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BS EN 15051-3:2013



BSI Standards Publication

Workplace exposure — Measurement of the dustiness of bulk materials

Part 3: Continuous drop method

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This British Standard is the UK implementation of EN 15051-3:2013. Together with BS EN 15051-1:2013 and BS EN 15051-2:2013 it supersedes BS EN 15051:2006, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee EH/2/2, Work place atmospheres.

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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ISBN 978 0 580 76566 7

ICS 13.040.30

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 December 2013.

Amendments issued since publication

Date	Text affected
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EUROPÄISCHE NORM

November 2013

ICS 13.040.30

Supersedes EN 15051:2006

English Version

Workplace exposure - Measurement of the dustiness of bulk materials - Part 3: Continuous drop method

Exposition sur les lieux de travail - Mesure du pouvoir de resuspension des matériaux pulvérulents en vrac - Partie 3: Méthode de la chute continue

Exposition am Arbeitsplatz - Messung des Staubungsverhaltens von Schüttgütern - Teil 3: Verfahren mit kontinuierlichem Fall

This European Standard was approved by CEN on 28 September 2013.

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
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Foreword

This document (EN 15051-3:2013) has been prepared by Technical Committee CEN/TC 137 "Assessment of workplace exposure to chemical and biological agents", the secretariat of which is held by DIN.

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 May 2014, and conflicting national standards shall be withdrawn at the latest by May 2014.

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, together with EN 15051-1:2013 and EN 15051-2:2013, supersedes EN 15051:2006.

The major technical changes between this European Standard and the previous edition are as follows:

- a) EN 15051:2006 has been split into three parts (see below);
- b) the test methods given are no longer referred as reference test methods;
- c) the test of equivalence between an alternative (candidate) test method and any of the test methods now given in EN 15051-2 and this European Standard have been deleted.

EN 15051 *Workplace exposure – Measurement of the dustiness of bulk materials* consists of the following parts:

- *Part 1: Requirements and choice of test methods;*
- *Part 2: Rotating drum method;*
- *Part 3: Continuous drop method.*

According to the CEN-CENELEC Internal Regulations, the national standards organizations 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.

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Introduction

This European Standard gives details of the design and operation of the continuous drop test method that classifies the dustiness of solid bulk materials, in terms of health-related fractions.

A dustiness classification is presented to provide users (e.g. manufacturers, producers, occupational hygienists and workers) with information on the potential for dust emissions when the bulk material is handled or processed in workplaces. It provides the manufacturers of bulk materials with information that can help to improve their products. It allows the users of the bulk materials to assess the effects of pre-treatments, and also to select less dusty products, if available. It is envisaged that different branches of industry might develop their own classification schemes using experimentally determined dustiness values of the bulk materials of interest.

Although this European Standard does not discuss the analysis of dust released from bulk materials (except in terms of health-related fractions), the test method produces samples with the potential for chemical analysis of the contents.

This European Standard was developed based on the results of the European project SMT4-CT96-2074 "Development of a Method for Dustiness Testing" (see [1]). This project investigated the dustiness of 12 bulk materials, with the intention to test as wide a range of bulk materials as possible, i.e. magnitude of dustiness, industrial sectors, chemical composition and particle size distribution. Meanwhile the method has been applied to investigate the dustiness of more than 500 different bulk materials (see [2]).

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1 Scope

This European Standard specifies the continuous drop test apparatus and associated test method for the reproducible production of dust from a bulk material under standard conditions, and the measurement of the inhalable and respirable fractions of this dust, with reference to existing European Standards, where relevant (see Clause 6).

The continuous drop method intends to simulate dust generation processes where there are continuous falling operations (conveying, discharging, filling, refilling, weighing, sacking, metering, loading, unloading etc.) and where dust is liberated by winnowing during falling. It can be modified to measure the thoracic fraction as well, but this modification is not described in this European Standard. It differs from the rotating drum method presented in EN 15051-2 in that in this European Standard, the bulk material is dropped only once, but continuously, while in EN 15051-2, the same bulk material is repeatedly dropped.

Furthermore, this European Standard specifies the environmental conditions, the sample handling and analytical procedures and the method of calculating and presenting the results. A classification scheme for dustiness is specified, to provide a standardised way to express and communicate the results to users of the bulk materials.

This European Standard is applicable to powdered, granular or pelletised bulk materials.

This European Standard is not applicable to test the dust released when solid bulk materials are mechanically treated (e.g. cut, crushed) or to evaluate handling procedures for the bulk materials.

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 1540, *Workplace exposure - Terminology*

prEN 13205-1, *Workplace exposure - Assessment of sampler performance for measurement of airborne particle concentrations - Part 1: General requirements*

EN 15051-1:2013, *Workplace exposure - Measurement of the dustiness of bulk materials - Part 1: Requirements and choice of test methods*

EN 22768-1, *General tolerances - Part 1: Tolerances for linear and angular dimensions without individual tolerance indications (ISO 2768-1)*

EN ISO 13137, *Workplace atmospheres - Pumps for personal sampling of chemical and biological agents - Requirements and test methods (ISO 13137)*

ISO 15767, *Workplace atmospheres - Controlling and characterizing uncertainty in weighing collected aerosols*

3 Terms and definitions

For the purpose of this document, the terms and definitions given in EN 1540 and EN 15051-1 apply.

NOTE In particular, the following terms of EN 1540 are used in this document: airborne dust, collected sample, dustiness, inhalable fraction, respirable fraction, thoracic fraction and health related fractions.