



SLOVENSKI STANDARD
SIST EN 12802:2002
01-september-2002

Road marking materials - Laboratory methods for identification

Road marking materials - Laboratory methods for identification

Straßenmarkierungsmaterialien - Laborverfahren für die Identifikation

Produits de marquage routiers - Méthodes de laboratoire pour identification

Ta slovenski standard je istoveten z: EN 12802:2000

[SIST EN 12802:2002](https://standards.iteh.ai/catalog/standards/sist/d5ba1345-2364-4b55-b550-51c31599b377/sist-en-12802-2002)

<https://standards.iteh.ai/catalog/standards/sist/d5ba1345-2364-4b55-b550-51c31599b377/sist-en-12802-2002>

ICS:

93.080.20 Materiali za gradnjo cest Road construction materials

SIST EN 12802:2002 **en**

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 12802:2002

<https://standards.iteh.ai/catalog/standards/sist/d5ba1345-2364-4b55-b550-51c31599b377/sist-en-12802-2002>

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 12802

January 2000

ICS 93.080.20

English version

Road marking materials - Laboratory methods for identification

Produits de marquage routiers - Méthodes de laboratoire
pour identification

Straßenmarkierungsmaterialien - Laborverfahren für die
Identifikation

This European Standard was approved by CEN on 12 November 1999.

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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 12802:2002

<https://standards.iteh.ai/catalog/standards/sist/d5ba1345-2364-4b55-b550-51c31599b377/sist-en-12802-2002>



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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Contents

	Page
Foreword.....	3
1 Scope.....	3
2 Normative references.....	3
3 Definitions.....	3
4 Sampling.....	4
5 Test methods.....	4
Annex A (normative).....	7
Paint – Test method for the determination of the solids content.....	7
Annex B (normative).....	9
Paint – Test method for the determination of the binder content.....	9
Annex C (normative).....	11
Paint – Test method for the determination of titanium(IV) dioxide content.....	11
Annex D (normative).....	15
Paint, thermoplastics and cold plastics – Method for the identification of the binder type by infrared analysis.....	15
Annex E (normative).....	18
Paint, thermoplastics and cold plastics – Test method for the identification of pigment and inorganic materials.....	18
Annex F (normative).....	20
Paint and cold plastics – Test method for the determination of the glass bead content... ..	20
Annex G (normative).....	22
Thermoplastics – Test method for the determination of the binder content.....	22
Annex H (normative).....	23
Thermoplastics – Test method for the determination of the glass bead content.....	23
Annex J (normative).....	25
Cold plastics – Test method for the determination of the binder content.....	25

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 July 2000, and conflicting national standards shall be withdrawn at the latest by July 2000.

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.

The annexes A, B, C, D, E, F, G, H and J of this European Standard are normative.

1 Scope

iTeh STANDARD PREVIEW

This European Standard describes laboratory methods for the identification of road marking materials used in horizontal signalization.

[SIST EN 12802:2002](https://standards.iteh.ai/catalog/standards/sist/d5ba1345-2364-4b55-b550-51c31599b377/sist-en-12802-2002)

[https://standards.iteh.ai/catalog/standards/sist/d5ba1345-2364-4b55-](https://standards.iteh.ai/catalog/standards/sist/d5ba1345-2364-4b55-b550-51c31599b377/sist-en-12802-2002)

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 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.

prENV 13459-1:1999	Road marking materials – Quality control – Part 1: Sampling from storage and testing
ISO 2811-1:1997	Paints and varnishes – Determination of density – Part 1: Pycnometer method
ISO 5725-2:1994	Accuracy (trueness and precision) of measurement methods and results – Part 2: Basic method for the determination of repeatability and reproducibility of a standard measurement method

3 Definitions

For the purposes of this standard the following definitions apply.

3.1 paint : a liquid product containing solids suspended in an organic solvent or in water. It can be supplied in single or multi-component systems. When applied by brush,

Page 4
EN 12802:2000

roller, spray or any other appropriate method it produces a cohesive film by the process of solvent evaporation and/or by a chemical process.

3.2 thermoplastics : a solvent-free marking substance supplied in block, granular or powder forms. It is heated to a molten state and then applied with an appropriate hand or mechanical applicator. It forms a cohesive film by cooling.

