

Surface dressing — Requirements

ICS 93.080.20

National foreword

This British Standard is the UK implementation of EN 12271:2006. It supersedes BS EN 12271-3:2002 which is withdrawn.

The UK participation in its preparation was entrusted by Technical Committee B/510, Road materials, to Subcommittee B/510/2, Surface dressings, sprays and slurry surfacings.

A list of organizations represented on subcommittee can be obtained on request to its secretary.

This standard should be read in conjunction with PD 6689:2009, *Surface Treatments — Guidance on the use of BS EN 12271 and BS EN 12273*.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 28 February 2007

© BSI 2009

ISBN 978 0 580 67703 8

Amendments/corrigenda issued since publication

Date	Comments
30 June 2009	Text changed in National foreword

English Version

Surface dressing - Requirements

Enduits superficiels - Spécifications

Oberflächenbehandlung - Anforderungen

This European Standard was approved by CEN on 25 October 2006.

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Contents

Page

Foreword.....	3
1 Scope	4
2 Normative references	4
3 Terms and definitions	5
4 Symbols and abbreviations	8
5 Requirements	8
5.1 Constituent materials	8
5.1.1 General.....	8
5.1.2 Binders.....	8
5.1.3 Chippings	9
5.2 Surface dressing.....	9
5.2.1 Type of surface dressing	9
5.2.2 Application of binder	9
5.2.3 Application of chippings	9
5.2.4 Defects as determined by visual assessment	9
5.2.5 Macrotexture	10
5.2.6 Binder-aggregate adhesivity	10
5.2.7 Characterising noise generation	10
5.3 Durability	11
5.3.1 General.....	11
5.3.2 Skid resistance.....	11
6 Evaluation of conformity.....	12
Annex A (normative) Factory Production Control	13
A.1 General.....	13
A.2 General requirements.....	13
A.3 Product specific requirements	14
A.3.1 General.....	14
A.3.2 Records.....	14
A.3.3 FPC system	15
A.3.4 Responsibility and authority	15
A.3.5 Design process	15
A.3.6 Process control.....	15
A.3.7 Control of equipment and monitoring and measuring devices	16
A.3.8 Monitoring and measurement of product	16
A.3.9 Non-conforming products	17
A.3.10 Corrective and remedial action	17
Annex B (normative) Minimum inspection/test frequencies for FPC	18
Annex C (normative) Type Approval Installation Trial (TAIT).....	24
C.1 General.....	24
C.2 Requirements	24
C.3 Data recorded.....	24
C.4 Information availability.....	25
C.5 Families of surface dressing and road grades	25
Annex ZA (informative) Clauses of this European Standard addressing the provisions of the EU Construction Products Directive.....	27
Bibliography	33

Foreword

This document (EN 12271:2006) 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 June 2007, and conflicting national standards shall be withdrawn at the latest by September 2008.

This document supersedes EN 12271-3:2002.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

1 Scope

This European Standard describes the performance requirements and control procedures for the installation of surface dressing as a product for the surface treatment of roads and other trafficked areas.

This European Standard does not apply to surface dressings designed by the purchaser.

This European Standard is not applicable to surface dressings carried out in tunnels and where fire regulations apply.

This European Standard does not apply to small areas of surface dressing on roads that are less than 500 m² which are not contiguous (for example patch repair surface dressing especially when carried out manually).

This European Standard does not apply to aircraft pavements that are covered by international regulations, for example, International Civil Aviation Organization (ICAO) regulations (airfields).

