SLOVENSKI STANDARD
oSIST prEN 12802:2019

01-februar-2019

Materiali za označevanje vozišča - Laboratorijske metode za identifikacijo

Road marking materials - Laboratory methods for identification

Straßenmarkierungsmaterialien - Laborverfahren für die Identifikation

Produits de marquage routier - Méthodes de laboratoire pour identification

Ta slovenski standard je istoveten z: **prEN 12802**

ICS:

93.080.20 Materiali za gradnjo cest Road construction materials

oSIST prEN 12802:2019 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT prEN 12802

December 2018

ICS 93.080.20

Will supersede EN 12802:2011

English Version

Road marking materials - Laboratory methods for identification

Produits de marquage routier - Méthodes de laboratoire pour identification

Straßenmarkierungsmaterialien - Laborverfahren für die Identifikation

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 226.

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.

This draft European Standard was established by CEN 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.

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.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.

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

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

Contents

Page

European foreword

This document (prEN 12802:2018) has been prepared by Technical Committee CEN/TC 226 “Road equipment”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 12802:2011.

This document is one of a package of inter-related European Standards:

— EN 1790, *Road marking materials — Preformed road markings*;

— EN 1824, *Road marking materials — Road trials*;

— EN 1871, *Road marking materials — Physical properties*;

— EN 12802, *Road marking materials — Laboratory methods for identification*;

— EN 13197, *Road marking materials — Wear simulator Turntable*;

— EN 13212, *Road marking materials — Requirements for factory production control*;

— EN 13459, *Road marking materials — Sampling from storage and testing*.

1 Scope

This document specifies laboratory methods for the identification of road marking materials used in horizontal signalization. It is not necessary, unless required, to perform all of the tests described.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 1423, *Road marking materials - Drop on materials - Glass beads, antiskid aggregates and mixtures of the two*

EN 1424, *Road marking materials - Premix glass beads*

EN 1790, *Road marking materials - Preformed road markings*

EN 13459, *Road marking materials - Sampling from storage and testing*

EN ISO 2811-1, *Paints and varnishes - Determination of density – Part 1: Pycnometer method (ISO 2811-1)*

EN ISO 2811-2, *Paints and varnishes - Determination of density - Part 2: Immersed body (plummet) method (ISO 2811-2)*

EN ISO 15528, *Paints, varnishes and raw materials for paints and varnishes - Sampling (ISO 15528)*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
paint
liquid product which contains binders, pigments, fillers, solvents and additives, which can be supplied in single or multi-component systems and which, when applied, produces a cohesive film by the process of solvent/water evaporation and/or a chemical reaction and/or coalescence process (in the case of water base product)

3.2
thermoplastic
solvent-free marking product which is supplied in block, granular or powder forms, which is heated to a molten state prior to application to road surfaces, and which forms a cohesive film by cooling

3.3
cold plastic
viscous products supplied in multi-component forms (at least one main component and a hardener system), the cohesive film being formed after mixing of all components only by a chemical reaction following which the cold plastic becomes a solid

4 Sampling

Samples may be taken from storage, from material provided on work site, or from the application equipment on site.

Samples representative of each component of the material shall be taken from storage in accordance with EN 13459.

Sampling prior to application can be carried out from the application unit of the road marking machine and/or the provided container. If the material is suspect to be non-homogeneous take some samples from different areas of the container or during the application of the road marking out of the application unit. For paints and cold plastics at minimum 2 × 1 l of the basic component shall be taken.

In the case of thermoplastic in powder form, sufficient quantity shall be taken so that it can be melted in a metal container and mixed to a homogeneous mass. After cooling and casting into solid sheets or blocks, representative samples of approximately 2 × 1 kg of homogeneous solid material shall be taken for testing.

5 Test methods

5.1 General

The standard test methods are listed in 5.2 to 5.4.

Alternative quantitative analytical test methods may be used providing that the resulting values are comparable to those obtained using the standard methods.

5.2 Paints, cold plastics and thermoplastics

5.2.1 Density

The density of the paint and cold plastics shall be determined using, either the method laid down in EN ISO 2811-1, EN ISO 2811-2. An alternative method for density of thermoplastic is EN 1097-6.

5.2.2 Solids/solvent content

The solids/solvent content of the paint, expressed as a percentage, shall be determined using the method described in Annex A.

5.2.3 Organic content and identification

The type of organic materials, and the content expressed as a percentage, of the paint shall be determined using the method described in Annex B.

5.2.4 Inorganic content and identification

The type of inorganic materials, and the content expressed as a percentage, shall be determined using the method described in Annex C.

5.2.5 Titanium dioxide content

The titanium dioxide content of the inorganic compound, expressed as a percentage, shall be determined by the method described in Annex D.

5.2.6 Premix particles/Glass bead content

The premix particles or glass bead content, expressed as a percentage, shall be determined as described in Annex E.

