BRITISH STANDARD

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13523-18:2002

Coil coated metals — Test methods —

Part 18: Resistance to staining

The European Standard EN 13523-18:2002 has the status of a British Standard

ICS 17.040.20; 25.220.60

National foreword

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The UK participation in its preparation was entrusted to Technical Committee STI/27, Paint systems for metallic substrates, which has the responsibility to:

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Summary of pages

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English version

Coil coated metals - Test methods - Part 18: Resistance to staining

Tôles prélaquées - Méthodes d'essai - Partie 18: Résistance aux tâches

Bandbeschichtete Metalle - Prüfverfahren - Teil 18: Beständigkeit gegen Fleckenbildung

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Ref. No. EN 13523-18:2002 E

Foreword

This document EN 13523-18:2002 has been prepared by Technical Committee CEN/TC 139 "Paints and varnishes", 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of an identical text or by endorsement, at the latest by January 2003, and conflicting national standards shall be withdrawn at the latest by January 2003.

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

1 Scope

This Part of EN 13523 specifies test procedures for assessing the effect of chemicals on the characteristics of an organic coating on a metallic substrate. It covers testing by using defined substances and to assess the change in characteristics such as discoloration, change in gloss, blistering, softening, swelling and loss of adhesion. Assessment of other phenomena may be agreed between the interested parties.

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).

EN 13523-0:2001, *Coil coated metals — Test methods — Part 0: General introduction and list of test methods.*

EN 23270:1991, *Paints and varnishes and their raw materials — Temperatures and humidities for conditioning and testing (ISO 3270:1984).*

3 Terms and definitions

For the purposes of this Part of EN 13523, the terms and definitions given in EN 13523-0:2001 apply.

4 Principle

A coated test panel or a flat surface on a fabricated article is exposed to an individual substance for an agreed period of time. Three different test procedures can be used, as described in 4.1 to 4.3.

4.1 Spot test (covered)

The substance is placed on the test panel and immediately covered with a watch glass.

4.2 Spot test (open)

The substance is placed on the test panel and left open to the atmosphere.

4.3 Immersion test

The test panel is partly immersed in the substance.

5 Apparatus

Ordinary laboratory apparatus and glassware, together with the following as appropriate:

5.1 Watch glass, of diameter 50 mm.

5.2 Pipette, of capacity 5 ml, graduated in 0,1 ml.

5.3 Glass beaker, of capacity 600 ml, with a suitable cover.

5.4 Hotplate, with thermostatic control.

6 Substances

The type of substance, its composition and concentration to be used shall be agreed between the interested parties.

NOTE Possible substances are:
- distilled water (cold);
- distilled water (hot);
- alkaline solution;
- diluted mineral acid;
- acetic acid;
- soap solution;
- detergent solution;
- ethanol, with a volume fraction of 50 %;
- lighter fluid and other volatile reagents;
- fruit;
- oil and fats - butter, margarine, lard, vegetable oils, etc.;
- condiments - mustard, tomato puree, curry, etc.;
- beverages - coffee, tea, cola, etc.;
- lubricating oils and greases;
- shoe polish;
- lipstick;
- marker pens;
- other substances as agreed between the interested parties.

7 Sampling

See EN 13523-0:2001.

8 Test panels

See EN 13523-0:2001.

A representative panel shall be selected from the organic coating under test. Spot and direct application techniques may be carried out on the fabricated article coated with the finishing system to be tested, if sufficient flat surface is available. For immersion tests and tests where the finished article is not available, panels shall be prepared after consultation and agreement between the interested parties.

9 Procedure

9.1 General

The individual procedure (9.2, 9.3 or 9.4) to be used shall be agreed between the interested parties.

9.2 Spot test (covered)

Unless otherwise agreed between the interested parties, carry out the test on a single test panel at ambient temperature. In case of dispute, the ambient temperature shall be defined as (23 ± 2) °C and the relative humidity as (50 ± 5) %, in accordance with EN 23270:1991.

Deposit the agreed substance (see the note in clause 6) on the horizontal test panel or flat test surface of the fabricated article. For fluid substances, apply approximately 1 ml, using the pipette (5.2). For other substances, apply to an area approximately one half of the watch glass (5.1). Cover immediately with the watch glass.

After the agreed period of time, wipe gently to remove any residues of the substance and examine immediately for any change of the coating characteristics as described in clause 1.

NOTE A typical test period is 24 h. If an intermediate examination is needed, a series of additional spots of the same substance is required. If desired and agreed, the panel may be allowed to recover for a specified time period and then examined for the return of the original properties.

9.3 Spot test (open)

Unless otherwise agreed between the interested parties, carry out the test on a single test panel at ambient temperature. In case of dispute, the ambient temperature shall be defined as (23 ± 2) °C and the relative humidity as (50 ± 5) %, in accordance with EN 23270:1991.

Place a small portion of the agreed substance (see the note in clause 6) on the test panel or test surface which is in horizontal position. In case of test on fruit, place a freshly cut surface in contact with the test coating.

After the agreed time period, wipe gently to remove any residues of the substance and examine immediately for any change of the characteristics as described in clause 1.

NOTE A typical test period is 24 h. If an intermediate examination is needed, a series of additional spots of the same substance is required. If desired and agreed, the panel may be allowed to recover for a specified time period and then examined for the return of the original properties.

9.4 Immersion test

Immerse a suitably agreed and prepared test panel of dimensions typically 70 mm × 100 mm to half of its length in the agreed substance contained in the glass beaker (5.3) at the test temperature. After the agreed time period withdraw the panel, wipe gently to remove any residues of the substance, dry with absorbent paper and examine immediately for any change of the characteristics as described in clause 1.

NOTE If desired and agreed, the panel may be allowed to recover before examination. It is normally not necessary to seal the edges of the panel, but if the substance markedly effects the edge condition of the panel, the test should be repeated with the edges sealed, the sealer being agreed between the interested parties.

10 Required supplementary information

For any particular application of the test method specified in this Part of this European Standard, the details given in clause 9 need to be completed by supplementary test conditions which are to be specified or agreed. Details of the supplementary test conditions listed below shall be supplied as appropriate to enable the method to be carried out.

The information required should preferably be agreed between the interested parties and may be derived, in part or totally, from an international or national standard or other document related to the product under test.

a) test temperature in degrees Celsius (to be maintained to ± 5 °C);

b) period of time;

c) time of recovery, if desired.

11 Expression of results

The results shall be expressed as the type of effect observed such as discoloration (staining), change in gloss, blistering, softening, swelling, loss of adhesion or any other phenomena as agreed between the interested parties.

12 Precision

NOTE No precision data are currently available.

13 Test report

The test report shall contain at least the following information:

a) all details necessary to identify the product tested;

b) a reference to this Part of EN 13523;

c) the items of supplementary information referred to in clause 10;

d) a reference to the international or national standard, product specification or other document supplying the information referred to in c);

e) the test procedure employed;

f) the substances used;

g) the observed changes in characteristics (see clauses 1 and 11);

h) any deviation from the test method specified;

i) the date of the test.

Bibliography

EN 1396:1996, *Aluminium and aluminium alloys — Coil coated sheet and strip for general applications — Specifications.*

EN 10169-1:1996, *Continuously organic coated (coil coated) steel flat products — Part 1: General information (definitions, materials, tolerances, test methods).*

ENV 10169-2:1999, *Continuously organic coated (coil coated) steel flat products — Part 2: Products for building exterior applications.*

prEN 10169-3:2001, *Continuously organic coated (coil coated) steel flat products — Part 3: Products for building interior applications.*

EN ISO 2812-1:1994, *Paints and varnishes — Determination of resistance to liquids — Part 1: General methods (ISO 2812-1:1993).*

ASTM D 1308-87 (Reapproved 1998), *Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes.*

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