Irish Standard
I.S. EN IEC 60794-1-211:2021

Optical fibre cables - Part 1-211: Generic specification - Basic optical cable test procedures - Environmental test methods - Sheath shrinkage, method F11

I.S. EN IEC 60794-1-211:2021

Incorporating amendments/corrigenda/National Annexes issued since publication:

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National Foreword

I.S. EN IEC 60794-1-211:2021 is the adopted Irish version of the European Document EN IEC 60794-1-211:2021, Optical fibre cables - Part 1-211: Generic specification - Basic optical cable test procedures - Environmental test methods - Sheath shrinkage, method F11

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 60794-1-211

March 2021

ICS 33.180.10

Supersedes EN IEC 60794-1-22:2018 and all of its amendments and corrigenda (if any)

English Version

Optical fibre cables - Part 1-211: Generic specification - Basic optical cable test procedures - Environmental test methods - Sheath shrinkage, method F11 (IEC 60794-1-211:2021)

Câbles à fibres optiques - Partie 1-211: Spécification générique - Procédures fondamentales d'essais des câbles optiques - Méthodes d'essais d'environnement - Rétraction de la gaine, méthode F11
(IEC 60794-1-211:2021)

Lichtwellenleiterkabel - Teil 1-211: Fachgrundspezifikation - Grundlegende Prüfverfahren für Lichtwellenleiterkabel - Umweltprüfverfahren - Mantelschrumpf, Methode F11
(IEC 60794-1-211:2021)

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Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

The text of document 86A/2074/FDIS, future edition 1 of IEC 60794-1-211, prepared by SC 86A "Fibres and cables" of IEC/TC 86 "Fibre optics" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60794-1-211:2021.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2021-12-25
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2024-03-25

This document supersedes EN IEC 60794-1-22:2018 and all of its amendments and corrigenda (if any).

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The text of the International Standard IEC 60794-1-211:2021 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60794-1-2	NOTE	Harmonized as EN IEC 60794-1-2
IEC 60811-503	NOTE	Harmonized as EN 60811-503

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60794-1-1	-	Optical fibre cables - Part 1-1: Generic specification - General	EN 60794-1-1	-
IEC 60794-1-22	2017	Optical fibre cables - Part 1-22: Generic specification - Basic optical cable test procedures - Environmental test methods	EN IEC 60794-1-22	2018

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IEC 60794-1-211

Edition 1.0 2021-02

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Optical fibre cables –
Part 1-211: Generic specification – Basic optical cable test procedures – Environmental test methods – Sheath shrinkage, method F11

Câbles à fibres optiques –
Partie 1-211: Spécification générique – Procédures fondamentales d'essais des câbles optiques – Méthodes d'essais d'environnement – Rétraction de la gaine, méthode F11

IEC 60794-1-211:2021-02(en-fr)

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IEC 60794-1-211

Edition 1.0 2021-02

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Optical fibre cables –
Part 1-211: Generic specification – Basic optical cable test procedures – Environmental test methods – Sheath shrinkage, method F11

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OPTICAL FIBRE CABLES –

Part 1-211: Generic specification – Basic optical cable test procedures – Environmental test methods – Sheath shrinkage, method F11

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as “IEC Publication(s)”). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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IEC 60794-1-211 has been prepared by subcommittee 86A: Fibres and cables, of IEC technical committee 86: Fibre optics. It is an International Standard.

This document cancels and replaces IEC 60794-1-22:2017. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to IEC 60794-1-22:2017:

a) method F11 (cables intended for patch cords) of IEC 60794-1-22:2017 was renumbered F11A and renamed as "sheath shrinkage (cables to be terminated with connectors)";
b) a second method F11B is newly included that was adapted from ANSI/TIA-455-86-A;
c) in method F11A, the thermal exposure from ambient to the specified temperature was replaced by temperature cycling between a low and high temperature according to IEC 60794-1-22, method F1;

d) in method F11A, the continuing of the test cycles until the shrinkage exhibits a variation less than ±1 mm was replaced with a fixed number of cycles specified by the detail specification;

e) in method F11A, the average was changed to maximum sheath shrinkage that shall not exceed the value specified in the relevant detail specification;

f) in both methods, the alternative that the sample may be cut to length and the length between the cut sheath ends measured is added.