5.2.7 Solvent identification

The type of solvent, and the content expressed as a percentage, shall be determined using the method described in Annex F.

5.2.8 Viscosity

The viscosity of the paint shall be determined using the method described in Annex G.

5.2.9 Ash content

The ash content shall be determined using the method described in Annex H.

5.3 Preformed road markings

The identification methods for preformed road markings are laid down in EN 1790.

5.4 Premix particles and/or glass beads

5.4.1 Granulometry

The granulometry shall be determined using digital image analysis or the method laid down in EN 1424 or EN 1423.

5.5 Tolerances

Tolerances are as shown in Table 1.

Manufacturers tolerances shouldn't be greater than in Table 1 declared.

If the manufacturer can't provide values or parameters requested by the authorities necessary for the certification process the authorities authorized lab determines that values or parameters.

For the initial testing of a material, tolerances apply to the manufacturers declared mean values for the properties tested and the initial test results shall be within the tolerances, related to the mean value, in Table 1.

When the values fall inside the tolerances then the values initially declared by the manufacturer are considered to be verified.

When values fall outside of the tolerances there are four possibilities:

— the manufacturer can decide that the test be terminated;

— by agreement between the participants the test can be repeated with the same samples;

— by agreement between the participants the test can be repeated with new samples;

— by agreement between the participants the manufacturer can submit revised declared values;

Table 1 — Tolerances for paints, cold plastics and thermoplastics

Parameter	Maximum relative deviation	Maximum absolute deviation
Solids content	–	±2
Density	– – –	Paint: ± 0,04 g/cm³ Cold plastic: ± 0,06 g/cm³ Thermoplastic: ± 0,1 g/cm³
Organic constituents	10 %	±2
Calcium Carbonate		±3
Inorganic constituents	–	±3
Titanium dioxide	For TiO_2 concentrations ≥ 10 % Tolerance = 10 %	For TiO_2 concentrations ≤ 10 % Tolerance = ± 1
Glass beads/premix particles[a]	20 %	±5
Solvent content		±3
Viscosity	Cold plastic: 20 %	Paint: ± 10 units
Ash Content	–	±3

[a] Experimental values which are only applicable if the glass bead/premix content is ≥ 10 %. It is not possible to set tolerances if the percentage of glass beads is less than 10 %.

When assessing the identity of two infrared spectra it shall be checked if all absorptions-/transmission peaks are present or there are additional occurrences which are significantly different from the baseline to stand out. The relative height levels between the peaks shall not change significantly.

6 Test report

At the end of the tests, the test report shall be made available. The test report shall include at least: a reference to this standard and to the test method (Annex A to Annex H); the critical testing conditions; and the expression of the results (as specified in the corresponding test method) and the related uncertainty (if applicable).

Annex A
(normative)

Paint – Test method for the determination of the solids/solvent content

A.1 Principle

The volatile constituents of the paint are evaporated at 105 °C. The residual solids are weighed and the solids content calculated.

A.2 Apparatus

a) Porcelain basins with a minimum diameter of 40 mm.

b) Analytical balance, with an accuracy of 0,001 g, with zero point correction.

A lower accuracy balance may be used provided large sample size is used.

c) Warming cupboard, with forced fresh air ventilation and flame-proof interior capable of being heated to 105 °C ± 2 °C.

d) Desiccator, with drying agent, e.g. silica gel.

A.3 Reagents

Thinner consisting of a suitable solvent/thinner as recommended by the manufacturer.

A.4 Procedure

A.4.1 Carry out two determinations.

A.4.2 Mark porcelain plates with numbers. Record the mass of the empty plates (L) to the nearest 0,01 g. Place approximately 2 g of the paint, and homogenized, in the plate with a spoon. Weigh to the nearest 0,01 g (mass M_1).

A.4.3 Place the plates containing the sample in a warming cupboard at a temperature of 105 °C ± 2 °C and store there for at least 3 h or until constant mass is reached. Constant mass is reached when, the mass loss is less than Δ = 0,2 % change in mass. Cool the plate to room temperature in the desiccator, and weigh to the nearest 0,01 g.

A.5 Test result

The percentage solids content of the paint by mass, S, shall be calculated according to the following formula:

$$S = \frac{100\left(M_2 - L_S\right)}{M_1 - L_S} \qquad \text{(A.1)}$$

and the difference to the initial mass give the solvent content SC:

$$SC = 100 - S \qquad \text{(A.2)}$$

where

M_1 is the initial mass of paint together with the empty plate, in grams;

M_2 is the final mass of solid together with the plate, in grams;

L is the mass of the empty plate, in grams.

If the results of the individual determinations differ by more than 0,5 % by mass the procedure shall be repeated. The mean of the two individual results shall be calculated and the solids content given rounded to the nearest 0,1 % by mass.