2 Normative references

The following referenced documents are indispensable for the application 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 12272-1, *Surface dressing — Test methods — Part 1: Rate of spread and accuracy of spread of binder and chippings*

EN 12272-2:2003, *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*

EN 12591, *Bitumen and bituminous binders — Specifications for paving grade bitumens*

EN 13036-1, *Road and airfield surface characteristics — Test methods — Part 1: Measurement of pavement surface macrotexture depth using a volumetric technique*

EN 13043, *Aggregates for bituminous mixtures and surface treatments for roads, airfields and other trafficked areas*

EN 13588, *Bitumen and bituminous binders — Determination of cohesion of bituminous binders with pendulum test*

EN 13808:2005, *Bitumen and bituminous binders — Framework for specifying cationic bituminous emulsions*

EN 14023, *Bitumen and bituminous binders — Framework specification for polymer modified bitumens*

prEN 15322:2005, *Bitumen and bituminous binders — Framework for specifying cut-back and fluxed bituminous binders*

EN ISO 9001:2000, *Quality management systems — Requirements (ISO 9001:2000)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12272-2:2003 and the following apply.

3.1

surface dressing

consists of at least one layer of binder and at least one layer of chippings

3.2

binder

binder as a component of surface dressing is a bituminous material such as: bitumen emulsion; fluxed bitumen; cut-back bitumen; or paving grade bitumen; any of which may be modified with polymer

3.3

chippings

coarse aggregate practically free of fines with a narrow grading range

3.4

pre-coated chippings

chippings coated with bituminous binder before application

3.5

mosaic

arrangement of the chippings such that they are in shoulder to shoulder contact and are thus supported laterally

NOTE The initial stability of a surface dressing is dependent upon the formation of a close mosaic and the cohesion and adhesivity of the binder. Subsequent durability is gained by re-orientation of the chippings by traffic to form a tight mosaic, and sufficient binder to secure the chippings to the existing road surface.

3.6

embedment

process whereby chippings are forced into an existing road surface by the action of traffic

NOTE 1 Factors affecting embedment are:

- traffic density of heavy vehicles during summer months;
- average road temperature and road hardness. Cement concrete, for example, does not allow embedment;
- size of chippings. Larger chippings reduce the rate of embedment;
- traffic speed. Slow moving traffic, experienced on hills and at junctions, increases embedment. Conversely, fast traffic in the overtaking lane of a dual carriageway results in less embedment;
- shaded areas. A reduction in average road temperature reduces embedment.

NOTE 2 Embedment results in a reduction of macrotexture with time (macrotexture is measured in accordance with EN 13036-1 or EN ISO 13473-1).

3.7

Factory Production Control

permanent internal control of production exercised by the producer when all the elements, requirements and provisions adopted by the producer are documented in a systematic manner in the form of written policies and procedures

NOTE This production control system documentation ensures a common understanding of quality assurance and enables the achievement of the required product characteristics and the effective operation of the production control system to be checked.

3.8

design proposal

design proposed (components and method statement) to provide the performance requirements specified

3.9

perceptible properties check

evaluation made with the senses: sight, touch, smell, hearing etc. It is a broader concept than the more commonly used term 'visual inspection'

NOTE 1 For example, a check on a binder delivery might involve visual (colour, fuming, consistency and homogeneity), smell (odour) and touch (estimate of viscosity by stirring and tackiness when cured and at ambient temperature). This would detect whether the binder conformed to the expectations of the tester and would be the quickest way to detect a defective load. Similar principles apply to aggregates, particularly with stockpile inspection where handling soon reveals cleanliness, grading or flakiness problems.

NOTE 2 In all cases perceptible property checks should extend only as far as health and safety regulations permit.

3.10

Type Approval Installation Trial (TAIT)

synonymous with Initial Type Test (ITT) which demonstrates that the characteristics of the surface dressing complies with the declared characteristics according to this European Standard. The TAIT consists of a defined section where surface dressing has been installed using Factory Production Control (FPC) and which has been submitted to performance tests after a period of one year. Detailed information is recorded to clearly identify the product, its performance and the intended uses (see Annex C)

NOTE A TAIT is used by the producer to provide confidence in his product and his capability to design and install it.

