



**STANDARD FOR
TELEPHONE CORDAGE
AND
CORD SETS**

Approved by
AMERICAN NATIONAL STANDARDS INSTITUTE
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ICEA STANDARD FOR
TELEPHONE CORDAGE AND CORD SETS

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FOREWORD

ICEA Standards are adopted in the public interest and are designed to eliminate misunderstanding between the manufacturer and user and to assist the user in selecting and obtaining proper products for his particular need. Existence of an ICEA Standard does not in any respect preclude the manufacture or use of products not conforming to the Standard.

The user of this Standard is cautioned to observe any applicable health or safety regulations and rules relative to the manufacture and use of the cable made in conformity with this Standard. This Standard hereafter assumes that manufacture, testing, installation and maintenance of cables defined by this Standard will be performed only by properly trained personnel using suitable equipment.

Questions of interpretation of ICEA Standard can only be accepted in writing at Headquarters by the Secretary, and the reply shall be provided in writing.

Suggestions for improvements in this Standard are welcome, and should be sent to ICEA at the address below.

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CONTENTS

SECTIONS

		PAGE
PART 1	INTRODUCTION	
	1.1 Scope	1
	1.2 General	1
	1.3 Units	2
	1.4 References	2
	1.5 Information to be Supplied by the User . .	2
	1.6 Quality Assurance	2
PART 2	CONDUCTORS	
	2.1 General	3
	2.2 Conductor Types	3
PART 3	INSULATIONS	
	3.1 General	6
	3.2 Materials	6
	3.3 Insulation Requirements	6
PART 4	INSULATED CONDUCTOR ASSEMBLY AND CIRCUIT IDENTIFICATION	
	4.1 General	7
	4.2 Parallel Construction	7
	4.3 Twisted Pair Configuration	8
PART 5	JACKETS	
	5.1 General	9
	5.2 Jacket Materials	9
	5.3 Jacket Requirements	9
PART 6	CORDAGE REQUIREMENTS	
	6.1 General	11
	6.2 Conductor Continuity	11
	6.3 Dielectric Strength Between Conductors . .	11
	6.4 Insulation Resistance	11
	6.5 Low Temperature Flexibility	11
	6.6 Staining of ABS	11
	6.7 Heat Shock	11
	6.8 Surge Test	11
	6.9 All-Wires Flame Test	11
	6.10 Jacket Voltage Breakdown Rating Test . .	12
	6.11 Crush Resistance Test	12
PART 7	TERMINATING DEVICES	
	7.1 General	13
	7.2 Modular Plugs	13
	7.3 Modular Jacks	13
	7.4 Connectors	13
	7.5 Terminals	13

PART 8	CONSTRUCTION AND REQUIREMENTS OF SPECIFIC TYPES	
8.1	Telephone Line Cord Sets	14
8.2	Telephone Extension Line Cord Set	16
8.3	Telephone Handset Cord	16
PART 9	TESTING AND TEST METHODS	
9.1	Testing	19
9.2	Extent of Testing	19
9.3	Conductor Continuity	19
9.4	Conductor Resistance	19
9.5	Dielectric Strength Between Conductors	19
9.6	Dielectric Strength, Conductor to Outer Metallic Elements	20
9.7	Insulation Resistance	20
9.8	Low Temperature Flexibility	20
9.9	Stain Test to ABS	20
9.10	Heat Shock	20
9.11	Surge Test	21
9.12	Cord/Plug Pull Test	21
9.13	Crush Resistance Test	21
9.14	Bending Life Test	22
9.15	Oscillation Test	22
9.16	Strain Relief	23
9.17	Tensile Pull Strength of Tinsel Conductor	23
9.18	Tinsel Ribbon Bend Test	23
9.19	All-Wires Flame Test	23
9.20	Fault Current Test	23
9.21	Jacket Tensile Strength	24
9.22	Jacket Voltage Breakdown Rating Test	24
PART 10	REFERENCES	
10.1	General	25
10.2	American Society for Testing and Materials (ASTM)	25
10.3	Electronic Industries Association (EIA)	26
10.4	The Institute of Electrical and Electronic Engineers, Inc. (IEEE)	26
10.5	Federal Communications Commission (FCC)	26
10.6	Underwriters Laboratories (UL)	26
10.7	Canadian Standards Association (CSA)	26
APPENDIX A	LACQUER MARRING TEST	27
TABLES	2-1 CONDUCTOR DIAMETER & RESISTANCE REQUIREMENTS	5
	4-1 COLOR CODE FOR PARALLEL CONSTRUCTION	8
	4-2 COLOR CODE FOR TWISTED PAIR CONSTRUCTIONS	8

PART 1

INTRODUCTION

- 1.1 **SCOPE:** This specification covers the requirements for telephone cordage and cord sets.

The cordage consists of insulated conductors laid in a parallel or twisted construction with an overall covering. The cordage may be finished in flat or round configuration. The cordage may be formed into a retractile coil.

Cords sets are completed by the assembly of connectors, modular jacks, modular plugs, terminals or a combination of these terminations on the cordage.

Materials, constructions and performance requirements are included in the Standard, together with applicable test procedures.

Products covered by this standard are intended to conform to all applicable requirements of Part 68 of the FCC Rules and Regulations.

This specification does not apply to cordage and cord sets which contain conductors other than those used specifically for communications circuits, such as electric light and power.

- 1.2 **GENERAL:** This publication is so arranged that cordage and cord sets may be selected from numerous constructions. Parts 2 to 5 cover the major components of the cordage.

