

Optical fibres —

Part 1-34: Measurement methods and test procedures — Fibre curl

The European Standard EN 60793-1-34:2006 has the status of a British Standard

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National foreword

This British Standard was published by BSI. It is the UK implementation of EN 60793-1-34:2006. It is identical with IEC 60793-1-34:2006. It supersedes BS EN 60793-1-34:2002 which is withdrawn.

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A list of organizations represented on GEL/86/1 can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Partie 1-34: Méthodes de mesure et
procédures d'essai -
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CENELEC

European Committee for Electrotechnical Standardization
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Foreword

The text of document 86A/1049/FDIS, future edition 2 of IEC 60793-1-34, prepared by SC 86A, Fibres and cables, of IEC TC 86, Fibre optics, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60793-1-34 on 2006-04-01.

This European Standard supersedes EN 60793-1-34:2002. It provides more details for performing the described test.

The following dates were fixed:

- | | | |
|--|-------|------------|
| – latest date by which the EN has to be implemented
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Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60793-1-34:2006 was approved by CENELEC as a European Standard without any modification.

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OPTICAL FIBRES –

Part 1-34: Measurement methods and test procedures – Fibre curl

1 Scope

This part of IEC 60793 establishes uniform requirements for the mechanical characteristic: fibre curl or latent curvature, in uncoated optical fibres. Fibre curl has been identified as an important parameter for minimizing the splice loss of optical fibres when using passive alignment fusion splicers or active alignment mass fusion splicers.

Two methods are recognized for the measurement of fibre curl, in uncoated optical fibres:

- method A: side view microscopy;
- method B: laser beam scattering.

Both methods measure the radius of curvature of an uncoated fibre by determining the amount of deflection that occurs as an unsupported fibre end is rotated about the fibre's axis. Method A uses visual or digital video methods to determine the deflection of the fibre while method B uses a line sensor to measure the maximum deflection of one laser beam relative to a reference laser beam.

By measuring the deflection behaviour of the fibre as it is rotated about its axis and understanding the geometry of the measuring device, the fibre's radius of curvature can be calculated from simple circular models, the derivation of which are given in Annex C.

Both methods are applicable to types A1, A2, A3 and B optical fibres as described in the IEC 60793 series.

Method A is the reference test method, used to resolve disputes.

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 (all parts), *Optical fibres*

3 Apparatus

3.1 Principle

An uncoated fibre end is mounted in a rotatable fixture so that the end extends freely into space by an overhang distance which will depend on the measurement device. The overhang distance is typically 10 mm to 20 mm. If the measurement device is designed with overhang distances greater than this, care must be taken to avoid excessive degradation due to effects of vibration and gravity. The fibre is rotated and the deviations in the position of the overhang point relative to a reference position are measured to obtain the fibre's radius of curvature, r_c .