DRAFT FOR DEVELOPMENT

DD CEN/TS 15366:2009

Winter and road service area maintenance equipment — Solid absorbents intended for road usage

ICS 13.030.40

BSI British Standards

National foreword

This Draft for Development is the UK implementation of CEN/TS 15366:2009.

This publication is not to be regarded as a British Standard.

It is being issued in the Draft for Development series of publications and is of a provisional nature. It should be applied on this provisional basis, so that information and experience of its practical application can be obtained.

Comments arising from the use of this Draft for Development are requested so that UK experience can be reported to the international organization responsible for its conversion to an international standard. A review of this publication will be initiated not later than 3 years after its publication by the international organization so that a decision can be taken on its status. Notification of the start of the review period will be made in an announcement in the appropriate issue of Update Standards.

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The UK participation in its preparation was entrusted to Technical Committee B/513, Construction equipment and plant and site safety.

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

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English Version

Winter and road service area maintenance equipment - Solid absorbents intended for road usage

Matériel de viabilité hivernale et d'entretien des dépendances routières - Produits absorbants solides destinés à un usage routier

Produkte für den Straßenbetriebs- und Winterdienst - Bindemittel zur Anwendung auf Straßen

This Technical Specification (CEN/TS) was approved by CEN on 8 August 2009 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

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Foreword

This document (CEN/TS 15366:2009) has been prepared by Technical Committee CEN/TC 337 “Winter maintenance and road service area maintenance equipment”, the secretariat of which is held by AFNOR.

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1 Scope

This Technical Specification is a product specification standard. It applies to bulk spreadable products for absorbing hydrocarbons, mineral oils and similar liquids from road surfaces or traffic areas. Each country may add usage regulations.

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 590, *Automotive fuels — Diesel — Requirements and test methods*

EN 14231, *Natural stone test methods — Determination of the slip resistance by means of the pendulum tester*

ISO 8213, *Chemical products for industrial use — Sampling techniques — Solid chemical products in the form of particles varying from powders to coarse lumps*

ISO 9044, *Industrial woven wire cloth — Technical requirements and tests*

ISO 11014-1, *Safety data sheet for chemical products — Part 1: Content and order of sections*

3 Terms and definitions

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

3.1
absorbents
solid substances meant to absorb hydrocarbons, mineral oils and similar liquids from road surfaces or traffic areas

3.2
skid resistance
slip resistance
property of the road surface which evaluates the relative movement between the contact patch of a vehicle tyre and the surface

3.3
Skid Resistance Test
SRT
method to measure the slip/skid resistance of a surface by means of the pendulum test

3.4
absorbency
ability of a given mass of product material to absorb a quantity of liquid

4 Safety principles

4.1 Safety data sheets

A safety data sheet, in accordance with ISO 11014-1 (see European Directive 2001/58/EC of 27 July 2001 or ISO 11014-1), shall be available.

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The national authorities of the country where the absorbent shall be used, may demand proof that the declarations in the SDS are correct.

4.2 Human health and environmental properties

According to this Technical Specification no absorbents shall be used on roads, which are classified as "dangerous" with respect to European Directive 67/548, Article 2 (2).

Products shall fulfill the European regulations for disposal in landfill according to European Decision 2003/33, attachment, chapter 2.2.2, at L/S 10 l/kg (except sulphate).

5 Functional specifications for solid absorbents intended for road usage

5.1 General

The specifications for absorbents that follow specify the requirements for road usage. These specifications are designed to ensure the safety of road users and to limit the dissemination of pollutants into the environment.

5.2 Absorbency

The absorbency shall be assessed, using the test protocol described in Annex A.

The minimum absorbency of hydrocarbons (gas oil) shall be 50 **%** wt.

The absorbency of water shall be measured in accordance with Annex A.

5.3 Skid resistance

For information, the variation in the skid resistance of the surface should be assessed using the test protocol described in Annex D.

a) Part 1: Skid resistance of wet absorbent

The required minimum values is:

SRT Final Coefficient ≥ 80 % SRT initial Coefficient.

b) Part 2: Skid resistance of the road surface after removal of contaminated absorbent

The required minimum values is:

SRT Final Coefficient ≥ 85 % SRT initial Coefficient.

The skid resistance shall be measured using the apparatus described in EN 14231.

A material conforms to this Technical Specification if part 1 and part 2 exceed the minimum values.

