

Surface dressing — Test method —

Part 3: Determination of binder aggregate adhesivity by the Vialit plate shock test method

The European Standard EN 12272-3:2003 has the status of a
British Standard

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National foreword

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The UK participation in its preparation was entrusted by Technical Committee B/510, Road materials, to Subcommittee B/510/2, Surface dressing, sprays and slurry surfacing, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
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Surface dressing - Test method - 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 Bindemitteln
und Gesteinskörnung mit dem Schlagprüfverfahren

This European Standard was approved by CEN on 21 November 2002.

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Foreword

This document (EN 12272-3:2003) has been prepared by Technical Committee CEN/TC 227 "Road materials", the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by July 2003, and conflicting national standards shall be withdrawn at the latest by April 2005.

This European Standard is one of a series of standards as listed below:

EN 12272-1, *Surface dressing — Test method — Part 1: Rate of spread and accuracy of spread of binder and chippings.*

prEN 12272-2, *Surface dressing — Test method — Part 2: Visual assessment of defects.*

EN 12272-3, *Surface dressing — Test method — Part 3: Determination of binder aggregate adhesivity by the Vialit plate shock test method.*

Annexes A, B, C and D are informative.

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, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

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 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.

1 Scope

This European Standard specifies the measurement of the binder aggregate adhesivity, and the influence of adhesion agents or interfacial dopes on adhesion characteristics as an aid to design binder aggregate systems for surface dressing. It is not intended that this method is used on site for quality control.

This European Standard specifies methods of measurement of:

- ¾ the mechanical adhesion of the binder to the surface of the aggregate;
- ¾ the active adhesivity of the binder to the chippings;
- ¾ 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;
- ¾ the wetting temperature of the binder to the aggregate;
- ¾ the variation of adhesivity below the fragility temperature.

This test method is suitable for:

- ¾ all the hydrocarbon binders used for surface dressings (e.g. conventional or polymer modified binders, fluxed or cut-back binders or, conventional or polymer modified bituminous emulsions);
- ¾ all the aggregate types used for surface dressings;
- ¾ following aggregate product sizes:
 - ¾ set 1: 2/5 mm, 5/8 mm, 8/11 mm and 11/16 mm;
 - ¾ set 2: 2/6 mm, 4/6 mm, 6/10 mm and 10/14 mm.

NOTE Further information concerning the purpose of the test may be found in annex D.

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 (including amendments).

ISO 48, *Rubber, vulcanized or thermoplastic — Determination of hardness (Hardness between 10 IRHD and 100 IRHD)*.

3 Terms and definitions

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

3.1

active adhesivity

necessary to bond damp chippings in their natural state

3.2

mechanical adhesion

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

4 Active adhesivity and mechanical adhesion

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 $(5 \pm 1) ^\circ\text{C}$.

50 or 100 graded chippings are laid down on the binder and rolled if a hot 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 number of chippings remaining bonded to the plate and the number of fallen chippings which are stained by the binder.

NOTE If the chippings are treated chemically or washed on site or an interfacial adhesion agent (dope) used in construction, then this should be simulated in the test method. If polymer modified binders are used which need special site conditions, e. g. road temperatures $> 10 ^\circ\text{C}$ or heated chippings, then again the test should reflect these constraints and the report modified accordingly, e. g. increase temperature of chippings to $10 ^\circ\text{C}$.

4.2 Apparatus

4.2.1 Flat steel plates (see Figure 1)

Flat steel plates with a rim of 2 mm to 3 mm height and with following dimensions:

$\frac{3}{4}$ side $(200 \pm 1) \text{ mm}$ $(200 \pm 1) \text{ mm}$;

$\frac{3}{4}$ 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.

