STANDARD FOR

OPTICAL FIBER DROP CABLE

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FOREWORD

(This Foreword is not part of this Standard.)

This Standard provides information on specifying optical fiber cables for use as drop cables in telecommunications applications.

The first edition of this Standard was approved by ICEA on June 5, 2003. That edition was adopted by the Telecommunications Industry Association (TIA) as ANSI/TIA-472D000-B in September 2004. This second edition was approved by ICEA on September 13, 2012. It was approved by The American National Standards Institute (ANSI) on March 13, 2013. The members of the ICEA Communications Cable Division Working Group who participated in the fifth edition of this standard were:

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This issue replaces the previous issue of ICEA S-110-717-2003/ANSI/TIA-472F000, *Standard for Optical Fiber Drop Cable*. Major changes in this revision include the following:

- Addition of new fiber types
- Addition of a buffer tube kink test
- New, altered definitions of composite and hybrid cables
- Addition of an Expanded Ambient Test Condition and designation of those tests which utilize it.

This Standard contains eight annexes. Annex B is normative and considered part of this Standard when required by the customer. Annexes A, C, D, and E are informative and are not considered 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 a particular need. The existence of an ICEA Standard does not in any respect preclude the manufacture or use of products not conforming to this 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 manufacture, test, install, and/or perform maintenance on cables defined by this Standard.

Questions of interpretation of ICEA Standards can only be accepted in writing and the reply shall be provided in writing. Suggestions for improvements in this Standard are welcome. Questions and suggestions shall be sent to:

Secretary
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United States of America

Alternatively, you can contact ICEA by utilizing the *Contact* link in the ICEA web site:

www.icea.net

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INTRODUCTION

1.1 Scope

1.1.1 General

This Standard covers optical fiber communications cables intended for use in outdoor and/or indoor/outdoor optical fiber drop applications. Materials, construction, and performance requirements are included in this Standard, together with applicable test procedures.

Optical fiber communications cables within the scope of Multiple Dwelling Unit (MDU) applications, as defined by ICEA S-115-730, may include specific types of drop cables. For these MDU drop cables, the requirements of S-730 supersede the requirements of this Standard, except by agreement between manufacturer and user.

Refer to other published ICEA cable product Standards for information for optical fiber cable requirements for other applications:

- S-104-696 (ANSI/TIA-472C000-B) for optical fiber communications cables intended for use in other combined indoor/outdoor applications,
- S-87-640 (to be TIA-472D000-C) for optical fiber communication cables intended for use in other outdoor applications,
- S-83-596 (TIA-472C000-C) for optical fiber communications cables intended only for indoor use, and
- S-112-718 for optical fiber cable for placement in sewers.
- S-115-730 for optical fiber cable for multiple-dwelling units.

1.1.2 Application Space

Products covered by this Standard are intended for operation under conditions normally encountered in the last portion of all-optical networks. This space exists from the Network Access Point (NAP) which is typically the access point into the distribution network, or other hardware serving that purpose, ending at or inside the subscriber premises. These products convey communications signals (voice, video, and data) between the communications network and the subscriber premises. Products covered by this Standard may be factory-terminated with connectors or other telecommunications hardware as appropriate.

Products covered by this Standard may be designed for aerial installation—either self-supporting or lashed to messengers or other cables. These products may be designed to be installed underground—direct buried, trenched, or installed in ducts by any of a number of methods.

When a hybrid cable (a cable with both optical fibers and metallic conductors) is required, the applicable metallic conductor requirements shall be as established by agreement between the end user and the cable manufacturer. The requirements of ICEA S-84-608, the filled OSP copper cable standard, should be considered when determining appropriate requirements.

For the purposes of this standard, user premises are defined as residential properties and small to medium sized businesses located in facilities that can be served by an optical cable having 12 or fewer fibers, with typical distances less than or equal to 100 m in length. Most applications will only require cables with four or fewer fibers. Fiber counts higher than 12 are allowed. Products covered by this Standard are not intended for use in extended distance applications, which are typically characterized by higher fiber count cables and which specify more stringent design and performance requirements. The suitability of products covered by this Standard in applications other than those for which they are intended should be as agreed upon between the manufacturer and user.

1.1.3 Temperature Ranges

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

Table 1-1
Cable Normal Temperature Ranges

	Outdoor Cable		Indoor/Outdoor Cable (fire-resistant)	
	℃	(℉)	℃	(℉)
Operation	-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)
Installation	-30 to +60	(-22 to +140)	-10 to +60	(+14 to +140)

1.1.4 Tensile Rating

For the purposes of this document, the standard tensile rating represents the maximum allowable installation load for the cable.

The standard tensile ratings for products covered by this Standard are 1335 N (300 lbf) for cables designed for installation by pulling, and 440 N (100 lbf) for cables that are direct-buried, placed in the ground by trenching equipment, or blown into ducts. The residual load is defined as a load equivalent to 30 % of the

standard tensile rating, as related to all cable designs, except aerial self-supporting.

For self-supporting aerial applications there may be additional considerations, based on the particular application, which need to be addressed to ensure that the cable design is appropriate for the self-supporting distance (typically 30 m [100 ft] or less) and environmental loading requirements. See Paragraph 7.24 and Annex C for information on aerial plant requirements and considerations.

For aerial applications in which the drop cable is lashed to a separate messenger wire, the use of a cable designed for installation by direct burial, trenching, or pulling into duct may be adequate.

1.1.5 Minimum Bend Diameter

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

Condition	Bend Diameter
Unloaded (Installed):	20 x Cable OD
Loaded (During Installation):	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.

For cables with very small diameters or thickness, the manufacturer may specify fixed minimum bend diameters.

1.1.6 Fire-Resistance

Fire tests may be applicable based on the specific drop cable application. Users of this document are encouraged to consult pertinent Building and Fire Codes, such as those described in Paragraph 1.9, to ensure product compliance to the requirements for a particular installation.

For purposes of this document, cables intended strictly for outdoor use need not be listed for fire-resistance. Cables intended for indoor use, or which transition from outdoor to indoor, may be required to be tested and marked with the appropriate fire-resistance listing as referenced in Paragraph 1.9.

The choice of materials needed to achieve adequate fire-resistance may impact the ability of such cables to be handled at low temperatures. Refer to Table 1-1 for temperature ranges.