J-C-580B
October 15, 1974
SUPERSEDING
Fed. Spec. J-C-580A
August 8, 1962

FEDERAL SPECIFICATION

CORD, FLEXIBLE, AND WIRE, FIXTURE, (ELECTRICAL, 0- TO 600-VOLT SERVICE)

This specification was approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers flexible cord and fixture wire, solid or stranded, for use at 600-volts or less, except armored cord.

1.2 Classification.

1.2.1 Types. Cord wire furnished under this specification shall be of the types specified in table 1.

1.2.2 Type designation. Cords and wires covered by this specification shall beidentified by a type designation, formed as indicated below. This type designation is intended for cataloging and ordering purposes, and not for surface printing on the wire or cable.

J-C-580B	SPT-2	3	C	F	3/16	T	TJ	G	9
Spec. No.	UL type	Maximum working voltage	Conductor material	Type of conductor(s)	Number and size of conductor(s)	Type of insulation	Outer covering	Ground wire	Color code of single conductor
(1.2.3)	(1.2.4)	(1.2.5)	(1.2.6)	(1.2.7)	(1.2.8)	(1.2.9)	(1.2.10)	(1.2.11)	(1.2.12)

1.2.3 Cord Specification No. J-C-580B.

1.2.4 UL type designation. The UL (Underwriter's Laboratories) type designation shall consist of the types specified in 1.2.1.

1.2.5 Maximum working voltage. The maximum working voltage shall be designated as follows (see tables I and II):

3 - for use at not more than 300 volts.

6 - for use at not more than 600 volts.

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

C - copper.

S - copper with insulated steel strands (see 3.3).

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

E - Solid conductor (fixture wire only).

F - Concentric-lay-stranded conductor(s) of standard flexibility.

K - Bunch-stranded conductor(s) of extreme flexibility.

1.2.8 Number and size of conductor(s). The number of individual conductors of the same wire shall be designated by that number followed by a slant line and followed by a number indicating the conductor AWG size. When cables are made up of different wire sizes, each different wire size with the number of conductors shall be individually represented, with a dash separating each different wire size.

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

R - rubber

SR - synthetic rubber

NE - neoprene

T - thermoplastic

XP - cross linked polyethlene

CP - chlorosulphonated polyethylene

A - asbestos

AV - asbestos-varnished-cloth insulated

V - varnished cloth

1.2.10 Outer jacket. The outer jacket shall be designated as follows:

RJ - rubber jacket

SJ - synthetic rubber jacket

NJ - neoprene jacket

TJ - thermoplastic jacket

PJ - polyamide jacket

XJ - cross linked polyethylene jacket

CB - cotton braid

GB - glass braid

AB - asbestos covering

FC - fibrous covering

LS - lead sheath

AL - aluminum sheath

UJ - unjacketed

1.2.11 Ground wire. When a ground wire is required as part of a cable configuration, it shall be designated by the letter "G".

1.2.12 Color code.

1.2.12.1 The color code for single conductor fixture wires only shall be designated by the appropriate identifying number as shown in table III.

1.2.12.2 The color code for multi-conductor cords and wires shall be in accordance with tables IV and V except for parallel cords (see 3.2).

2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein:

Federal Specifications:

L-P-378 - Plastic Sheet and Strip, Thin Gauge, Polyolefin.

PPP-B-601 - Boxes, Wood, Cleated-Plywood.

PPP-B-621 - Boxes, Wood, Nailed and Lock-Corner.

PPP-B-636 - Boxes, Shipping, Fiberboard.

PPP-B-1055 - Barrier Material, Waterproofed, Flexible.

Federal Standards:

Fed. Std. No. 123 - Marking for Deomestic Shipment (Civil Agencies).

(Activities outside the Federal Government may obtain copies of Federal Specifications, Standards, and Handbooks as outlined under General Information in the Index of Federal Specifications and Standards and at the prices indicated in the Index. The Index, which includes cumulative monthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.

(Single copies of this specification and other Federal Specifications required by activities outside the Federal Government for bidding purposes are available without charge from Business Service Centers at the General Services Administration Regional Offices in Boston, New York, Washington, DC, Atlanta, Chicago, Kansas City, MO, Fort Worth, Denver, San Francisco, Los Angeles, and Seattle, WA.

(Federal Government activities may obtain copies of Federal Specifications, Standards, and Handbooks and the Index of Federal Specifications and Standards from established distribution points in their agencies.)

