BS ISO 17299-4:2015

BSI Standards Publication

Textiles — Determination of deodorant property

Part 4: Condensation sampling analysis

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National foreword

This British Standard is the UK implementation of ISO 17299-4:2015.

The UK participation in its preparation was entrusted to Technical Committee TCI/80, Chemical testing of textiles.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Textiles — Determination of deodorant property —

Part 4: Condensation sampling analysis

Textiles — Détermination des propriétés du déodorant —

Partie 4: Analyse par condensation d'échantillonnage

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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 on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: Foreword — Supplementary information.

The committee responsible for this document is ISO/TC 38, *Textiles*.

ISO 17299 consists of the following parts, under the general title of *Textiles — Determination of deodorant property*

— *Part 1: General principle*

— *Part 2: Detector tube method*

— *Part 3: Gas chromatography method*

— *Part 4: Condensation sampling analysis*

— *Part 5: Metal-oxide semiconductor sensors* method

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Introduction

This part of ISO 17299 describes condensation sampling analyses to measure the very low concentration of the odour chemicals which is assumed at the level of human olfactory perception threshold.

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Textiles — Determination of deodorant property —

Part 4: Condensation sampling analysis

1 Scope

This part of ISO 17299 specifies a deodorant testing method using analytical instruments after using condensation sampling methods for all textile products. This method is applicable to gaseous odour chemicals, such as indole, methyl mercaptan, hydrogen sulfide, isovaleric acid, and nonenal.

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.

ISO 17299-1, *Textiles — Determination of deodorant property — Part 1: General principle*

3 Terms and definitions

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

3.1
condensation sampling
method for collecting gaseous odour chemicals at very low concentration levels, which are then condensed by analytical methods to higher concentration levels to facilitate detections of the chemicals

4 Principle

The concentration of a gaseous odour chemical in a container with or without a textile specimen after a designated elapsed time is measured by instrumental devices. The reduction rate of concentration of gaseous odour chemicals is calculated from the difference of average concentration data obtained from the container with specimen and from that without specimen. The test shall be done for each chemical individually.

5 Reagents

Unless otherwise specified, analytical grade reagents are used.

5.1 Ethanol, reagent with concentration of 99,5 %.

5.2 Odour chemicals.

5.2.1 Indole (C_8H_7N), reagent.

5.2.2 Methyl mercaptan, at a certified concentration of 2,0 µl/l ± 3 % in nitrogen diluent.

5.2.3 Hydrogen sulfide (H_2S), at a certified concentration of 2,0 µl/l ± 3 % in nitrogen diluent.

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5.2.4 Isovaleric acid [$(CH_3)_2CHCH_2COOH$], reagent with a purity of 98,0 %.

5.2.5 Nonenal ($C_9H_{16}O$), reagent with a concentration of 95,0 % in ethanol solution.

5.3 Diluent gas, nitrogen gas from nitrogen gas cylinder with a purity of at least 99,99 %.

6 Apparatus and materials

6.1 Plastic bags, with a volume of 3 l, at least six plastic bags for one test (see ISO 17299-1).

6.2 Micro syringe, capable of delivering 10 µl of solution by an accuracy of ±0,1 µl.

6.3 Heat sealer, used to seal open edge of plastic bag. The adhesive tape can be used as an alternative.

NOTE A sealing attachment such as a linear binder can be used.

6.4 Aspirator or vacuum pump, capable of evacuating remaining air from 3 l sealed plastic bag (refer to Figure 1, item 1).

6.5 Adsorption tube, capable of being mounted on a thermal desorption instrument, and absolving condensed samples of testing chemicals.

6.6 Thermal desorption instrument, capable of mounting an adsorption tube and baking it for cleaning at a temperature over 280 °C with flow of inert gas.

6.7 Impinger, capable of putting absorbing solution and condensing odour chemical of the gas sample supplied from the plastic bag (refer to Figure 1, item 2).

6.8 Air pump, capable of drawing approximately 0,2 l per minute of a sample gas from a plastic bag into adsorption tube, impinger, etc. (refer to Figure 1, item 3).

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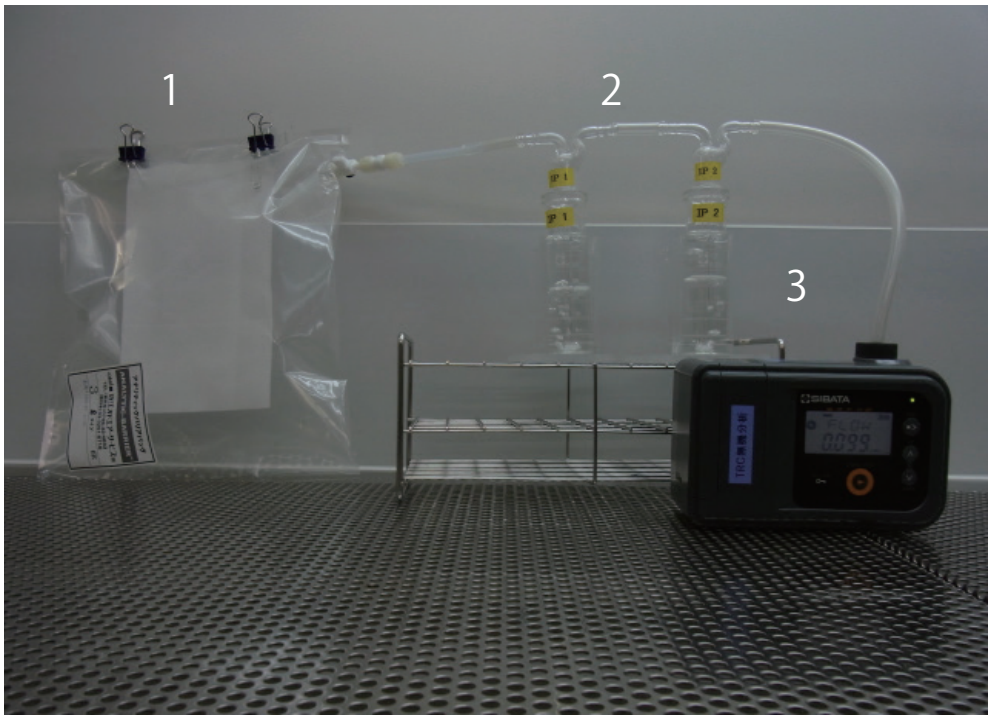

Key

1 plastic bag with specimen

2 impinger

3 air pump

Figure 1 — Sampling set-up

6.9 Thermal desorption gas chromatography (GC) equipment, coupled with a thermal desorption instrument which can be heated up a temperature higher than 280 °C and equipped with a flame photometer detector (FPD), a flame ionization detector (FID), or mass spectrometer (MS).

6.10 Ion chromatography (IC) equipment, to analyse the testing solution of condensed sample in impinger.

The detectors used are Conductivity Detector (CD).

7 Test method

7.1 Sampling of test specimen

The dimension or mass of specimen for textile products is shown in Table 1.

Table 1 — Dimension or mass of specimen

Kind	Dimension or mass
Fabrics (woven, knit, non-woven, and tapes)	250 cm^2 ± 12,5 cm^2
Yarns, fibres, and feather	2,5 g ± 0,125 g

For multi-layer products, the edge and the untreated layer (or the "not targeted" layer) may be covered with an aluminium sheet or the test specimen may be folded in two with the untreated layers inward, in order to avoid contact of untreated layer with odorous atmosphere.

Condition the specimen as specified in ISO 17299-1.

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