- Part 2 - Conductors
- Part 3 - Insulations
- Part 4 - Insulated Cordage Assembly &
Circuit Identification
- Part 5 - Jackets
- Part 6 - Cordage Requirements
- Part 7 - Termination Devices

Each of these parts designates the materials, material characteristics, dimensions and tests applicable to the particular component.

Part 8 covers cord sets for specific service and/or installation conditions and gives construction details and test requirements for the specific types. If there is a conflict between Part 8 and Parts 1 through 7 and 9, the provisions of Part 8 apply.

Part 9 describes testing and test methods.

Part 10 contains references to other standards.

- 1.3 **UNITS:** In this Standard, U.S. customary units are employed. Their approximate metric equivalents are included for information only. The rounding-off method of ASTM E 29 shall be used for determining measurement tolerances.
- 1.4 **REFERENCES:** See Part 10 for a list of titles and dates of other standards to which reference is made herein.
- 1.5 **INFORMATION TO BE SUPPLIED BY THE USER:** When requesting proposals from cordage/cord set manufacturers, the prospective user should describe the desired product by reference to pertinent sections of this Standard. To help avoid misunderstandings and possible misapplication of the product, the user should also provide pertinent information concerning the intended application.
- 1.6 **QUALITY ASSURANCE:** It is the responsibility of the manufacturer to establish quality assurance procedures which will ensure that the product will meet the requirements of this Standard on a continuing basis. It is not intended that a complete testing program shall be carried out on every length of conductor, cordage, or cord set. When the user wishes to specify acceptance tests or other quality procedures, it is essential that agreement be reached between the user and the manufacturer at the time of ordering.

PART 2

CONDUCTORS

- 2.1 **GENERAL:** Conductors that may be utilized in the construction of the product include, but are not limited to, stranded copper or tinsel as described below. Conductor types shall not be intermixed within one cordage construction.
- 2.2 **CONDUCTOR TYPES:** One of the following types may be used, and shall meet the requirements shown.
- 2.2.1 **CONCENTRIC-LAY STRANDED CONDUCTOR (COPPER OR TINNED COPPER):**
- 2.2.1.1 Stranded conductors shall be made from round copper wire. Before stranding, the individual wires shall meet the requirements of ASTM B 3 for untinned and ASTM B 33 for tinned wire, except the requirements for "dimensions and permissible variations" are waived.
- 2.2.1.2 The stranded conductors may include, but are not limited to, an assembly of 7 wires. The stranded conductors shall meet the requirements of ASTM B 174, if untinned, and ASTM B 286, if tinned.
- 2.2.1.3 The sizes of the conductors, their nominal diameters and maximum resistance shall be as indicated in Table 2-1. Resistance shall be measured according to 9.4
- 2.2.1.4 A joint in the stranded conductor may be made by separately joining each individual strand. A joint may also be made by joining the conductor as a whole, provided that the resulting solid section is not longer than 0.5 inches (13 mm). The conductor diameter in a joined section shall not be increased.
- 2.2.1.5 Any section of conductor that includes a factory joint shall have a tensile strength not less than 85% of the tensile strength of an adjacent section of the conductor without a joint.
- 2.2.2 **TINSEL CONDUCTOR:**
- 2.2.2.1 Tinsel conductors shall be composed of copper alloy tinsel ribbons and non-metallic support thread(s).
- 2.2.2.2 The metal for the tinsel ribbon may be, but is not limited to, a copper alloy, composed of copper and (a) 1.0 to 1.5% cadmium or (b) 0.6 to 0.7% tin and 0.03 to 0.05% phosphorous.

- 2.2.2.3 The complete tinsel conductor shall be comprised of multiple metal ribbons and support thread(s) assembled in either a multiple ribbon or a multiple strand construction as described below.
- 2.2.2.3.1 In a multiple ribbon construction, each ribbon shall be rolled from a wire to a width of not less than 0.016 inch (0.41 mm) and not more than 0.022 inch (0.56 mm). Ribbons shall be wound in a helix around a support thread. Each ribbon shall have not less than 18 turns per inch (0.7 turns per mm) along a length of the core, as determined by an average from 10 samples each 5 inches (127 mm) long.
- 2.2.2.3.2 In a multiple strand construction, each ribbon shall be rolled from a wire to a width of approximately 0.012 inch (0.30 mm). The ribbon shall be evenly wound in a helix around a support thread. The ribbon shall lie flat and there shall be not less than 50 turns per inch (2 turns per mm) along a 1 inch (25 mm) length of thread, as determined by an average from 10 samples, each 5 inches (127 mm) long. The strands shall be evenly assembled in a helix of not less than 2-1/4 nor more than 3-1/4 turns per inch (not less than 0.09 nor more than 0.1 turns per mm) as determined by measurements on a three foot (0.9 meter) length of finished conductor.
- 2.2.2.4 The outside diameter of the completed tinsel conductor shall meet the dimensional and resistance requirements of Table 2-1. Resistance shall be measured in accordance with 9.4.

TABLE 2-1

CONDUCTOR DIAMETER & RESISTANCE REQUIREMENTS

TYPE/SIZE	CONDUCTOR DIAMETER		RESISTANCE @ 20°C	
	NOMINAL		MAXIMUM	
	inch	mm	Ω/ft	Ω/m
7-Strand 36 AWG/28 AWG	0.0150	0.381	0.0707	0.232
7-Strand 35 AWG/27 AWG	0.0168	0.427	0.0556	0.182
7-Strand 34 AWG/26 AWG	0.0189	0.480	0.0444	0.145
Tinsel	0.024	0.61	0.50	1.64