat resistant, armored, lead sheath	600	75
RHW	44	Heat and moisture resistant	600 or 2,000	75 wet
RHH	44	Heat resistant	600 or 2,000	90 dry
SA	44	Silicone, heat resistant	600	90
RH or RHW <u>1/</u>	44	Heat and moisture resistant	600	90
XHHW	44	Heat and moisture resistant (cross linked polyethylene, thin wall)	600	75 wet, 90 dry
TW	83	Moisture resistant	600	60
THWN	83	Heat and moisture resistant	600	75
THW	83	Heat and moisture resistant	600	75 wet
THHN	83	Heat resistant, for use in dry locations	600	90 dry
THHN or THWN <u>1/</u>	83	Heat and moisture resistant	600	90
UF	493	For direct burial in earth	600	60
UF-B	493	For direct burial in earth	600	60 or 75 wet
NM-B	719	For use in dry locations	600	60
NMC-B	719	For use in dry and moist and mildly corrosive locations	600	60
SE	854	Flame and moisture retardant, no mechanical protection	600	75
USE	854	Moisture resistant, no mechanical protection, for underground use	600	75
MV	1072	Medium voltage	5-35 kV	75 or 90
MC	1569	Metal-clad	600-35,000	75, 85, or 90

1/ For dual marking, see 3.4.

2.1.1 Cable and wire specification number. [A-A-59544](#).

2.1.2 UL type designation. The UL type designation shall consist of the types specified in [table I](#).

2.1.3 Maximum working voltage. The maximum working voltage shall be designated as follows:

03	-	300
06	-	600
10	-	1,000
20	-	2,000
30	-	3,000
40	-	4,000
50	-	5,000
100	-	10,000
350	-	35,000

2.1.4 Conductor material. The conductor material shall be designated as follows:

A	-	1350 aluminum
C	-	Copper
CA	-	Copper clad aluminum (M 83)
AA	-	Aluminum alloy, 8000 series ( <a href="#">UL 83</a> , <a href="#">UL 44</a> , <a href="#">UL 493</a> , <a href="#">UL 854</a> )

2.1.5 Type of conductor(s). The type of conductor(s) shall be designated as follows:

- E - Solid conductor (AWG 20 to AWG 8 only).
- F - Concentric-lay-stranded conductor(s) of standard flexibility, conforming to type C, class B of [A-A-59551](#) or class B of [ASTM B231/ B231M](#), as applicable.
- G - Concentric-lay-stranded conductor(s) where greater flexibility is desired, conforming to type C, class C of [A-A-59551](#) or class C of [ASTM B231/ B231M](#) as applicable.
- H - Rope-lay-stranded conductor(s) where extreme flexibility is desired, conforming to type RC, class G of [A-A-59551](#).
- J - Rope-lay-stranded conductor (s) where extreme flexibility is desired, conforming to type RC, class H of [A-A-59551](#).
- K - Bunch-stranded conductor(s) where extreme flexibility in the smaller AWG sizes is desired, conforming to type B, class K of [A-A-59551](#).
- L - Compact stranded conductors(s) where greater flexibility is desired, conforming to Class B of [ASTM B400](#).

Note: AWG – American Wire Gauge

2.1.6 Number and size of conductors. The number of individual conductors of the same wire size shall be designated by that number followed by a slant line and followed by a number indicating the conductor AWG size. When cables comprise different wire sizes, each different wire size with the number of conductors shall be individually represented with a dash separating each different wire size. A conductor larger than number 0000 AWG shall be designated by its cross-sectional area in circular mils.

2.1.7 Type of insulation. The type of insulation shall be designated as follows:

- SR - Synthetic rubber
- T - Thermoplastic
- XP - Cross-linked polyethylene
- CP - Chlorosulphonated polyethylene
- EP - Ethylene propylene

2.1.8 Outer covering. The outer covering shall be designated as follows:

- AL - Aluminum sheath
- AR - Armored
- CB - Cotton braid
- CRE - Chlorinated polyethylene
- FC - Fibrous covering
- GB - Glass braid
- LS - Lead sheath
- PJ - Polyamide jacket
- RJ - Rubber jacket
- SJ - Synthetic rubber jacket
- TJ - Thermoplastic jacket
- UJ - Unjacketed
- W - Neoprene jacket
- XP - Cross-linked polyethylene jacket

2.1.9 Ground wire. When a ground wire is part of a cable configuration, the ground wire shall be designated by the letter G.

