

INTERNATIONAL
STANDARD

ISO
11567

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**Carbon fibre — Determination of filament
diameter and cross-sectional area**

*Fibres de carbone — Détermination du diamètre et de l'aire de la section
transversale des filaments*



Reference number
ISO 11567:1995(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 11567 was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 13, *Composites and reinforcement fibres*.

Annex A of this International Standard is for information only.

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Carbon fibre — Determination of filament diameter and cross-sectional area

1 Scope

This International Standard specifies four test methods which may be used for the determination of the diameter and cross-sectional area of single carbon fibre filaments.

It is important to note that the shape of the cross-section of the filaments from different suppliers may vary significantly. The term "diameter" used in this standard applies to all cases, from a "true" diameter, where the filament is exactly circular in cross-section, to an "apparent" diameter where the filament is not circular.

The methods proposed may not be directly applicable to all types of filament. The product specification should specify which method should be used. If there is no specification, the selection of the appropriate method is a matter of judgement. The details given here are considered to be sufficiently precise to enable this choice to be made.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 10119:1992, *Carbon fibre — Determination of density*.

ISO 10120:1991, *Carbon fibre — Determination of linear density*.

ISO 11566:—¹⁾, *Carbon fibre — Determination of the tensile properties of single-filament specimens*.

3 Principle

Four methods are proposed for the determination of the diameter and cross-sectional area of carbon fibre filaments:

- Method A:
Determination of the diameter by calculation
- Method B:
Determination of the diameter by optical microscopy
- Method C:
Determination of the diameter and cross-sectional area of transversely cut filaments by microscopy
- Method D:
Determination of the diameter by laser diffractometry

NOTE 1 Method A gives only an average value of the diameter, which may be sufficient in certain cases, while methods B, C and D, which are experimental methods, provide actual values.

4 Test specimens

Because of the intrinsic variability in filament diameter between filaments and along the length of a filament, it is recommended that the diameter or cross-sectional area of 20 filaments in the yarn sample be measured and a statistical analysis of these results carried out.

Test specimens shall be taken from each yarn sample.

1) To be published.