INTERNATIONAL STANDARD 1806

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

Fishing nets — Determination of mesh breaking load of netting

First edition — 1973-07-01

UDC 677.66 : 639.2.081.11 : 620.1

Ref. No. ISO 1806-1973 (E)

Descriptors : textiles, nets, fishing nets, meshes, tests, tension tests, breaking load.

Price based on 4 pages

Preisgr. C

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.

Prior to 1972, the results of the work of the Technical Committees were published as ISO Recommendations; these documents are now in the process of being transformed into International Standards. As part of this process, International Standard ISO 1806 replaces ISO Recommendation R 1806-1970 drawn up by Technical Committee ISO/TC 38, *Textiles.*

The Member Bodies of the following countries approved the Recommendation :

Belgium	India	South Africa, Rep. of
Brazil	Iran	Spain
Czechoslovakia	Israel	Sweden
Denmark	Netherlands	Switzerland
Egypt, Arab Rep. of	New Zealand	Turkey
France	Norway	United Kingdom
Germany	Peru	U.S.S.R.
Greece	Poland	
Hungary	Portugal	

No Member Body expressed disapproval of the Recommendation.

Printed in Switzerland

Fishing nets — Determination of mesh breaking load of netting

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method of determining the mesh breaking load of netting for fishing.

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 netting in use.

2 REFERENCES

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

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

3 DEFINITIONS[1)]

3.1 mesh breaking load : The breaking load, equal to the maximum load applied to a mesh, as observed during a breaking test. Distinction is made between

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

3.2 time-to-break : The time, in seconds, taken to reach the mesh breaking load, measured from the moment of application of the load.

4 PRINCIPLE

A mesh is extended in the dry or wet state until one of the knots or joints reaches the load at rupture. The test is performed using a suitable apparatus that records or indicates the applied load.

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.

5 APPARATUS

5.1 Tensile testing machine. Any of the following types may be used :

a) constant rate of elongation machine;

b) constant rate of load machine;

c) constant rate of traverse machine.

Preference should be given to a constant rate of elongation machine.

5.1.1 The clamps of the tensile testing machines shall be replaced by pins of stainless material which stand at right angles to the direction of pull. These shall be of sufficient strength and have a diameter suitable for the mesh size.

Alternatively, loops of netting yarn heavier than that of the netting may be used. It is necessary to use these loops if the meshes are very small.

5.1.2 It shall be possible to regulate the distance between the pins so that netting of different mesh openings can be submitted to the test.

1) Symbolic abbreviations of the parameters defined have been omitted pending discussion of the general subject by Technical Committee ISO/TC 38.

5.1.3 The maximum error of the indicated load at any point in the range in which the machine is used shall not exceed ± 1 %. Check the accuracy of the graduated scale of the apparatus dynamically, for example by means of calibrated springs of appropriate characteristics.

5.1.4 All testing machines should include facilities for producing different rates of loading in order to break specimens in the specified average time-to-break.

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.

5.4 Stop-watch or **interval timer.**

6 SAMPLING

Test samples shall be selected at random from the netting so as to be representative of the whole.

7 PREPARATION OF SPECIMENS

To prevent untwisting of the loose ends, proceed as follows :

7.1 Netting with small meshes

Cut a sample of netting with a size of 3 × 3 meshes. The mesh strength has to be determined on the central mesh.

7.2 Netting with large meshes

Cut the loose ends of the sample mesh as far as possible from the knots or joints. Whenever possible, melting instead of cutting is preferred.

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 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 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 may be used. The specimens shall be immersed for 1 h in a solution of wetting agent in water at a temperature of 20 ± 2 °C. A shorter time of immersion is allowed if it can be shown that the specimen is completely wetted in less than 1 h.

8.3 Time-to-break

The mean duration of test should be 20 ± 3 s. It shall be determined by preliminary tests.

9 NUMBER OF TESTS

At least 20 single valid tests on each piece of netting shall be carried out, unless otherwise agreed between the purchaser and supplier. If a distinct confidence interval for the mean value is prescribed, as many additional tests shall be carried out as are necessary to secure this confidence interval.

10 TEST PROCEDURE

10.1 Check that the pins or loops of the testing machine are properly aligned and parallel so that the subsequent application of force to the specimen will not cause any angular deflection.

10.2 Mount the specimen in the testing machine over the pins or in the loops in such a way that its knots do not touch the pins or loops (see Figures 1 and 2).

10.3 Wet specimens should be tested immediately after removing from water (see 8.2.1).

10.4 Apply the force to reach the prescribed mean time-to-break.

10.5 If a specimen does not break at one of the knots or joints, this test shall be discarded.

10.6 Discard all observations obtained on specimens of which the loose ends of the mesh slip in the knots or the joints dissolve. Such a test shall be repeated with a new specimen. The number of observations discarded as directed above shall be noted.