5.4 Identification of the absorbent

A technical data sheet is issued with the absorbent. This data sheet lists the composition of the product stating the standardized test methods used (referred to in Annex C) and the physical properties of the product. The objective is to know the ID card of the product.

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6 Sampling for tests

6.1 General

The specifications for absorbents that follow specify the requirements for samples to be tested in an external testing laboratory.

6.2 Sample definition

If the product is already on the market, the sample is an original unopened, packed, conditioned absorbent. This sample shall be marked to have a traceability of the product (name, sample number, etc.).

Otherwise, the claimant has to give a guarantee that the sample sent corresponds in all properties to the product quality to be sold later on (minimum quantity: 5 kg).

Technical data sheet and safety data sheet shall be sent with the product.

6.3 Sampling

Sampling in the laboratory shall be made in accordance with ISO 8213.

After testing, the remaining marked representative samples shall be stored for six months in the testing laboratory.

7 Marking, labelling, packaging

Absorbents intended for road usage shall bear labels or imprints, A6 size or larger, and in compliance with the requirements and should include the following additional information on each bag in one of the languages generally understood in the country where the product is sold.

The marking contains:

a) the nature of the product including a list of essential components;

b) R indicates: suitable for road purposes;

c) reference to the usage: "Absorbent for use on road surfaces and traffic areas";

d) reference to this Technical Specification;

e) product name or product brand name;

f) name of producer or distributor or other official identification code;

g) a code for product traceability for at least two years;

h) the contents of the package either in kilograms or in litres, with an indication of bulk density;

i) absorbency for hydrocarbons and for water as per this Technical Specification;

j) conditions for exposure, handling and storage extracted from the safety data sheet as defined in ISO 11014-1;

k) statement of the obligations and the risks of using absorbents on roads:

   1) "Absorbents contaminated by pollutants may present the same dangers as the absorbed pollutants.";

2) "They should be handled and stored with the same precautions.";

3) "Used absorbents should be removed from the road surface and collected, labelled and disposed of in accordance with the legislation in force.";

l) any other information concerning health and safety in use shall be added to this marking.

A template label is included in Annex B.

Annex A
(normative)

Determination of absorbency of water and hydrocarbon

A.1 General

This protocol describes a laboratory test to assess the saturated absorbency of absorbent products intended for road usage, for water and hydrocarbons.

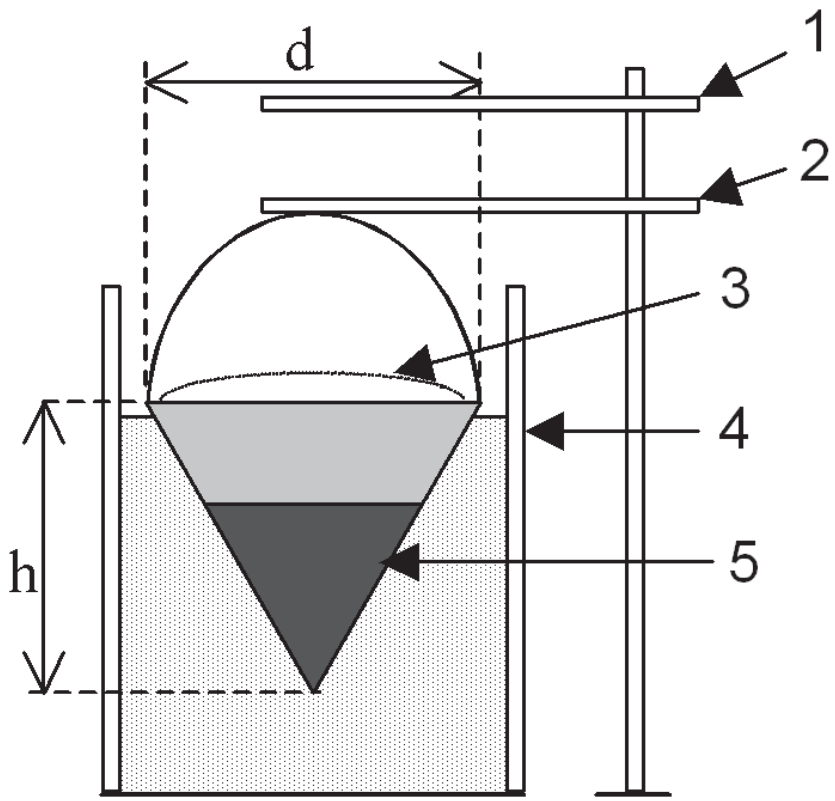
A.2 Principle

The test method consists in determining the mass of water or hydrocarbon absorbed by a certain quantity of product expressed in percentage (%) of mass.