Dimensions in millimetres

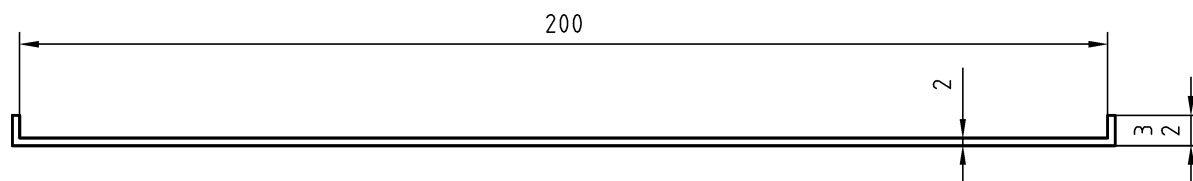
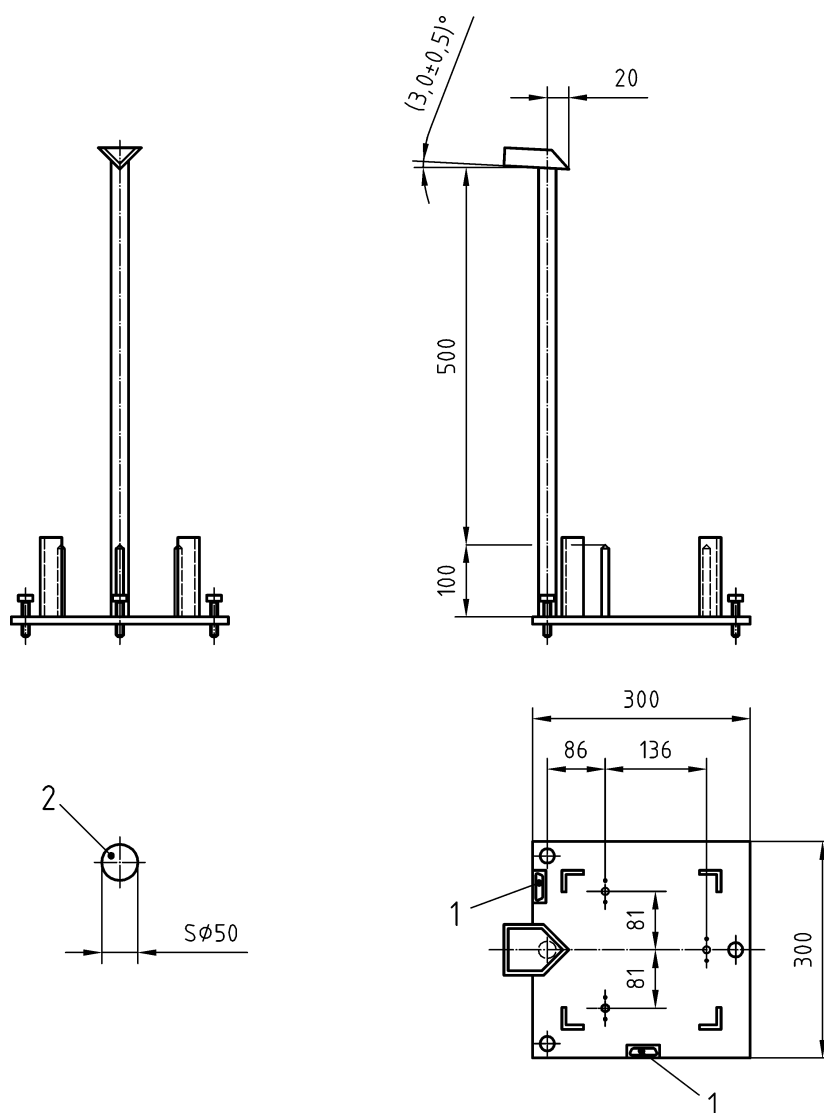


Figure 1 — Flat steel plate

4.2.2 3-pointed supports

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



Key

- 1 Level
- 2 Ball

Tolerances ± 1 mm, except for
 — the supports: $\pm 0,2$ mm
 — the ball: $\pm 0,5$ mm

Figure 2 — 3-pointed supports