Military Standards:

MIL-STD-129 - Marking For Shipment And Storage.

(Copies of Military Specifications and Standards required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on date of invitation for bids or request for proposal shall apply:

Underwriters' Laboratories (UL) Inc. Standards:

No. 62 - Standard for Flexible Cord and Fixture Wire.

(Application for copies should be addressed to the Underwriters' Laboratories, Inc., 207 East Ohio Street, Chicago, Illinois 60611; 1285 Walt Whitman Road, Melville, L.I., New York 11746; or 1655 Scott Blvd., Santa Clara, California 95050.)

National Motor Freight Traffic Association, Incorporated, Agent:

National Motor Freight Classification.

(Application for copies should be addressed to the American Trucking Associations, Inc., Tariff Order Section, 1616 P Street, N.W., Washington, DC 20036.)

Uniform Classification Committee, Agent:

Uniform Freight Classification.

(Application for copies should be addressed to the Uniform Classification Committee, Room 1106, 222 South Riverside Plaza., Chicago, IL 60606.)

3. REQUIREMENTS

3.1 Fire, safety and casualty hazards.

3.1.1 Each contractor shall submit to the contracting agency proof that the cord and fixture wire he proposes to supply under this specification conforms to the requirements of the Underwriters' Laboratories, Inc., Standard No. 62, Flexible Cord and Fixture Wire. The label, or listing mark, of the UL, may be accepted as evidence that the flexible cord or fixture wire conforms to this requirement.

3.1.2 In lieu of the UL label, or listing mark, the contractor shall submit independent proof, satisfactory to the contracting agency, that the flexible cord or fixture wire conforms to the applicable requirements of the published standards including methods of tests of the UL No. 62.

3.1.3 Compliance with the above preliminary requirements in regard to fire, safety and casualty harards does not absolve the contractor from complete compliance with the other requirements of this specification in order to secure acceptance of his material or equipment.

3.2 Color code.

3.2.1 Single conductor. The color of a single conductor fixture wire is usually arbitrarily selected for purposes of differentiating between circuits when a number of single conductor wires are to be used. Consequently, the number designated in the type designation (see 1.2.11) signifies the color of a single conductor cable or wire.

3.2.2 Cords listed in table I, not over 3-conductors, shall be color coded in accordance with table IV, except for SP-1, SP-2, SPT-1, SPT-2, SP-3, SPT-3, HPN, and PO.

3.2.3 Cords listed in table I from 4 to 10 conductors shall be color coded in accordance with table V, except E, EO, Et, and ETP.

3.3 Steel strands for mechanical strength may be employed in a type E, EO, ET, or ETP elevator cable; and, if so used, the steel strands shall be run straight as a fibrous covered or insulated central wire and shall not be cabled with the copper strands of any conductor.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the supplier may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure that supplies and services conform to prescribed requirements.

4.2 Acceptance. Cord and wire furnished under this specification shall conform to all the requirements of this specification. Except as otherwise specified herein, for acceptance purposes, evidence of compliance shall be the label or listing mark of the Underwriters' Laboratories, Inc. or other Government approved nationally recognized testing organization properly equipped and qualified for testing to the appropriate Underwriters' Laboratories, Inc. Standard. Non-conformance with the requirements of this specification shall be cause for rejection.

4.3 Inspection of preparation for delivery. The packaging, packing, and marking of the packages of cord and wire shall be examined to determine compliance with the requirements of section 5 of this specification.

5. PREPARATION FOR DELIVERY

5.1 Packaging. Packaging shall be level A, B or C as specified (see 6.1).

5.1.1 Level A.

5.1.1.1 Coils (AWG sizes 18 to 10). Cord and wire shall be uniformly coiled and packaged with 250 feet per coil in a fiberboard box conforming to PPP-B-636, class weather-resistant, and may be provided with the special knockout feature normally used in commercial practice for dispensing purposes.

5.1.1.2 Coils (AWG sizes 8 to 2). Cord and wire uniformly coiled with 250 feet per coil. The coil shall be spirally wrapped with waterproffed flexible barrier material conforming to PPP-B-1055, class E-2 and sealed.

