



**SLOVENSKI STANDARD**  
**oSIST prEN 12272-1:2024**  
**01-julij-2024**

---

**Površinske prevleke - Preskusne metode - 1. del: Količina pobrizga veziva in posipa drobirja**

Surface dressing - Test methods - Part 1: Rate of spread and accuracy of spread of binder and chippings

Oberflächenbehandlung - Prüfverfahren - Teil 1: Dosierung und Querverteilung von Bindemitteln und Gesteinskörnung

Enduits superficiels d'usure - Méthode d'essai - Partie 1 : Taux d'épandage et régularité transversale du liant et des gravillons

**Ta slovenski standard je istoveten z: prEN 12272-1**

[oSIST prEN 12272-1:2024](https://standards.sist.si/catalog/standards/sist/96825/83-73da-138f-010f-303cc77add7/osist-pr-en-12272-1-2024)

<https://standards.sist.si/catalog/standards/sist/96825/83-73da-138f-010f-303cc77add7/osist-pr-en-12272-1-2024>

**ICS:**

93.080.20      Materiali za gradnjo cest      Road construction materials

**oSIST prEN 12272-1:2024**

**en,fr,de**



EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**DRAFT**  
**prEN 12272-1**

May 2024

ICS 93.080.20

Will supersede EN 12272-1:2002

English Version

## Surface dressing - Test methods - Part 1: Rate of spread and accuracy of spread of binder and chippings

Enduits superficiels d'usure - Méthodes d'essai - Partie  
1 : Taux d'épandage et régularité transversale du liant  
et des gravillons

Oberflächenbehandlung - Prüfverfahren - Teil 1:  
Dosierung und Genauigkeit der Verteilung von  
Bindemitteln und Gesteinskörnung

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

<b>Contents</b>	<b>Page</b>
European foreword .....	4
<b>1</b> <b>Scope</b> .....	<b>5</b>
<b>2</b> <b>Normative references</b> .....	<b>5</b>
<b>3</b> <b>Terms and definitions</b> .....	<b>5</b>
<b>4</b> <b>Determination of the rate of spread of binder</b> .....	<b>6</b>
<b>4.1</b> <b>Principle</b> .....	<b>6</b>
<b>4.2</b> <b>Apparatus</b> .....	<b>6</b>
<b>4.2.1</b> <b>Collectors</b> .....	<b>6</b>
<b>4.2.2</b> <b>Portable balance</b> .....	<b>6</b>
<b>4.2.3</b> <b>Plastic bags</b> .....	<b>7</b>
<b>4.2.4</b> <b>Tape</b> .....	<b>7</b>
<b>4.3</b> <b>Procedure</b> .....	<b>7</b>
<b>4.3.1</b> <b>Preparation of the collectors</b> .....	<b>7</b>
<b>4.3.2</b> <b>Location and placement of the collectors</b> .....	<b>7</b>
<b>4.3.3</b> <b>Removal and weighing of the collectors</b> .....	<b>8</b>
<b>4.4</b> <b>Expression of results</b> .....	<b>8</b>
<b>4.5</b> <b>Test report</b> .....	<b>9</b>
<b>5</b> <b>Determination of the accuracy of spread of binder</b> .....	<b>10</b>
<b>5.1</b> <b>Principle</b> .....	<b>10</b>
<b>5.2</b> <b>Apparatus</b> .....	<b>10</b>
<b>5.2.1</b> <b>Collectors</b> .....	<b>10</b>
<b>5.2.2</b> <b>Portable balance</b> .....	<b>10</b>
<b>5.3</b> <b>Procedure</b> .....	<b>10</b>
<b>5.3.1</b> <b>Preparation of the test apparatus</b> .....	<b>10</b>
<b>5.3.2</b> <b>Location and placement of the apparatus</b> .....	<b>10</b>
<b>5.3.3</b> <b>Removal and weighing of the collectors</b> .....	<b>10</b>
<b>5.4</b> <b>Expression of results</b> .....	<b>11</b>
<b>5.5</b> <b>Test report</b> .....	<b>12</b>
<b>6</b> <b>Determination of the rate of spread of chippings</b> .....	<b>13</b>
<b>6.1</b> <b>Principle</b> .....	<b>13</b>
<b>6.2</b> <b>Apparatus</b> .....	<b>13</b>
<b>6.2.1</b> <b>Box collector</b> .....	<b>13</b>
<b>6.2.2</b> <b>Portable balance</b> .....	<b>14</b>
<b>6.2.3</b> <b>Tray collector</b> .....	<b>14</b>
<b>6.2.4</b> <b>Spring balance with calibrated check masses</b> .....	<b>14</b>
<b>6.3</b> <b>Procedure</b> .....	<b>14</b>
<b>6.3.1</b> <b>Rate of spread with the box collector (see 6.2.1)</b> .....	<b>14</b>
<b>6.3.2</b> <b>Rate of spread with the tray collector (see 6.2.3)</b> .....	<b>15</b>
<b>6.4</b> <b>Expression of results</b> .....	<b>15</b>
<b>6.4.1</b> <b>Expression of results with the box collector (see 6.2.1)</b> .....	<b>15</b>
<b>6.4.2</b> <b>Expression of results with the tray collectors (see 6.2.3) in terms of mass</b> .....	<b>16</b>
<b>6.5</b> <b>Proportional range calculation</b> .....	<b>16</b>
<b>6.5.1</b> <b>Proportional range calculation for box collectors (see 6.2.1)</b> .....	<b>16</b>
<b>6.5.2</b> <b>Proportional range calculation for tray collectors (see 6.2.3)</b> .....	<b>17</b>
<b>6.6</b> <b>Test report</b> .....	<b>17</b>
<b>7</b> <b>Determination of the accuracy of spread of chippings</b> .....	<b>18</b>
<b>7.1</b> <b>Principle</b> .....	<b>18</b>

