Superseding
MIL-W-3795A
30 July 1957

MILITARY SPECIFICATION

WIRE, ELECTRICAL (TINSEL)

This specification is mandatory for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. - This specification covers uninsulated tinsel electrical wire used in the manufacture of tinsel electrical cord, where extreme flexibility is required.

1.2 Classification. - This specification covers the types of tinsel electrical wire listed in table I, as specified. (See 6.2.)

Table I. Tinsel electrical wire.

Type	Overall diameter	Breaking load minimum
	Inch	Pounds
I	0.040 ± 0.002	43
II	.032 ± .002	25
III	.025 ± .002	13
IV	.022 ± .002	10

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.

SPECIFICATIONS

Military

MIL-C-572 - Cords, Yarns and Monofilaments - Organic Synthetic Fiber.

MIL-C-45662 - Calibration System Requirements.

STANDARDS

Military

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.

(Copies of 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.)

3. REQUIREMENTS

3.1 Material.

3.1.1 Tinsel ribbon. - Tinsel ribbon shall be made by rolling wire into a flat ribbon of uniform cross section. For use in type I wire, AWG size 37 hard-drawn bronze wire shall be used, and for types II, III, IV, AWG size 40 hard-drawn cadmium copper wire shall be used. When specified (see 6.2), the ribbon shall be coated with a continuous and uniform coating of silver or tin. Ribbon sizes shall be in accordance with table II.

Table II. Ribbon sizes.

Dimension	For type I wire	For types II, III, and IV wire
Width, range, inclusive, inch	0.015 to 0.020	0.007 to 0.011
Thickness, range, inclusive, inch	.0009 to .0013	.0008 to .0012

3.1.1.1 Performance requirements. - The ribbon shall meet the performance requirements specified in table III. (See 4.5.2 to 4.5.4, incl.)

Table III. Performance requirements for ribbon.

Performance characteristic	For type I wire	For types II, III, and IV wire
Breaking load, minimum, ounces.	19.4	11
DC resistance, at 20°C, range, inclusive, ohms per foot.	0.5 to 1.3	0.8 to 1.5
Bending, minimum, number of bends.	750	1,000

3.1.2 Strand and core yarns. - The synthetic ply yarn of the strand (see 3.2.1) and of the wire core (see 3.2.2) shall conform to type SAR of MIL-C-572, except that for type IV, these yarns shall be polyaryl amide fiber, Du Pont "Nomex", or equal; short fiber spun yarn may be used for under 200 denier. However, other types of synthetic-textile materials may be substituted, if approved by the agency or service concerned. Vegetable and sulfonated oils shall not be used as lubricants in the processing of rayon.

3.1.2.1 Conductivity of strand and core yarns. - The conductivity of a solution prepared from the yarns of the strands and wire core, removed from the finished (but uninsulated) wire, shall not exceed 50 micromhos per centimeter cube at 20°C. (See 4.5.5.)

3.2 Construction.

3.2.1 Tinsel strand. - Two ribbons shall be evenly wound in a double layer about a synthetic ply-yarn strand. The first layer of the ribbon shall lie flat against the strand yarn and the second layer of ribbon shall lie flat against the first layer of ribbon. Adjacent turns of each ribbon shall lie flat and the adjacent edges shall not touch nor overlap. Strand construction shall also be in accordance with table IV.

Table IV. Strand construction.

Construction	For type I wire	For type II wire	For type III wire	For type IV wire
Strand yarn	450 denier or equivalent	270 denier or equivalent	150 denier or equivalent	200 denier or equivalent (polyaryl amide)
Direction of lay . .	Right hand	Left hand	Right hand	Right hand
Number of turns of ribbon per inch of strand yarn, minimum*	29	48	48	39

*Measured over any 6-inch portion.

3.2.2 Tinsel electrical wire. - Wire construction shall be in accordance with table V. Six strands (see 3.2.1) for types I, II and III wire, and four strands for type IV wire, shall be evenly wound in a single layer about a synthetic ply-yarn core. (See 3.1.2.) For type IV wire construction, the synthetic ply-yarn center strand may be omitted at the discretion of the supplier.

Table V. Wire construction.

Construction	For type I wire	For type II wire	For type III wire	For type IV wire
Core yarn	270 denier, 4 ply, or equivalent	270 denier, 3 ply, or equivalent	150 denier, 3 ply, or equivalent	100 denier or equivalent (polyaryl amide)
Direction of lay . .	Left hand	Right hand	Left hand	Left hand
Number of turns of each strand per inch of core yarn, range, inclusive	2.0 to 3.0	2.5 to 3.25	2.0 to 3.0	2.0 to 5.0
Overall wire diameter, inch	0.040 ± 0.002	0.032 ± 0.002	0.025 ± 0.002	0.022 ± 0.002

3.2.2.1 Performance requirements. - The wire shall meet the performance requirements in table VI. (See 4.5.2 and 4.5.3.)

Table VI. Performance requirements for wire.

Performance characteristic	Type I	Type II	Type III	Type IV
Breaking load, minimum, pounds.	43	25	13	10
DC resistance, at 20°C, maximum, ohms per foot.	0.28	0.25	0.25	0.27

3.3 Workmanship. - Tinsel electrical wire shall be manufactured and processed in a careful and workmanlike manner, in accordance with good design and sound practice. The wire shall be uniform in appearance, shall be free from injurious defects, and shall contain no visible splits, nicks, or slivers.

6. NOTES

6.1 Intended use. - The uninsulated tinsel electrical wires described in this specification are intended for use where extreme flexibility is required, such as in tinsel electrical cord for telephones, switchboards, microphones, and similar equipment.

6.2 Ordering data. - Procurement documents should specify the following:

(a) Title, number, and date of this specification.

(b) Type of wire required. (See 1.2.)

(c) Whether coated ribbon is required. (See 3.1.1.)

6.3 Corrosion. Where corrosion to the wire by rubber chemicals in the wire insulation (or migration from the jacket through the insulation) will occur, tin-coated ribbon should be used where it is not feasible to adjust the rubber compound.

Custodians:
Army - EL
Air Force - 17

Review Activities:
Air Force - 80, 85
NSA
DSA - IS

User Activities:
Army - AV, MI, ME, MU
Navy - OS, SH

Preparing Activity:
Army - EL

Project No. 6145-0540

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SPECIFICATION ANALYSIS SHEET

Form Approved
Budget Bureau No. 22-R255

INSTRUCTIONS: This sheet is to be filled out by personnel, either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity. Comments and suggestions submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or serve to amend contractual requirements.

SPECIFICATION
MIL-W-3795B Wire, Electrical(Tinsel)

ORGANIZATION

CITY AND STATE

CONTRACT NUMBER

MATERIAL PROCURED UNDER A

☐ DIRECT GOVERNMENT CONTRACT ☐ SUBCONTRACT

1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?

A. GIVE PARAGRAPH NUMBER AND WORDING.

B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES

2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID

3. IS THE SPECIFICATION RESTRICTIVE?

☐ YES ☐ NO *(If "yes", in what way?)*

4. REMARKS *(Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)*

SUBMITTED BY *(Printed or typed name and activity - Optional)*

DATE

DD FORM 1 JAN 56 1426

REPLACES EDITION OF 1 OCT 54 WHICH MAY BE USED.

ESC-FM 1068-68