2.1.10 Color code. The color code for single conductor cables and wires shall be designated by the appropriate identifying number as shown in [table II](#) (see [3.3.1](#)).

TABLE II. Color-code identification for single conductor cables and wires.

Number designator	Color	Number designator	Color
0	Black	5	Green
1	Brown	6	Blue
2	Red	7	Violet (purple)
3	Orange	8	Gray (slate)
4	Yellow	9	White

NOTE: This table is not intended to signify a color sequence but only a number-color identification reference.

2.1.11 Color code for multi-conductor cables. For 2-, 3-, and 4-conductor cables, designation of color-coding will not be necessary in the type designation (see [2.1](#)). These multi-conductor cables have a definite color-coding arrangement (see [3.3.2](#)); consequently, the number of multi-conductors in the type designation (see [2.1.6](#)) automatically signifies the color code.

### 3. SALIENT CHARACTERISTICS.

3.1 Interface and physical dimensions. Cable and wire supplied to this CID shall be as specified herein.

3.2 Fire and casualty hazards. Each contractor shall maintain evidence that the cable or wire to be supplied under this specification conforms to the requirements of the applicable UL Standard. The UL label, or listing with re-examination, of the UL may be accepted as evidence that the cable or wire conforms to the requirements. In lieu of the UL label, or listing with re-examination, the contractor shall maintain evidence that the cable or wire conforms to the applicable requirements of the published standards including methods of tests of the applicable UL standard.

3.3 Color code.

3.3.1 Single conductor. The color of a single conductor cable or wire is usually arbitrarily selected for purposes of differentiating between circuits when a number of single conductor cables or wires are to be used. Consequently, the number designated in the type designation signifies the color of a single conductor cable or wire (see 2.1.10).

3.3.2 Multi-conductor. Multi-conductor cables shall be color-coded as follows:

2-conductor - black, white (see note).

3-conductor - black, white, red (see note).

4-conductor - black, white, red, blue.

Note: For type SE cable, the color white is omitted for the uninsulated neutral conductor.

3.4 Dual markings.

3.4.1 THHN or THWN wire. Any types of THHN wire that comply with the requirements in UL 83 for Type THWN wire as well as those for Type THHN may be dual marked THHN or THWN.

3.4.2 RHH or RHW wire. A wire or a cable which complies with the requirements in UL 44 for Type RHH wire and all the requirements for Type RHW wire may be dual marked RHH or RHW.

3.4.3 RHW or USE cable. If a rubber insulated wire or cable also qualifies completely for use as a cable in a different classification (such as Type USE service-entrance cable), the product may carry an amplified marking including the word or to indicate the additional classification and the optional use - for example, RHW or USE.

3.4.4 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.4.5 Workmanship. Cable and wire shall be processed in such a manner as to be uniform in quality and shall be free from other defects that will affect life, serviceability, or appearance.

3.5 Marking. Electrical power cable and wire, fixed installation supplied to this CID shall be marked with the manufacturer's (MFR's) standard commercial PIN. (NOTE: The part number marked on the unit pack shall be the CID PIN.)

4. REGULATORY REQUIREMENTS. The offeror/contractor is encouraged to use recovered materials to the maximum extent practicable, in accordance with 23.403 of the Federal Acquisition Regulation (FAR).

5. PRODUCT CONFORMANCE PROVISIONS.

5.1 Product conformance. The products provided shall meet the salient characteristics of this CID, conform to the producer's own drawings, specifications, standards and quality assurance practices, and be the same product offered for sale in the commercial market. The Government reserves the right to require proof of such conformance.

5.2 Market acceptability. The following market acceptance criteria are necessary to document the quality of the product to be provided under this CID:

- a. The company producing the item must have been producing a product meeting the requirements of this CID for at least 2 years.
- b. The company producing the item must have sold 1,000 units meeting this CID in the commercial marketplace over the past 2 years.

6. PACKAGING. Preservation, packing, and marking shall be as specified in the contract or order.

7. NOTES.

7.1 PIN. The PIN should be used for Government purposed to buy commercial products to this CID. See section 2 for PIN format example.

7.2 Environmentally preferable material. Environmentally preferable materials should be used to the maximum extent possible to meet the requirements of this specification. As of the dating of this document, the U.S. Environmental Protection Agency (EPA) is focusing efforts on reducing 31 priority chemicals. The list of chemicals and additional information is available on their website <http://www.epa.gov/osw/hazard/wastemin/priority.htm>. Use of these materials should be minimized or eliminated unless needed to meet the requirements specified herein (see Section 3.)

