



SLOVENSKI STANDARD
SIST EN 13523-12:2005

01-april-2005

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Coil coated metals - Test methods - Part 12: Resistance to scratching

Bandbeschichtete Metalle - Prüfverfahren - Teil 12: Widerstand gegen Ritzen

Tôles prélaquées - Méthodes d'essais - Partie 12: Résistance à la rayure

Ta slovenski standard je istoveten z: EN 13523-12:2004

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ICS:

25.220.60 Organske prevleke Organic coatings

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 13523-12

November 2004

ICS 25.220.60

English version

Coil coated metals - Test methods - Part 12: Resistance to scratching

Tôles prélaquées - Méthodes d'essais - Partie 12:
Résistance à la rayure

Bandbeschichtete Metalle - Prüfverfahren - Teil 12:
Widerstand gegen Ritzen

This European Standard was approved by CEN on 23 September 2004.

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, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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

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

EN 13523-12:2004 (E)

Foreword

This document (EN 13523-12:2004) 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 May 2005, and conflicting national standards shall be withdrawn at the latest by May 2005.

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, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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1 Scope

This part of EN 13523 describes the procedure for determining the resistance of an organic coating on a metallic substrate to penetration by scratching with a needle.

It is possible that with some aluminium alloys and thin gauge steel substrate below 0,4 mm, that rather than scratching, the needle will deform the substrate. Under these conditions this test method is not applicable.

Soft coatings such as poly vinyl chloride (PVC) and structured coatings will not give a precise result due to the soft nature of the coating and/or the potential for the needle to snag.

The method is not applicable to conductive coatings.

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

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

EN ISO 1518, *Paints and varnishes — Scratch test (ISO 1518:1992)*.

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3 Terms and definitions

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

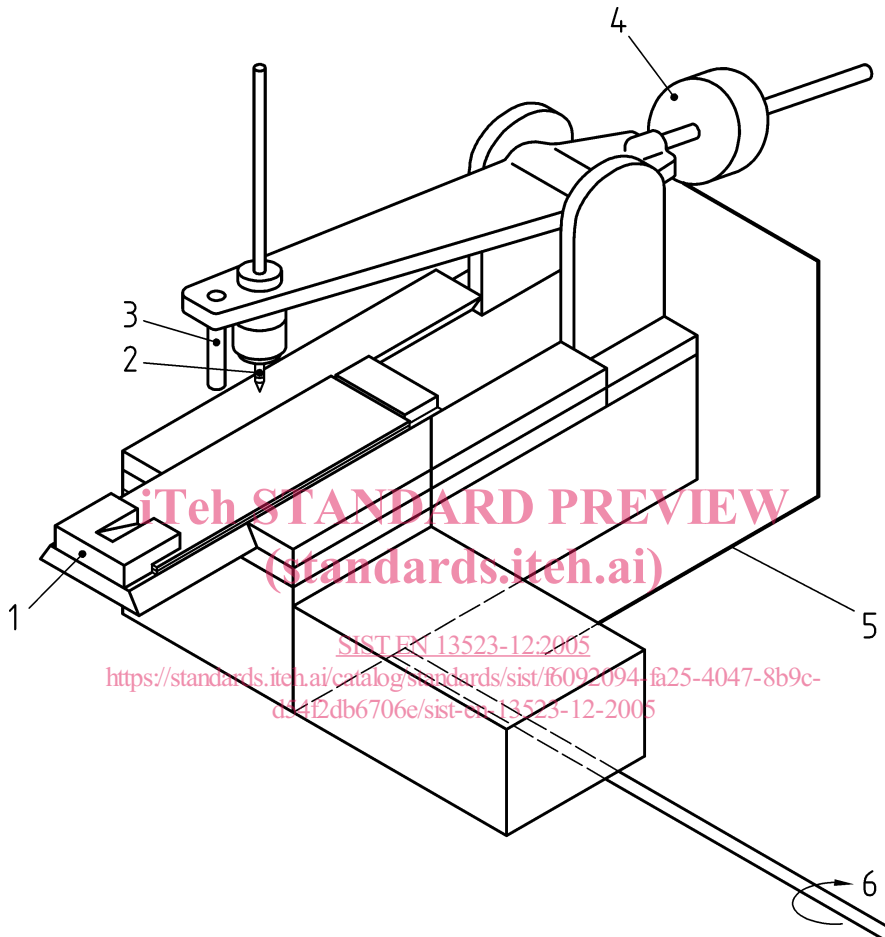
4 Principle

The organic coating is tested by mechanical means whereby a test panel is dragged beneath a needle upon which a specified load is placed.

5 Apparatus

5.1 Scratch apparatus (see EN ISO 1518). The apparatus is shown in Figure 1. It consists of a sliding table, which holds the test panel, with an arm on which the load is placed over a chuck, which holds the needle, a constant speed motor to drive the table and a low voltage electrical meter to detect electrical contact.

Other arrangements which give a similar performance may be used.



Key

- 1 Panel in test panel holder with sloping ramp
- 2 Needle
- 3 Rod which allows the needle to lower gently onto the tested surface
- 4 Counterweight
- 5 Electrical connection with indicator for detecting scratch penetration to a metallic substrate
- 6 Drive from constant-speed motor

Figure 1 — Scratch apparatus

5.2 Needle that can be fixed on the apparatus. The tip of the needle is a small sphere ($1 \pm 0,05$) mm in diameter of hardened steel or tungsten carbide, the latter giving a longer serviceable life.

NOTE In the case of a needle with a tip of hardened steel, the needle should be used only once and then disposed of or re-tipped.

6 Sampling

See 13523-0.

7 Test panels

See 13523-0.

The test panel to be tested shall be flat and typically 75 mm × 150 mm, although size may vary depending on the apparatus.

8 Procedure

8.1 Test conditions

Measure the resistance to scratching of the organic coating at ambient conditions. For more accurate measurements, as required for instance in case of dispute, the temperature shall be $(23 \pm 2) ^\circ\text{C}$ or any other temperature agreed upon and the relative humidity shall be $(50 \pm 5) \%$, in accordance with EN 23270.

8.2 Determination

Clamp the test panel onto the sliding table, using the screw clamps on the apparatus, the long edge being in the direction in which the scratch is to be made. The surface to be tested shall be facing up.

Place the needle in the chuck. It is important that the needle tip is checked for damage and that any debris is removed. This should be carried out prior to every scratch.

Adjust the position of the counterweight so that the rod is just in contact with the sample holder on top of the ramp. Place the specified load on the spindle. Put the apparatus into the scratch mode and start the test.

The minimum length of the travel shall be 50 mm.

The penetration of the coating will be indicated by the detection of an electrical current when the needle makes contact with the metallic substrate.

If the test method is to be used as a pass or fail method, this procedure shall be carried out 3 times with the same load at different positions on the test panel.

This procedure can be repeated after increasing the load until penetration of the coating to the metallic substrate takes place.

NOTE It is essential that the movement is smooth with no heavy downward or lateral movement.

9 Expression of results

The result shall be expressed either by a pass or fail with a specified load or by the load just prior to penetration, in which case the result shall be the arithmetic mean of three measurements.

10 Precision

No precision data are available.

EN 13523-12:2004 (E)**11 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 (EN 13523-12);
- c) the temperature at which the test was carried out;
- d) the result of the test, as indicated in clause 9;
- e) any deviation from the test method specified;
- f) the date of the test.

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