INTERNATIONAL STANDARD 3790

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Fishing nets — Determination of elongation of netting yarns

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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 3790 was drawn up by Technical Committee ISO/TC 38, *Textiles,* and was circulated to the Member Bodies in June 1975.

It has been approved by the Member Bodies of the following countries :

Belgium	Ireland	Spain
Brazil	Israel	Sweden
Canada	Italy	Switzerland
Czechoslovakia	Japan	Thailand
Denmark	Netherlands	Turkey
France	New Zealand	United Kingdom
Germany	Poland	U.S.S.R.
Hungary	Romania	Yugoslavia
India	South Africa, Rep. of	

No Member Body expressed disapproval of the document.

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Fishing nets — Determination of elongation of netting yarns

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method of determining the elongation of netting yarns, from packages or from netting, in their final physical state.

Tests may be carried out in both the dry and wet states but tests in the wet state are considered to be particularly appropriate in indicating the behaviour of the yarn in use.

2 REFERENCES

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

ISO 858, *Fishing nets — Designation of netting yarns in the Tex system.*

ISO 1805, *Fishing nets — Determination of breaking load and knot breaking load of netting yarns.*

ISO 1806, *Fishing nets — Determination of mesh breaking load of netting.*

3 DEFINITIONS

3.1 knot breaking load : The breaking load, equal to the maximum load observed during a breaking test on netting yarn with a weaver's knot.

Distinction is made between

- the dry knot breaking load;
- the wet knot breaking load.

3.2 elongation : The increase in length of a specimen during a tensile test, expressed as a percentage of the nominal gauge length.

3.3 elongation at half the knot breaking load : The elongation after applying a pre-tension, produced on a specimen at half the knot breaking load (see 3.1).

3.4 load/elongation curve : A graphical representation, showing the relationship between the change in length of the pre-tensioned specimen and the magnitude of the applied stress.

3.5 duration of testing : The time in seconds taken to reach half the knot breaking load, measured from the moment of application of the force, after application of pre-tension.

3.6 pre-tension : The tension applied to straighten the specimen (see 8.4).

3.7 nominal gauge length : The length of specimen between the faces of the upper and lower grips of the testing machine, after application of pre-tension.

4 PRINCIPLE

A prescribed length of netting yarn in the dry or wet state without knot is extended under increasing tensile load until that load reaches half the value of the corresponding dry or wet knot breaking load. The test is performed using a suitable apparatus that records the amount of elongation.

5 APPARATUS

5.1 Tensile testing machine.

Either of the following types may be used :

a) constant rate of elongation machine;

b) constant rate of traverse machine.

Preference should be given to a constant rate of elongation machine, which shall always be used for arbitration purposes.

5.1.1 The testing machine shall include a pair of flat grips to hold the specimen without slipping or damage, to ensure an accurate specimen length and to allow the application of a pre-tension (see the figure).

5.1.2 The testing machine shall be capable of operating with a starting distance between grips of 500 mm.

5.1.3 The testing machine shall include facilities for producing different speeds of traverse in order to test specimens in the specified time for testing.

5.1.4 The testing machine shall be equipped with an autographic recorder for the load/elongation curve. The dynamic response of any recorder must be sufficiently rapid that it will accurately record the steepest part of the load/elongation curve.

5.2 Equipment for producing and maintaining the standard atmosphere for testing (see 8.1).

5.3 Equipment in which specimens can be immersed in water preparatory to wet testing.

6 SAMPLING

Sampling shall be carried out in accordance with recognized national standards or in a manner agreed between the interested parties.

7 PREPARATION OF SPECIMENS

7.1 The specimen shall be removed from its package or taken from the netting in such a manner that there is no alteration in the construction.

7.2 If the elongation of yarn taken from netting is to be tested, knots shall be undone to obtain pieces of netting yarn of at least 600 mm length. Precautions shall be taken to avoid damage, stretching and change of construction of the specimens.