3.3 cold plastics : a marking substance which is supplied in single or multi-component forms. Depending on the type of system the components are mixed together in various ratios and applied with an appropriate applicator. It forms a cohesive film only by a chemical process.

4 Sampling

Samples representative of each component of the material shall be taken from storage in accordance with prENV 13459-1:1999. Smaller representative samples, of sufficient quantity to carry out all the tests required, shall be taken from the larger samples. For paints and cold plastics approximately 1 l of the basic component shall be taken.

In the case of thermoplastic in powder form sufficient quantity shall be taken in accordance with prENV 13459-1:1999 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 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;
- and,
- the repeatability of the alternative methods, determined in accordance with ISO 5725-2:1994, can be shown to be not less than that of the methods given in this standard.

5.2 Paint

5.2.1 Density

The density of the paint shall be determined using the method laid down in ISO 2811-1:1997.

5.2.2 Solids content

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

5.2.3 Binder content

The binder content of the paint, expressed as a percentage, shall be determined using the method described in annex B.

5.2.4 Titanium dioxide content

The titanium dioxide content of the paint, expressed as a percentage, shall be determined by the method described in annex C.

5.2.5 Binder type

The type of binder shall be identified using the method of infrared analysis described in annex D.

5.2.6 Pigment and inorganic materials

The type of both pigment and inorganic materials shall be identified using the method described in annex E.

5.2.7 Glass bead content

The glass bead content of the paint, expressed as a percentage, shall be determined as described in annex F.

5.3 Thermoplastics

5.3.1 Binder content

The binder content of the thermoplastics, expressed as a percentage, shall be determined using the method described in annex G.

5.3.2 Binder type

The type of binder shall be identified using the method described in annex D.

5.3.3 Pigment and inorganic materials

The type of both pigment and inorganic materials shall be identified. The preparation of the sample shall be carried out as described in annex D, followed by the infrared analysis described in annex E.

5.3.4 Titanium dioxide content

The titanium dioxide content of the thermoplastics, expressed as a percentage, shall be determined. The preparation of the sample shall be carried out as described in annex G, followed by analysis using the method described in annex C.

5.3.5 Glass bead content

The glass bead content of the thermoplastics, expressed as a percentage, shall be determined using the method described in annex H.

5.4 Cold plastics

5.4.1 Binder content

The binder content of the basic component of the cold plastics, expressed as a percentage, shall be determined using the method described in annex J.

[SIST EN 12802:2002](https://standards.iteh.ai/catalog/standards/sist/d5ba1345-2364-4b55-b550-51c31599b377/sist-en-12802-2002)

5.4.2 Binder type

<https://standards.iteh.ai/catalog/standards/sist/d5ba1345-2364-4b55-b550-51c31599b377/sist-en-12802-2002>

The type of binder in the basic component of the cold plastics shall be identified. The preparation of the sample and subsequent analysis shall be carried out as described in annex D.

5.4.3 Pigment and inorganic materials

The type of both pigment and inorganic materials in the basic component of the cold plastics shall be identified. The preparation of the sample shall be carried out as described in annex D, followed by infrared analysis as described in annex E.

5.4.4 Titanium dioxide content

The titanium dioxide content of the basic component of the cold plastics, expressed as a percentage, shall be determined. The preparation of the sample shall be carried out as described in annex J, followed by analysis using the method described in annex C.

5.4.5 Glass bead content

The glass bead content of the basic component of the cold plastics, expressed as a percentage, shall be determined as described in annex F.

Annex A (normative)

Paint – Test method for the determination of the solids 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. The solids are used as the basic material for further tests.

A.2 Apparatus

- a) Cooling equipment, refrigerator or water bath with thermostat at approximately +10 °C;
- b) erlenmeyer flasks, two flasks made of heat resistant glass with standard ground neck and stopper (45/40) of 250 ml or 300 ml capacity;
- c) analytical balance, with an accuracy of 0,001 g, with zero point correction;
- d) warming cupboard, with forced fresh air ventilation and flame-proof interior capable of being heated to 105 °C ± 2 °C;
- e) desiccator, with drying agent, e.g. silica gel.

