SLOVENSKI STANDARD
SIST EN 12743:2000

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Footwear - Test methods for outsoles - Compression energy

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Schuhe - Prüfverfahren für Laufsohlen - Kompressionsenergie

Chaussures - Méthodes d'essai applicables aux semelles - Mesure de l'énergie de compression

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English version

Footwear - Test methods for outsoles - Compression energy

Chaussures - Méthodes d'essai applicables aux semelles - Mesure de l'énergie de compression

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 309 "Footwear", the secretariat of which is held by AENOR.

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of an identical text or by endorsement, at the latest by March 2000, and conflicting national standards shall be withdrawn at the latest by March 2000.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This european standard specifies a method for the determination of the compression energy of outsoles.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 12222	Footwear - Standard atmospheres for conditioning and testing of footwear and components for footwear
prEN 13400:1998	Footwear - Sampling location of components for footwear.
ISO 5893	Rubber and plastic test equipment - Tensile, flexural and compression types (constant rate of traverse) - Description.

3 Definitions

For the purpose of this standard the following definition applies:

Compression energy:
The energy in joules corresponding to the deformation of a material under a fixed force of 5000 newtons.

4 Apparatus and material

The following apparatus and material shall be used:

4.1 Tensile-testing machine

The tensile-testing machine shall comply with the requirements of ISO 5893, to an accuracy corresponding to grade B, with a constant rate of traverse of 10 mm/min $\pm$ 2 mm/min. A low-inertia machine having autographic force recording facilities is required.

4.2 Test punch, being the back part of a standardized last made in polyethylene. The last is sectioned on a plane vertical to the feather edge and at 90º to the axis of the back part (see figure 1). The length of the punch in relation to footwear size is given in table 1.

Table 1
Summarising chart of measurements for footwear

SIZE			DIMENSIONS				
MONDOPOINT	FRENCH SIZES	ENGLISH SIZES	L mm	l mm	H mm	h mm	D mm
235	up to 36	up to 3	65,0 ± 1	32,5 ± 1	60 ± 1	40 ± 1	14 ± 0,5
245	37/38	4/5	67,5 ± 1	33,7 ± 1	60 ± 1	40 ± 1	14 ± 0,5
255	39/40	6	70,5 ± 1	35,0 ± 1	60 ± 1	40 ± 1	14 ± 0,5
265	41/42	7/7,5/8	72,5 ± 1	36,2 ± 1	60 ± 1	40 ± 1	14 ± 0,5
275	43/44	9/10	75,5 ± 1	37,7 ± 1	60 ± 1	40 ± 1	14 ± 0,5
285	45 and over	11 and over	77,5 ± 1	38,5 ± 1	60 ± 1	40 ± 1	14 ± 0,5

5 Sampling and conditioning

Test specimens to be tested are taken in accordance with prEN 13400:1998. All test specimens shall be conditioned in accordance with EN 12222 before testing.

Minimum time of conditioning 24 hours, and minimum two test pieces by size are necessary.

6 Test method

Place the outsole with the heel on a steel base and press the test punch against the outsole unit from the inside at the centre of the heel area at a test rate of 10 mm/min ± 3mm/min until a force of 5 000 newtons is obtained.

7 Expression of results

Plot a load/compression curve (see figure 2) for each test and determine the compression energy E in joules, rounded to the nearest 1 J, from the equation:

$$E = \int_{50\,N}^{5\,000\,N} F \cdot ds$$

where

F is the applied force, in newtons
s is the deformation, in metres

The result will be expressed as the average value.

8 Test Report

The test report shall include the following information:

a) results, expressed in accordance with clause 7;
b) full identification of the sample;
c) reference to this method of test;
d) date of testing.