8 REQUIREMENTS FOR TESTING

8.1 Atmosphere for testing

All specimens to be tested in the dry state shall be exposed to the standard atmosphere for testing specified in ISO 139, until they have reached equilibrium. For netting yarns of man-made fibres, a period of 24 h exposure is generally sufficient. Where it is not possible to carry out the tests in the standard atmosphere, the tests shall be carried out immediately after removal of the samples from the standard atmosphere.

8.2 Testing in the wet state

8.2.1 All specimens to be tested in the wet state shall be immersed in tap water, without wetting agents, at a temperature of 20 ± 2 °C for a period of not less than 12 h. Surplus water shall be shaken off.

8.2.2 By agreement between the interested parties, a shorter wetting time, with the addition of a wetting agent at a temperature of 20 ± 2 °C, may be used provided that it can be shown that the specimen is completely wetted.

8.3 Distance between grips

The distance between the grips at the commencement of the test shall be 500 mm measured accurately.

8.4 Pre-tension

The pre-tension shall correspond to the mass of 250 ± 25 m of the netting yarn to be tested.

If this pre-tension is not sufficient to remove kinks and to just straighten the specimen, a higher pre-tension shall be applied. This value shall be recorded specially in the test report, because of the influence on the elongation results.

8.5 Duration of testing

The mean duration of all the tests shall be 30 ± 3 s. It shall be determined by preliminary tests. Where this time cannot be obtained owing to limitations of the apparatus, the duration of the test shall be as near as possible to 30 s. The actual mean and the range of time shall be recorded in the test report.

9 NUMBER OF TESTS

At least 10 single valid tests on specimens from each sample shall be carried out. If a distinct confidence interval for the mean value is prescribed, as many additional tests shall be carried out as are necessary to achieve this confidence interval.

10 PROCEDURE

10.1 Before testing for elongation, determine the relevant mean knot breaking load (wet or dry) of the netting yarn as specified in ISO 1805 or, for netting yarns taken from netting, as specified in ISO 1806, sub-clause 10.7.

10.2 Test wet specimens immediately after removal from the water (see 8.2).

10.3 Mount the specimen in the testing machine in such a manner as to prevent slippage and avoid damage to the specimen in the grips with the axis of the specimen parallel to and coincidental with the direction of the applied tensile force.

10.4 Apply a pre-tension (see 8.4) to remove kinks and just straighten the specimen.

10.5 Check that the length of the specimen, under pre-tension, is accurately 500 mm between the grips.

10.6 Increase the tensile force continuously until, within the prescribed time, it corresponds to half the knot breaking load as defined in ISO 1805.

10.7 Discard all observations obtained on specimens which slip between the grips or break completely or partially before reaching half the relevant knot breaking load. Record the number of observations so discarded.

11 EXPRESSION OF RESULTS

11.1 Calculate the mean values of the elongations and express them in percentages of the nominal gauge length under pre-tension.

11.2 If necessary, the coefficient of variation and the confidence interval may be calculated by recognized statistical methods.

12 TEST REPORT

The test report shall include the following particulars :

a) a statement that the tests were performed in accordance with this International Standard;

b) the date of the test;

c) a description of the material tested [type, linear density and construction of the netting yarn (see ISO 858) and any treatment; used or unused];

d) the type and capacity of testing machine used and the range of indication;

e) the sampling method employed;

f) the number of specimens tested;

g) the number of invalid tests;

h) the method and time of wetting (with or without wetting agents);

i) the load/elongation curves corresponding to each test;

j) the mean elongation at half the knot breaking load;

k) the actual mean duration and the range of durations of the test;

l) any deviation from the specified test procedure.

If required :

m) the coefficient of variation of the elongation and the confidence interval.

