



SLOVENSKI STANDARD
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Prevljučene kovine, ki se navijajo - Preskusne metode - 13. del: Odpornost proti pospešenemu staranju pri povišani temperaturi

Coil coated metals - Test methods - Part 13: Resistance to accelerated ageing by the use of heat

Bandbeschichtete Metalle - Prüfverfahren - Teil 13: Beständigkeit gegen beschleunigte Alterung durch Wärmeeinwirkung

Tôles prélaquées - Méthodes d'essai - Partie 13: Résistance au vieillissement accéléré par la chaleur

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ICS:

17.040.20	Lastnosti površin	Properties of surfaces
25.220.60	Organske prevleke	Organic coatings

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English Version

Coil coated metals - Test methods - Part 13: Resistance to accelerated ageing by the use of heat

Tôles prélaquées - Méthodes d'essai - Partie 13:
Résistance au vieillissement accéléré par la chaleur

Bandbeschichtete Metalle - Prüfverfahren - Teil 13:
Beständigkeit gegen beschleunigte Alterung durch
Wärmeinwirkung

This draft European Standard is submitted to CEN members for formal vote. It has been drawn up by the Technical Committee CEN/TC 139.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

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Foreword

This document (FprEN 13523-13:2014) has been prepared by Technical Committee CEN/TC 139 “Paints and varnishes”, the secretariat of which is held by DIN.

This document is currently submitted to the Formal Vote.

This document will supersede EN 13523-13:2001.

The main technical changes are:

- a) in 9.2.1 the preparation of test specimen was made optional for the case that no prepared test specimens are available;
- b) in 9.2.5 and 9.2.6 the measurement of adhesion was made optional;
- c) in 9.3.2 the time before bending was specified;
- d) the supplementary information in the former Annex A were integrated in the test report.

EN 13523, *Coil coated metals — Test methods*, consists of the following parts:

- *Part 0: General introduction*
- *Part 1: Film thickness*
- *Part 2: Gloss*
- *Part 3: Colour difference — Instrumental comparison*
- *Part 4: Pencil hardness*
- *Part 5: Resistance to rapid deformation (impact test)*
- *Part 6: Adhesion after indentation (cupping test)*
- *Part 7: Resistance to cracking on bending (T-bend test)*
- *Part 8: Resistance to salt spray (fog)*
- *Part 9: Resistance to water immersion*
- *Part 10: Resistance to fluorescent UV radiation and water condensation*
- *Part 11: Resistance to solvents (rubbing test)*
- *Part 12: Resistance to scratching*
- *Part 13: Resistance to accelerated ageing by the use of heat*
- *Part 14: Chalking (Helmen method)*
- *Part 15: Metamerism*
- *Part 16: Resistance to abrasion*

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- *Part 17: Adhesion of strippable films*
- *Part 18: Resistance to staining*
- *Part 19: Panel design and method of atmospheric exposure testing*
- *Part 20: Foam adhesion*
- *Part 21: Evaluation of outdoor exposed panels*
- *Part 22: Colour difference — Visual comparison*
- *Part 23: Resistance to humid atmospheres containing sulfur dioxide*
- *Part 24: Resistance to blocking and pressure marking*
- *Part 25: Resistance to humidity*
- *Part 26: Resistance to condensation of water*
- *Part 27: Resistance to humid poultice (Cataplast test)*
- *Part 29: Resistance to environmental soiling (Dirt pick-up and striping)*

1 Scope

This Part of EN 13523 specifies the procedure for determining the behaviour of an organic coating on a metallic substrate when submitted to accelerated ageing by heating at a defined temperature for a defined period of time.

It is not possible to test heat resistance in such a way as to control all possible conditions of use. The aim of this test is therefore to furnish the basic test method for the effect of heat.

Special applications might require that properties other than those mentioned in this Part of EN 13523 be checked. The test(s) to be done should then be agreed between the interested parties.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

prEN 13523-0:2013, *Coil coated metals — Test methods — Part 0: General introduction*

EN 13523-2, *Coil coated metals — Test methods — Part 2: Gloss*

EN 13523-3, *Coil coated metals — Test methods — Part 3: Colour difference - Instrumental comparison*

prEN 13523-7:2013, *Coil coated metals — Test methods — Part 7: Resistance to cracking on bending (T-bend test)*

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

EN 60454-2, *Pressure-sensitive adhesive tapes for electrical purposes — Part 2: Methods of test (IEC 60454-2)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in prEN 13523-0:2013 apply.

4 Principle

A test specimen is subjected to an elevated temperature during a defined period of time. Certain physical properties of the test specimen are then compared to those of a reference specimen which has been kept during the same period of time in ambient conditions of temperature.

5 Required supplementary information

For any particular application, the test method specified in this Part of EN 13523 needs to be completed by supplementary information. The items of supplementary information are given in Annex A.

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6 Apparatus and materials

- 6.1 Air circulation oven**, capable of being maintained at the chosen test temperature to $\pm 5\%$ (in °C).
- 6.2 Apparatus as described in** EN 13523-2, EN 13523-3 and EN 13523-7.
- 6.3 Transparent pressure-sensitive adhesive tape**, 25 mm wide, with an adhesion strength of (10 ± 1) N per 25 mm width when tested in accordance with EN 60454-2.

7 Sampling

See EN 13523-0.

8 Test specimens

See EN 13523-0.

Two sets of specimens shall be taken: one set for the ageing tests and one set as reference specimens.

Test and reference specimens shall be taken from the same precoated sheet of coil coated metal in order to ensure a precise assessment of the property being evaluated.

The number and size of all specimens shall be such that all required tests can be carried out. See 9.1.1, 9.2.2 and 9.3.1 respectively.

9 Procedure

9.1 Procedure using flat specimens

9.1.1 Select two specimens for each test.

9.1.2 Place one specimen, the reference specimen, in the ambient storage conditions. For more accurate tests, as required for instance in case of dispute, the ambient temperature shall be (23 ± 2) °C and the relative humidity $(50 \pm 5)\%$, in accordance with EN 23270.

9.1.3 Subject the other specimen, the test specimen, to accelerated ageing in the air circulation oven (6.1) at the specified or agreed test temperature and for the specified or agreed period of time (see Annex A).

9.1.4 After the specified or agreed period of time remove the test specimen from the oven and condition it for at least 16 h under conditions as specified in 9.1.2.

9.1.5 Measure the gloss and colour of both the reference specimen and the aged test specimen, using the same apparatus and following the procedures described in EN 13523-2 and EN 13523-3 respectively. Calculate the gloss and colour differences.

9.2 Procedure using specimens that are to be aged after bending

9.2.1 If not otherwise agreed, select and bend specimens as described in EN 13523-7, i.e. by using the minimum bending radius that the material can tolerate without cracking being visible at $\times 10$ magnification.

Assuming that $T_a = a$, where a represents the minimum radius and t the thickness of the substrate, prepare two sets of five specimens and bend them according to the following radii: