SLOVENSKI STANDARD
SIST EN 13523-7:2021

01-december-2021

Nadomešča:
SIST EN 13523-7:2014

Prevlečene kovine, ki se navijajo - Preskusne metode - 7. del: Odpornost proti pokanju pri upogibu (T-upogibni preskus)

Coil coated metals - Test methods - Part 7: Resistance to cracking on bending (T-bend test)

Bandbeschichtete Metalle - Prüfverfahren - Teil 7: Widerstandsfähigkeit gegen Rissbildung beim Biegen (T-Biegeprüfung)

Tôles prélaquées - Méthodes d'essai - Partie 7: Résistance à la fissuration par pliage (essai de pliage en T)

Ta slovenski standard je istoveten z: **EN 13523-7:2021**

ICS:

17.040.20	Lastnosti površin	Properties of surfaces
25.220.60	Organske prevleke	Organic coatings

SIST EN 13523-7:2021 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13523-7

October 2021

ICS 25.220.60

Supersedes EN 13523-7:2014

English Version

Coil coated metals - Test methods - Part 7: Resistance to cracking on bending (T-bend test)

Tôles prélaquées - Méthodes d'essai - Partie 7: Résistance à la fissuration par pliage (essai de pliage en T)

Bandbeschichtete Metalle - Prüfverfahren - Teil 7: Widerstandsfähigkeit gegen Rissbildung beim Biegen (T-Biegeprüfung)

This European Standard was approved by CEN on 16 August 2021.

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, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents

Page

European foreword

This document (EN 13523-7:2021) 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 April 2022, and conflicting national standards shall be withdrawn at the latest by April 2022.

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 13523-7:2014.

The main changes are:

a) a requirement concerning the minimum width of the test specimen was added to Clause 7;

b) the list of the existing parts of EN 13523 has been updated;

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 and metamerism — 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 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 (Cataplasm test)*

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

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

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 specifies the procedure for determining the resistance to cracking of an organic coating on a metallic substrate when bent through 135° to 180°. The degree of adhesion can also be evaluated.

Both folding and mandrel methods are considered. The folding method is more often used for practical purposes but where more precise determinations are required, the mandrel method is the preferred method.

The cylindrical bend method can also be used for a pass/fail decision by using an agreed mandrel.

The choice of the appropriate test method is limited by the thickness and/or the hardness of the substrate.

The feasibility of the test depends on the type and thickness of the substrate. During the procedure, the mandrel is not intended to deform.

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 13523-0:2021, *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, *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 EN 13523-0 and the following apply.

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

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
metal thickness
total thickness of the substrate including any metallic coating and excluding any organic coating

4 Principle

The coated test specimen is bent parallel to the direction of rolling through 135° to 180° over a period of 1 s to 2 s around various radii with the coating on the outside of the bend.

Close contact is maintained between the test specimen and either the wedge or mandrel to ensure a uniform bend.

Any bending device allowing the required smooth and uniform bending may be used.

The minimum bending radius to which the test specimen can be bent without cracking of the organic coating determines the resistance to cracking on bending through 135° to 180°.

The minimum bending radius to which the test specimen can be bent without loss of adhesion determines the resistance to loss of adhesion on bending through 135° to 180°.

5 Apparatus

Ordinary laboratory apparatus, together with the following:

5.1 Bending device

5.1.1 For the folding method:

Vice or suitable bend forming apparatus as shown in Figure 1.

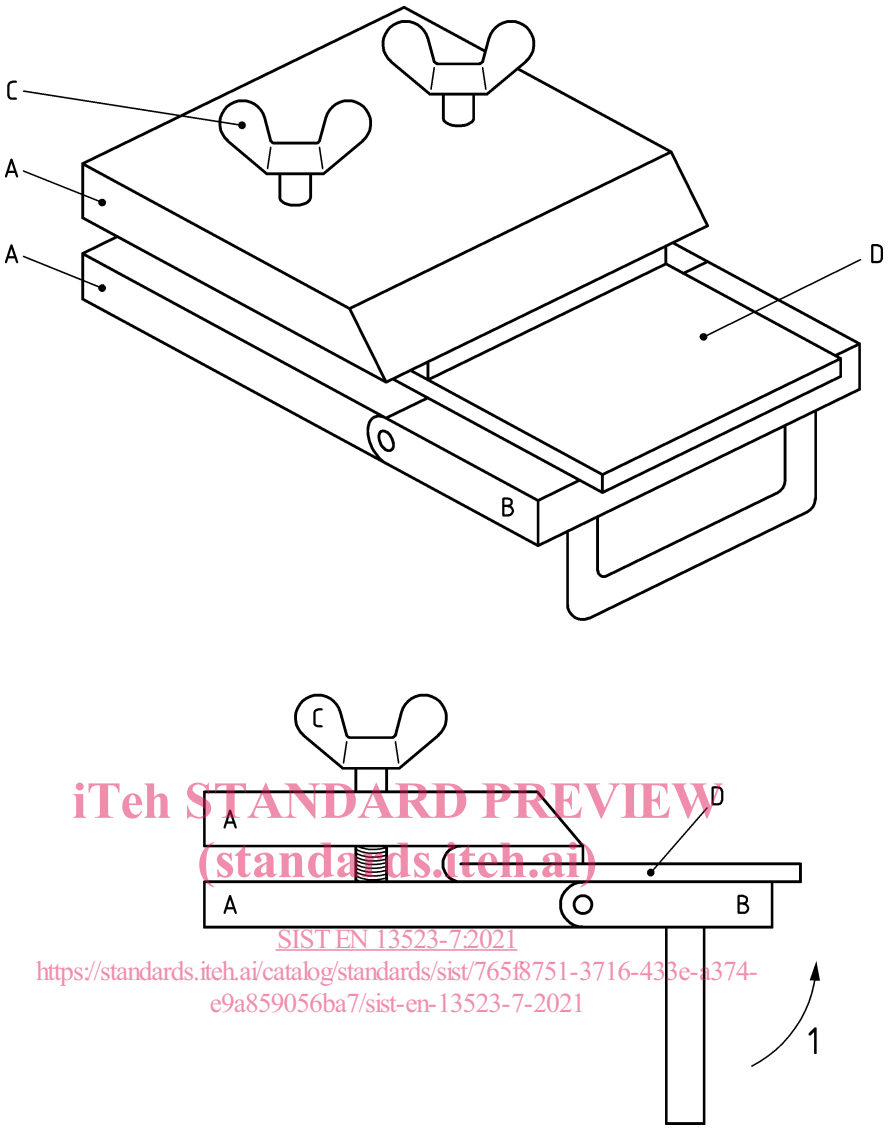
5.1.2 For the mandrel method:

