

English Version

**Footwear - Critical substances potentially present in footwear
and footwear components - Determination of phthalates in
footwear materials (ISO/TS 16181:2011)**

Chaussures - Substances critiques potentiellement
présentes dans les chaussures et les composants des
chaussures - Détermination des phtalates dans les
matériaux des chaussures (ISO/TS 16181:2011)

Schuhe - Möglicherweise in Schuhen und
Schuhbestandteilen vorhandene kritische Substanzen -
Bestimmung von Phthalaten in Schuhwerkstoffen (ISO/TS
16181:2011)

This Technical Specification (CEN/TS) was approved by CEN on 21 May 2011 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

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Foreword

This document (CEN ISO/TS 16181:2011) 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".

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.

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Introduction

Phthalates are commonly used as plasticizers in polymers. Toxicological concern has arisen due to their potential effect as endocrine disruptors and some of the listed phthalates are toxic in reproduction. The level of media publicity will ensure that their use continues to be of concern to consumers.

Phthalates are controversial because high doses of many phthalates have shown hormonal activity in rodent studies. Studies on rodents involving large amounts of phthalates have shown damage to the liver, the kidneys, the lungs, and the developing testes.

This Technical Specification calls for the use of substances and/or procedures that can be injurious to health if appropriate precautions are not observed. It refers only to technical suitability and does not absolve the user from legal obligations relating to health and safety at any stage.

Footwear — Critical substances potentially present in footwear and footwear components — Determination of phthalates in footwear materials

SAFETY PRECAUTIONS — Persons using this Technical Specification should be familiar with normal laboratory practice. This Technical Specification does not claim to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with any national regulatory conditions.

IMPORTANT — It is absolutely essential that tests conducted according to this Technical Specification be carried out by suitably trained staff.

1 Scope

This Technical Specification specifies a test method to determine the presence of phthalate compounds. This test method is applicable to all types of footwear materials.

NOTE 1 This test method can also be used to determine plasticizers other than those listed in 3.2, subject to validation.

NOTE 2 ISO/TR 16178 defines which materials are concerned by this determination.

2 Principle

The aim of the method is to extract phthalates in footwear materials such as leather, textile, polymer, coated materials or others. This method uses extraction apparatus with *n*-hexane/acetone as solvent.

The total *n*-hexane/acetone extractable phthalate plasticizer content is calculated by weight with gas chromatography-mass spectrometry (GC-MS) detection to identify and quantify individual phthalates.

3 Apparatus and reagents

3.1 Apparatus

- 3.1.1 Scales, resolution of 1 mg.
- 3.1.2 Flask, 50 ml.
- 3.1.3 Water-cooled condenser.
- 3.1.4 Spark-proof heating mantle/water bath.
- 3.1.5 Ultrasonic bath.
- 3.1.6 Microwave extractor.
- 3.1.7 Steam bath or rotary evaporator.