

**Kergtäitematerjalid Osa 2:  
Kergtäitematerjalid bituumensegude ja  
pinnatöötlusmaterjalidevalmistamiseks  
ning märgistuse pealekandmiseks ja  
ülesvõtmiseks**

Lightweight aggregates - Part 2: Lightweight  
aggregates for bituminous mixtures and surface  
treatments and for unbound and bound applications

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 13055-2:2004 sisaldab Euroopa standardi EN 13055-2:2004 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 26.10.2004 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 13055-2:2004 consists of the English text of the European standard EN 13055-2:2004.</p> <p>This document is endorsed on 26.10.2004 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
--	---

<p><b>Käsitlusala:</b></p> <p>This European Standard specifies the properties of lightweight aggregates and fillers derived thereof obtained by processing natural, manufactured or recycled materials and mixtures of these aggregates for bituminous mixtures and surface treatments and for unbound and hydraulically bound applications other than concrete, mortar and grout.</p>	<p><b>Scope:</b></p> <p>This European Standard specifies the properties of lightweight aggregates and fillers derived thereof obtained by processing natural, manufactured or recycled materials and mixtures of these aggregates for bituminous mixtures and surface treatments and for unbound and hydraulically bound applications other than concrete, mortar and grout.</p>
--	--

ICS 91.100.15

Võtmesõnad:

English version

**Lightweight aggregates - Part 2: Lightweight aggregates for  
bituminous mixtures and surface treatments and for unbound  
and bound applications**

Granulats légers - Partie 2 : Granulats légers pour  
mélanges hydrocarbonés, enduits superficiels et pour  
utilisation en couches traitées et non traitées

Leichte Gesteinskörnungen - Teil 2: Leichte  
Gesteinskörnungen für Asphalte und  
Oberflächenbehandlungen sowie für ungebundene und  
gebundene Verwendung

This European Standard was approved by CEN on 23 April 2004.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**Management Centre: rue de Stassart, 36 B-1050 Brussels**

# Contents

page

Foreword .....	4
1 Scope .....	5
2 Normative references .....	5
3 Terms, definitions and abbreviations .....	6
4 Requirements .....	7
4.1 General .....	7
4.2 Density .....	8
4.3 Aggregate size .....	8
4.4 Grading .....	9
4.5 Particle shape .....	9
4.6 Fines .....	9
4.7 Grading of LWA filler .....	9
4.8 Water content .....	9
4.9 Water absorption .....	9
4.10 Bulk crushing resistance .....	9
4.11 Percentage of crushed particles .....	9
4.12 Resistance to disintegration .....	10
4.13 Freezing and thawing resistance .....	10
4.14 Water suction height .....	10
4.15 Compaction and load bearing capacity .....	10
4.16 Resistance to cyclic compressive loading .....	10
4.17 Stiffening properties .....	10
4.18 Voids of dry compacted LWA filler .....	10
4.19 Resistance to thermal shock .....	10
4.20 Resistance to polishing .....	11
4.21 Resistance to wear by abrasion from studded tyres of coarse LWA in surface treatments .....	11
4.22 Compatibility between LWA and bitumen .....	11
4.23 Chemical requirements .....	11
4.24 Thermal conductivity .....	12
5 Testing .....	12
5.1 Sampling .....	12
5.2 Quantity of test specimens .....	12
5.3 Preparation of test specimens .....	12
6 Evaluation of conformity .....	13
6.1 General .....	13
6.2 Initial type tests .....	13
6.3 Factory production control .....	13
7 Designation, supply marking and labelling .....	13
7.1 Designation .....	13
7.2 Supply .....	14
7.3 Marking and labelling .....	14
Annex A (normative) Compaction and load bearing capacity .....	15
A.1 General .....	15
A.2 Principle .....	15
A.3 Sampling .....	15
A.4 Apparatus .....	16
A.5 Preparation of test specimens .....	16
A.6 Procedure .....	16
A.7 Calculation and expression of results .....	17

A.8	Test report .....	18
<b>Annex B (normative) Determination of resistance to freezing and thawing of lightweight aggregates .....</b>		
B.1	Introduction .....	19
B.2	Principle .....	19
B.3	Apparatus .....	19
B.4	Sampling .....	19
B.5	Test specimens .....	20
B.6	Procedure .....	20
B.7	Calculation and expression of results .....	21
B.8	Test report .....	21
<b>Annex C (normative) Factory production control .....</b>		
C.1	Introduction .....	23
C.2	Organization .....	23
C.3	Control procedures .....	23
C.4	Management of the production .....	24
C.5	Inspection and test .....	24
C.6	Records .....	27
C.7	Control of non-conforming product .....	27
C.8	Handling, storage and conditioning in production areas .....	28
C.9	Transport and packaging .....	28
C.10	Training of personnel .....	28
<b>Annex D (informative) Guidance on how to convert quantities by mass to quantities by volume .....</b>		
D.1	Background .....	29
D.2	Example calculation .....	29
<b>Annex ZA (informative) Clauses of this European Standard addressing the provisions of the EU Construction Products Directive .....</b>		
		30

## Foreword

This document (EN 13055-2:2004) 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 January 2005, and conflicting national standards shall be withdrawn at the latest by January 2005.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see annex ZA, which is an integral part of this document.

Annexes A, B and C are normative. Annex D is informative.

This European Standard forms part of a series of standards for lightweight aggregates, the other part being:

*Part 1: Lightweight aggregates for concrete, mortar and grout.*

Requirements for other end uses of aggregates will be specified in the following European Standards:

EN 12620, *Aggregates for concrete.*

EN 13043, *Aggregates for bituminous mixtures and surface treatments for roads, airfields and other trafficked areas.*

EN 13139, *Aggregates for mortar.*

EN 13242, *Aggregates for unbound and hydraulically bound materials for use in civil engineering work and road construction.*

EN 13383-1, *Armourstone - Part 1: Specification.*

EN 13450, *Aggregates for railway ballast.*

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

## 1 Scope

This European Standard specifies the properties of lightweight aggregates and fillers derived thereof obtained by processing natural, manufactured or recycled materials and mixtures of these aggregates for bituminous mixtures and surface treatments and for unbound and hydraulically bound applications other than concrete, mortar and grout.

This European Standard covers lightweight aggregates of mineral origin having particle densities not exceeding  $2000 \text{ kg/m}^3$  ( $2,00 \text{ Mg/m}^3$ ) or loose bulk densities not exceeding  $1200 \text{ kg/m}^3$  ( $1,20 \text{ Mg/m}^3$ ) including:

- a) natural aggregates;
- b) aggregates manufactured from natural materials and/or from by-products of industrial processes;
- c) by-products of industrial processes;
- d) recycled aggregates.

It provides for the evaluation of conformity of the products to this European Standard.

The requirements specified in this standard may not be relevant to all types of lightweight aggregates. For particular applications the requirements and tolerances can be adapted for the end use.

**NOTE** Aggregates used in construction should comply with all the requirements of this European Standard. As well as familiar and traditional natural and manufactured aggregates Mandate M/125 "Aggregates" included recycled aggregates and some materials from new or unfamiliar sources. Recycled aggregates are included in the standards and new test methods for them are at an advanced stage of preparation. For unfamiliar materials from secondary sources, however, the work on standardization has only started recently and more time is needed to define clearly the origins and characteristics of these materials. In the meantime such unfamiliar materials when placed on the market as aggregates should comply fully with this standard and national regulations for dangerous substances (see annex ZA) depending upon their intended use. Additional characteristics and requirements can be specified on a case by case basis depending upon experience of use of the product, and defined in specific contractual documents.

## 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 932-1, *Tests for general properties of aggregates — Part 1: Methods for sampling.*

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.*

EN 933-5, *Tests for geometrical properties of aggregates — Part 5: Determination of percentage of crushed and broken surfaces in coarse aggregate particles.*

EN 933-10, *Tests for geometrical properties of aggregates — Part 10: Assessment of fines – Grading of fillers (air jet sieving)*.

EN 1097-3, *Tests for mechanical and physical properties of aggregates — Part 3: Determination of loose bulk density and voids*.

EN 1097-4, *Tests for mechanical and physical properties of aggregates — Part 4: Determination of the voids of dry compacted filler*.

EN 1097-5, *Tests for mechanical and physical properties of aggregates — Part 5: Determination of the water content by drying in a ventilated oven*.

EN 1097-6:2000, *Tests for mechanical and physical properties of aggregates — Part 6: Determination of particle density and water absorption*.

EN 1097-8, *Tests for mechanical and physical properties of aggregates — Part 8: Determination of the polished stone value*.

EN 1097-9, *Tests for mechanical and physical properties of aggregates — Part 9: Determination of the resistance to wear by abrasion from studded tyres — Nordic test*.

EN 1097-10, *Tests for mechanical and physical properties of aggregates — Part 10: Determination of water suction height*.

EN 1367-5, *Tests for thermal and weathering properties of aggregates — Part 5: Determination of resistance to thermal shock*.

EN 1744-1:1998, *Tests for chemical properties of aggregates — Part 1: Chemical analysis*.

EN 1744-3, *Tests for chemical properties of aggregates — Part 3: Preparation of eluates by leaching of aggregates*.

EN 12664, *Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Dry and moist products of medium and low thermal resistance*.

EN 12667, *Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Products of high and medium thermal resistance*.

EN 12697-11, *Bituminous mixtures - Test methods for hot mix asphalt - Part 11: Determination of the affinity between aggregate and bitumen*.

EN 13055-1:2002, *Lightweight aggregates — Part 1: Lightweight aggregates for concrete, mortar and grout*.

EN 13179-1, *Tests for filler aggregate used in bituminous mixtures - Part 1: Delta ring and ball test*.

EN 13286-7, *Unbound and hydraulically bound mixtures - Part 7: Cyclic load triaxial test for unbound mixtures*.

EN ISO 10456, *Building materials and products - Procedures for determining declared and design thermal values (ISO 10456:1999)*.

### **3 Terms, definitions and abbreviations**

For the purposes of this European Standard, the following terms and definitions and abbreviations apply.