SLOVENSKI STANDARD
SIST EN 13285:2018

01-september-2018

Nadomešča:
SIST EN 13285:2010

Nevezane zmesi - Zahteve

Unbound mixtures - Specifications

Ungebundene Gemische - Anforderungen

Graves non traitées - Spécifications

Ta slovenski standard je istoveten z: EN 13285:2018

ICS:

93.080.20 Materiali za gradnjo cest Road construction materials

SIST EN 13285:2018 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13285

June 2018

ICS 93.080.20

Supersedes EN 13285:2010

English Version

Unbound mixtures - Specifications

Graves non traitées - Spécifications

Ungebundene Gemische - Anforderungen

This European Standard was approved by CEN on 20 February 2017.

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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. EN 13285:2018 E

Contents

Page

European foreword

This document (EN 13285:2018) has been prepared by Technical Committee CEN/TC 227 “Roads materials”, 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of an identical text or by endorsement, at the latest by December 2018, and conflicting national standards shall be withdrawn at the latest by March 2020.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN not be held responsible for identifying any or all such patent rights.

This document supersedes EN 13285:2010.

Compared with EN 13285:2010 the following changes have been made:

a) Introduction of new categories for mixtures, designations, grading and fines content;

b) adjustment of scope for new categories to an upper sieve size (D) range from 5,6 mm to 90 mm;

c) introduction of definitions for new terms;

d) A-Deviation by Estonia introduced in new Annex C. The former Annex C is now part of Clause 5.

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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard specifies requirements for unbound mixtures used for construction and maintenance of roads, airfields and other trafficked areas.

This European Standard applies to unbound mixtures of natural, manufactured and recycled aggregates with an upper sieve size (D) from 5,6 mm to 90 mm and lower sieve size (d) = 0 at the point of delivery.

NOTE 1 Mixtures with an upper sieve size (D) greater than 90 mm are not covered by this European Standard but may be specified in the place of use.

NOTE 2 Water content of the mixture and the density of the installed layer are not specified mixture requirements. Both parameters are related to the control of the construction of the layer and are outside the scope of this European Standard.

The aggregate requirements are defined with appropriate cross-reference to EN 13242.

Use of aggregates as soil is not covered by this standard.

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

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

EN 13286-1, *Unbound and hydraulically bound mixtures — Part 1: Test methods for laboratory reference density and water content — Introduction, general requirements and sampling*

EN 13286-2, *Unbound and hydraulically bound mixtures — Part 2: Test methods for laboratory reference density and water content — Proctor compaction*

EN 13286-3, *Unbound and hydraulically bound mixtures — Part 3: Test methods for laboratory reference density and water content — Vibrocompression with controlled parameters*

EN 13286-4, *Unbound and hydraulically bound mixtures — Part 4: Test methods for laboratory reference density and water content — Vibrating hammer*

EN 13286-5, *Unbound and hydraulically bound mixtures — Part 5: Test methods for laboratory reference density and water content — Vibrating table*

EN 16236, *Assessment and Verification of the Constancy of Performance (AVCP) of aggregates — Type testing and Factory Production Control*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13242, EN 16236 and the following apply.

3.1
unbound mixture
granular material, normally of a controlled grading with $d = 0$, which is generally used in pavement bases and sub-bases and surface layers

Note 1 to entry: An unbound mixture does not contain an added binder.

3.2
manufacturer's declared value (MDV)
value declared by the manufacturer accompanied by a declared tolerance

3.3
week of production
5 days of production in a period no longer than 3 months

3.4
month of production
20 days of production in a period no longer than 6 months

3.5
six month of production
120 days of production in a period no longer than 2 years

3.6
year of production
at least one day of production in a period no longer than 12 months

Note 1 to entry: For the purpose of the test frequencies, a year of production is the same as a calendar year.

4 Requirements

4.1 General requirements

The need for testing for all properties in this clause shall be limited according to the particular application or end use or origin of the mixture. When required, the tests specified in 4.2 to 4.3 shall be carried out to determine appropriate properties.

When a test is not required, it should be specified as a "No requirement".

4.2 Aggregate requirements

The following properties of the aggregates used in the mixture shall be in accordance with EN 13242:

— shape of coarse aggregate;

— percentage of crushed particles and of totally rounded particles in coarse aggregates;

— fines quality;

— resistance to fragmentation of coarse aggregate;

— particle density;

— water absorption;

— resistance to wear of coarse aggregate;

— chemical requirements (e.g. water soluble sulphate);

— classification of the constituents of recycled aggregates;

— durability requirements.

4.3 Mixture requirements

4.3.1 Mixture designation

Mixtures (0/*D*) shall be selected from Table 1.

Table 1 — Mixture designation

0/5,6 (0/5)	0/6,3 (0/6)	0/8
0/10	0/11,2 (0/11)	0/12,5 (0/12)
0/14	0/16	0/20
0/22,4 (0/22)	0/31,5 (0/32)	0/40
0/45	0/56	0/63
0/80	0/90	
NOTE Rounded sizes shown in parentheses can be used as simplified descriptions of aggregate sizes.		

Other mixture designations *0*/*D* may be declared with *D* selected from the ISO 565/R20 series.

4.3.2 Fines content

When required, the percentage of particles which pass the 0,063 mm sieve (fines) determined in accordance with EN 933-1 shall not exceed the values in Table 2, according to the category chosen.

Table 2 — Maximum fines content

Percentage passing 0,063 mm sieve by mass	Category
≤ 3	*UF* 3
≤ 5	*UF* 5
≤ 7	*UF* 7
≤ 9	*UF* 9
≤ 12	*UF* 12
≤ 15	*UF* 15
> 15	$UF_{Declared}$
No requirement	*UF* NR
NOTE No requirement (NR) Category, *UF* (upper fines content)	

When required, the percentage of particles passing the 0,063 mm sieve shall also be equal or greater than the values given in Table 3, according to the category chosen.