10.7 If more than ten knots of the twenty meshes tested slip, the method of mesh testing described in this International Standard shall not be used. It shall be replaced by the method of determining the knot breaking load of netting yarns by fastening all four ends in the holding devices of the testing machine (see ISO 1805). If the meshes are too small to ensure that all four ends of the knot are gripped by the holding devices, the knots around the knot to be tested shall be opened (see Figure 3).

NOTE — The results of such knot breaking load tests are not comparable with the results of mesh breaking load tests, the latter always giving lower values than knot breaking load tests.

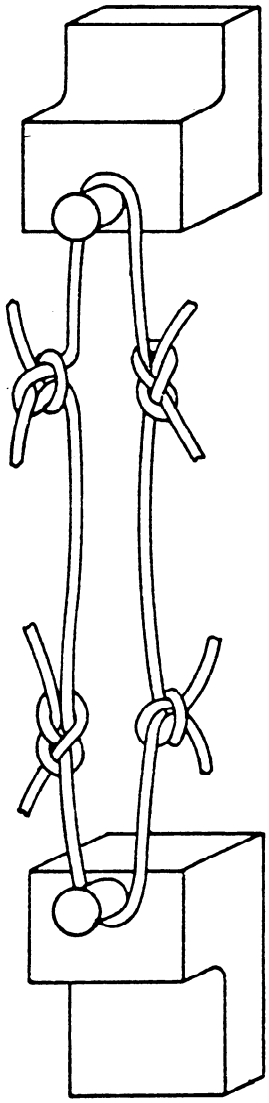


FIGURE 1 — **Mounting of a mesh by pins**

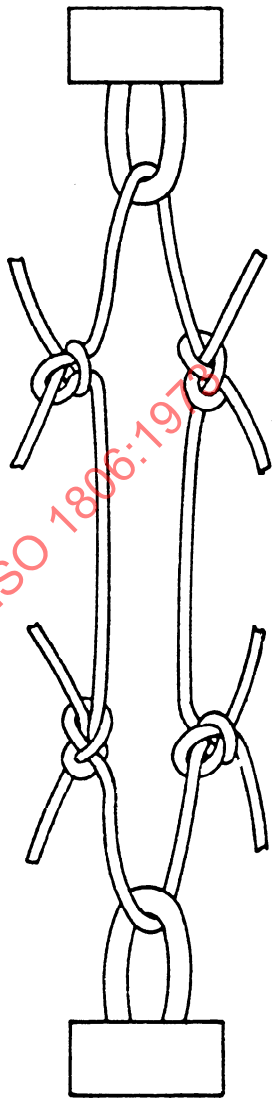
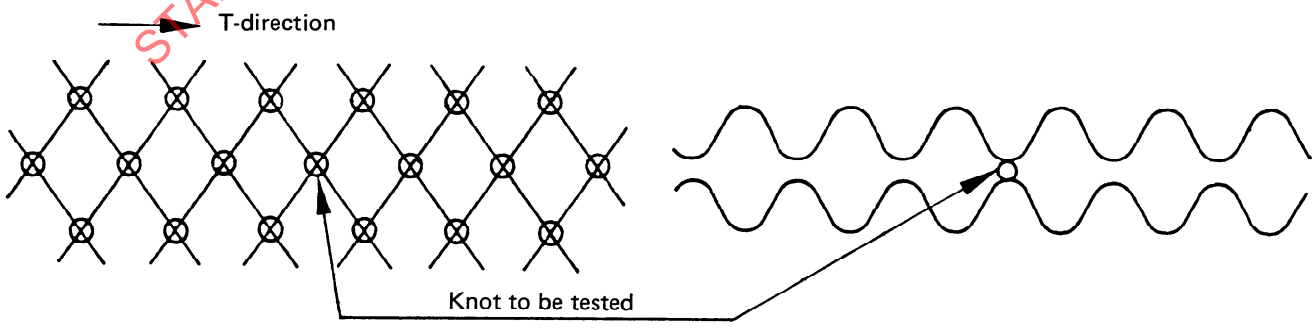


FIGURE 2 — **Mounting of a mesh by loops**



a) Specimen before opening the knots

b) Specimen after opening the knots

FIGURE 3 — **Preparation of specimen for determination of knot breaking load**

11 CALCULATION AND EXPRESSION OF RESULTS

11.1 Average mesh breaking load is equal to

$$\frac{\text{sum of observed breaking loads}}{\text{number of observations}}$$

breaking load being expressed in decanewtons (or kilograms-force[1]).

Calculate the average breaking load to four significant figures and round it off to three significant figures.

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 netting (type of material, type of fibre, type of knot, mesh size and preparation);

d) the type and capacity of testing machine used, the type of holding devices employed and the range of indication;

e) the sampling method employed;

f) the number of specimens tested;

g) the number of irregular tests;

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

i) the average breaking load in decanewtons (or kilograms-force);

j) any deviation from the specified test procedure.

If required :

k) the coefficient of variation of the breaking load and the confidence interval.

1) 1 kgf = 9,806 65 N