5.1.1.3 Reels. Cord and wire shall be packaged on non-returnable wood or metal spools or reels designed with strong flanges of a diameter that will protect the cord or wire during shipment or storage. After the cord or wire has been wound on the reel it shall be covered with a full wrap of waterproofed flexible barrier conforming to PPP-B-1055, class E-2. The wrap shall extend between the flanges and be secured in place with a minimum of two metal or non-metallic straps.

5.1.2 Level B.

5.1.2.1 Coils (AWG sizes 18 to 10). Cord and wire shall be uniformly coiled and packaged with 250 feet per coil to a fiberboard box conforming to PPP-B-636, class domestic, provided with the special knockout feature normally used in commercial practice for dispensing purposes.

5.1.2.2 Coils (AWG sizes 8 to 2). Cord and wire shall be uniformly coiled and packaged with 250 feet per coil. The coil shall be wrapped in a bag fabricated from material conforming to L-P-378, minimum thickness 0.0006 inch (6 mil). Each bag shall be heat sealed.

5.1.2.3 Reels. Cord and wire packaged in non-returnable wood or metal spools or reels designed with strong flanges of a diameter that will protect the cord or wire during or storage. After the cord or wire has been wound on the reel, it shall be wrapped in a bag fabricated from material conforming to L-P-378, minimum thickness 0.006 inch (6 mil). Each bag shall be heat sealed.

5.1.3 Level C. Cord and wire shall be packaged in accordance with the suppliers standard practice.

5.2 Packaging. Packing shall be level A, B, or C as specified (see 6.1).

5.2.1 Level A.

5.2.1.1 Coils (AWG sizes 18 to 10). Cord and wire packaged, as specified in 5.1 shall be packed in nailed or wood cleated plywood boxes conforming to PPP-B-621 and PPP-B-601, respectively.

5.2.1.2 Coils (AWG sizes 8 to 2) and reels. Cord and wire packaged, as specified in 5.1.1.2 and 5.1.1.3 shall require no further over packing.

5.2.2 Level B coils and reels. The number of coils or reels, as specified (see 6.1) shall be packed in a snug-fitting fiberboard box conforming to PPP-B-636, class domestic. Where the contract or order indicates that the unit packages is one coil, packing shall be in accordance with 5.1.2.1.

5.2.3 Level C. Wire and cord in quantities, as specified, packaged as specified in 5.1.3 shall be packed in containers to assure carrier acceptance and safe arrival at destination in compliance with Uniform Freight Classification Rules or National Motor Freight Classification Rules.

5.3 Marking. In addition to the markings required by the procurement documents, shipping containers shall be marked in accordance with Fed. Std. No. 123 for civil agencies or MIL-STD-129 for military agencies, as applicable.

TABLE I. Flexible cord

Type	AWG size	Number of Conductors	AWG size of individual strands	Voltage	Temperature
AFC	18-10	2 or 3	36-30	300	150°C(302°F)
AFPO	18-10	2	36-30	300	150°C(302°F)
AFPD	18-10	2 or 3	36-30	300	150°C(302°F)
AFSJ	18-16	2 or 3	36-30	300	150°C(302°F)
C	18-10	2 or more	36-26	300	60°C(140°F)
CFC	18-10	2 or 3	36-30	300	90°C(194°F)
CFPO	18-10	2	36-30	300	90°C(194°F)
CFPD	18-10	2 or 3	36-30	300	90°C(194°F)
E	18-14	2 or more	36-30	300	60°C(140°F)
EO	18-14	2 or more	36-30	300	60°C(140°F)
ET	18-14	2 or more	36-30	300	60°C(140°F)
ETP	18-14	2 or more	36-30	300	60°C(140°F)
HPD	18-12	2, 3, or 4	36-34	300	90°C(194°F)
HPN	18-12	2 (PARALLEL)	36-34	300	90°C(194°F)
HS	14-12	2, 3, or 4	36-34	300	60°C(140°F)
HSJ	18-16	2, 3, or 4	36-34	300	60°C(140°F)
HSJO	18-16	2, 3, or 4	36-34	300	60°C(140°F)
HSO	14-12	2, 3, or 4	36-34	300	60°C(140°F)
P-2	18-16	2 or more	36-26	300	60°C(140°F)
PO	18-10	2 (PARALLEL)	36-26	600	60°C(140°F)
PD	18-10	2 or more	36-26	300	60°C(140°F)
S	18-2	2 or more	*	600	60°C(140°F)
SO	18-2	2 or more	*	600	60°C(140°F)
ST	18-2	2 or more	*	600	60°C(140°F)
STO	18-2	2 or more	*	600	60°C(140°F)
SJ	18-14	2, 3 or 4	**	300	60°C(140°F)
SJO	18-14	2, 3, or 4	**	300	60°C(140°F)
SJT	18-14	2, 3 or 4	**	300	60°C(140°F)
SJTO	18-14	2, 3, or 4	**	300	60°C(140°F)
SP-1	18	2 (PARALLEL)	36-34	300	60°C(140°F)
SP-2	18-16	2 (PARALLEL)	36-34	300	60°C(140°F)
SPT-1	18	2 (PARALLEL)	36-34	300	60°C(140°F)
SPT-2	18-16	2 (PARALLEL)	36-34	300	60°C(140°F)
SP-3	18-12	2 (PARALLEL)	36-30	300	60°C(140°F)
SPT-3	18-10	2 (PARALLEL)	36-30	300	60°C(140°F)
SRD	10-4	3 or 4	36-20	300	60°C(140°F)
SRDT	10-4	3 or 4	36-20	300	60°C(140°F)
SV	18	2	36-34	300	60°C(140°F)
SVO	18	2	36-34	300	60°C(140°F)
SVT	18-17	2	36-34	300	60°C(140°F)
SVHT	18-17	2	36-34	300	90°C(194°F)