Table 3 — Minimum fines content

Percentage passing 0,063 mm sieve by mass	Category
≥ 2	*LF* 2
≥ 4	*LF* 4
≥ 6	*LF* 6
≥ 8	*LF* 8
≥ 10	*LF* 10
< 2	$LF_{Declared}$
No requirement	*LF* NR
NOTE No requirement (NR) Category, *LF* (lower fines content)	

The categories in Table 2 and Table 3 shall be chosen so that the difference between the maximum fines content and the minimum fines content is not less than 3 %.

4.3.3 Oversize

The percentage of particles passing the upper (*D*) sieve, when determined in accordance with EN 933-1, shall conform to one of the categories given in Table 4.

Table 4 — Oversize

Percentage passing by mass			Category
2 D[a, b]	1,4 D[b]	D[c]	
—	100	90 to 99	*OC 90*
—	100	85 to 99	*OC 85*
100	90 to 100 [d]	80 to 99	*OC 80*
100	85 to 100 [d]	75 to 99	*OC 75*

NOTE Category, *OC* (oversize)

[a] For unbound mixtures where D is greater than 63 mm, only the oversize requirements related to the 1,4 D sieve apply because there is no ISO 565/R20 series sieve size larger than 125 mm.

[b] Where the sieves calculated as 1,4 D and 2 D are not exact sieve numbers in the ISO 565/R20 series then the next nearest sieve size shall be adopted. When D = 90 mm the 125 mm sieve shall be used as oversize.

[c] The percentage passing sieve size D may be greater than 99 % but in such cases the manufacturer shall declare the typical grading.

[d] For unbound mixtures where D is smaller than 63 mm.

4.3.4 Grading requirements

4.3.4.1 General grading curve

The percentage by mass passing, when determined in accordance with EN 933-1, shall conform to the category selected from Table 5. The appropriate sieves shall be selected from Table 6.

The grading shall be declared together with the mixture designation of the unbound mixture.

Table 5 — Grading Ranges

Type of Grading range	Percentage by mass passing						Category G
	Sieve A	Sieve B	Sieve C	Sieve E	Sieve F	Sieve G	
Normal graded mixtures							
Overall grading range	55 to 85	35 to 65	22 to 50	15 to 40	10 to 35[a]	0 to 20	G_A
Manufacturer's declared value grading range	63 to 77	43 to 57	30 to 42	22 to 33	15 to 30[a]	5 to 15	
Overall grading range	55 to 85	35 to 68	22 to 60	16 to 47	9 to 40	5 to 35	G_B
Manufacturer's declared value grading range	63 to 77	43 to 60	30 to 52	23 to 40	14 to 35	10 to 30	
Overall grading range	50 to 90	30 to 75	20 to 60	13 to 45	8 to 35	5 to 30	G_C

Type of Grading range	Percentage by mass passing						Category G
	Sieve A	Sieve B	Sieve C	Sieve E	Sieve F	Sieve G	
Manufacturer's declared value grading range	61 to 79	41 to 64	31 to 49	22 to 36	13 to 30	10 to 25	
Open graded mixtures							
Overall grading range	50 to 78	31 to 60	18 to 46	10 to 35	6 to 26	0 to 20	G_O
Manufacturer's declared value grading range	58 to 70	39 to 51	26 to 38	17 to 28	11 to 21	5 to 15	
Overall grading range	43 to 81	23 to 66	12 to 53	6 to 42	3 to 32	NR	G_P
Manufacturer's declared value grading range	54 to 72	33 to 52	21 to 38	14 to 27	9 to 20		
Other mixtures							
Overall grading range	56 to 85	30 to 58	14 to 37	0 to 15	NR	0 to 6	G_S
Manufacturer's declared value grading range	No requirement						
Overall grading range	50 to 90	30 to 75	15 to 60	NR	0 to 35	NR	G_E
Manufacturer's declared value grading range	No requirement						
Overall grading range	50 to 90	30 to 75	15 to 60	No requirement			G_U
Manufacturer's declared value grading range	No requirement						
Overall grading range	47 to 87	No requirement		15 to 75	No requirement		G_V
Manufacturer's declared value grading range	No requirement						
Overall grading range	No requirement						G_N
Manufacturer's declared value grading range							
Overall grading range	52 to 86	33 to 68	23 to 54	15 to 43	12 to 34	NR	G_W
Manufacturer's declared value grading range	60 to 78	41 to 60	31 to 46	22 to 36	17 to 29		

Type of Grading range	Percentage by mass passing						Category G
	Sieve A	Sieve B	Sieve C	Sieve E	Sieve F	Sieve G	
Overall	56 to 84	47 to 75	33 to 60	22 to 47	15 to 36	NR	G_{WW}
Manufacturer's declared value grading range	64 to 76	55 to 67	41 to 52	29 to 40	20 to 31		
Overall	57 to 79	39 to 63	26 to 50	21 to 28	11 to 25	6 to 20	G_T
Manufacturer's declared value grading range	No requirement						
a For certain applications sieve F for - overall: 5 to 30; and - MDV: 10 to 25.							

When required, for the control of individual batches of categories G_A, G_B, G_C, G_O, G_P, G_W and G_{WW} the manufacturer shall nominate a declared value within the manufacturer's declared value grading range appropriate to the mixture type. In addition, for categories G_A, G_B, G_C, G_O, G_P, G_W and G_{WW} the mean value calculated from all gradings of the last six months of production shall be within the manufacturer's declared value grading range appropriate to the category selected from Table 5.

NOTE Use of the manufacturer's declared value is illustrated in Annex A.