
International Standard



5904

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

Gymnastic equipment — Landing mats and surfaces for floor exercises — Determination of resistance to slipping

Engins de gymnastique — Tapis de chute et surfaces pour exercices au sol — Détermination de la résistance au glissement

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Descriptors : sport equipment, gymnastic equipment, mats, tests.

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 5904 was developed by Technical Committee ISO/TC 83, *Sports and recreational equipment*, and was circulated to the member bodies in April 1980.

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

Austria	Netherlands	South Africa, Rep. of
Egypt, Arab Rep. of	New Zealand	Spain
Germany, F. R.	Poland	Switzerland
India	Romania	USSR

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

France
United Kingdom

This International Standard was drawn up in co-operation with the International Gymnastic Federation (IGF).

Gymnastic equipment — Landing mats and surfaces for floor exercises — Determination of resistance to slipping

1 Scope and field of application

This International Standard specifies a method for the determination of resistance to slipping of gymnastic landing mats and surfaces (mats and boards) for floor exercises for use in competitions and training. The relevant requirements in ISO 5905, ISO 5906 and ISO 5907

- a) ensure that, in competitions and training, mats and surfaces for floor exercises are used, the landing surface of which presents in all directions the same resistance to slipping according to their function;
- b) reduce the risk of injury to the gymnast by slipping.

2 References

ISO 4649, *Rubber, vulcanized — Determination of abrasion resistance*.¹⁾

ISO 5905, *Gymnastic equipment — Landing mat*.

ISO 5906, *Gymnastic equipment — Surface for floor exercises — Mat*.

ISO 5907, *Gymnastic equipment — Surface for floor exercises — Boards*.

3 Principle

Pulling, by means of a rope, a friction piece over the horizontal surface of the mat or a surface for floor exercises, in the specified directions. The measured force is related to the resistance to slipping.

4 Apparatus

4.1 Test device, the design of which is at the option of the tester. A suitable test device is shown in figure 1.

4.2 A cylindrical friction piece, made of steel, of mass 3 kg, to the lower surface of which is bonded a rubber disc of

thickness 8 mm, used as the friction surface (see figure 2); the rubber disc made in accordance with the standard rubber described in clause B.2 of annex B of ISO 4649.

5 Procedure

Carry out the tests at an ambient temperature of 20 ± 3 °C.

Place the dust-free landing surface to be tested in a horizontal position.

Roughen the friction surface of the friction piece for each measured distance by drawing the friction piece (4.2) over a strip of abrasive paper of grain size 60 to 63 according to the procedure described in this International Standard.

Pull, by means of a rope, the friction piece (4.2) over a length of at least 300 mm at a constant speed of 150 ± 10 mm/min over the horizontal surface of the mat and the surface for floor exercises, in one direction. Record the force exerted on the friction piece in relation to the movement of the friction piece. The measured force is related to the resistance to slipping according to this International Standard.

Carry out three measurements for each measured distance. The position, direction and number of measured distances shall be those given in ISO 5905, ISO 5906 and ISO 5907.

6 Expression of results

The first measurement for each measured distance shall not be evaluated. For the two remaining measurements the five maxima of the force F measured in the range of 50 to 300 mm of the friction length to the nearest 1 N, shall be taken from the tensile force/distance of friction-curve and the mean value for each measured distance calculated.

Determine the average tensile force F by calculating the mean value from the mean values of the different measured distances. This total mean value shall be given to the nearest 5 N.

The range of the five greatest values of the tensile force of one measured distance taken from the diagram shall not exceed 5 N.

¹⁾ At present at the stage of draft.