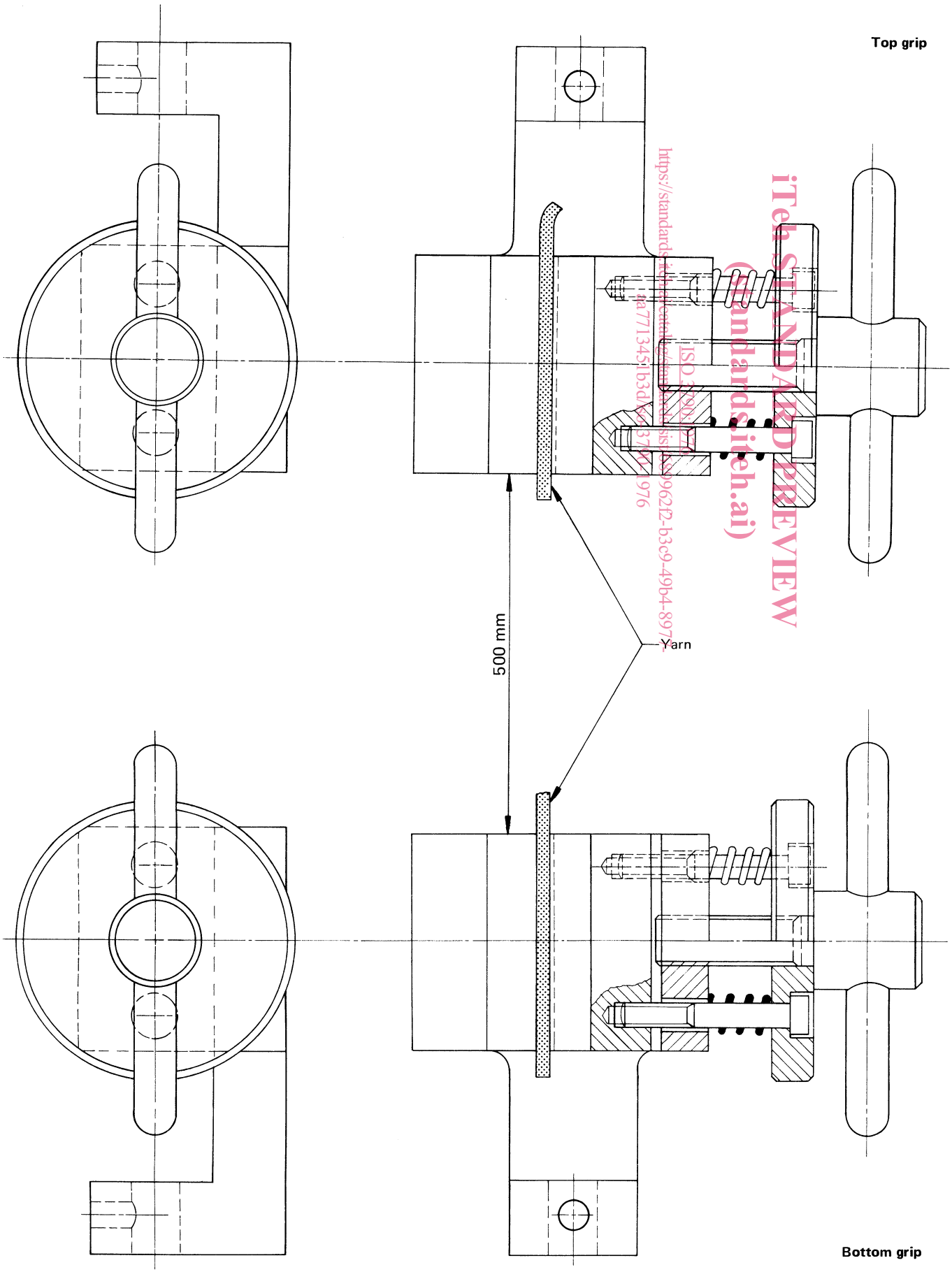

FIGURE – **Holding grips for the testing of netting yarns without knots**

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