SLOVENSKI STANDARD
SIST EN 1424:1999

01-november-1999

Materiali za označevanje vozišča – Steklene kroglice za primešanje k barvi

Road marking materials - Premix glass beads

Straßenmarkierungsmaterialien - Premixglasperlen

Produits de marquage routier - Microbilles de verre de prémélange

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Ta slovenski standard je istoveten z: **EN 1424:1997**

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ICS:

93.080.20 Materiali za gradnjo cest Road construction materials

SIST EN 1424:1999 **en**

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EUROPEAN STANDARD **EN 1424**

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Descriptors: roads, signalling, marking, balls, glass, mixtures, specifications, grain size, classification, quality, defects tolerances, sampling, laboratory tests

English version

Road marking materials - Premix glass beads

Produits de marquage routier - Microbilles de verre de prémélange

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 226 "Road equipment", the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by February 1998, and conflicting national standards shall be withdrawn at the latest by February 1998.

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

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1 Scope

This European Standard specifies the requirements for laboratory tests (production control) and qualification procedures for the premixed glass beads used in road marking materials.

The requirements taken into consideration in this standard are:

- granulometry ;
- refractive index of the glass ;
- chemical resistance ;
- quality ;
- surface treatments.

This European Standard does not cover the glass beads used as a filler in marking products.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

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ISO 565	Test sieves - Metal wire cloth, perforated metal plate and electroformed sheet - Nominal sizes of openings
ISO 2591-1	Test sieving - Part 1 : Methods using test sieves of woven wire cloth and perforated metal plate
EN 1423	Road marking materials - Drop-on materials - Glass beads, antiskid aggregates and mixtures of the two

3 Definition

For the purposes of this standard, the following definition applies:

premix glass bead

Transparent spherical glass particle used to provide night visibility for road markings by retroreflecting the incident headlight beams of a vehicle towards the driver. These materials are premixed during manufacture into paints, thermoplastics materials, cold hardening plastics and any other marking product applied in the liquid state to the road surface. Premix glass beads can also be added to liquid marking materials just before their application to the road surface.

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4 Requirements

4.1 Granulometry

The granulometry of premix glass beads shall be described by giving the minimum and the maximum percentages by mass of the cumulative retained premix glass beads on metal wire cloth test sieves : ISO 565 - sizes R 40/3 using the test sieving procedure defined in ISO 2591-1.

For a period of 5 years after the date of publication of this European Standard, existing national standard granulometries can be used, even if they use sieves other than those defined in ISO 565 - sizes R 40/3. Thereafter, granulometries shall be described by selecting the sieves in accordance with the following rules (also see table 1) :

- the upper safety sieve shall retain 0 % of the total mass of the premix glass beads ;

- the upper nominal sieve shall retain 0 % to 10 % of the premix glass beads ;

- if necessary, intermediate sieves shall be added to limit the ratio between the nominal sizes of openings of two successive sieves to a maximum of 1,7 : 1 ;

- for each of the intermediate sieves, the range by mass between the minimum N_1 and the maximum N_2 of the cumulative retained percentages shall be not more than 40 % ($N_2 - N_1 \leq 40$) ;

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- the lower nominal sieve shall retain 95 % to 100 % of the premix glass beads.

Table 1 : Selecting sieves for premix glass beads

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Sieves : ISO 565 R 40/3	Cumulative retained mass %
upper safety	0
upper nominal	0 to 10
intermediate	N_1 to N_2
lower nominal	95 to 100

Examples of the interpretation of the rules to specify the granulometry of premix glass beads are given in table 2 and table 3.

Table 2 : Fine grading

Sieves : ISO 565 R 40/3 µm	Cumulative retained mass %
425	0
300	0 to 10
250	0 to 30
150	40 to 80
90	80 to 100
53	95 to 100

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Table 3 : Medium grading

Sieves : ISO 565 R 40/3 µm	Cumulative retained mass %
1180	0
1000	0 to 10
850	5 to 20
600	45 to 85
355	95 to 100

The granulometry of the premix glass beads shall be determined in accordance with ISO 2591-1.

4.2 Refractive index

When determined in accordance with annex A of EN 1423, the refractive index n of the premix glass beads shall conform with the following classes :

Class A : $n \geq 1,5$;

Class B : $n \geq 1,7$;

Class C : $n \geq 1,9$.

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4.3 Resistance to water, hydrochloric acid, calcium chloride and sodium sulfide

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When tested in accordance with annex B of EN 1423, the premix glass beads shall not develop any surface haze or dulling when in contact with any of the following : water, hydrochloric acid, calcium chloride and sodium sulfide.

4.4 Quality requirements

When tested in accordance with EN 1423 annex D, premix glass beads with imperfections as described in annex C of EN 1423, shall be considered defective.

Taking into consideration only one defect per bead, the maximum weighted percentage of defective premix glass beads shall be 20 % for premix glass beads with a diameter lower than 1 mm and 30 % for premix glass beads with a diameter equal to or greater than 1 mm, in both cases including a maximum of 3 % of grains and foreign particles (see table 4). If a granulometry includes beads with diameters lower than 1 mm and diameters equal to or greater than 1 mm they shall be separated by means of a sieve with nominal sizes of openings of 1 mm and checked separately.

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Table 4 : Maximum weighted percentage of defective premix glass beads

Diameter of premix glass beads mm	Maximum weighted percentage of defective premix glass beads %	Maximum weighted percentage of grains and foreign particles %
<1 ≥1	20 30	3 3

4.5 Surface treatments of premix glass beads

Special coatings can be applied to the surface of the premix glass beads to enhance their properties. When the manufacturer states the presence of a coating it shall be proved by testing the premix glass beads in accordance with a test method agreed between the supplier of the premix glass beads and the specifying authority.

5 Sampling

In order to test premix glass beads, a representative sample of the material to be tested shall be taken as follows.

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When *M*, in kilograms, is the mass of the material to be tested, at least 1,5 kg of the material shall be taken by inserting an appropriate probe in the full height of a certain number S of bags in an upright position, or inserting the probe S times in the whole height of an Intermediate Bulk Container (IBC).

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S is calculated by the formula : $S = \sqrt{M / 150}$; and it shall be rounded up to the next higher unit.

The material shall be taken from at least three bags or one IBC.

A representative sample shall be obtained by mixing the material taken with the *S* insertions of the probe in the bags. The representative sample shall be split using a 1/1 splitter into the number of samples necessary for the tests.

NOTE : A test probe can be constructed from a tube of 28 mm to 34 mm diameter and 1000 mm to 1200 mm in length. The end of the probe which reaches the bottom of the bag should be fitted with a plugging system. After penetration of the probe to the full depth of the bag, the plug is inserted and the probe removed. The contents of the probe represent a single sample of the material to be tested.