A.3 Reagents

Thinner consisting of three parts toluene p.a. to one part acetone p.a. by volume.

A.4 Procedure

A.4.1 Carry out two determinations.

A.4.2 Mark the erlenmeyer flasks and stoppers with numbers. Record both the mass of the empty erlenmeyer flask (L) and that of the flask together with the ground stopper (L_s) to the nearest 0,001 g. Place approximately 2 g of the paint, pre-cooled to 10 °C and homogenized, in the flask with a spoon. Tightly seal the flask with the ground stopper and weigh to the nearest 0,001 g (mass M_1). Swirl the flask to distribute the sample evenly over the bottom.

NOTE: In the case of paints that are highly viscous or have a tendency to form a skin it is advisable, after weighing the sample, to add a few millilitres of a suitable thinner (the toluene/acetone mixture or the manufacturer's recommended thinner) in order to achieve a better distribution of the sample over the bottom of the flask.

Remove the stopper, cover the neck of the flask with a filter paper and store for approximately 16 h (overnight) at room temperature to enable the solvent to evaporate. Place the flask containing the sample in a warming cupboard at a temperature of $105\text{ °C} \pm 2\text{ °C}$ and store there for at least 6 h or until constant mass is reached. Constant mass is reached when, after the sample has been in the warming cupboard for a further 1,5 h, the mass loss is less than 0,2 % of the initial mass. Cool the flask to room temperature in the desiccator, reseal with the stopper and weigh to the nearest 0,001 g.

Use the solid residue remaining in the flask as the basis for determining the binder content of the paint in accordance with annex B.

A.5 Test result

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

$$S = \frac{100 (M_2 - L_s)}{M_1 - L_s}$$

where:

M_1 is the initial mass of paint together with the empty erlenmeyer flask with standard stopper, in grams;

M_2 is the final mass of solid together with the empty erlenmeyer flask with standard stopper, in grams;

L_s is the mass of the empty erlenmeyer flask together with ground stopper, in grams.

If the results of the individual determinations differ by more than 0,6 % 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.

Annex B (normative)

Paint – Test method for the determination of the binder content

B.1 Principle

The solid matter in an individual specimen of the road marking paint is ashed at $450\text{ °C} \pm 25\text{ °C}$ and the mass loss is determined. The mass loss, expressed as a percentage, is reported as the binder content. The ignition residue (ash) is used for further determinations.

B.2 Apparatus

- a) Two flasks of heat resistant glass with standard ground neck and stopper (45/50), with a capacity of 250 ml or 300 ml;
- b) analytical balance, with an accuracy of 0,001 g, with zero point correction.
- c) muffle furnace, electrically heated, adjustable to $450\text{ °C} \pm 25\text{ °C}$;
- d) crucible tongs;
- e) desiccator, with drying agent, e.g. silica gel.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 12802:2002](https://standards.iteh.ai/catalog/standards/sist/d5ba1345-2364-4b55-b550-51c31599b377/sist-en-12802-2002)

<https://standards.iteh.ai/catalog/standards/sist/d5ba1345-2364-4b55-b550-51c31599b377/sist-en-12802-2002>

B.3 Procedure

B.3.1 Carry out two determinations.

B.3.2 Use the solid matter obtained from determining the solids content in accordance with annex A as the starting material for ashing the paint.

B.3.3 Weigh the flask (without stopper) containing the solid matter to the nearest 0,001 g (mass M_3) and place in a muffle furnace. Raise the temperature of the muffle furnace at a rate of 5 °C per minute to $450\text{ °C} \pm 25\text{ °C}$. Keep the flask in the furnace at $450\text{ °C} \pm 25\text{ °C}$ for at least 2 h, or until constant mass is reached. Constant mass is reached when, after the sample material has been in the furnace for another 1,5 h a mass loss of less than 0,2 % of the initial mass is found. Take care that no ash-forming constituents are lost. After cooling to room temperature in a desiccator weigh the erlenmeyer flask containing the residue to the nearest 0,001 g (mass M_4).

Store the erlenmeyer flask containing the ashing residues over a drying agent and retain for determining the proportion by mass of titanium dioxide (see annex C).

NOTE 1: The determination of ashing loss should be carried out in a properly functioning fume hood.