3.11

road grade

intended use which may have set frequencies of testing and/or set categories of performance (see Annex C)

3.12

product family

represents a declared sub-group of intended uses and/or associated parameters described by the appropriate road grade (see Annex C)

3.13

single surface dressing (see Figure 1a)

successive laying of one layer of binder and one layer of chippings

3.14

racked-in surface dressing (see Figure 1b)

successive laying of one layer of binder and two layers of chippings, the second layer being of a smaller size

3.15

double dressing (see Figure 1c)

successive laying of a first layer of binder and a first layer of chippings followed by a second layer of binder and a second layer of chippings, the second layer of chippings being of a smaller size

NOTE When the surface dressings are not carried out at the same time (i.e. successively), they are considered as two single dressings.

3.16

inverted double dressing (see Figure 1d)

successive laying of a first layer of binder and a first layer of chippings followed by a second layer of binder and a second layer of chippings, the second layer of chippings being of a larger size

NOTE When the dressings are not carried out at the same time (i.e. successively), they are considered as two single dressings.

3.17

pre-chipping dressing (see Figure 1e)

successive laying of one layer of chippings (pre-chipping layer) followed by surface dressing as part of the process

NOTE Sandwich dressing is the term used for a pre-chipping layer followed by a single surface dressing.

3.18

stress absorbing membrane (SAM) dressing

single surface dressing with a high rate of application of bituminous binder (typically 2 kg/m^2 to 4 kg/m^2) and high resistance to strain (typically using pre-coated chippings, see 3.4)

3.19

durability of a product

ability of a product to maintain its required performance, under the influence of foreseeable actions, for a reasonable economic working life

3.20

defect

state of a surface dressing where the mosaic is covered by binder as in the case of fatting up, tracking and bleeding (P_1); or is disrupted as in the case of scabbing and tearing (P_2), fretting (P_3) or streaking (P_4)

NOTE 1 For further clarification see EN 12272-2.

NOTE 2 A defect can occur due to poor construction techniques.

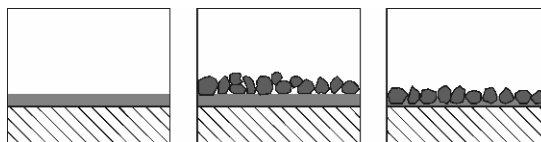


Figure 1a — Single surface dressing

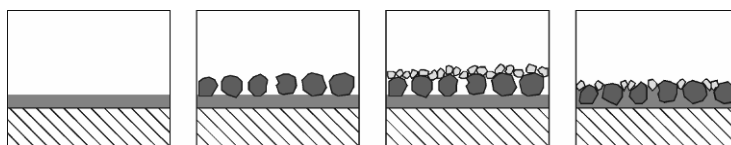


Figure 1b — Racked-in surface dressing

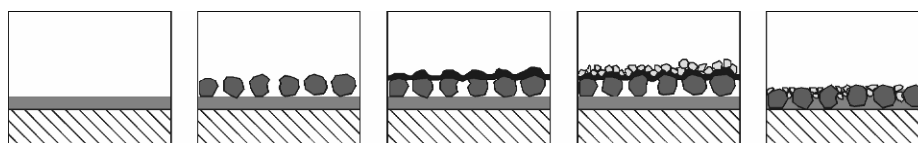


Figure 1c — Double dressing

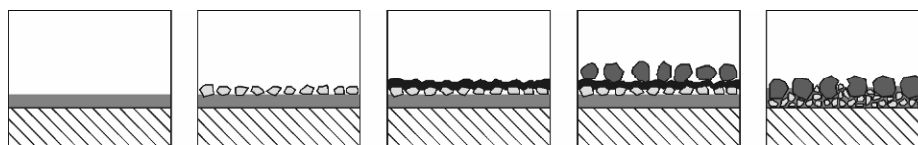


Figure 1d — Inverted double dressing

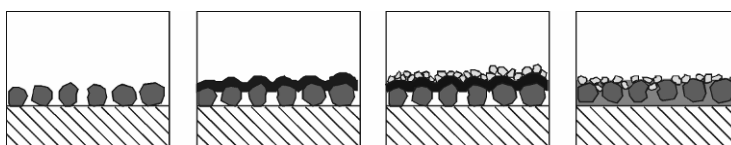


Figure 1e — Sandwich dressing (example of pre-chipping dressing)