* 18 AWG, 36-30; 16-2 AWG, 36-26
** 18 AWG, 36-30; 16-14 AWG, 36-26

TABLE II. Single conductor, fixture wire

Type	AWG	AWG Stranding	Volts	Temperature
AF	18-10	Solid, 7 Strand or 36-30 AWG	300	150°C(302°F)
CF	18-10	Solid, 7 Strand or 36-30 AWG	300	90°C(194°F)
FFH-1	18	36-26	300	75°C(167°F)
FFH-2	18-16	36-26	600	75°C(167°F)
PF	18-14	Solid or 7 Strand	600	200°C(392°F)
PFF	18-14	36-26	600	150°C(302°F)
PGF	18-14	Solid or 7 Strand	600	200°C(392°F)
PGFF	18-14	36-26	600	150°C(302°F)

TABLE II. Single conductor, fixture wire (con.)

Type	AWG	AWG Stranding	Volts	Temperature
RF-2	18-16	Solid or 7 Strand	600	60°C(140°F)
RFH-1	18	Solid or 7 Strand	300	75°C(167°F)
RFH-2	18-16	Solid or 7 Strand	600	75°C(167°F)
SF-1	18	Solid or 7 Strand	300	200°C(392°F)
SF-2	18-14	Solid or 7 Strand	600	200°C(392°F)
SFF-1	18	36-26	300	150°C(302°F)
SFF-2	18-14	36-26	600	150°C(302°F)
TF	18-16	Solid or 7 Strand	600	60°C(140°F)
TFF	18-16	36-26	600	60°C(140°F)
TFN	18-16	Solid or 7 Strand	600	90°C(194°F)
TFFN	18-16	36-26	600	90°C(194°F)

TABLE III. Color-code identification for single conductor fixture wire

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.

TABLE IV. Color codes for cords with not over 3 conductors

Conductor number	Insulation color
1	Black
2	White
3	Green or green with yellow stripe

TABLE V. Color codes for cords of 4 to 10 conductors

Conductor number	Insulation color
1	Black
2	White
3	Red
4	Green or green with yellow stripe
5	Orange
6	Blue
7	Brown
8	Gray
9	Yellow
10	Purple

6. NOTES

6.1 Ordering data. Purchasers should select the preferred options permitted herein, and include the following information in procurements:

(a) Title, symbol, and date of this specification.
(b) Type designation No. (see 1.2.2).
(c) Levels of packaging, packing, and marking requirements (see 5).

MILITARY INTEREST

Military Coordinating Activity:

Army - EL

CUSTODIANS:

Army - EL
Navy - YD
Air Force - 17

Review activities:

Army - AT, ME, ML
Navy - SH
Air Force - 80
NSA
DSA - LS

Users activity:

Army - AV

CIVIL AGENCY COORDINATING ACTIVITIES:

GSA-FSS, PCD
DC GOVT - DCG
DOT - ACO
INTERIOR - BPA
HEW - FDA

Preparing Activity:

GSA-FSS

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