<b>7.2</b>	<b>Apparatus</b> .....	<b>18</b>
<b>7.2.1</b>	<b>The picking frame (see Annex D)</b> .....	<b>18</b>
<b>7.2.2</b>	<b>Portable balance</b> .....	<b>18</b>
<b>7.2.3</b>	<b>Sampling bags</b> .....	<b>18</b>
<b>7.3</b>	<b>Procedure</b> .....	<b>18</b>
<b>7.4</b>	<b>Expression of results</b> .....	<b>20</b>
<b>7.5</b>	<b>Test report</b> .....	<b>21</b>
<b>Annex A (informative) Determination of the “shoulder to shoulder” rate of spread of chippings</b> .....		
		<b>22</b>
<b>Annex B (informative) Example of equipment used in the determination of the accuracy of spread of binder test</b> .....		
		<b>23</b>
<b>Annex C (informative) Determination of the accuracy of spread of binder</b> .....		
		<b>29</b>
<b>Annex D (informative) The picking frame, used in the determination of the accuracy of spread of chipping test</b> .....		
		<b>31</b>

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

[oSIST prEN 12272-1:2024](https://standards.iteh.ai/catalog/standards/sist/96b234bd-75da-43bf-b181-503ce77fdd57/osist-pren-12272-1-2024)

<https://standards.iteh.ai/catalog/standards/sist/96b234bd-75da-43bf-b181-503ce77fdd57/osist-pren-12272-1-2024>

## prEN 12272-1:2024 (E)

### European foreword

This document (prEN 12272-1:2024) 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 12272-1:2002.

prEN 12272-1:2024 includes the following significant technical changes with respect to EN 12272-1:2002:

- greater tolerance on “carpet” surfaces for controlling the binder dosage;
- for aggregates, introduction of weighing of aggregates (English method) in addition to the “volumetric” dosing box method.

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.*

In this document, the Annexes A, B, C and D are informative.

Itch Standards  
(<https://standards.itech.ai>)  
Document Preview

[oSIST prEN 12272-1:2024](https://standards.itech.ai/catalog/standards/sist/96b234bd-75da-43bf-b181-503ce77fdd57/osist-pren-12272-1-2024)

<https://standards.itech.ai/catalog/standards/sist/96b234bd-75da-43bf-b181-503ce77fdd57/osist-pren-12272-1-2024>

## 1 Scope

This document specifies test methods for determining the rates of spread and accuracy of spread of binder and chippings of a surface dressing on a section of road at a given time.

This test method can also be used for determining the rate of spread and accuracy of spread of sprayed bituminous emulsions e.g. when used as bond coats or asphalt preservation systems. The performance categories for binder rate of spread and accuracy of spread in EN 12271 do not apply to bond coats and tack coats.

The test methods are used on site to check the ability of binder sprayers and chipping spreaders to meet the intended rates of spread and tolerances and coefficients of variation.

The test methods can be used to fulfil the Factory Production Control requirements:

- equipment calibration (EN 12271 – Annex B – Table B2);
- production inspection (EN 12271 – Annex B – Table B6).

The calibration of binder and chipping spreaders requires strict application of the procedures described in this document.

Using these methods for inspections during production (FPC), allows certain changes to these methods due to the specificity of certain sites and materials used (e.g. combined chipping-binder spreaders). In this case, the changes are documented in the Factory Production Control and identified in the test reports.

Other test methods used to check the rate of spread and accuracy of spread of binder, such as the static spray bar bench test for sprayers, are not covered by this document, although the test methods in this document can be used for this purpose.

