

Teknisk specifikation

SIS-CEN ISO/TS 16186:2012

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Skodon – Riskfyllda ämnen som kan förekomma i skodon och komponenter – Provningsmetod för att kvantitativt bestämma dimetylfumarat i skodonsmaterial (ISO/TS 16186:2012)

Footwear – Critical substances potentially present in footwear and footwear components – Test method to quantitatively determine dimethyl fumarate (DMFU) in footwear materials (ISO/TS 16186:2012)

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Dokumentet är framtaget av kommittén för Läder och skodon, SIS/TK 158.

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TECHNICAL SPECIFICATION
SPÉCIFICATION TECHNIQUE
TECHNISCHE SPEZIFIKATION

CEN ISO/TS 16186

August 2012

ICS 61.060

English Version

**Footwear - Critical substances potentially present in footwear
and footwear components - Test method to quantitatively
determine dimethyl fumarate (DMFU) in footwear materials
(ISO/TS 16186:2012)**

Chaussure - Substances critiques potentiellement
présentes dans la chaussure et les composants de
chaussure - Méthodes d'essai pour déterminer
quantitativement le diméthylfumarate (DMFu) dans les
matériaux de chaussure (ISO/TS 16186:2012)

Schuhe - Möglicherweise in Schuhen und
Schuhbestandteilen vorhandene kritische Substanzen -
Prüfverfahren zur quantitativen Bestimmung von
Dimethylfumarat (DMFU) in Schuhwerkstoffen (ISO/TS
16186:2012)

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Foreword

This document (CEN ISO/TS 16186:2012) has been prepared by Technical Committee CEN/TC 309 "Footwear", the secretariat of which is held by AENOR, in collaboration with Technical Committee ISO/TC 216 "Footwear".

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Footwear — Critical substances potentially present in footwear and footwear components — Test method to quantitatively determine dimethyl fumarate (DMFU) in footwear materials

1 Scope

This Technical Specification gives a test method for determining the amounts of dimethyl fumarate (DMFU) in footwear materials, desiccant sachets and other commodities.

The test method is not applicable to metal parts. The materials to which it is applicable are given in ISO/TR 16178:2012, Table 1.

NOTE In Europe, DMFU is prohibited in biocidal products as per Directive 98/8/EC. The substance must be used with caution to avoid any health problems in the chemistry laboratory. More recently, EU Commission Decision 2009/251/EC requires EU member states to ensure that products containing the biocide DMFU are not placed or made available on the market in the European Union. Decision 2009/251/EC establishes a maximum concentration of DMFU in products and parts of products of 0,1 mg/kg.

2 Normative references

The following referenced documents are indispensable for the application 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 16178:2012, *Footwear — Critical substances potentially present in footwear and footwear components*

3 Principle of method

The sample is cut into small pieces and extracted with acetone in a sealed vial at a defined temperature in an ultrasonic bath. At this step, two different procedures are proposed, to be used depending on the material being tested:

- a) the first procedure, without purification and concentration of the extracted solution, can be used for samples giving a simple chromatograph, for example, textiles;
- b) the second procedure, with purification and concentration of the extract, can be used for samples with a complex matrix effect, such as leather.

4 Reagents

4.1 General

The substances given in Table 1 shall be used at a defined purity grade (at least 99,5 %).

Table 1 — Reagents

No	Substances	CAS ^a number
1	Dimethyl fumarate	624-49-7
2	Dimethyl maleate	624-48-6
3	d2-DMFU Dimethyl fumarate	23057-98-9
4	Acetone	67-64-1
^a Chemical abstract service.		

4.2 Stock solutions and working solutions

4.2.1 Stock solution of internal standard (1 g/l)

Weigh 10 mg of d2-DMFU into a 10 ml volumetric flask and fill to the mark with acetone. Transfer the content into an amber 10 ml vial with PTFE stopcock and keep at 4 °C.

4.2.2 Acetone working solution with internal standard (1 mg/l)

Prepare this solution by means of 1:1 000 dilution of the stock solution of internal standard with acetone.

4.2.3 Stock solution (1 g/l)

Weigh 50 mg of dimethyl fumarate and 50 mg of dimethyl maleate, with an accuracy of 0,1 mg, in a 50 ml volumetric flask, and fill to the mark with the acetone.

4.2.4 Acetone working solution of dimethyl fumarate and dimethyl maleate (1 mg/l)

Prepare this solution by means of 1:1 000 dilution of the stock solution with acetone.

5 Equipment

The usual equipment and laboratory glassware, according to ISO 4787, shall be used, in addition to the following.

5.1 Analytical balance, with a precision of at least 0,1 mg.

5.2 Glass vial that can be tightly sealed, 40 ml.

5.3 Ultrasonic bath with adjustable temperature.

5.4 PTFE membrane filter with a pore width of 0,45 µm.

5.5 Sample vials of 1 ml and PTFE-capped.

5.6 GC-MS (gas chromatograph–mass spectroscopy).

Other techniques may be used, provided it can be demonstrated that at least the same analytical performance can be obtained.

6 Sampling

In the footwear, the upper and the complex lining plus insock shall be tested.

The test piece shall consist of a single material (leather, textile or polymer).