

BS EN ISO 2307:2010



BSI Standards Publication

Fibre ropes — Determination of certain physical and mechanical properties (ISO 2307:2010)

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National foreword

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The UK participation in its preparation was entrusted to Technical Committee TCI/77, Ropes and cordage and fishing nets.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Amendments issued since publication

Date	Text affected
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English Version

Fibre ropes - Determination of certain physical and mechanical properties (ISO 2307:2010)

Cordages en fibres - Détermination de certaines caractéristiques physiques et mécaniques (ISO 2307:2010)

Faserseile - Bestimmung einiger physikalischer und mechanischer Eigenschaften (ISO 2307:2010)

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Foreword

This document (EN ISO 2307:2010) has been prepared by Technical Committee ISO/TC 38 "Textiles" in collaboration with Technical Committee CEN/TC 248 "Textiles and textile products" the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2011, and conflicting national standards shall be withdrawn at the latest by February 2011.

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

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Endorsement notice

The text of ISO 2307:2010 has been approved by CEN as a EN ISO 2307:2010 without any modification.

Fibre ropes — Determination of certain physical and mechanical properties

1 Scope

This International Standard specifies, for ropes of different kinds, a method of determining each of the following characteristics:

- linear density;
- lay length;
- braid pitch;
- elongation;
- breaking force.

The linear density, lay length and braided pitch are measured with the rope under a specified tension called the reference tension, as specified in Annex A.

The elongation corresponds to the measured increase in length of the rope when the tension to which it is subjected is increased from an initial value (reference tension) to a value equal to 50 % of the minimum specified breaking strength of the rope.

The breaking force is the maximum force registered (or reached) during a breaking test on the test piece, carried out on a tensile testing machine with constant rate of traverse of the moving element. The breaking force values given in the tables of rope specifications are only valid when this type of testing machine is used.

When it is not possible to test the whole section of rope, the method described in Annex B can be used, subject to agreement between the parties involved.

This International Standard also provides a method for measuring water repellency, lubrication and finish content, and heat setting treatment, when requested by the customer.

2 Normative references

The following referenced documents are indispensable for the application 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*

ISO 1968, *Fibre ropes and cordage — Vocabulary*

ISO 9554:2010, *Fibre ropes — General specifications*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 1968 and the following apply.

3.1

unspliced breaking force

breaking force which is obtained by application of the method described in 9.7.2

3.2

spliced breaking force

breaking force which is obtained by application of the method described in 9.7.3

4 Principle

4.1 Calculation of the linear density

The linear density is obtained by measurement of the mass and the length, under a reference tension, of a conditioned test piece.

4.2 Measurement of the lay length and braid pitch

This measurement is taken at the time of application of the reference tension.

4.3 Measurement of the elongation of the rope

This measurement is taken by comparing the lengths of a section of the test piece that has been subjected successively to

- a) the reference tension, and
- b) a tension equal to 50 % of the minimum specified breaking force for the rope.

4.4 Measurement of the breaking force

This measurement is carried out by increasing the tension in 4.3 b) to the breaking point.

5 Apparatus

5.1 Tensile testing machine, accommodating the assumed breaking force of the rope, which allows a constant rate of traverse of the moving element, in accordance with 9.5, and measurement of the breaking force to an accuracy of ± 1 %.

Different types of tensile testing machines may be used:

- pulley-type grip ("*cors de chasse*" testing machine);
- testing machine with bollards for eye splices;
- wedge-grip testing machine.

In the case of a "*cors de chasse*" tensile testing machine, the diameter of the pulleys or catches holding down the test pieces shall be equal to at least 10 times that of the rope being tested.

In the case of a testing machine with bollards, the diameter of the bollards passing through the eye-spliced test pieces shall be at least twice the diameter of the rope being tested.

5.2 Balance, allowing measurement of mass to an accuracy of ± 1 %.

6 Sampling

6.1 Sample size

When specified by the purchaser, a lot sample for acceptance testing shall be taken at random in accordance with 6.4.

6.2 Sample unit

If required, test samples shall be taken from each shipping unit, in the lot in the number and the length required to perform the specified tests. The test samples shall be included in the delivered mass or length.

As an alternative, the manufacturer's production and inspection records may be used, if agreed upon between the purchaser and the manufacturer.

6.3 Composition of the batch to be sampled

Samples shall be taken from a homogeneous batch, i.e. consisting of ropes of the same size and same dimensions and which have been subject to the same series of manufacturing operations and the same control procedure.

6.4 Selection of samples

Take the number N_S of samples at random from the batch in accordance with Equation (1):

$$N_S = 0,4 \sqrt{N} \quad (1)$$

where N is the batch size, expressed as the number of 220 m coils.

When the calculated value of N_S is not a whole number, the number obtained shall be rounded to the nearest whole number.

EXAMPLE 27,5 and 30,35 are rounded to 28 and 30, respectively.

Where $N_S < 1$, take one sample length.

7 Test pieces for tensile testing and force-elongation

7.1 Length

The test piece shall be of adequate length to give an effective length, L_u (see 9.3), between terminations which is at least equal to that given in Table 1, when mounted on the tensile testing machine (see Figures 1, 2 and 3).