

**Täitematerjalide geomeetriliste omaduste katsetamine.  
Osa 3: Tera kuju määramine. Plaatsustegur**

**Tests for geometrical properties of aggregates - Part 3:  
Determination of particle shape - Flakiness index**

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

See Eesti standard EVS-EN 933-3:2012 sisaldab Euroopa standardi EN 933-3:2012 ingliskeelset teksti.	This Estonian standard EVS-EN 933-3:2012 consists of the English text of the European standard EN 933-3:2012.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 18.01.2012.	Date of Availability of the European standard is 18.01.2012.
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English Version

## Tests for geometrical properties of aggregates - Part 3: Determination of particle shape - Flakiness index

Essais pour déterminer les caractéristiques géométriques  
des granulats - Partie 3: Détermination de la forme des  
granulats - Coefficient d'aplatissement

Prüfverfahren für geometrische Eigenschaften von  
Gesteinskörnungen - Teil 3: Bestimmung der Kornform -  
Plattigkeitskennzahl

This European Standard was approved by CEN on 29 October 2011.

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## Foreword

This document (EN 933-3:2012) has been prepared by Technical Committee CEN/TC 154 "Aggregates", 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of an identical text or by endorsement, at the latest by July 2012, and conflicting national standards shall be withdrawn at the latest by July 2012.

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 supersedes EN 933-3:1997.

The following changes have been made to the previous edition:

- a) the CEN Technical Specification has been adopted as European Standard;
- b) the document has been editorially revised.

This standard forms part of a series of tests for geometrical properties of aggregates. Test methods for other properties are covered by the following European Standards:

EN 932 *Tests for general properties of aggregates;*

EN 1097 *Tests for mechanical and physical properties of aggregates;*

EN 1367 *Tests for thermal and weathering properties of aggregates;*

EN 1744 *Tests for chemical properties of aggregates;*

EN 13179 *Tests for filler aggregate used in bituminous mixtures.*

EN 933, *Tests for geometrical properties of aggregates*, consists of the following parts:

- *Part 1: Determination of particle size distribution — Sieving method;*
- *Part 2: Determination of particle size distribution — Test sieves, nominal size of apertures;*  
*Part 3: Determination of particle shape — Flakiness index;*
- *Part 4: Determination of particle shape — Shape index;*
- *Part 5: Determination of percentage of crushed and broken surfaces in coarse aggregate particles;*
- *Part 6: Assessment of surface characteristics — Flow coefficient of aggregates;*
- *Part 7: Determination of shell content — Percentage of shells for coarse aggregates;*
- *Part 8: Assessment of fines — Sand equivalent test;*

- *Part 9: Assessment of fines — Methylene blue test;*
- *Part 10: Assessment of fines — Grading of filler aggregates (air jet sieving);*
- *Part 11: Classification test for the constituents of coarse recycled aggregate.*

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, 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.

## 1 Scope

This European Standard describes the reference method, used for type testing and in case of dispute, for determination of the flakiness index of aggregates. For other purposes, in particular production control, other methods may be used, provided that an appropriate working relationship with the reference method has been established.

This European Standard applies to natural, manufactured or recycled aggregates.

The test procedure specified in this part of this European Standard is not applicable to particle sizes less than 4 mm or greater than 100 mm.

## 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 932-2, *Tests for general properties of aggregates — Part 2: Methods for reducing laboratory samples*

EN 932-5, *Tests for general properties of aggregates — Part 5: Common equipment and calibration*

EN 933-1, *Tests for geometrical properties of aggregates — Part 1: Determination of particle size distribution — Sieving method*

EN 933-2, *Tests for geometrical properties of aggregates — Part 2: Determination of particle size distribution — Test sieves, nominal size of apertures*

## 3 Terms and definitions

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

### 3.1

#### **constant mass**

mass determined by successive weighings performed at least 1 h apart and not differing by more than 0,1 %

Note 1 to entry: In many cases, constant mass can be achieved after a test portion has been dried for a pre-determined period in a specified oven (see 5.4) at  $(110 \pm 5)$  °C. Test laboratories can determine the time required to achieve constant mass for specific types and sizes of sample dependent upon the drying capacity of the oven used.

### 3.2

#### **laboratory sample**

sample intended for laboratory testing

### 3.3

#### **particle size fraction( $d_i/D_i$ )**

fraction of an aggregate passing the larger ( $D_i$ ) of two sieves and retained on the smaller ( $d_i$ )

Note 1 to entry: The lower limit for  $d_i$  may be zero.

### 3.4

#### **test portion**

sample used as a whole in a single test