Figure 1 — Types of surface dressing (schematic diagram)

4 Symbols and abbreviations

For the purposes of this document, the following symbols and abbreviations apply:

- S is the area of 100 m long surface dressing section, in square metres (m^2);
- P_1 is the visual assessment of fatting up, tracking and bleeding, expressed as the percentage (%) of the area of the section, S ;
- P_2 is the visual assessment of scabbing and tearing, expressed as the percentage (%) of the area of the section, S ;
- P_3 is the visual assessment of fretting, expressed as the percentage (%) of chipping loss;
- P_4 is the visual assessment of streaking, expressed as a linear measurement, in metres (m).

NOTE The above are determined by test procedures from EN 12272-2.

FPC Factory Production Control

TAIT Type Approval Installation Trial

PSV Polished Stone Value

NPD No Performance Determined

5 Requirements

5.1 Constituent materials

5.1.1 General

Only constituent materials with established suitability shall be used.

The establishment of suitability shall result from one or more of the following:

- 1) European Standard;
- 2) European Technical Approval;
- 3) specifications for materials based on a history of demonstrating compliance with this European Standard. Evidence shall be provided on their suitability. This evidence may be based on research combined with evidence from practice.

5.1.2 Binders

The binder shall be a bituminous material such as: bitumen emulsion; fluxed bitumen; cut-back bitumen; or paving grade bitumen; any of which may be modified with polymers. The appropriate European Standards for binders are given in Table 1.

The cohesion of the bituminous binder shall comply with the classes specified in EN 13808:2005, Table 4 or prEN 15322:2005, Table 4 (see Table 2).

The use of volatile flux in cut-back may be reduced to minimize any environmental impact.

Table 1 — Binder standards

Binder type	Appropriate European Standard
Bitumen emulsion and polymer modified bitumen emulsion	EN 13808:2005
Cut-back bitumen, polymer modified cut-back bitumen, fluxed bitumen and polymer modified fluxed bitumen	prEN 15322:2005
Paving grade bitumen	EN 12591
Polymer modified paving grade	EN 14023

5.1.3 Chippings

Aggregates for chippings shall comply with EN 13043 as appropriate for the intended use and hence the performance required, e.g. resistance to studded tyres, PSV etc. (see Table 2).

Material passing a 0,5 mm sieve may be an additional test required for chippings.

5.2 Surface dressing

5.2.1 Type of surface dressing

The type of surface dressing shall be described as part of the product description, the most common types of which are illustrated in Figure 1.

NOTE The design proposal can include for different treatments for different parts of the road during installation, for example, the wheel tracks can require a pre-chipping layer with a single surface dressing over the whole carriageway.

5.2.2 Application of binder

Tolerances for the rate of spread of the binder to be applied to the design of a surface dressing and categories for coefficients of variation for the accuracy of transverse distribution of the binder, shall be declared from those in Table 2.

5.2.3 Application of chippings

Tolerances for the rate of spread of the chippings to be applied to the design of a surface dressing and categories for coefficients of variation for the accuracy of transverse distribution of the chippings, shall be declared from Table 2.

5.2.4 Defects as determined by visual assessment

Defects can be repaired at any time after the construction of a surface dressing; however, a TAIT shall not include within its length any sections of repaired surface dressing.

Categories for visual assessment of defects shall be declared from Table 2, after eleven months and before thirteen months.

NOTE 1 In general, most defects occur during the first twelve months of the life of a surface dressing.

NOTE 2 The measurement of visual assessment after a year gives an indication of the durability of the surface dressing.