
Obutev - Kritične snovi, ki so lahko v obutvi in delih obutve - Preskusna metoda za kvantitativno ugotavljanje policikličnih aromatskih ogljikovodikov (PAH) v obutvenih materialih (ISO/DIS 16190:2021)

Footwear - Critical substances potentially present in footwear and footwear components - Test method to quantitatively determine polycyclic aromatic hydrocarbons (PAH) in footwear materials (ISO/DIS 16190:2021)

Schuhe - Möglicherweise in Schuhen und Schuhbestandteilen vorhandene kritische Substanzen - Prüfverfahren zur quantitativen Bestimmung polyzyklischer aromatischer Kohlenwasserstoffe (PAK) in Schuhwerkstoffen (ISO/DIS 16190:2021)

Chaussures - Substances critiques potentiellement présentes dans la chaussure et les composants de chaussure - Méthodes d'essai pour déterminer quantitativement les hydrocarbures aromatiques polycycliques (HAP) dans les matériaux de chaussure (ISO/DIS 16190:2021)

Ta slovenski standard je istoveten z: prEN ISO 16190

ICS:

61.060 Obuvala Footwear

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Footwear — Critical substances potentially present in footwear and footwear components — Test method to quantitatively determine polycyclic aromatic hydrocarbons (PAH) in footwear materials

Chaussures — Substances critiques potentiellement présentes dans la chaussure et les composants de chaussure — Méthodes d'essai pour déterminer quantitativement les hydrocarbures aromatiques polycycliques (HAP) dans les matériaux de chaussure

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ISO/DIS 16190:2021(E)

Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 216, *Footwear*.

This first edition cancels and replaces ISO/TS 16190:2013, which has been technically revised.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

In the European Union according to Regulation (EC) No 1272/2013 [1] amending Annex XVII to Regulation (EC) No 1907/2006 (REACH) [2], Annex XVII, Entry 50, [1] articles such as, footwear shall not be placed on the market for supply to the general public, if any of their rubber or plastic components that come into direct, as well as prolonged or short-term repetitive, contact with the human skin or the oral cavity, under normal or reasonably foreseeable conditions of use, contain more than 1 mg/kg (0,0001 % by weight of this component) of any of the following PAHs.

Further information can be found in the ECHA guideline [3].

According to Regulation (EU) 2018/1513 [4] amending Annex XVII to Regulation (EC) No 1907/2006 (REACH) by Entry 72, (c) footwear shall not be placed on the market after 1 November 2020, if they contain more than 1 mg/kg (0,0001 % by weight of this component) of any of the following PAHs.

This restriction shall not apply to: (a) clothing, related accessories or footwear, or parts of clothing, related accessories or footwear, made exclusively of natural leather, fur or hide; (b) non-textile fasteners and non-textile decorative attachments; (c) second-hand clothing, related accessories, textiles other than clothing or footwear. It shall also not apply to clothing, related accessories, textiles other than clothing, or footwear within the scope of Regulation (EU) 2016/425 or Regulation (EU) 2017/745.

Restricted PAHs according to REACH are Benzo[a]pyrene (BaP), Benzo[e]pyrene (BeP), Benzo[a]anthracene (BaA), Chrysene (CHR), Benzo[b]fluoranthene (BbFA), Benzo[j]fluoranthene (BjFA), (g) Benzo[k]fluoranthene (BkFA), Dibenzo[a,h]anthracene (DBAhA).

The PAHs Benzo(g,h,i)perylene, Fluoranthene, Phenanthrene and Pyrene have been added to the REACH Candidate List of SVHC <https://echa.europa.eu/candidate-list-table>.

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Footwear — Critical substances potentially present in footwear and footwear components — Test method to quantitatively determine polycyclic aromatic hydrocarbons (PAH) in footwear materials

WARNING — The use of this standard involves hazardous materials. It does not purport to address all of the safety or environmental problems associated with its use. It is the responsibility of users of this standard to take appropriate measures to ensure the safety and health of personnel and the environment prior to application of the standard, and fulfil statutory and regulatory requirements for this purpose.

1 Scope

This document specifies a method to determine the amounts of polycyclic aromatic hydrocarbons (PAH) in footwear and footwear components.

NOTE A list of relevant materials can be found in ISO/TR 16178, Table 1.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 4787, *Laboratory glassware — Volumetric instruments — Methods for testing of capacity and for use*

ISO/TR 16178, *Footwear — Critical substances potentially present in footwear and footwear components*

ISO 28540:2011, *Water quality — Determination of 16 polycyclic aromatic hydrocarbons (PAH) in water — Method using gas chromatography with mass spectrometric detection (GC-MS)*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

4 Principle

The test sample is extracted using toluene at 60 °C in an ultrasonic bath for 1 h. An aliquot is then analysed using a gas chromatograph with mass selective detector.

5 Reagents

WARNING — Toluene is flammable. In addition, Polycyclic Aromatic Hydrocarbons (PAH) may cause cancer; therefore they should be treated according to national regulations on Occupational Health and Safety.

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Unless otherwise specified, analytical grade chemicals shall be used.

5.1 Toluene, CAS¹⁾ number: 108-88-3.

5.2 PAH

The following 24 PAH given in [Table 1](#) are relevant.

Table 1 — List of the relevant PAH

Composé	Numéro CAS (*)
Naphthalene	91-20-3
Acenaphthylene	208-96-8
Acenaphthene	83-32-9
Fluorene	86-73-7
Anthracene	120-12-7
Phenanthrene	85-01-8
Fluoranthene	206-44-0
Pyrene	129-00-0
1-methylpyrene	2381-21-7
cyclopenta(c,d)pyrene	27208-37-3
Benzo[a]anthracene	56-55-3
Chrysene	218-01-9
Benzo[b]fluoranthene	205-99-2
Benzo[j]fluoranthene	205-82-3
Benzo(k)fluoranthene	207-08-9
Benzo[a]pyrene	50-32-8
Benzo[e]pyrene	192-97-2
Benzo[ghi]perylene	191-24-2
Indeno[1,2,3-cd]pyrene	193-39-5
Dibenzo(a,h)anthracene	53-70-3
Dibenzo[a,l]pyrene	191-30-0
Dibenzo[a,e]pyrene	192-65-4
Dibenzo[a,i]pyrene	189-55-9
Dibenzo[a,h]pyrene	189-64-0

5.3 PAH standard solution(s) (100 µg/ml)

24 different components specified in [5.2](#), either as commercially available certified mixes or as individual components in solution.

5.4 Target PAHs – Stock solution 1 (5 µg/ml)

Put 9 ml of toluene ([5.1](#)) in a 10 ml amber volumetric flask ([6.6](#)), add 500 µl of PAH stock solution ([5.3](#)) and fill the flask up to the calibration mark with toluene ([5.1](#)).

5.5 Target PAHs – Stock solution 2 (0.5 µg/ml)

Put 8 ml of toluene ([5.1](#)) in a 10 ml amber volumetric flask ([6.6](#)), add 1ml of stock solution 1 ([5.4](#)) and fill the flask up to the calibration mark with toluene ([5.1](#)).

1) CAS: Chemical Abstract Service.