
**Textiles — Determination of fabric
deformability by forced mechanical
distension**

*Textiles — Détermination de la déformabilité des étoffes par
distension forcée mécaniquement*



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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 38, *Textiles*, Subcommittee SC 24, *Conditioning atmospheres and physical tests for textile fabrics*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 248, *Textiles and textile products*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The determination of the deformation characteristics is relevant for all production processes in which flat textile fabrics (including reinforcement textiles) are formed into a three-dimensional shape. This example is the case for upholstery applications or the majority of current liquid composite molding (LCM) processes. Knowledge about the development of deformation effects such as changes in fibre orientation, undulation, and gaps in the textile is crucial for the safe design of processes and components.

Textiles — Determination of fabric deformability by forced mechanical distension

1 Scope

This document specifies a method for the automatic determination of the deformability of textile fabrics, including continuous-fibre reinforcement textiles. This method is not applicable to resin impregnated fabrics.

The method is suitable for use with fabrics such as woven or knitted fabrics, nonwovens, non-crimp fabrics, fabrics made of glass rovings or untwisted carbon filament yarns intended for reinforced composite materials. When applying the method to multi-axial non-crimp fabrics, the evaluation of the fibre orientation and gaps only incorporates the uppermost layer.

The method can be used for fabrics treated with powder binder.

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.

ISO 139, *Textiles — Standard atmospheres for conditioning and testing*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

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

3.1

reinforcement textile

fabric whose fibres are used to absorb and transfer the mechanical loads within a fibre-reinforced composite material

3.2

deformability

conformability for forced three-dimensional deformation

3.3

specimen plane

plane which is defined by the inserted undeformed test specimen

3.4

specimen holder

device consisting of a retaining ring and a ring-shaped fitting body that retains the test specimen during deformation with a settable, evenly distributed pressure