STANDARD FOR
FIBER TO THE ANTENNA (FTTA)
OPTICAL FIBER CABLE

ANSI/ICEA S-119-741-2016

INSULATED CABLE ENGINEERS ASSOCIATION, Inc.

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FOREWORD

(This Foreword is not part of this Standard)

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 cable made in conformity with this Standard. This Standard hereafter assumes that only properly trained personnel using suitable equipment will perform manufacture, testing, installation and maintenance of cables defined by this Standard.

Requests for interpretation of this ICEA Standard must be submitted in writing (hard copy, email, or fax) to the Insulated Cable Engineers Association to the ICEA Secretary. The mailing address of ICEA Headquarters and a Contact link are shown on the ICEA web site:

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An official written interpretation will be provided.

The members of the ICEA Joint Working Group 741, who participated in the first edition of this standard, were:

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INTRODUCTION

1.1 Scope

1.1.1 Products

Fiber to the Antenna (FTTA) cables covered by this standard include cable used for distribution and delivery of optical fiber from the base band unit (BBU) of a cell site to the remote radio unit (RRU) on the associated structure. These cables may be hybrid design, incorporating electrical conductors for low voltage power delivery and control, or standalone optical cables. This standard primarily references ANSI/ICEA S-87-640-2011 (ICEA 640) and ANSI/ICEA S-104-696-2013 (ICEA 696) for optical performance requirements. Standalone optical cables complying with ICEA 640 or ICEA 696 shall also be considered compliant with this standard.

1.1.2 Application Space

All designs covered by this Standard are intended for operation under normal conditions found in the communications user's locations, most often cell towers. These products normally convey digital communications signals (voice, video, and data) from point to point or point to multi point. Products covered by this Standard may be factory terminated with connectors or splicing modules.

1.1.3 Temperature Ranges

The normal temperature ranges for cables covered by this Standard are listed in Table 1-1:

For the purposes of this standard, very-Iow temperature applications are defined as -50 °C (-58 °F) per 1.4.1.6 and are addressed in Annex C of ICEA 640 (Normative), which contains requirements for lower operating and storage temperatures than listed in Table 1-1.

Table 1-1
Temperature Ranges

	Cables with No Fire Resistance Rating		Cables with Plenum Fire Resistance Rating		Cables with Other Fire Resistance Rating	
	°C	(°F)	°C	(°F)	°C	(°F)
Operation	-40 to +70	(-40 to 158)	-40 to +70	(-40 to 158)	-40 to +70	(-40 to 158)
Storage and Shipping	-40 to +70	(-40 to 158)	-40 to +70	(-40 to 158)	-40 to +70	(-40 to 158)
Installation	-30 to +60	(-22 to +140)	-0 to +60	(+32 to +140)	-10 to +60	(+14 to +140)

1.1.4 Tensile Rating

Antenna locations vary widely, which places varying demands on the cables servicing them. Appropriate tensile ratings for FTTA cables are thus application dependent.

FTTA cables that are designated for vertical, self-support applications, e.g., free-hanging inside a monopole, shall be rated for residual load that matches or exceeds the weight of the free hanging portion of the cable.

1.1.5 Minimum Bend Diameter

The standard minimum bend diameters for cables covered by this Standard are:

Residual (Installed or static): 20 x Cable OD

Loaded Condition (During Installation or self-support): 40 x Cable OD

For cables not having a circular cross-section, bend diameter requirements are to be determined using the thickness (minor axis) as the cable diameter and bending in the direction of the preferential bend.

Smaller cable bend diameters are permissible as agreed upon between the user and manufacturer.

1.1.6 Fire-Resistance

Fire resistance is application dependent. The user should consult the local Authority Having Jurisdiction (AHJ) to determine required fire resistance ratings, if any. Some fire resistance ratings that may be appropriate are:

1.1.6.1 Plenum Cables

Cables listed as having adequate fire-resistance and low smoke producing characteristics for use in ducts, plenums and other space used for environmental air. In the context of this standard, Plenum rating would only be applicable to standalone optical cables.

1.1.6.2 Riser Cables

Cables listed as having fire-resistant characteristics capable of preventing the carrying of fire from floor to floor for use in a vertical run in a shaft or from floor to floor. In the context of this standard, Riser rating would only be applicable to standalone optical cables.

1.1.6.3 General Purpose

Cables listed as being resistant to the spread of fire for general-purpose use, with the exception of risers, plenums, and other space used for environmental air. In the context of this standard, General Purpose rating would only be applicable to standalone optical cables.

1.1.6.4 Tray Rated

Cables listed as being intended for use in accordance with Article 336 and other applicable parts of the National Electrical Code (NEC), ANSI/NFPA 70, in cable trays, in raceways, and where supported in outdoor locations by a messenger wire. In the context of this standard, Tray Rating would be applicable to hybrid cables and the designation is TC-OF (Tray Cable – Optical Fiber).