A.3 Apparatus

a) Sieve, tank and lid

Conical sieves (as used in the Westinghouse Test) made of an inox tissue with a 355 µm mesh following the standard ISO 9044.



Key

d Diameter of the sieve

h Height of the sieve

1 Height 1 (0,5 × h)

2 Height 2 (0,95 × h)

3 Lid if necessary

4 Tank

5 Conical sieve:

— size of the sieve: diameter 100 mm (d), height 105 mm (h);

— a set of cylindrical glass tanks with an internal diameter of at least 130 mm and an internal height of at least 150 mm.

Figure A.1

b) Balance

A balance with a precision of 0,1 g.

c) Reagents

d) Demineralized water

e) Reference hydrocarbon

The reference hydrocarbon used to contaminate the road surface and the absorbent is of the diesel fuel type EN 590 – TC 19 – Mineral oil – Normal type – Summer type for countries making a distinction with seasons.

A.4 Special instructions

These instructions are intended to guarantee the reproducibility of the measurements of the absorbency with hydrocarbons and water.

Before each test clean the sieves using propanol or equivalent.

A.5 Procedure

A.5.1 Preparation of the sample for the test

It is necessary to have homogeneous and representative samples of the product. Do not dry the product in any way, use it as received from the bag.

A.5.2 Determination

Measurements are taken in a laboratory at a constant temperature of (21 ± 3) °C. Materials and equipment will be stored at room temperature.

Make one measurement on each of the three samples of the material to be tested.

A.5.3 Measurement of water retention

For each conical sieve (see Figure A.1), proceed in the following order:

a) immerse the empty and clean conical sieve in a tank full of de-mineralized water (see A.3) for 2 min; cover with a lid if necessary;

b) withdraw and allow to drain for 10 min;

c) weigh the wet conical sieve with a precision of ± 0,1 g (m_0);

d) half immerse (height 1, corresponding to 0,5 × height of the sieve) the same conical sieve in a tank full of de-mineralized water;

e) take 20 g (m_1) of the sample of absorbent for the test and put it on the liquid surface in the conical sieve;

f) immerse (height 2, corresponding to approximately 0,95 × height of the sieve) the conical sieve and the absorbent for 20 min;

g) withdraw the sieve carefully and allow to drain for 30 min;

h) weigh the conical sieve and its saturated contents with a precision of 0,1 g (m_2).

A.5.4 Measurement of hydrocarbon retention

For each conical sieve (see Figure A.1), proceed in the following order:

a) immerse the empty and clean conical sieve in a tank full of the reference hydrocarbon (see 5.2) for 2 min; cover with a lid if necessary;

b) withdraw and allow to drain for 10 min;

c) weigh the wet conical sieve with a precision of 0,1 g (m_3);

d) half immerse (height 1, corresponding to 0,5 × height of the sieve) the same conical sieve in a tank full of the reference hydrocarbon (see A.6.2);

e) take 20 g (m_4) of the sample of absorbent for the test and put it on the liquid surface in the conical sieve;

f) immerse (height 2, corresponding to approximately 0,95 × height of the sieve) the conical sieve and the absorbent for 20 min;

g) withdraw carefully and allow to drain for 30 min;

h) weigh the conical sieve and its saturated contents with a precision of 0,1 g (m_5).

A.6 Expressing the results

A.6.1 Water retention

$$R_w = \frac{m_2 - m_1 - m_0}{m_1} \times 100 \qquad \text{(A.1)}$$

where

R_w is the retention of water, expressed in percent (%) (wt) of the absorbent;

m_0 is the mass of the wet conical sieve in grams (g);

m_1 is the mass of the sample of absorbent tested in grams (g);

m_2 is the mass of the conical sieve and its saturated contents in grams (g).

The result is the mean of the three measurements.

A.6.2 Hydorcarbon retention

$$R_h = \frac{m_5 - m_4 - m_3}{m_4} \times 100 \qquad \text{(A.2)}$$

where

R_h the retention of hydrocarbon, expressed in percent (%) (wt) of the absorbent;

m_3 is the mass of the “wet” conical sieve in grams (g);

m_4 is the mass of the sample of absorbent tested in grams (g);

m_5 is the mass of the conical sieve and its saturated contents in grams (g).

The result is the mean of the three measurements.

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A.7 Validity

The test shall be made at least three times and the results shall not differ from the mean value more than ± 5 %.

A.8 Test report

The test report shall indicate:

— the test procedure reference;

— all information required to identify the material completely;

— the results obtained;

— any test procedure details not required by this standard or optional details;

— any incidents that may have affected the results.

Record all observations concerning the response of the sample to the test including disintegration, effervescence, colour changes or particular reactions, turbidity, etc.

Annex B
(normative)

Label template

ABSORBENT FOR USE ON ROAD SURFACES OR TRAFFIC AREAS

According to CEN/TS 15366

Product Name or product Brand Name

R

NATURE .....

.....

.....(list of essential components)

CONTENT (expressed in kilograms or litres)

Bulk density : ……..……..(kg/l)

ABSORBENCY: Hydrocarbon: .....(% wt)

Water: .....(% wt)

HEALTH AND SAFETY INFORMATION .....

.....

.....

.....

(extract from the safety data sheet, ISO 11014-1)

Absorbents contaminated by pollutants may present the same dangers as the absorbed pollutants.

Handle and store with the same precautions.

Used absorbents should be removed from the road surface and collected, labelled and disposed off in accordance with the legislation in force.

CODE FOR PRODUCT TRACEABILITY (Indicate where the information is shown on the bag)

Name of producer or distributor or other official identification code

Annex C
(informative)

Preferred methods

Concerning the essential physical and chemical properties of the absorbent, preferred methods to identify organic and mineral compounds would be the following:

— qualitative mineralogical analysis by X-ray diffraction;

— thermal analysis;

— IR spectrometry.

Annex D
(informative)

Determination of the variation in the skid resistance of a road surface or traffic area caused by the presence of an absorbent

D.1 General

This protocol describes laboratory test methods to assess the variation in the skid resistance of a road surface or traffic area following hydrocarbon pollution, treated with an absorbent.

— Part 1: Skid resistance of wet absorbent;

— Part 2: Skid resistance of the road surface after removal of contaminated absorbent.

D.2 Principle

The test method consists in determining the variation in the skid resistance of a road surface or traffic area following hydrocarbon pollution, treated with an absorbent to be tested.

D.3 Apparatus

D.3.1 Apparatus

A Pendulum friction tester, as described in EN 14231, is used to determine the skid resistance of the road surface.

D.3.2 Reference test surfaces

The reference test surfaces are made of replicas of road surfaces made of resin[1)], the size of which is 280 mm by 200 mm of the 0/10 mm semi-granular asphalt concrete type, with a basic SRT friction coefficient obtained during skid resistance in humid conditions greater than 50 units on the C scale, as defined in EN 14231, and a mean macrotexture depth greater than 0,6 mm, as defined in EN 13036-1.

D.3.3 Deionized or demineralised water

D.3.4 Reference hydrocarbon

The reference hydrocarbon used to contaminate the road surface and the absorbent is of the diesel fuel type (EN 590 – TC 19 – Mineral oil – Normal type – Summer type for countries making a distinction with seasons).

D.3.5 Mould

Use a mould prepared from a flat sheet 4 mm thick from which a rectangular section 200 mm × 100 mm has been removed.

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1) Replica made of resin by pouring into a silicone rubber cast of the road surface. A reference surface can be obtained.

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D.4 Special instructions

These instructions are intended to guarantee the reproducibility of the measurements of the skid resistance following contamination by hydrocarbons:

a) measurements shall be taken in a laboratory at a constant temperature of (21 ± 3) °C. The materials and measurement apparatus shall be stored at this temperature;

b) mounting of the resin surface and of the pendulum shall be rigid. Caution needs to be taken on the position of the reference surface. The same area of friction should be kept for all the measurements in each procedure. The height of the pendulum should remain fixed for all the tests. Care needs to be taken to ensure that there is no movement of the surface during the swing of the pendulum and care should be taken NOT to change the direction of the test surface during the test procedure;

c) to characterise an absorbent: use the same operative SRT pad according to EN 14231 for all the measurements.

Before each SRT measurement:

d) clean conscientiously the reference surfaces:

   1) brush the sample under hot water with a detergent and rinse it with water;

   2) clean the sample with propanol or equivalent;

   3) dry with compressed air;

e) clean the pad:

   1) by rubbing with a cloth soaked in propanol or equivalent;

   2) leave the pad in water between the measurements;

f) clean the brush with propanol.