The text of this International Standard is based on the following documents:

Draft	Report on voting
86A/2074/FDIS	86A/2087/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

A list of all parts in the 60794 series, published under the general title *Optical fibre cables*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

INTRODUCTION

This document defines two test methods to measure the shrinkage of the sheath due to thermal exposure of cables intended for termination with connectors and cables for general purpose.

This document cancels and replaces method F11 of IEC 60794-1-22:2017, which will be withdrawn. It includes an editorial revision, based on the new structure and numbering system for optical fibre cable test methods. Additionally, technical changes were implemented. The environmental tests contained in IEC 60794-1-22:2017 will be individually numbered in the IEC 60794-1-2xx series. Each test method is now considered to be an individual document rather than part of a multi-test method compendium. Full cross-reference details are given in IEC 60794-1-2.

This document includes a first method F11 of IEC 60794-1-22:2017 named "sheath shrinkage test for cables intended for patch cords". This method was renumbered as method F11A in this document. There are technical changes in method F11A. The thermal exposure from ambient to the specified temperature was replaced by temperature cycling according to IEC 60794-1-22, method F1. Also, the continuing of the test cycles until the shrinkage exhibits a variation less than ±1 mm was replaced by a fixed number of cycles according to the detail specification.

This document includes a second method F11B for sheath shrinkage of cable for general purpose. This test procedure adapts the method in ANSI/TIA-455-86-A.

The numbering of these tests continues the F-series numbering sequence of IEC 60794-1-22:2017.

A test procedure other than method F11A and method F11B to measure the shrinkage exists. Method F17 according to IEC 60794-1-22 defines shrinkage testing on a cable sample with a minimum length of 10 m or longer by measuring the fibre protrusion and, indirectly, the buffered fibre or fibre tube protrusion at both ends.

For electric and optical fibre cables, a shrinkage test for sheaths according to IEC 60811-503 exists that uses a nominal sample length of 500 mm and exposes the sample over a specified temperature and time. Afterwards, the sample is allowed to cool in air to ambient temperature. Five such thermal cycles are carried out.

IEC TR 62959[1] provides information on cable shrinkage characterisation of optical fibre cables that consist of standard glass optical fibres for telecommunication applications. The characterisation is directed to the effects of cable shrinkage or cable element shrinkage on the termination of cables. Recommended test methods for the evaluation of cable shrinkage and classification by several grades are given.

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1 Under preparation. Stage at the time of publication: IEC TR/TPUB 62959:2020.

OPTICAL FIBRE CABLES –

Part 1-211: Generic specification – Basic optical cable test procedures – Environmental test methods – Sheath shrinkage, method F11

1 Scope

This part of IEC 60794 defines test procedures to measure the shrinkage of the sheath due to thermal exposure of cables.

A first test method, F11A, is included for cables where the fibre or buffered fibre and the sheath of the cable are intended to be fully terminated into a connector at one or both cable ends.

A second test method, F11B, is included in this document for sheath shrinkage testing for general purpose.

See IEC 60794-1-2 for a reference guide to test methods of all types and for general requirements.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60794-1-1, *Optical fibre cables – Part 1-1: Generic specification – General*

IEC 60794-1-22:2017, *Optical fibre cables – Part 1-22: Generic specification – Basic optical cable test procedures – Environmental test methods*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60794-1-1 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

4 Method F11A – Sheath shrinkage (cables to be terminated with connectors)

4.1 Objective

The purpose of this test is to measure the shrinkage behaviour of the sheath due to thermal exposure of cables intended to be terminated with connectors.

This test is not intended for connectorised cable assemblies.