# INTERNATIONAL STANDARD 3416

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

1F neg 2 TC file

# Textile floor coverings — Determination of thickness loss after prolonged, heavy static loading

*Revêtements de sol textiles — Détermination de la perte en épaisseur après application prolongée d'une charge statique élevée*

First edition — 1975-05-15



UDC 645.12 : 620.16

Ref. No. ISO 3416-1975 (E)

**Descriptors** : textiles, floor coverings, textile coatings, tests, compression tests, thickness, measurement.



Price based on 3 pages

## 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 3416 was drawn up by Technical Committee ISO/TC 38, *Textiles*, and circulated to the Member Bodies in May 1974.



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

| | | |
|---|---|---|
| Australia | Hungary | South Africa, Rep. of |
| Austria | India | Sweden |
| Belgium | Iran | Thailand |
| Canada | Ireland | Turkey |
| Chile | Israel | United Kingdom |
| Czechoslovakia | Italy | U.S.A. |
| Denmark | Japan | U.S.S.R. |
| Finland | Netherlands | Yugoslavia |
| France | Poland | |
| Germany | Romania | |



No Member Body expressed disapproval of the document.



Printed in Switzerland

# Textile floor coverings — Determination of thickness loss after prolonged, heavy static loading

## 1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method for determination of thickness loss of textile floor coverings after prolonged, heavy static loading. It is applicable to all textile floor coverings of uniform thickness and construction. It does not apply to other textile floor coverings unless the areas of different thickness or construction can be separately tested.

NOTE — A method for determination of thickness loss of textile floor coverings after brief, moderate static loading is given separately in ISO 3415.

## 2 REFERENCES

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

ISO 1765, *Machine-made textile floor coverings — Determination of thickness.*

ISO 1957, *Machine-made textile floor coverings — Sampling and cutting specimens for physical tests.*

## 3 PRINCIPLE

Subjection of a test specimen to a prolonged, heavy static loading treatment, the thickness being measured before loading and after various recovery periods.

## 4 APPARATUS

**4.1 Thickness tester**, with presser foot of area between 300 and 1 000 mm² and capable of measuring thickness to an accuracy of 0,1 mm at the standard pressure of 2 000 ± 200 Pa as defined in ISO 1765.

**4.2 Five alloy specimen plates**, each measuring 100 mm × 100 mm and approximately 6 mm thick.

**4.3 Static loading machine**, capable of applying a pressure of 700 kPa through a circular presser foot of radius at least 2 mm larger than the radius of the presser foot of the thickness tester, and which is constrained to move vertically. A suitable apparatus is described in the annex.

**4.4 Double-sided adhesive tape.**

## 5 ATMOSPHERE FOR CONDITIONING AND TESTING

The specimens shall be conditioned and all measurements made in the standard atmosphere for conditioning and testing textiles specified in ISO 139.

Preconditioning in a dry atmosphere before conditioning in the standard atmosphere for testing is not required.

## 6 TEST SPECIMENS

Cut out at least five specimens, each measuring 100 mm × 100 mm, following the sampling procedure specified in ISO 1957.



## 7 PREPARATION OF TEST SPECIMENS

**7.1** Cover one side of a specimen plate (4.2) with double-sided adhesive tape, pressing down firmly to ensure adhesion. Remove any backing paper and measure to the nearest 0,1 mm the combined thickness ($t_1$) of plate plus tape at the standard pressure.

**7.2** Mount a test specimen, use-surface uppermost, on the prepared specimen plate, pressing down sufficiently to ensure adhesion.

**7.3** Allow the mounted test specimens to condition in the standard atmosphere for testing textiles, flat, singly and use-surface uppermost, for at least 24 h.

NOTE — In the subsequent procedure, always handle specimens by the edge of the mounting plates.

## 8 PROCEDURE

### 8.1 General

Conduct the test in the standard atmosphere for testing textiles. Make all determinations of thickness to the nearest 0,1 mm.

### 8.2 Measurement of initial thickness

Measure the thickness of the conditioned and mounted specimen at the standard pressure (see 4.1) in the centre to obtain the total thickness ($t_2$) of test specimen, tape and plate.

### 8.3 Application of pressure

Place the measured specimen on the static loading machine so that the presser foot is central, and apply the specified pressure. Leave undisturbed for 24 h.

### 8.4 Measurement of thickness after recovery

Remove the mounted specimen from the static loading machine, place it on the thickness tester and re-measure the thickness of the assembly within the compressed area after recovery for 2 min.

Leave the specimen use-surface uppermost and without load during recovery periods and re-measure the thickness after total recovery times of 1 h and 24 h at the same place of the compressed area.

NOTE – It is most convenient if several static loading machines are used in conjunction with one thickness tester to test several specimens at the same time.

## 9 EXPRESSION OF RESULTS

**9.1** Calculate the original thickness of each specimen by the difference $t_2 - t_1$ and express the result in millimetres to the nearest 0,1 mm.

**9.2** Calculate the thickness losses at each stage, for each specimen, to the nearest 0,1 mm.

**9.3** Calculate the arithmetic mean of the results (original thickness and thickness loss at each recovery stage).

## 10 TEST REPORT

The test report shall include the following particulars :

a) that the procedure was conducted in accordance with this International Standard, and details of any operations not included, or optional;

b) the original thickness of each specimen and the mean original thickness;

c) the thickness loss at each recovery stage for each specimen and the arithmetic mean of the results for each recovery stage.

ANNEX

## STATIC LOADING MACHINE

A suitable static loading machine is based upon a lever system as shown in the figure below. In this, A is a fixed pivot point and the loading beam is extended backwards for counter-weight C to balance the weight of the beam. B is an oilite bearing constraining the presser foot P to move vertically and apply the load to the test specimen S.

The ratio $y/x$ is chosen so that mass $m$ applies a pressure of 700 kPa on the presser foot of area $a$ mm².

$$m = 7a \times \frac{x}{y} \times 10^{-2} \text{ kg}$$