



SLOVENSKI STANDARD
oSIST prEN 12272-3:2024

01-oktober-2024

Površinske prevleke - Preskusne metode - 3. del: Ugotavljanje adhezivnosti veznega agregata s preskusno metodo udarjanja (preskusna metoda z Vialitovo ploščo)

Surface dressing - Test methods - Part 3: Determination of binder aggregate adhesivity by the Vialit plate shock test method

Oberflächenbehandlung - Prüfverfahren - Teil 3: Bestimmung des Adhäsionsvermögens von Bindemittel und Gesteinskörnung mit dem Schlagprüfverfahren

Enduits superficiels - Méthode d'essai - Partie 3: Détermination de l'adhésivité liants-granulats par mesure de la cohésion Vialit

Ta slovenski standard je istoveten z: prEN 12272-3

<https://standards.iteh.ai/catalog/standards/sist/a2031490-417f-48d1-b23e-089b87932828/osist-pren-12272-3-2024>

ICS:

93.080.20 Materiali za gradnjo cest Road construction materials

oSIST prEN 12272-3:2024

en,fr,de

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN 12272-3

July 2024

ICS 93.080.20

Will supersede EN 12272-3:2003

English Version

Surface dressing - Test methods - Part 3: Determination of binder aggregate adhesivity by the Vialit plate shock test method

Enduits superficiels - Méthode d'essai - Partie 3:
Détermination de l'adhésivité liants-granulats par
mesure de la cohésion Vialit

Oberflächenbehandlung - Prüfverfahren - Teil 3:
Bestimmung des Adhäsionsvermögens von Bindemittel
und Gesteinskörnung mit dem Schlagprüfverfahren

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 227.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye 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	4
Introduction	5
1 Scope.....	6
2 Normative references.....	6
3 Terms and definitions.....	7
4 Active adhesivity, mechanical adhesion and Vialit emulsion adhesivity	7
4.1 Description.....	7
4.2 Apparatus	8
4.2.1 Flat steel plates.....	8
4.2.2 3-pointed supports.....	8
4.2.3 Steel ball.....	10
4.2.4 Rubber wheel roller.....	10
4.2.5 Sprayer	10
4.2.6 Balance	10
4.2.7 Climatic chambers	10
4.2.8 Oven.....	10
4.2.9 Auxiliary items.....	11
4.3 Procedure	11
4.3.1 Preparation of the binder	11
4.3.2 Preparation of the chippings	11
4.3.3 Preparation of the plates	12
4.3.4 Chippings spreading	12
4.3.5 Temperatures setting.....	12
4.3.6 Implementation.....	13
4.4 Expression of results	13
4.5 Test report.....	14
5 Wetting temperature (only for anhydrous binders).....	14
5.1 Description.....	14
5.2 Apparatus	14
5.3 Procedure	14
5.3.1 Preparation of the binder	14
5.3.2 Preparation of the chippings	14
5.3.3 Preparation of the plates	15
5.3.4 Chippings spreading and rolling	15
5.3.5 Temperatures setting.....	15
5.3.6 Implementation.....	15
5.4 Expression of results	15
5.5 Test report.....	15
6 Fragility temperature (only for anhydrous binders).....	15
6.1 Description.....	15
6.2 Apparatus	15
6.3 Procedure	16
6.3.1 Preparation of the binder	16
6.3.2 Preparation of the chippings	16

6.3.3	Preparation of the plates	16
6.3.4	Spreading and rolling (hot bituminous binders)	16
6.3.5	Temperature setting.....	16
6.3.6	Implementation.....	16
6.4	Expression of results	16
6.5	Test report	16
7	Test report	16
Annex A (informative) Summary of the preparation of the plates before testing		18
A.1	Binders (all tests)	18
A.2	Chippings	18
A.3	Plates (with binder).....	19
A.4	Dope.....	19
A.5	Spreading the chippings.....	19
A.6	Rolling.....	19
A.7	Temperature setting for the test plates.....	19
Annex B (informative) Tables of results.....		21
B.1	Overall adhesivity example of test report	21
B.2	Fragility temperature example of test report	22
Annex C (informative) Measures of the fragility temperature.....		23
Annex D (informative) Purpose of the Vialit plate shock test		24
Bibliography		25

prEN 12272-3:2024 (E)

