SLOVENSKI STANDARD
SIST EN 14602:2012

01-oktober-2012

Nadomešča:
SIST EN 14602:2005

Obutev - Preskusna metoda za ocenjevanje ekoloških meril

Footwear - Test method for the assessment of ecological criteria

Schuhe - Prüfverfahren zur Beurteilung ökologischer Kriterien

Chaussure - Méthodes d'essai pour l'évaluation de critères écologiques

Ta slovenski standard je istoveten z: EN 14602:2012

ICS:

61.060	Obuvala	Footwear

SIST EN 14602:2012 **en,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 14602

August 2012

ICS 61.060

Supersedes EN 14602:2004

English Version

Footwear - Test methods for the assessment of ecological criteria

Chaussure - Méthodes d'essai pour l'évaluation de critères écologiques

Schuhe - Prüfverfahren zur Beurteilung ökologischer Kriterien

This European Standard was approved by CEN on 13 July 2012.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN 14602:2012: E

Contents

Page

Foreword

This document (EN 14602:2012) 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of an identical text or by endorsement, at the latest by February 2013, and conflicting national standards shall be withdrawn at the latest by February 2013.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 14602:2004.

The main technical changes that have been made in this new edition of EN 14602 are the following ones:

— changes in the general organisation of the standard; all the criteria for the Ecolabel for footwear that are already covered by European standards are removed from this edition;

— improvement in the test methods for the determination of total heavy metals content;

— criteria on COD an Cr III have been introduced;

— new reference test method the determination of phthalates;

— new test method for the determination of the electrical energy consumption.

According to the CEN/CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard defines certain test methods necessary to issue the footwear Ecolabel, For some criteria, this European Standard provides important clarification or gives a test method to assess the ecological criteria.

NOTE The footwear Ecolabel has been published in the Official Journal of July 28th, 2009.

This European Standard applies to any kind of footwear except those containing electrical or electronic components.

The chemical analysis of the metallic components is outside of the scope of this European Standard.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1122:2001, *Plastics — Determination of cadmium — Wet decomposition method*

EN 12868, *Child use and care articles — Methods for determining the release of N-Nitrosamines and N-Nitrosatable substances from elastomers or rubber teats and soothers*

EN ISO 11885, *Water quality — Determination of selected elements by inductively coupled plasma optical emission spectrometry (ICP-OES) (ISO 11885)*

CEN ISO/TS 16181, *Footwear — Critical substances potentially present in footwear and footwear components — Determination of phthalates in footwear materials (ISO/TS 16181)*

EN ISO 17072-2:2011, *Leather — Chemical determination of metal content — Part 2: Total metal content (ISO 17072-2:2011)*

EN ISO 17294-2, *Water quality — Application of inductively coupled plasma mass spectrometry (ICP-MS) — Part 2: Determination of 62 elements (ISO 17294-2)*

ISO 8288, *Water quality — Determination of cobalt, nickel, copper, zinc, cadmium and lead — Flame atomic absorption spectrometric methods*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
volatile organic compound
VOC
organic compound that has, at 293,15 K, a vapour pressure of 0,01 KPa or more, or that has a corresponding volatility under the particular conditions of use

3.2
volatile organic compounds emissions
VOC emissions
amount of volatile organic compounds emitted to the atmosphere to produce a pair of shoes

3.3
test period
Tp
consecutive test period during which:

— the production of the shoe or a group of shoes being analysed is well known;

— the consumption of chemical preparations is well known

3.4
process electric consumption
PEC
electricity used only by the process equipment used to manufacture the footwear

4 Test methods associated to the criteria

NOTE The uncertainty of measurement for each test method described in this European Standard can be assessed according to the methods described ENV 13005 or ISO 5725-2.

4.1 Determination of total heavy metals content

4.1.1 General

The total concentration of heavy metals in a product is considered as a relevant criterion regarding the end of life disposal. This test method identifies the main chemicals of potential hazard which may contaminate the environment after disposal or incineration.

There shall be no Arsenic, Cadmium and Lead in the materials used for the product assembly or in the final product. Presence of heavy metals shall be established by either:

— testing the materials individually; or

— testing the upper and lower components of the shoe as composite groups of materials.

NOTE The total concentration of other heavy metals (see Table 1) can be determined using this method.

