



SLOVENSKI STANDARD
kSIST FprEN 13450:2012

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Agregati za grede železniških prog

Aggregates for railway ballast

Gesteinskörnungen für Gleisschotter

Granulats pour ballasts de voies ferrées

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Aggregates for railway ballast

Granulats pour ballasts de voies ferrées

Gesteinskörnungen für Gleisschotter

This draft European Standard is submitted to CEN members for unique acceptance procedure. It has been drawn up by the Technical Committee CEN/TC 154.

If this draft becomes a European Standard, 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.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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Foreword

This document (FprEN 13450:2012) has been prepared by Technical Committee CEN/TC 154 “Aggregates”, the secretariat of which is held by BSI.

This document is currently submitted to the Unique Acceptance Procedure.

This document will supersede EN 13450:2002.

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 informative Annex ZA, which is an integral part of this document.

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 13055, *Lightweight aggregates*;
- 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*.

Considering evaluation of conformity see FprEN 16236, Evaluation of Conformity.

FprEN 13450:2012 (E)**1 Scope**

This European Standard specifies the properties of aggregates obtained by processing natural, manufactured or recycled crushed unbound aggregates for use in construction of the upper layer of railway track. For the purposes of this standard, the aggregate is referred to as railway ballast.

A list of the source materials that have been considered and are within the scope of this European Standard is given in Annex E (normative).

NOTE 1 Reused railway ballast: railway ballast resulting of previously used railway ballast on site and without putting it on the market is not covered by this European Standard.

It also specifies that a quality control system is in place for use in factory production control and it provides for the evaluation of conformity of the products to this European Standard.

It incorporates a general requirement that railway ballast should not release any dangerous substances in excess of the maximum permitted levels specified in a relevant European Standard for the material or permitted in the national regulations of the member state of destination (see NOTE 2).

NOTE 2 Railway ballast used in construction should comply with all the requirements of this European Standard. The standard includes comprehensive and specific requirements for natural aggregates and recycled ballast, dealing with, for example, the stability of certain basalts.

For materials from some other secondary sources, however, work is ongoing and the requirements are incomplete. In the meantime such materials, when placed on the market as railway ballast, should conform fully to this standard but may also be required to conform to specific relevant additional requirements at the place of use. Additional characteristics and requirements may be specified on a case by case basis depending upon experience of use of the product, and defined in specific contractual documents.

NOTE 3 Requirements for the declaration of the potential of railway ballast to release regulated dangerous substances are currently under development. Until such time as these are finalised, attention should be paid to requirements at the place of use.

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 932-3, *Tests for general properties of aggregates — Part 3: Procedure and terminology for simplified petrographic description*

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

EN 933-3, *Tests for geometrical properties of aggregates — Part 3: Determination of particle shape — Flakiness index*

EN 933-4, *Tests for geometrical properties of aggregates — Part 4: Determination of particle shape — Shape index*

EN 1097-1, *Tests for mechanical and physical properties of aggregates — Part 1: Determination of the resistance to wear (micro-Deval)*

EN 1097-2, *Tests for mechanical and physical properties of aggregates — Part 2: Methods for the determination of resistance to fragmentation*

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

EN 1367-1, *Tests for thermal and weathering properties of aggregates — Part 1: Determination of resistance to freezing and thawing*

EN 1367-2, *Tests for thermal and weathering properties of aggregates — Part 2: Magnesium sulfate test*

EN 1367-3, *Tests for thermal and weathering properties of aggregates — Part 3: Boiling test for “Sonnenbrand basalt”*

EN 1367-6, *Tests for thermal and weathering properties of aggregates — Part 6: Determination of resistance to freezing and thawing in the presence of salt (NaCl)*

FprEN 16236, *Evaluation of conformity of aggregates*

3 Terms and definitions

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

3.1

aggregate

granular material used in construction

Note 1 to entry: Aggregates may be natural, manufactured or recycled.

3.2

railway ballast

aggregate where 100 % of the surface of the particles can be described as totally crushed used in the construction of the upper layer of railway track, with sizes e. g. 22/40 mm, 31,5/50 mm or 31,5/63 mm

3.3

natural railway ballast

aggregate for railway ballast from mineral sources which have been subjected to nothing more than mechanical processing

Note 1 to entry: Natural railway ballast should be produced without blending material from different geological sources.

3.4

manufactured railway ballast

railway ballast of mineral origin resulting from an industrial process involving thermal or other modification

3.5

recycled railway ballast

railway ballast resulting from the processing of inorganic or mineral material previously used in construction

3.6

category

level of a property of railway ballast expressed as a range of values or a limiting value

Note 1 to entry: There is no relationship between the categories of different properties.

FprEN 13450:2012 (E)**3.7****railway ballast size**

designation of railway ballast in terms of lower (d) and upper (D) sieve sizes expressed as d/D

Note 1 to entry: This designation accepts the presence of some particles which are retained on the upper sieve (oversize) and some which pass the lower sieve (undersize)

3.8**fine particles**

particle size fraction of railway ballast which passes the 0,5 mm sieve

3.9**finer**

particle size fraction of railway ballast which passes the 0,063 mm sieve

4 Geometrical requirements**4.1 General**

The necessity for testing and declaring all properties specified in this clause shall be limited according to the particular application at end use or origin of the railway ballast. When required, the tests in Clause 4 specified shall be carried out to determine appropriate geometrical properties.

NOTE 1 When the value of a property is required but not defined by specified limits the value should be declared as an XX_{Declared} category, e.g. in Table 4 a value of say 40 for the flakiness index corresponds to FI_{RB40} (*Declared value*).

NOTE 2 When a property is not required, a "No requirement" category can be used.

NOTE 3 Guidance on selection of appropriate categories for specific applications can be found in national provisions in the place of use of the railway ballast.

NOTE 4 Where conformity with a category is based on a value of a property being less than or equal to a given value, conformity with a more severe category (lower value) automatically confers conformity with all less severe categories (higher values). Similarly for categories based on the value of a property being greater than or equal to a given value, conformity with a more severe (higher value) automatically confers conformity with all less severe categories (lower values).

Sampling shall be carried out in accordance with EN 932-1.

NOTE 5 Advice on sampling from a wagon or the track at the laying site is given in Annex A.

NOTE 6 Guidance on interpretation of results when samples of railway ballast have been taken from railway wagon or out of track is given in Annex B.

4.2 Railway ballast size

Railway ballast size shall be specified using a pair of sieve sizes in millimetre with d as the lower limit designation sieve and D as the upper limit designation sieve between which most of the particle size distribution lies.

4.3 Grading

The grading of the railway ballast shall be determined in accordance with EN 933-1 and the results declared in accordance with the relevant category specified in Table 1.