European foreword

This document (prEN 12272-3:2024) has been prepared by Technical Committee CEN/TC 227 “Road materials”, the secretariat of which is held by BSI.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 12272-3:2003.

prEN 12272-3:2024 includes the following significant technical changes with respect to EN 12272-3:2003:

- the possible use of 2/4 mm aggregates;
- the new notion of Vialit emulsion adhesivity and the procedure related to its measurement;
- precision of different operating procedures:
 - dosages when using 2/6 mm aggregates;
 - time to temperature settings;
 - curing time during the implementation of the test when using emulsion.

This document is one of a series of standards as listed below:

- EN 12272-1, *Surface dressing — Test methods — Part 1: Rate of spread and accuracy of spread of binder and chippings*
- EN 12272-2, *Surface dressing — Test methods — Part 2: Visual assessment of defects*
- EN 12272-3, *Surface dressing — Test methods — Part 3: Determination of binder aggregate adhesivity by the Vialit plate shock test method*

Annexes A, B, C and D are informative.

Introduction

The adhesion between binder and chippings is the basis of successful surface dressing. It is important that this bond can be obtained, initially, at the moment of construction and be ensured in cool conditions when the adhesivity problems become dominant for binder with damp or dry and dusty chippings. A knowledge of adhesivity enables the choice of a binder and aggregate type for minimum risk, especially for early and late season work.

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

[oSIST prEN 12272-3:2024](https://standards.iteh.ai/catalog/standards/sist/a2031490-417f-48d1-b23e-089b87932828/osist-pren-12272-3-2024)

<https://standards.iteh.ai/catalog/standards/sist/a2031490-417f-48d1-b23e-089b87932828/osist-pren-12272-3-2024>

prEN 12272-3:2024 (E)

1 Scope

This document specifies, for anhydrous bituminous binder (cut-back and fluxed bituminous binders), the measurement of the binder aggregate adhesivity and the influence of adhesion agents or interfacial dopes and adhesion characteristics as an aid to design binder aggregate systems for surface dressing.

This document specifies methods of measurement of:

- the mechanical adhesion of the binder to the surface of the aggregate;
- the active adhesivity of the binder to the chippings;
- the improvement of the mechanical adhesion and active adhesivity by adding an adhesion agent either into the mass of the binder or by spraying the interface between binder and chippings;
- the wetting temperature of the binder to the aggregate;
- the variation of adhesivity below the fragility temperature.

The wetting capacity of the binder affects the adhesivity properties. With the presence of water, the wetting capacity of bitumen emulsion is naturally high. Even if mechanical adhesion and active adhesivity test methods are mainly dedicated to anhydrous bituminous binders (cut-back and fluxed bituminous binders), these measurements can also be practiced with bitumen emulsion with a personalized interpretation of the results that depends on the design of the binder aggregate system. For bitumen emulsion, the adhesivity is conventionally measured through the water immersion test (EN 13614).

This test method is applicable for:

- bituminous binders used for surface dressings (e.g. conventional or polymer modified binders; mainly anhydrous bituminous binders such as cut-back and fluxed bituminous binders and bitumen emulsions);
- all the following aggregates sizes that can be used for surface dressings:
 - set 1: 2/5 mm, 5/8 mm, 8/11 mm and 11/16 mm; and
 - set 2: 2/4 mm, 2/6 mm, 4/6 mm, 4/8 mm, 6/10 mm, 6/12 mm and 10/14 mm.

It is not intended that this method be used on site for quality control.

NOTE Further information concerning the purpose of the test can be found in Annex D.

WARNING – The use of this document can involve hazardous operations. This document does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this document to establish appropriate safety practices and determine the applicability of regulatory limitations prior to use.

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.