Table 1 — Possible heavy metals determined

Aluminium (Al)	Mercury (Hg)
Antimony (Sb)	Molybdenum (Mo)
Barium (Ba)	Nickel (Ni)
Boron (B)	Potassium (K)
Chromium (Cr)	Selenium (Se)
Cobalt (Co)	Silicon (Si)
Copper (Cu)	Tin (Sn)
Iron (Fe)	Titanium (Ti)
Magnesium (Mg)	Zinc (Zn)
Manganese (Mn)	Zirconium (Zr)

4.1.2 Preparation of the samples

4.1.2.1 Testing the materials for the product assembly

Test each material individually.

Each material is ground according to EN ISO 4044 or a similar test method.

NOTE Textile materials do not need to be ground.

4.1.2.2 Testing the final product

Separate the upper and the lower components of the footwear.

Fully grind each group of components separately according to EN ISO 4044 or a similar test method.

NOTE Only a full grinding of the test specimen will ensure the reproducibility of the test results.

4.1.3 Reagents

WARNING — Violent reactions may be produced with perchloric acid ($HClO_4$) on an organic matrix.

4.1.3.1 H_2SO_4, 96 % (mass fraction).

4.1.3.2 HNO_3, 65 % (mass fraction).

4.1.3.3 $HClO_4$, 65 % (mass fraction).

4.1.3.4 HCl, 36 % (mass fraction).

4.1.3.5 Demineralised water.

4.1.4 Apparatus and materials

Standard laboratory apparatus and glassware, together with the following:

4.1.4.1 A suitable heating device (for the acid digestion only).

4.1.4.2 Volumetric flask, of 100 ml.

4.1.4.3 Filter paper of 0,45 µm mesh size.

4.1.4.4 Microwave reactor (for the microwave digestion only), capable of working at maximum 100 bars (or 1 450 psi).

4.1.5 Digestion

4.1.5.1 Method A – acid digestion

Prepare, according to 4.1.2, a test piece of (0,500 ± 0,005) g of ground sample. The digestion given in EN 1122:2001, 6.3.2, method B is to be used.

4.1.5.2 Method B – acid digestion

Prepare, according to 4.1.2, a test piece of (1,000 ± 0,005) g of ground sample. The digestion given in EN ISO 17072-2:2011, 6.5.1 is to be used.

4.1.5.3 Method C - Microwave digestion

Prepare, according to 4.1.2, a test piece of 0,100 g to 0,500 g of ground sample.

Prepare a digestion solution by mixing 5 ml of demineralised water (4.1.3.5) and 5 ml of the following mixture: HNO_3, 65 % (4.1.3.2) and HCl, 36 % (4.1.3.4) (1/3:2/3).

Put the test piece in the microwave reactor (4.1.4.4), add the digestion solution and then start the digestion cycles (see for example a programme in Table 2).

Table 2 — Cycles of digestion

Time (min)	2,5	2,5	5	10	5	2,5	2,5	5	5
Power (W)	250	0	350	500	0	250	0	350	550

When the cycles are completed, transfer the resulting solution, filtering it through a filter paper (4.1.4.3), to a volumetric flask (4.1.4.2) and adjust the volume to 100 ml with demineralised water (4.1.3.5).

One blank (acid solution) is treated at the same time and a validation with this reference solution is carried out.

The digestion vessels shall be cleaned with special attention once the acid digestion is finished.

4.1.6 Determination of heavy metals content

Table 3 defines the recommended options for the determination of heavy metals in footwear.

Table 3 — Test method for heavy metals determination

	Testing the materials		**Testing the final product**	
	Soft material leather, textile	**Hard material polymers**	**Upper**	**Lower components of the footwear**
Method A	possible	Recommended (especially for PVC)	possible	Recommended (especially for PVC)
Method B	possible	possible	possible	possible
Method C	possible	possible	possible	possible

From the solution obtained in 4.1.5.1 or 4.1.5.2 or 4.1.5.3 determine, within 24 h, the Cd, As, Pb content by atomic absorption spectroscopy (AAS) as specified in ISO 8288, or by inductively coupled plasma atomic emission spectroscopy (ICP) as specified EN ISO 11885 or EN ISO 17294-2 (see EN ISO 17072-2).

NOTE 1 The quantification limit for a 1 g sample is given in Table 4.