

Soil improvers and growing media — Determination of particle size distribution

ICS 65.080

National foreword

This British Standard is the UK implementation of EN 15428:2007.

BSI, as a member of CEN, is obliged to publish EN 15428 as a British standard. However, during the development of this European Standard, the UK committee voted against its approval as a European Standard.

In the opinion of the UK committee, the shaking conditions for the sieve testing contained in Clauses 5 and 6 are not defined adequately, which is reflected by the performance results in Annex B. Failure to define these conditions can mean poor reproducibility between laboratories, and may lead to inconsistent results when independently testing the same sample.

The inter-laboratory trial results in Annex B are an amalgamation of results from 1997 and 2005. Attention is drawn to the fact that the laboratories were not using BS EN 15428 when the 1997 results were achieved as BS EN 15428 predates them. Furthermore, the 2005 results do not reflect a valid test of BS EN 15428 as the samples used for testing were pre-dried. This is contrary to Clause 7.1, which states 'samples' shall be analysed in a state ready to be used.

The UK participation in its preparation was entrusted to Technical Committee AW/20, Top soil and other growing media.

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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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 September 2009
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ISBN 978 0 580 69206 2

Amendments/corrigenda issued since publication

Date	Comments
30 September 2009	Correction to national foreword

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 15428

September 2007

ICS 65.080

English Version

**Soil improvers and growing media - Determination of particle
size distribution**

Amendements du sol et supports de culture -
Détermination de la répartition granulométrique

Bodenverbesserungsmittel und Kultursubstrate -
Bestimmung der Partikelgrößenverteilung

This European Standard was approved by CEN on 28 July 2007.

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Ref. No. EN 15428:2007: E



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Foreword

This document (EN 15428:2007) has been prepared by Technical Committee CEN/TC 223 “Soil improvers and growing media”, the secretariat of which is held by BSI.

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 March 2008, and conflicting national standards shall be withdrawn at the latest by March 2008.

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1 Scope

This document specifies a method of determination of particle size distribution in soil improvers and growing media.

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.

EN 12579, *Soil improvers and growing media - Sampling*

EN 13040:2007, *Soil improvers and growing media — Sample preparation for chemical and physical tests, determination of dry matter content, moisture content and laboratory compacted bulk density*

CR 13456:1999, *Soil improvers and growing media — Labelling, specifications and product schedules*

ISO 565, *Test sieves - Metal wire cloth, perforated metal plate and electroformed sheet - Nominal sizes of openings*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in CR 13456:1999 and EN 13040:2007 apply.

4 Principle

Sieving an air-dried sample of a growing medium or soil improver with specified test sieves using a mechanical sieving machine and determination of the weight fraction distribution.

5 Apparatus

5.1 Sieving-shaking machine, vertical vibrating movement, with amplitude adjustment, and interval timer. Sieving time: 7 min in periods of 10 s shaking and 1 s rest with an amplitude in the range between 0,5 mm and 1,5 mm.

5.2 Test sieves, diameter 200 mm or 300 mm, rim height 55 mm, aperture sizes as listed in ISO 565, of stainless steel woven wire with square openings 31,5 mm, 16,0 mm, 8,0 mm, 4,0 mm, 2,0 mm, 1,0 mm, and reception tray, sieve lid.

5.3 Drying oven, forced air suction, adjustable to $40\text{ °C} \pm 5\text{ °C}$.

NOTE Care should be taken to prevent loss of fine lightweight particles.

5.4 Three drying trays, rim height ca 50 mm $\pm$ 10 mm, minimum bottom area of 400 cm², heat proof to 50 °C.

5.5 Balance with a weighing range at least 4 kg and an accuracy 0,1 g.

5.6 Apparatus for sample division, comprising any suitable equipment for combining and reducing the samples which preserves the characteristics of the product. Depending on the particle size, material and

particle size distribution, the opening width of the passage should be 2,5 times to 3 times greater than the diameter of the largest particle.

6 Optimization of sieving machine

Prior to its first use the shaking machine shall be optimized as described in Annex A. Optimization shall be repeated annually.

7 Test sample

7.1 General

For the determination of the particle size distribution materials shall be sampled in accordance with EN 12579.

This European Standard is applicable to samples supplied in a form in which they are used and is not necessarily applicable to or suitable for all types of growing medium or soil improver, for example material that is not able to flow when used or is sticky.

Samples shall be analysed in a state ready to be used.

Prepare the test sample in accordance with EN 13040:2007 up to Clause 7.

7.2 Determination of the sub-sample volume

First determine the analytical sample size. For fine materials, use a smaller volume than for coarser materials to reduce the risk of blocking the sieves (see Table 1).

Place the 8,0 mm mesh sieve (5.2) on the sieving machine with the reception tray under it. Reduce the sample to the size of the sub-sample using an apparatus for sample division (5.6). Transfer the appropriate sub-sample (750 ml for 300 mm sieve and 375 ml for 200 mm sieve) to the sieve and place the lid on the sieve. Secure to the sieving tower and switch on the sieving machine (5.1) for 1 min at the standard setting. For samples in which the moisture content is too high, first air dry the sample in a drying oven for 16 h (5.3).

NOTE If the moisture content is too high, the sample will not pass through the sieve.

After sieving, weigh the sieve (*c*), the reception tray with the sample (*a*), then dry-clean the sieve and reception tray and weigh them empty (*d* and *b* respectively).

Calculate the fraction according to 10.1.

Table 1 — Sample volumes

Sieve diameter	Sub-sample portion	Sub-sample portion
	If 0 mm to 8 mm fraction ≤ 50 % w/w total	If 0 mm to 8 mm fraction > 50 % w/w total
200 mm	375 ml	125 ml
300 mm	750 ml	250 ml