ISO 48-2, *Rubber, vulcanized or thermoplastic — Determination of hardness — Part 2: Hardness between 10 IRHD and 100 IRHD*

3 Terms and definitions

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

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

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

3.1

active adhesivity

adhesivity necessary to bond damp chippings in their natural state

3.2

mechanical adhesion

adhesivity necessary to bond the dry chippings with their natural dust or fines making an inhibiting screen

3.3

wetting temperature

lowest temperature of the binder on the plate, just prior to applying the chippings, at which the number of all the stained chippings either bonded to the plate or fallen, after the shock test, is at least 90 % of the chippings

3.4

fragility temperature

lowest test temperature at which 90 % aggregates remain bonded to the plate

3.5

test temperature

temperature at which the plates with the binder and the chippings are conditioned before the shock test

3.6

Vialit emulsion adhesivity

adhesivity necessary to bond chippings with bitumen emulsion

Note 1 to entry: The results can be expressed with different treatments of chippings (washed or in their natural state).

4 Active adhesivity, mechanical adhesion and Vialit emulsion adhesivity

4.1 Description

The required quantity of binder is heated to spraying temperature and spread evenly on a steel plate. The test is performed at $(5 \pm 1) ^\circ\text{C}$ for anhydrous binders and at room temperature for emulsions.

Graded chippings are laid down on the binder and rolled only if anhydrous bituminous binder is used. The prepared plate is turned over and put on 3-pointed supports.

A steel ball is made to fall 500 mm three times onto the plate within a 10 s period.

The adhesivity value is determined as the sum of the number of chippings remaining bonded to the plate and the number of fallen chippings which are stained by the binder.

If the chippings are treated chemically or washed on site, or an interfacial adhesion agent (dope) is used in construction, then this should be simulated in the test method. If polymer-modified binders are used

prEN 12272-3:2024 (E)

which need special site conditions, e.g. road temperatures $> 10\text{ }^{\circ}\text{C}$ or heated chippings, the test shall reflect these constraints and the report modified accordingly, e.g. increase temperature of chippings to $10\text{ }^{\circ}\text{C}$.

4.2 Apparatus**4.2.1 Flat steel plates**

Flat steel plates (see Figure 1) with a rim of 2 mm to 3 mm height and with following dimensions:

- side $(200 \pm 1)\text{ mm} \times (200 \pm 1)\text{ mm}$;
- thickness $(2,0 \pm 0,2)\text{ mm}$.

The plates should be flat manufactured with a tolerance of 0,2 mm across the total length in any direction. The maximum tolerance after usage shall be 0,5 mm.

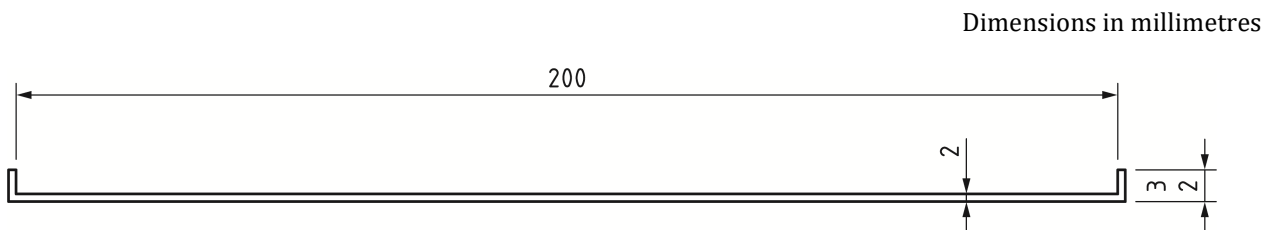


Figure 1 — Flat steel plate

4.2.2 3-pointed supports (<https://standards.iteh.ai>)

A device composed of a rigid base with 3-pointed supports, a vertical support ending in a lightly angled slide $(3,0 \pm 0,5)^{\circ}$ to launch the steel ball, see Figure 2.

[oSIST prEN 12272-3:2024](https://standards.iteh.ai/catalog/standards/sist/a2031490-417f-48d1-b23e-089b87932828/osist-pren-12272-3-2024)

<https://standards.iteh.ai/catalog/standards/sist/a2031490-417f-48d1-b23e-089b87932828/osist-pren-12272-3-2024>