Dimensions in mm

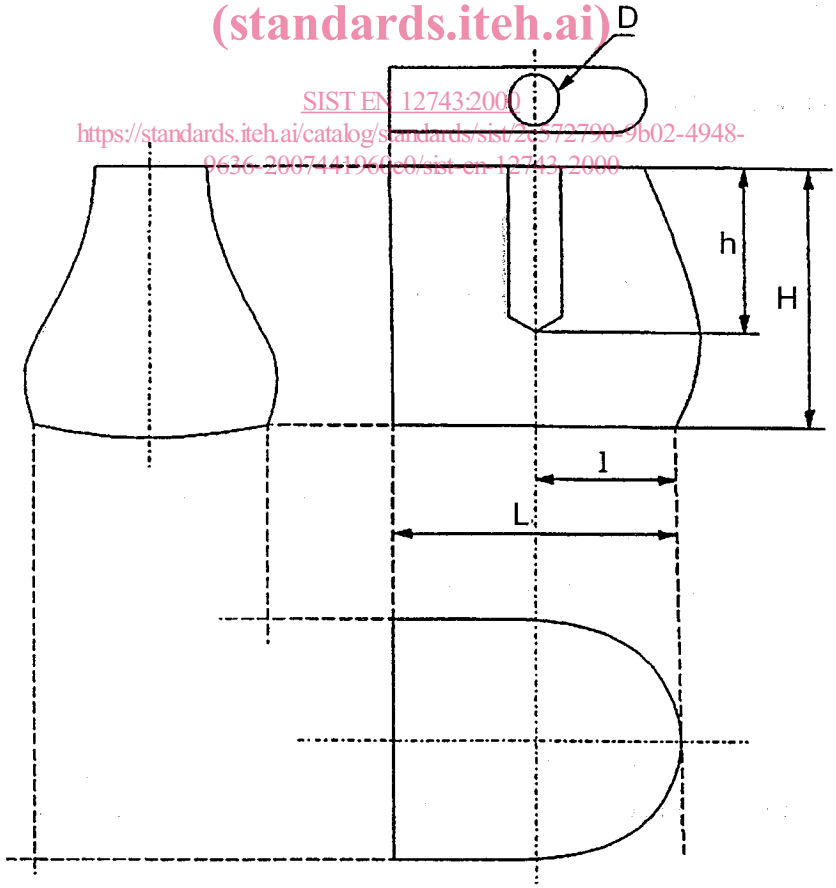
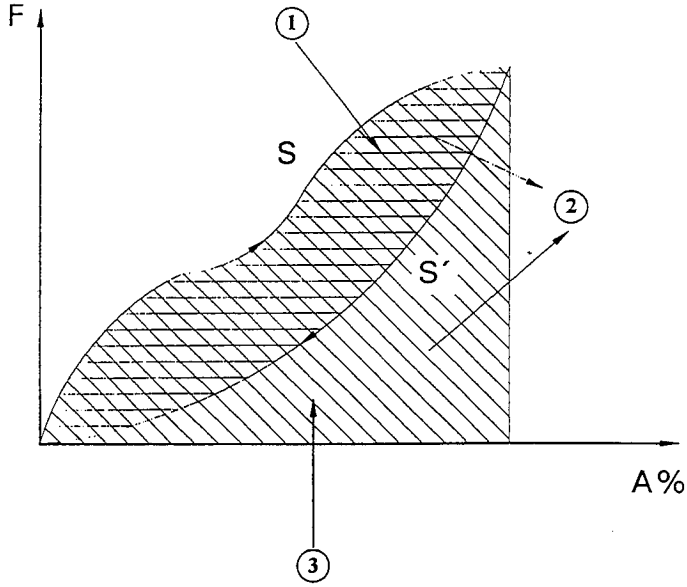


Figure 1 - Test punch for compression energy test



1 Absorption Energy (S-S'): Hysteresis. The difference between S and S'.

2 Compression Energy (S): The energy in joules corresponding to the cycle of the material from 0 to 5000 newtons.

3 Elastic Energy (S'): The energy in joules corresponding to the return cycle of the material from 5000 to 0 newtons.

Figure 2