**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

There are no normative references in this document.

## 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:

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

### 3.1

#### **surface dressing**

surface treatment consisting of the successive laying of at least one layer of binder and at least one layer of chippings

### 3.2

#### **chipping**

coarse aggregate within a narrow grading range, practically free of fines

**prEN 12272-1:2024 (E)**

Note 1 to entry: Chippings can have specified values for strength, soundness, shape, polishing resistance, resistance to abrasion, purity, durability and affinity to bituminous binder. Chippings should be washed to achieve the required fines content.

**3.3****rate of spread of binder**

average mass of binder in kilograms per square metre ( $\text{kg}/\text{m}^2$ ), or average volume of binder in  $\text{L}/\text{m}^2$  applied to the road surface when measured in accordance with this document

**3.4****rate of spread of chippings**

average bulk volume in litres per square metre ( $\text{l}/\text{m}^2$ ) or, mass in kilograms per square metre ( $\text{kg}/\text{m}^2$ ) applied to the road surface, when measured in accordance with this document

**3.5****proportional range**

difference between the maximum and minimum individual values of rates of spread of binder or chippings determined divided by the mean value, using the test methods in this document

**3.6****accuracy of spread of binder**

coefficient of variation of the mass of binder applied to the road surface when measured in accordance with this document

Note 1 to entry: The value and graph indicate the ability of the sprayer to apply binder evenly across the road

**3.7****accuracy of spread of chippings**

coefficient of variation of the mass of chippings applied to the road surface when measured in accordance with this document

Note 1 to entry: The value and graph indicate the ability of the chipping spreader to apply the chippings evenly across the road

**4 Determination of the rate of spread of binder****4.1 Principle**

Samples of the binder sprayed by the binder sprayer are collected to determine the average rate of spread. The minimum total test area shall be  $0,5 \text{ m}^2$  with the collectors (minimum x 3) where possible spaced evenly across the full width of the road to be sprayed.

**4.2 Apparatus****4.2.1 Collectors**

Collectors shall be of material sufficiently robust to resist deformation in use and be capable of retaining 100 % applied binder.

The sprayer shall achieve a consistent operation before the test commences.

**4.2.2 Portable balance**

The portable balance shall be, readable to 0,1 g and of sufficient capacity to weigh one tray with  $1,5 \times$  the maximum rate of spread of binder.



### 4.2.3 Plastic bags

Plastic bags or similar, if used, shall be lightweight and capable of containing the binder and collector for weighing without any loss by leakage or evaporation.

### 4.2.4 Tape

Adhesive tape can be used, to hold the collectors to the road and to mask them to the required dimensions. When removed, the adhesive tape shall not damage the masked parts of collectors to ensure there is no loss in mass of the underlying material.

## 4.3 Procedure

### 4.3.1 Preparation of the collectors

Ensure each collector is traceable to its position on the road surface under test. If necessary, mark the collectors with an indelible identification. Weigh the collectors together with a plastic bag (if used), to the nearest 1 g and record these masses as the mass of each collector before spraying.

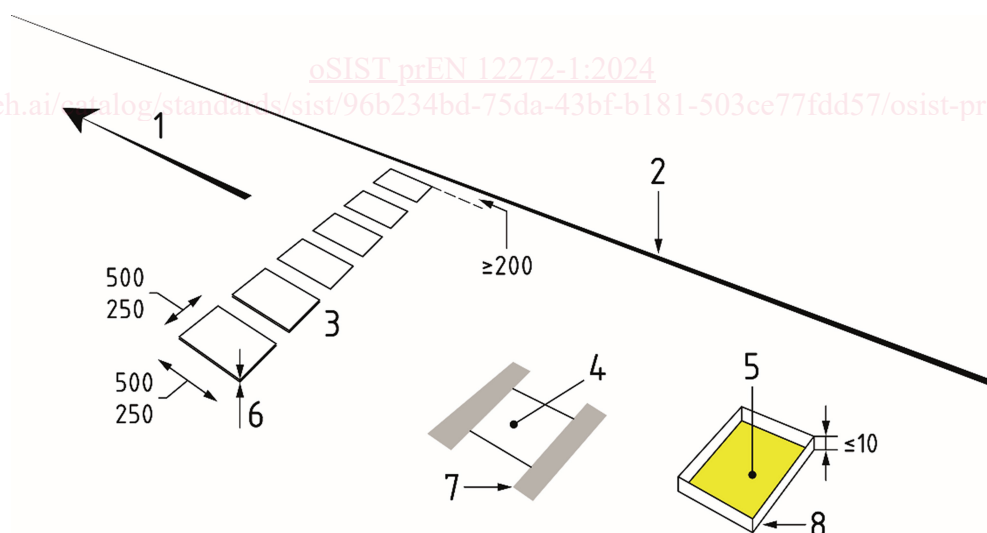
### 4.3.2 Location and placement of the collectors

Space the collectors across the width of road, which is to be sprayed with binder, and at least 200 mm from the edge as shown in Figure 1. If adhesive tape is used to secure the collectors to the road during spraying, measure the length and width of each of the areas exposed to the binder spray to the nearest 5 mm for the calculation of the exposed area.