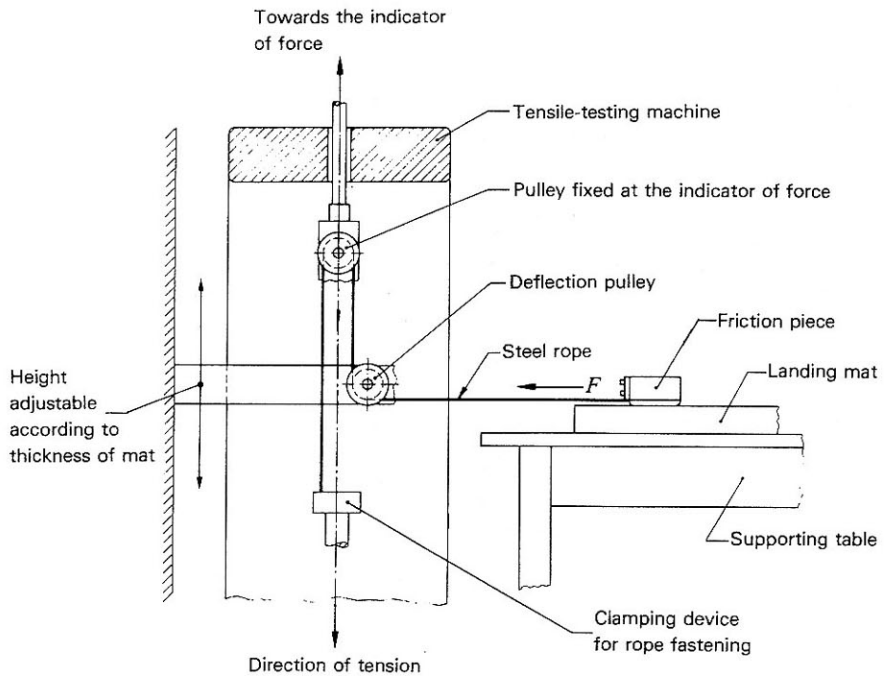


Figure 1 – Example of a suitable test device

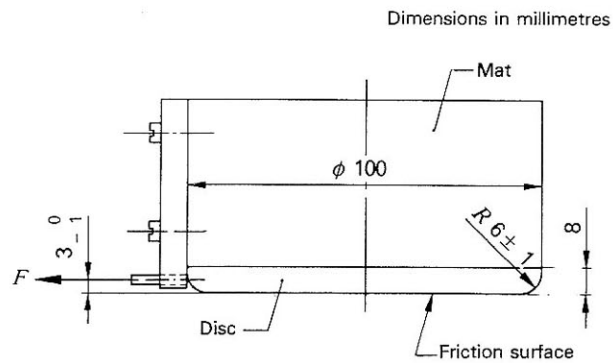


Figure 2 – Friction piece

7 Notes on procedure

7.1 On the basis of extensive practical experiments on gymnastic landing mats and surfaces for floor exercises (mats and boards) the characteristics of these products and the appropriate test method has been drawn up and described in this International Standard. This test method can, however, only represent an approximation to real conditions, since, in practice, different gymnastic shoe-soles come into contact with the landing surfaces and therefore it is not possible to characterize the surface of the mat in all cases. The test for resistance to slipping of the surfaces for floor exercises in relation to the floor of the gymnasium was deliberately excluded. In the International Standard on gymnastic landing mats and surfaces for floor exercises a degree of resistance to slipping is only included as a qualitative requirement.

7.2 A piece of rubber roughened before each test was used as the test surface because, on the one hand, it guarantees a permanent test condition and, on the other hand, it simulates the materials used for soles. The principle aim of the method of test is to determine the degree of resistance to slipping of the floor exercise surfaces as well as to determine the absolute resistance to slipping.

7.3 The test laboratory is free to choose the test device, provided the requirements of this International Standard are observed.

8 Test report

The test report shall include the following particulars :

- a) reference to this International Standard;
- b) description of the object tested;
- c) individual values and mean values of each measured distance;
- d) position, direction and number of measured distances;
- e) total mean value, to the nearest 5 N;
- f) field of range of the mean values of the individual measuring distances;
- g) any deviation from this International Standard and reasons for this deviation;
- h) date of test.