

Coil coated metals - Test methods - Part 6: Adhesion
after indentation (cupping test)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 13523-6:2020 sisaldab Euroopa standardi EN 13523-6:2020 ingliskeelset teksti.	This Estonian standard EVS-EN 13523-6:2020 consists of the English text of the European standard EN 13523-6:2020.
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English Version

Coil coated metals - Test methods - Part 6: Adhesion after indentation (cupping test)

Tôles prélaquées - Méthodes d'essai - Partie 6 :
Adhérence après indentation (essai d'emboutissage)

Bandbeschichtete Metalle - Prüfverfahren - Teil 6:
Haftfestigkeit nach Eindrücken (Tiefungsprüfung)

This European Standard was approved by CEN on 3 May 2020.

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European foreword

This document (EN 13523-6:2020) 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of an identical text or by endorsement, at the latest by December 2020, and conflicting national standards shall be withdrawn at the latest by December 2020.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 13523-6:2002.

The main changes are:

- a) the period of ageing has been changed from 1 h to agreement prior to the test (8.4);
- b) the time of ageing has been added to the test report;
- c) the text has been editorially revised and the normative references have been updated.

The EN 13523 series, *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*
- *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 (Cataplasma test)*
- *Part 29: Resistance to environmental soiling (Dirt pick-up and striping)*

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

1 Scope

This document defines terms of the procedure for determining the adhesion of an organic coating to a metallic substrate after indentation produced by slow deformation.

The resistance to cracking can also be evaluated.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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, *Coil coated metals — Test methods — Part 0: General introduction*

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

EN 60454-2, *Specification for pressure-sensitive adhesive tapes for electrical purposes — Part 2: Methods of test*

EN ISO 1520, *Paints and varnishes — Cupping test (ISO 1520)*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

4 Principle

The test specimen is cross-hatched with a cutting tool and is then deformed by pressing under specified conditions. After pressing, the test specimen can be artificially aged by immersion in boiling water.

5 Apparatus and materials

5.1 Cross-hatching device

A single-bladed knife, very sharp to avoid any burrs. For coatings less than 60 µm in thickness, it is also possible to use a purpose-made cutting tool, capable of making a minimum of six parallel cuts.

5.2 Pressing device

Apparatus in accordance with EN ISO 1520, consisting essentially of:

- a) a steel die, of inside diameter $(27 \pm 0,05)$ mm, its contact surface with the test specimen being flat and polished;
- b) a retaining ring, having its flat and polished surface in contact with the test specimen;
- c) an indenter consisting of a polished steel sphere, of diameter $(20 \pm 0,05)$ mm with a maximum of 0,1 mm displacement from the axis of the die;
- d) a system, preferably hydraulic, allowing movement of the indenter at a speed of (12 ± 6) mm/min.