7.3 Commercial and Government Entity (CAGE) code. For ordering purposes, inventory control, and submission of these cable and wire, electrical to DSCC under the Military Parts Control Advisory Group (MPCAG) evaluation program, CAGE code 0X4C9 should be used.

7.4 Source of documents.

#### FEDERAL REGULATIONS

FAR - Federal Acquisition Regulations (FAR).

(Copies of this document are available online at <http://www.acquisition.gov/comp/far/index.html> or from the U. S. Government Printing Office, 732 North Capital Street, NW, Washington D.C. 20401-0001.)

#### COMMERCIAL ITEM DESCRIPTION

A-A-59551 - Wire, Electrical, Copper

(Copies of this document are available online at <http://assist.daps.dla.mil> or <http://assist.daps.dla.mil/quicksearch/> or from the Standardization Document Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

#### ASTM INTERNATIONAL

ASTM B231/ B231M - Standard Specification for Concentric Lay Stranded Aluminum 1350 Conductors

ASTM B400 - Standard Specification for Compact Round Concentric Lay Stranded Aluminum 1350 Conductors

(Copies of these documents are available online at <http://www.astm.org> or from the ASTM International, P.O. Box C700, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

UNDERWRITERS LABORATORIES INC. (UL)

UL 4	-	Cable Armored
UL 44	-	Wires and Cables, Thermoset-Insulated
UL 83	-	Wires and Cables, Thermoplastic-Insulated
UL 493	-	Thermoplastic-Insulated Underground Feeder and Branch-Circuit Cables
UL 719	-	Non-metallic-Sheathed Cables
UL 854	-	Service-Entrance Cables
UL 1072	-	Medium Voltage Power Cables
UL 1569	-	Metal Clad Cables

(Copies of these documents are available online at <http://www.ul.com> or from the Underwriters Laboratories Inc., Publication Stock, 333 Pfingsten Road. Northbrook, IL 60062-2096.)

7.5 Ordering data. The contract or order should specify the following:

- a. CID document number, revision, and CID PIN.
- b. Product conformance provisions.
- c. Packaging requirements.

7.6 Commercial products. As part of the market analysis and research effort, this CID was coordinated with the following manufacturers of commercial products. At the time of CID preparation and coordination, these manufacturers were known to have commercial products that would meet the requirements of this CID. (NOTE: This information should not be considered as a list of approved manufacturers or be used to restrict procurement to only the manufacturers shown.)

MFR's CAGE  
0X4C9

MFR's name and address

Allied Wire and Cable, Inc.  
500 Schell Lane  
Phoenixville, PA 19460  
Telephone: 484-928-6700  
Fax: 484-928-6720  
<http://www.awcwire.com>

7.7 Part number (P/N) supersession data. These CID PINs supersede the following MFR's P/N's as shown (see [table III](#)). This information is being provided to assist in reducing proliferation in the Government inventory system.

TABLE III. P/N supersession data.

UL type (see <a href="#">table I</a> )	MFR's CAGE	MFR's P/N <u>1/</u>
UF	<b>0X4C9</b>	AA59544UF- B06CE3/12TTJG

1/ The manufacturer's P/N shall not be used for procurement to the requirements of this CID. At the time of preparation of this CID, the aforementioned commercial products were reviewed and could be replaced by the CID PIN shown.

7.8 Government users. To acquire information on obtaining these electrical cables and wires from the Government inventory system, contact Defense Supply Center, Columbus, ATTN: DSCC-CDCA, P.O. Box 3990, Columbus, OH 43218-3990, or telephone (614) 692-7940.

7.8.1 National stock number (NSN). The following is a list of NSNs assigned which correspond to this CID (see [table IV](#)). The list is for information only and may not be indicative of all possible NSNs associated with the CID. For up to date information on assigned NSNs, please contact the aforementioned DSCC office (see [7.8](#)).

TABLE IV. NSNs.

UL type (see <a href="#">table I</a> )	NSN
RHHRHW06CF110SRUJ 5	6145-00-005- 6292

7.9 Requirements for tests. If laboratory tests by the government are required, purchasing officers should order cable or wire for test purposes, in addition to the number of feet required for installation.

7.10 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

MILITARY INTERESTS:

Custodians:

- Army - CR
- Navy - AS
- Air Force – 85
- DLA – CC

Preparing activity:  
DLA-CC

Review activities:

- Army - AR, CR4, EA, MI
- Navy - MC
- Air Force – 99

(Project 6145-2008-073)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of this information above using the ASSIST Online database at <http://assist.daps.dla.mil>.