



**SLOVENSKI STANDARD**  
**SIST EN 13523-20:2012**

**01-februar-2012**

**Nadomešča:**  
**SIST EN 13523-20:2005**

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**Kovine, prevlečene v svitkih - Preskusne metode - 20. del: Oprijemljivost pene**

Coil coated metals - Test methods - Part 20: Foam adhesion

Bandbeschichtete Metalle - Prüfverfahren - Teil 20: Haftfestigkeit von Schaum

Tôles prélaqués - Méthodes d'essais - Partie 20: Adhérence des mousses  
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**Ta slovenski standard je istoveten z: EN 13523-20:2011**

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**ICS:**

25.220.60      Organske prevleke      Organic coatings

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 13523-20**

December 2011

ICS 25.220.60

Supersedes EN 13523-20:2004

English Version

**Coil coated metals - Test methods - Part 20: Foam adhesion**

Tôles prélaquées - Méthodes d'essai - Partie 20:  
Adhérence des mousses

Bandbeschichtete Metalle - Prüfverfahren - Teil 20:  
Haftfestigkeit von Schaum

This European Standard was approved by CEN on 15 October 2011.

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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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

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## Foreword

This document (EN 13523-20:2011) 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 June 2012, and conflicting national standards shall be withdrawn at the latest by June 2012.

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

This document supersedes EN 13523-20:2004.

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

- *Part 0: General introduction and list of test methods;*
- *Part 1: Film thickness;*
- *Part 2: Specular 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;*

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**EN 13523-20:2011 (E)**

- *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: Colour stability in 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).*

The main technical changes are:

- The description of the foam is updated;
- The description of scraping tool is clarified.

According to the CEN/CENELEC Internal Regulations, the national standards organizations 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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

## 1 Scope

This European Standard describes a laboratory method for testing foam adhesion to an organic coating on a metallic substrate under dry and wet conditions.

## 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*

## 3 Terms and definitions

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

## 4 Material

### 4.1 Foam.

Organic insulation material created by mixing polyols and isocyanates to make (for example) polyurethane (PUR) or polyisocyanurate (PIR) foams.

Mixing and handling of foams shall be carried out in line with the foam manufacturer's recommendations.

NOTE In the industrial process of sandwich panel manufacture, the constituent liquids of the foam are mixed just prior to application, which then expand rapidly to fill the gap between two outward facing sheets of coated metal, usually in a continuous process.

## 5 Principle

The foam adhesion is tested by pulling off the foam from the coil coated metal sheet.

The test has only two possible results: "passed" or "failed".

## 6 Apparatus

Ordinary laboratory apparatus and glassware, together with the following:

**6.1 Humidity cabinet** capable of being maintained at 100 % relative humidity at a temperature of  $(40 \pm 2)$  °C.

## 7 Sampling

See EN 13523-0.

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## EN 13523-20:2011 (E)

### 8 Test specimens

See EN 13523-0 for preparation and conditioning of test panels.

### 9 Procedure

#### 9.1 Preparation

Cut the samples of coated metal sheet into workable pieces.

Mix the components of the foam together in a blender, according to the supplier's specification (for example 20 g polyol and 26 g isocyanate, during 10 s).

Pour a small quantity of the mixture over the surface to be tested. As the mixture reacts immediately, the application of the mixture shall be done within 20 s after mixing, unless otherwise specified by the supplier.

After the application, leave the samples under ambient conditions, for 30 min to 40 min or as otherwise specified, before testing as described below.

#### 9.2 Adhesion testing

##### 9.2.1 Dry adhesion

9.2.1.1 Pull off the polymerised foam (by hand) from one sample.

9.2.1.2 If at the coating/foam interface none of the original coating surface is revealed, a second sample shall be held at room temperature for 24 h. Pull off the polymerised foam (by hand) from this sample. Lightly scrape the remaining foam layer with typically a blunt knife or finger nail. If this scraping cannot reveal the original coating, dry adhesion is reported as "passed".

##### 9.2.2 Wet adhesion

9.2.2.1 Put a sample prepared as described in 9.1 in boiling water for 1 h. After removal of excess water, pull off the foam (by hand).

9.2.2.2 If at the coating/foam interface none of the original coating surface is revealed after the boiling test, put a second sample as described in 9.1 in the humidity cabinet (100 % relative humidity at 40 °C) for 24 h. After removal of excess water, pull off the foam (by hand). If at the coating/foam interface none of the original coating surface is revealed, wet adhesion is reported as "passed".

### 10 Expression of results

The results shall be expressed either by "passed" if both dry and wet adhesion tests passed or by "failed" indicating at which step the adhesion test failed.

### 11 Precision

No precision data are currently available.



## 12 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 13523-20);
- c) specification of the foam components;
- d) result of the test, as indicated in clause 10;
- e) any deviation from the test method specified;
- f) date of the test.

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