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# International Standard



# 3341

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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

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## Textile glass — Yarns — Determination of breaking force and breaking elongation

*Verre textile — Fils — Détermination de la force de rupture et de l'allongement à la rupture en traction*

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**Descriptors :** textile glass, textile glass yarns, tests, tension tests, determination, break strength, elongation at break.

## 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. Every 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 3341 was prepared by Technical Committee ISO/TC 61, *Plastics*.

ISO 3341 was first published in 1977. This second edition cancels and replaces the first edition, of which it constitutes a minor revision.

# Textile glass — Yarns — Determination of breaking force and breaking elongation

## 0 Introduction

This International Standard has been drawn up on the basis of ISO 2062, *Textiles — Yarn from packages — Method for determination of breaking load and elongation at the breaking load of single strands — (CRL, CRE and CRT testers)*.

## 1 Scope and field of application

**1.1** This International Standard specifies a method for the determination of the tensile breaking force and breaking elongation of glass yarns taken from packages.

**1.2** This method is applicable to various types of glass yarn (single, folded, cabled, strands, structures without twist, rovings, etc.). It is basically intended for single, folded and cabled glass yarns having a diameter of less than 2 mm, or a linear density lower than 2 000 tex taken from packages. However, for yarns having a diameter greater than 2 mm or a linear density exceeding 2 000 tex, and for other types of textile glass yarn, the method can be applied with the reservation that the conditions are acceptable to all parties concerned with the test results.

NOTE — If required, this method can be used in the case of individual yarns removed from a fabric.

**1.3** The method is not applicable to glass yarns which, in equilibrium with the standard atmosphere and under a pre-tension of 5 mN/tex, are elongated by more than 0,5 %. Such yarns can be tested using a lower pre-tension (for example 2,5 mN/tex or 1 mN/tex), acceptable to all parties concerned with the test results. This would occur mainly when dealing with staple fibre yarns.

## 2 References

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

ISO 291, *Plastics — Standard atmospheres for conditioning and testing*.

ISO 1886, *Textile glass — Method of sampling applicable to batches*.

ISO 1889, *Textile glass products — Continuous filament yarns, staple fibre yarns and roving in the form of packages — Determination of linear density*.

ISO 2602, *Statistical interpretation of test results — Estimation of the mean — Confidence interval*.

ISO 3534, *Statistics — Vocabulary and symbols*.

## 3 Definitions

For the purpose of this International Standard, the following definitions apply.

**3.1 breaking (or maximum) force:** The maximum force (or load) required to break the test specimen in a tensile test carried to rupture. It is generally expressed in newtons.

**3.2 breaking tenacity:** The tensile breaking force per unit linear density of the unstrained specimen, expressed for example in newtons/tex.

**3.3 elongation:** The increase in the gauge length of the specimen, produced by a tensile force expressed either in units of length, for example millimetres, or as a percentage of the nominal gauge length, called in this case "percentage elongation".

Depending on the force under which it is produced, one speaks of

- a) elongation at maximum force, or
- b) elongation at break.

**3.4 time to break:** The interval, measured in suitable units such as seconds, during which the specimen is under a (generally increasing) tension, i.e. absorbing the energy required to reach the maximum force.

NOTE — Time to break does not include the time to remove slack from the specimen. On machines fitted with an autographic recorder, the time to break is indicated by the time elapsing after the pen registers the initial force sustained by the specimen until the pen registers the maximum force.

**3.5 nominal gauge length:** The length, including any non-linear portions of test specimens under the prescribed pre-tension, measured from nip to nip of the jaws of the clamps in their starting positions.