IEC 60793-1-32

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Optical fibres –
Part 1-32: Measurement methods and test procedures – Coating strippability

Fibres optiques –
Partie 1-32: Méthodes de mesure et procédures d'essai – Dénudabilité du revêtement

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FOREWORD

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International Standard IEC 60793-1-32 has been prepared by subcommittee 86A: Fibres and cables, of IEC technical committee 86: Fibre optics.

This second edition cancels and replaces the first edition published in 2001 and constitutes a technical revision.

This edition has been modified to include current practices in the market place.

This bilingual version, published in 2011-04, corresponds to the English version.

The text of this standard is based on the following documents:

CDV	Report on voting
86A/1273/CDV	86A/1310/RVC

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

The French version of this standard has not been voted upon.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of IEC 60793-1 series, published under the general title *Optical fibres – Measurement methods and test procedures,* can be found on the IEC website.

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

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- withdrawn,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

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OPTICAL FIBRES –

Part 1-32: Measurement methods and test procedures – Coating strippability

1 Scope

This part of IEC 60793 is intended primarily for testing either fibres as produced by a fibre manufacturer or subsequently overcoated (tight buffered) using various polymers. The test can be performed either on fibres as produced or after exposure to various environments.

This test applies to A1, A2, A3, B and C fibres.

The object of this standard is to establish uniform requirements for the mechanical characteristic – coating strippability. This test quantifies the force required to mechanically remove the protective coating from optical fibres along their longitudinal axis.

This test is not intended as a means to maximize fibre strength after the coating is removed nor is it intended to specify the best conditions for field stripping of optical fibres.

This test is designed for optical fibres having polymeric coatings with nominal outer diameters in the range of 240 μm to 900 μm. Application of this method to fibres with outer coating diameters outside the range of 230 μm to 930 μm is not recommended.

Warning – Fibres can fracture while being stripped and pierce skin and eyes. Use of protective eyewear is recommended.

2 Normative references

The following referenced documents are indispensable for the application 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 60793-1 (all parts), *Optical fibres – Measurement methods and test procedures*

3 Apparatus

3.1 Tensile equipment

Use a suitable device, for example a vertical tensile tester, which provides relative motion between the test fibre and a stripping tool and is capable of imparting constant motion at the velocity found in 5.2, without jerking the fibre under test or the stripping tool.

Use a device capable of providing relative motion in two directions to allow resetting. Provide suitable means for clamping and maintaining the stripping tool blades perpendicular to the fibre axis or in a position that prevents fibre bending, and for securing one end of the test fibre. To prevent fibre breakage, secure the fibre at the clamping point without stressing the fibre excessively.

Examples of test arrangements are shown in Figure 2.

3.2 Load cell

Use any appropriate device that is capable of sensing the force imparted to the fibre during the removal of the fibre coating.

3.3 Transducer amplifier

This device receives signals from the load cell and indicates the tensile force on the test fibre up to the point when the coating is stripped off. The transducer shall acquire the force data at a rate > 100 Hz. The transducer and/or measurement system shall have the ability to plot the test data on a continuous chart, such as a strip chart or line chart. It shall also have the capability of capturing sufficient information to calculate the maximum and average forces, along with the amplitude and frequencies of any oscillations in the force during the stripping process

The accuracy of the force measurement shall be stated in the detail specification.

3.4 Stripping tool

3.4.1 Because the results from this test are strongly dependent upon the design of tool used, it is important that the following tool design guidelines be observed:

a) Unless otherwise specified in the detail specification, use tool blades with the diameter of the hole greater than the nominal cladding diameter of the fibre to be stripped in order not to damage the cladding surface. The stripping tool shall be constructed such that the blades form a circular aperture. A practical example is a hole which is 15 μm larger that the nominal cladding diameter; for 125 μm cladding diameter fibres this results in a 140 μm circular hole.

b) The stripping tool blades shall be constructed such that the blades do not cause fibre bending. Stripping tools in which the blades butt together in the same plane are preferred in this test.

3.4.2 Mount the stripping tool on the test fixture and provide a means to hold it closed around the fibre using suitable clamps. Ensure the fibre is pulled in a direction normal to the plane of the blades.

3.4.3 Replace the stripping tools at intervals as dictated by a documented quality schedule, when the blades become dull or damaged, or whenever wear appears sufficient to affect the test results.

NOTE Tool wear can affect any or all of the following:

– fibre breakage,

– the amount of residue left on the glass surface,

– the way in which the coating is removed from the fibre, and

– the force required to remove the coatings.

3.5 Fibre guide

A fibre guide shall be provided to support the fibre which extends past the stripping tool blade (if not already designed into the tool) and which meets the following requirements:

a) the guide shall support the fibre to prevent sagging due to the weight of the fibre;

b) the guide shall prevent bending of the fibre caused by buckling of the fibre coating as it is removed;

c) the guide shall be located as close to the stripping tool as possible without interfering with the stripping operation;