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**Prevlečene kovine, ki se navijajo - Preskusne metode - 17. del: Oprijemljivost
zaščitnih folij**

Coil coated metals - Test methods - Part 17: Adhesion of strippable films

Bandbeschichtete Metalle - Prüfverfahren - Teil 17: Haftfestigkeit von abziehbaren Folien

Tôles prélaquées - Méthodes d'essai - Partie 17 : Adhérence des films pelables

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English Version

Coil coated metals - Test methods - Part 17: Adhesion of strippable films

Tôles prélaquées - Méthodes d'essai - Partie 17 :
Adhérence des films pelables

Bandbeschichtete Metalle - Prüfverfahren - Teil 17:
Haftfestigkeit von abziehbaren Folien

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

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

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European foreword

This document (prEN 13523-17:2018) 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 CEN Enquiry.

This document will supersede EN 13523-17:2011.

The main changes are:

- a) tolerances have been added to the panel sizes;
- b) 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*

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- *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 (Cataplasm test)*
- *Part 29: Resistance to environmental soiling (Dirt pick-up and striping)*

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1 Scope

This part of the EN 13523 series specifies two methods for determining the numerical evaluation of the adhesion of strippable films which have previously been applied to an organic coating on a metallic substrate.

Samples can be tested irrespective of whether the strippable film has been applied in the laboratory or on the production line.

NOTE Method 1 is preferred for films with adhesive and method 2 for films without adhesive.

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)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13523-0 and the following 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 <http://www.iso.org/obp>

3.1

strippable film

plastics film applied to the coated surface in order to afford a temporary protection against mechanical damage

Note 1 to entry: Strippable film is also referred to as protection foil.

4 Principle

The force necessary to peel a film of fixed width from the surface of a coil coated material, at a defined angle and speed, is determined using appropriate instruments.

5 Apparatus

5.1 For method 1

5.1.1 Hydraulic or electronic dynamometer with:

- a movable jaw speed of (300 ± 30) mm/min;
- a measuring scale usually reading from 0 N to 10 N;

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- a traction meter set so that the force required to strip the film lies between 15 % and 85 % of the measuring scale.

5.1.2 Cutting tool (e.g. a sharp knife).

5.1.3 Ruler.

5.2 For method 2

5.2.1 Spring balance (cylinder dynamometer) with a scale of up to 10 N.

5.2.2 Cutting tool (e.g. a sharp knife).

5.2.3 Ruler.

6 Sampling

Shall be in accordance with EN 13523-0.

7 Test panels

Shall be in accordance with EN 13523-0.

8 Procedure**8.1 Panel preparation****8.1.1 Self-adhesive strippable film**

When self-adhesive strippable film is applied in the laboratory, observe the following requirements:

- Store the roll of film before use for a minimum of 24 h at ambient temperature and humidity. For more accurate measurements, as required for instance in case of dispute, the temperature shall be $(23 \pm 2) ^\circ\text{C}$ and relative humidity $(50 \pm 5) \%$, in accordance with EN 23270. Apply the film under these conditions.
- Apply the film to the surface of the test samples immediately after it has been uncoiled from the roll; take every care to avoid folds and blisters; press the film into place in the first instance by finger-tip pressure only.
- Use a cylindrical metal roller, rubber-covered to approximately 80° Shore, with a minimum diameter of 50 mm and a pressure of 2,0 N/mm width to press down the film, the metal roller being made to travel twice in a longitudinal direction over and back across the film surface; speed of travel shall be as close as practicable to 10 mm/s; no additional pressure shall be exerted on the test panel surface.

Measure adhesion values (10 ± 1) min after the film has been applied.

Measure the adhesion of the strippable film at ambient conditions. For more accurate measurements, as required for instance in case of dispute, the temperature shall be $(23 \pm 2) ^\circ\text{C}$ and relative humidity $(50 \pm 5) \%$ in accordance with EN 23270.

8.1.2 Non-adhesive strippable film

When non-adhesive strippable film is applied in the laboratory, heat the substrate before application to a temperature specified by the film supplier.

After application of the strippable film, cool down the sample in a way as close as possible to the production line conditions.

8.2 Determination

8.2.1 Method 1

Prepare five samples of dimensions 200 mm × 60 mm. The 200 mm edge should be cut in the rolling direction (see 1 in Figure 1).

Cut through the strippable film with a cutting tool approximately 10 mm from each long edge and along the full length of each panel. Remove the film along both edges leaving (40 ± 1) mm of film along the centre of the samples.

Make five reference marks on each long edge of the samples at intervals of 30 mm, the first 50 mm from one end (end *c*). The marks shall be 5 mm long, neither touching nor damaging the film (see Figure 1).

Detach by hand not more than 25 mm of film from end *c* perpendicular to the surface of the sample.

Clamp the bared end (*c*) of the sample in one jaw of the dynamometer.

Fold the detached film back by 180 degrees and clamp in the other jaw so that the film surfaces are accurately aligned without touching.

Start the dynamometer at a speed of (300 ± 30) mm/min ensuring that the removed film moves parallel to, and does not touch, the film remaining on the sample (no friction between film surfaces).

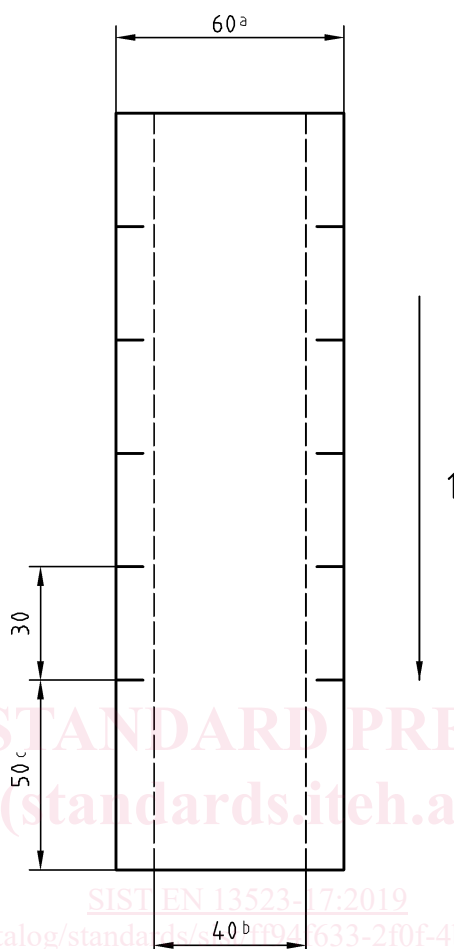
As the point of contact between film and sample reaches a reference point, the force indicated on the dynamometer scale shall be recorded.

Carry out the test on all five samples.

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Approximate dimensions in millimetres

**Key**

- 1 rolling direction
- ^a sheet
- ^b film
- ^c first reference mark

Figure 1 — Position of the marks**8.2.2 Method 2**

Prepare a sample of dimensions 150 mm × 200 mm. The 150 mm edge should be cut in the rolling direction (see 1 in Figure 2).

Cut through the strippable film with a cutting tool approximately 25 mm from and parallel to a short edge. Make five further cuts parallel to the first cut at 30 mm intervals. Remove the film at both edges leaving five strips of (30 ± 1) mm (see Figure 2).

Detach by hand not more than 55 mm of one end of the first strip of film.

Clamp the detached end of the film strip to the spring balance. Hold down the sample and peel off the film by raising the spring balance perpendicular to the sample surface at a constant speed so that a steady reading is obtained. Record the reading indicated on the spring balance.

Repeat the test on the remaining strips.