
**Textile glass — Staple fibres or
filaments — Determination of average
diameter**

*Verre textile — Fibres discontinues et filaments — Détermination du
diamètre moyen*



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Foreword

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The main task of technical committees is to prepare International Standards. 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 1888 was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 13, *Composites and reinforcement fibres*.

This third edition cancels and replaces the second edition (ISO 1888:1996), in which the minimum overall magnification required for the microscope specified in 2.2.1 and 3.2.1 has been reduced from $\times 500$ to $\times 400$.

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Textile glass — Staple fibres or filaments — Determination of average diameter

1 Scope

This International Standard specifies longitudinal-profile and transverse-section methods for determining the average diameter (i.e. the average value of actual diameters) of staple fibres or filaments in a textile glass product.

This diameter must not be confused with the nominal diameter which is used in the designation of yarns and materials manufactured from these yarns and corresponds to the average diameter but rounded to the nearest whole number.

2 Method A: Longitudinal profile

2.1 Principle

Fibres or filaments placed in a liquid medium having a refractive index differing from that of the textile glass are viewed in profile under a microscope and the diameter measured.

2.2 Apparatus

2.2.1 Microscope, equipped with the following:

- An eye-piece with a built-in micrometer graticule, the eye-piece and objective together giving an overall magnification of at least $\times 400$ and preferably $\times 1\,000$. The resolution of the microscope shall permit measurement to the nearest $0,5\ \mu\text{m}$ or better (see the Note).
- A system permitting lateral and rotational movement of the microscope stage.
- An illumination system.

NOTE This system may be replaced by or used in conjunction with a microprojector on which specimens can be measured using a transparent scale (preferably a curved scale).

The recommended type of microscope is one using plane-polarized light, and an illumination system with a Kohler light source and an Abbe condenser. A green filter may also be used to give better reading accuracy.

2.2.2 Micrometer scale, with $0,01\ \text{mm}$ divisions, for calibration of the optical system.

2.2.3 Glass slide (thickness: $1,10\ \text{mm}$ to $1,35\ \text{mm}$), and cover glass (thickness: $0,16\ \text{mm}$ to $0,19\ \text{mm}$). The thickness of the cover glass shall be verified periodically.

2.2.4 Mounting fluid, with a refractive index different (but not too different) from that of the glass under examination. Benzyl alcohol, methyl salicylate, a mixture of one part glycerol and two parts water are adequate media.

2.2.5 Razor blade or scissors.

2.2.6 Muffle furnace, capable of maintaining a temperature of $625\ ^\circ\text{C} \pm 25\ ^\circ\text{C}$.