

International Standard



5082

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Textiles — Woven fabrics — Determination of breaking strength — Grab method

Textiles — Tissus — Détermination de la force de rupture — Méthode d'arrachement

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

International Standard ISO 5082 was developed by Technical Committee ISO/TC 38, *Textiles*, and was circulated to the member bodies in September 1981.

It has been approved by the member bodies of the following countries :

Belgium	Israel	South Africa, Rep. of
Canada	Italy	Spain
China	Japan	Sri Lanka
Czechoslovakia	Korea, Rep. of	Sweden
Egypt, Arab Rep. of	Netherlands	Switzerland
Finland	New Zealand	Turkey
Hungary	Norway	United Kingdom
India	Poland	Yugoslavia
Iraq	Portugal	
Ireland	Romania	

The member bodies of the following countries expressed disapproval of the document on technical grounds :

France
USA
USSR

Textiles — Woven fabrics — Determination of breaking strength — Grab method

1 Scope and field of application

1.1 This International Standard specifies a method, known as the "grab" method, for the determination of the breaking strength of woven textile fabrics.

NOTE — The determination of breaking strength using the "strip" method is given in ISO 5081.¹⁾ There is no simple relationship between results given by grab tests and those given by strip tests because the amount of assistance provided by the adjacent yarns depends on the type of weave, construction, mobility of yarns, and other factors.

1.2 The method is applicable to unimpregnated fabrics and to fabrics that have been impregnated with sizing or stiffening materials, but not to fabrics coated with rubber or plastics.²⁾

1.3 The method provides for the determination of the breaking strength of specimens in equilibrium with the standard atmosphere for testing and of specimens in the wet state.

1.4 The method authorizes the use of the following types of testing machine in common use for measuring the breaking strength of fabrics :

- a) constant-rate-of-specimen-extension (CRE) (see clause 5 and annex A, clause A.1);
- b) constant-rate-of-traverse (CRT) (see clause 5 and annex A, clause A.2);
- c) constant-rate-of-load (CRL) (see clause 5 and annex A, clause A.3).

The three types of testing machine do not necessarily give the same results for the same fabric. The type of tester to be used must, therefore, be agreed upon by all parties interested in the test results, and must be reported. As it has been found that the breaking strengths obtained on different types of tester agree best when the time-to-break is the same, the method provides for testing at a specific time-to-break (see 4.2) and rates of extension, traverse, or loading are not specified.

NOTE — When the time-to-break has been the same, excellent experimental agreement has been reported between results obtained with CRE and CRT testers, but results given by CRL testers have in some cases been reported to differ somewhat from the other results.

2 References

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

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

3 Definitions

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

3.1 breaking strength : The maximum tensile force observed during a test in which the specimen is stretched until it breaks.

3.2 grab test : A breaking strength test in which only the centre part of the width of the specimen is gripped in the jaws.

3.3 nominal gauge length : The length of a specimen under specified pre-tension, measured from nip to nip of the jaws of the holding clamps in their starting position.

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 supplied before the breaking force is reached.

NOTE — Time-to-break does not include the time required to remove slack from the specimen. On machines supplied 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.

4 Principle

4.1 Breaking strength

An increasing force is applied (until break occurs) by a suitable mechanical means that indicates the maximum force up to break. The testing machine is operated at such a rate that the average time-to-break of a group of specimens falls within specified time limits.

1) ISO 5081, *Textiles — Woven fabrics — Determination of breaking strength and elongation (Strip method).*

2) The determination of breaking strength and elongation at break of fabrics coated with rubber or plastics is dealt with in ISO 1421, *Determination of breaking strength and elongation at break of fabrics coated with rubber or plastics.*