Bending device, appropriate to the metal thickness, hardness, and panel size:

— cylindrical mandrel: see Figure 2;

— conical mandrel: see Figure 3;

— conical wedge mandrel: see Figure 4; the conical wedge mandrel may be driven manually (see Figure 5) or pneumatically (see Figure 6).



Key

A	apparatus jaws
B	bending plate
C	clamping screws
D	test specimen
1	direction of movement

Figure 1 — Practical test (P) – folding method

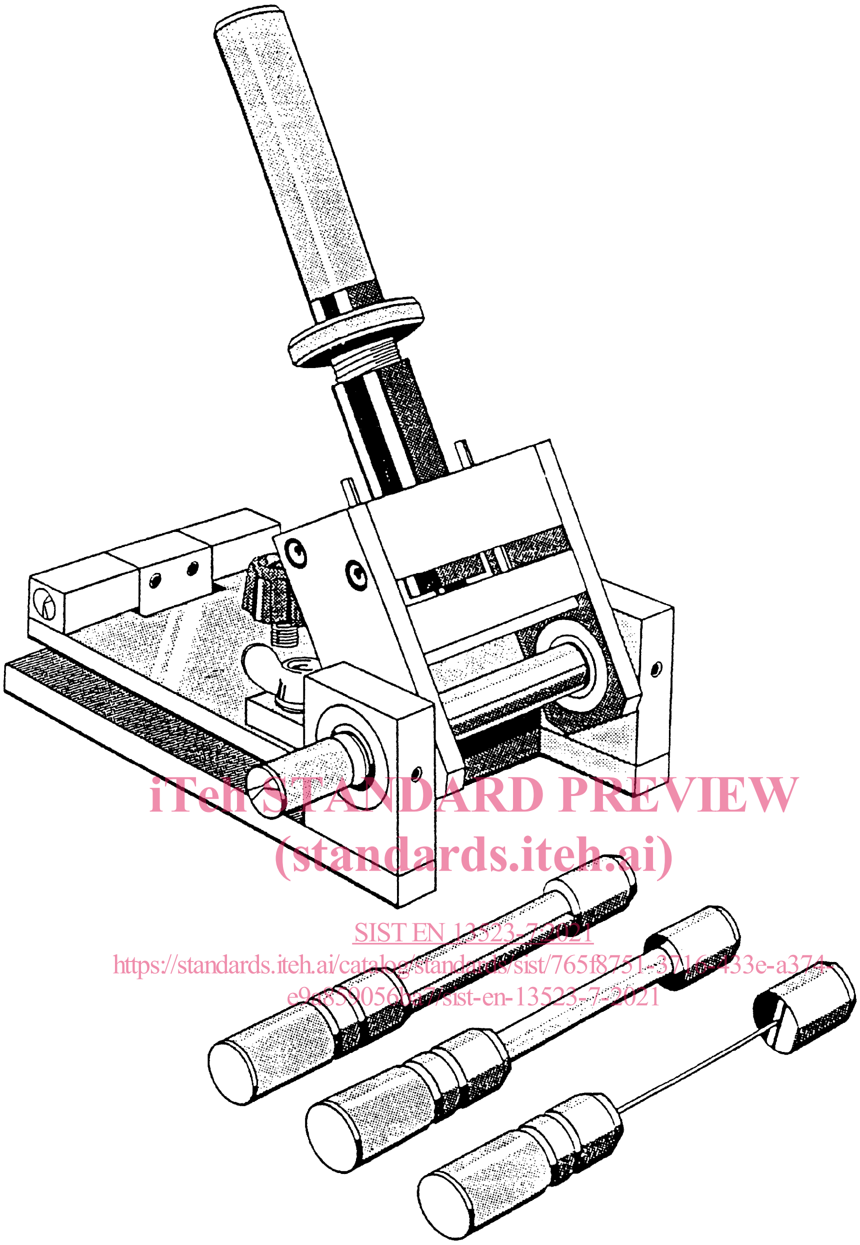


Figure 2 — Laboratory test (L) – cylindrical bend