D.5 Procedure for part 1: skid resistance of wet absorbent

Repeat the procedure at least twice:

a) determine the initial SRT friction factor of the wet reference surface by spraying the surface with water (see A.5.3) before each release. Repeat the drop of the pad until five values are measured with no more than three points deviation. The initial SRT friction factor is the average value of the last five releases;

b) dry with compressed air;

c) put 70 mm depth of the absorbent in conical sieves as referred in Annex A.3.1;

d) immerse the conical sieves in a tank full of de-mineralized water for 20 min;

e) withdraw and allow to drain for 30 min;

f) apply a coat of saturated absorbent which is 4 mm thick on to the reference surface;

g) form a 4 mm deep cavity by positioning the mould on the reference surface. Fill the cavity with saturated absorbent and level with a scraper. Leave the mould in place during the tests;

h) determine the final SRT friction factor of the reference surface covered with absorbent. Do not add water and do not clean the pad between the drops. Repeat the drop of the pad until five values are measured with no more than three points deviation. The final SRT friction factor is the average value of the last five releases.

D.6 Procedure for part 2: skid resistance of the road surface after removal of contaminated absorbent

Repeat the procedure at least twice:

a) determine the initial SRT friction factor of the wet reference surface by spraying the surface with deionised water (see A.5.3) before each release. Repeat the drop of the pad until five values are measured with no more than three points deviation. The initial SRT friction factor is the average value of the last five releases;

b) dry with compressed air;

c) apply, and spread evenly (100 $\pm$ 5) ml/m^2 of hydrocarbon using a stiff brush with synthetic bristles, already saturated with the hydrocarbon (see A.5.4). The brush should be held to drain for 2 min after being immersed. The part of the brush where the bristles are attached should be circular with a diameter between 4 cm and 6 cm;

d) apply a first coat of absorbent[2)] of (2 000 $\pm$ 50) ml/m^2 on the contaminated reference surface;

e) mix 30 s, using the same brush and leave for 5 min;

f) mix homogeneously with the same brush;

g) leave for a further 5 min and then remove the first coat applied in D.6 from the surface by brushing;

h) evenly sprinkle another coat of absorbent of (1 000 $\pm$ 50) ml/m^2;

i) leave for a further 5 min and then remove all the absorbent by brushing;

j) saturate the surface by pouring some water (see A.5.3);

k) determine the final SRT friction factor of the contaminated reference surface by spraying the surface with water before each release. Repeat the drop of the pad until five values are measured with no more than three points deviation. The final SRT friction factor is the average value of the last five releases.

D.7 Expressing the results

D.7.1 Part 1: skid resistance of wet absorbent

Determine the ratio (expressed in percent (%)) between the final SRT friction factor after performing the test and the initial SRT friction factor of the wet reference surface (D.5). The ratio is the SRT coefficient. If the difference between the two SRT coefficients is less than or equal to five units (units is in percent (%)) the final result will be the mean of the two coefficients.

If not, make another set of two measurements and then the result of the initial SRT coefficient is the mean of the three closest SRT coefficients.

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2) Basic absorbent not having undergone any changes.

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D.7.2 Part 2: skid resistance of the road surface after removal of contaminated absorbent

Determine the ratio (expressed in percent (%)) between the final SRT friction factor after performing the test and the initial SRT friction factor of the wet reference surface (D.6). The ratio is the SRT coefficient. If the difference between the two SRT coefficients is less than or equal to five units (units is in percent (%)) the final result will be the mean of the two coefficients.

If not, make another set of two measurements and then the result of the final SRT coefficient is the mean of the three closest SRT coefficients.

D.8 Test reports

The test report indicate:

— the test procedure reference;

— all information required to identify the material completely;

— all the results obtained;

— the final result and its conformity with the Technical Specification;

— any test procedure details not required by this Technical Specification or optional details;

— any incidents that may have affected the results.

Bibliography

[1] Commission Directive 2001/58/EC of 27 July 2001 amending for the second time Directive 91/155/EEC defining and laying down the detailed arrangements for the system of specific information relating to dangerous preparations in implementation of Article 14 of European Parliament and Council Directive 1999/45/EC and relating to dangerous substances in implementation of Article 27 of Council Directive 67/548/EEC (safety data sheets).

[2] Council Directive 67/548/EEC of 27 June 1967 on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances.

[3] Council Decision 2003/33/EC of 19 December 2002 establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC.

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

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