When the rates of transverse distribution are intentionally different in the same transverse profile then the collectors related to the same measurement should be placed in areas where the intended rate of spread is the same.

Care should be taken to ensure that when spray curtains are being used, touching the collectors should be avoided.

Dimensions in millimetres



#### Key

- 1 Spraying direction
- 2 Edge of spray
- 3 Trays or other collectors (minimum 3)
- 4 Area  $A_i$
- 5 Foam sheet or absorbent material insert

**prEN 12272-1:2024 (E)**

- 6 Thickness (maximum 25 mm)
- 7 Tape
- 8 Metal tray

NOTE Dimensions shown are all internal, with a tolerance of  $\pm 2$  mm.

**Figure 1 — Informative Collectors, diagrammatic****4.3.3 Removal and weighing of the collectors**

Within 3 min of the binder being sprayed onto the road, but before any chippings are applied, remove the collectors from the road surface. Then insert each collector into its own plastic bag, if used, before weighing it to the nearest 1 g. Care shall be taken not to lose or gain any binder. Weighing shall be carried out within 10 min unless the plastic bags or similar materials minimize the loss of water from emulsions or volatiles so that the results are not affected within the tolerances of the test by the time delay before weighing. Record the mass of each collector and bag, if used, after spraying. The calculation below assumes the binder mass in  $\text{kg}/\text{m}^2$  is known so when measuring rate of spread in  $\text{L}/\text{m}^2$  this shall be converted using the density of the binder at spraying temperature.

NOTE Methods to test the residual binder, permitting the water and volatiles to evaporate, can be used provided a correlation to the immediate test that has been carried out.

**4.4 Expression of results**

Calculate the binder mass:

$$M_i = M_{2i} - M_{1i} \quad (1)$$

where:

- $M_i$  is the binder mass retained on the collector, expressed in kilograms (kg);
- $M_{2i}$  is the mass of the collector after spraying, expressed in kilograms (kg);
- $M_{1i}$  is the mass of the collector before spraying, expressed in kilograms (kg).

Calculate the rate of spread:

$$d_i = \frac{M_i}{A_i} \quad (2)$$

where:

- $d_i$  is the rate of spread of binder, expressed in kilograms per square metre ( $\text{kg}/\text{m}^2$ ), for each collector;
- $M_i$  is the binder mass retained on the collector, expressed in kilograms (kg);
- $A_i$  is the area of collector exposed to the binder spray, expressed in square metres ( $\text{m}^2$ ).

Calculate the mean rate of spread of the binder:

$$D = \frac{(d_1 + d_2 + d_3 + d_4 + d_5 + \dots + d_N)}{N} \quad (3)$$

where:

- $D$  is the mean rate of spread of binder, expressed in kilogram per square metre ( $\text{kg}/\text{m}^2$ ), reported to the nearest 0,05  $\text{kg}/\text{m}^2$ ;

$d_i$  to  $d_N$  are the rates of spread of binder on each collector;

$N$  is the number of collectors used in the test.

Calculate the proportional range:

$$P_R = \frac{(d_{\max} - d_{\min})}{D} \quad (4)$$

where:

$P_R$  is the proportional range;

$d_{\max}$  is the highest rate of spread of binder found on an individual collector;

$d_{\min}$  is the lowest rate of spread of binder found on an individual collector.

If the proportional range is greater than 0,20, this indicates the binder spreader is not functioning properly.

#### 4.5 Test report

The test report shall contain:

- a) a statement that the test has been performed in accordance with this document, including its year of publication (i.e. prEN 12272-1:2024);
- b) identification of sprayer and spray bar used;
- c) spray bar height;
- d) spray bar pressure (if available);
- e) spray bar width used;
- f) location of site test;
- g) date of test;
- h) climatic conditions likely to affect the test result (e.g. windy);
- i) binder temperature recorded from the tank;
- j) binder type (e.g. binder grade);
- k) identification of collectors (type, number, total surface covered);
- l) specified rate of spread and tolerance;
- m) results as calculated in 4.4 (e.g. rate of spread; proportional range);
- n) any deviation from the test method;
- o) name and signature of the person responsible for producing the test report.