



SLOVENSKI STANDARD

oSIST prEN 13523-8:2016

01-julij-2016

Prevlečene kovine, ki se navijajo - Preskusne metode - 8. del: Odpornost proti slani megli

Coil coated metals - Test methods - Part 8: Resistance to salt spray (fog)

Bandbeschichtete Metalle - Prüfverfahren - Teil 8: Beständigkeit gegen Salzsprühnebel

Tôles prélaquées - Méthodes d'essais - Partie 8 : Résistance au brouillard salin

Ta slovenski standard je istoveten z: prEN 13523-8

ICS:

25.220.60 Organske prevleke Organic coatings

oSIST prEN 13523-8:2016

en

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN 13523-8

June 2016

ICS 25.220.60

Will supersede EN 13523-8:2010

English Version

Coil coated metals - Test methods - Part 8: Resistance to salt spray (fog)

Tôles prélaquées - Méthodes d'essais - Partie 8 :
Résistance au brouillard salin

Bandbeschichtete Metalle - Prüfverfahren - Teil 8:
Beständigkeit gegen Salzsprühnebel

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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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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European foreword

This document (prEN 13523-8:2016) 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 13523-8:2010.

The main changes compared to the previous edition are:

- a) definitions for the following terms were implemented from EN ISO 4628-8: holiday, artificial defect, circular defect, scribe, edge, corroded area, delaminated area;
- b) the term creep corrosion was changed to corrosion;
- c) use of a hole punch for application of the hole was added;
- d) EN ISO 4628-8 was introduced for the inspection of delamination and corrosion around the scribe;
- e) 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)*

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- *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)*

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Introduction

Pressure generated within a coil or a stack of sheets can affect the coating surface and cause marks of gloss transfer, plasticizer migration, etc. and even blocking/sticking.

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prEN 13523-8:2016 (E)**1 Scope**

This part of The EN 13523 series specifies the procedures for determining the resistance to salt spray (fog) of an organic coating on a metallic substrate (coil coating).

For steel, neutral salt spray (fog) is usually used, and for aluminium, acetic acid salt spray (fog).

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.

EN 10169:2010+A1:2012, *Continuously organic coated (coil coated) steel flat products — Technical delivery conditions*

EN 13523-0, *Coil coated metals - Test methods - Part 0: General introduction*

EN 13523-7:2014, *Coil coated metals — Test methods — Part 7: Resistance to cracking on bending (T-bend test)*

EN 13523-19:2011, *Coil coated metals — Test methods — Part 19: Panel design and method for atmospheric exposure testing*

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

EN ISO 3696, *Water for analytical laboratory use - Specification and test methods (ISO 3696)*

EN ISO 4628-2, *Paints and varnishes - Evaluation of degradation of coatings - Designation of quantity and size of defects, and of intensity of uniform changes in appearance - Part 2: Assessment of degree of blistering (ISO 4628-2)*

EN ISO 4628-8:2012, *Paints and varnishes - Evaluation of degradation of coatings - Designation of quantity and size of defects, and of intensity of uniform changes in appearance - Part 8: Assessment of degree of delamination and corrosion around a scribe or other artificial defect (ISO 4628-8:2012)*

EN ISO 9227:2012, *Corrosion tests in artificial atmospheres - Salt spray tests (ISO 9227)*

EN ISO 17872, *Paints and varnishes - Guidelines for the introduction of scribe marks through coatings on metallic panels for corrosion testing (ISO 17872)*

3 Terms and definitions

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

3.1**holiday**

absence of a paint film from certain areas of a coated substrate

[SOURCE: EN ISO 4628-8:2012, 3.1]

3.2

artificial defect

holiday through a coating, deliberately introduced in order to expose the underlying metal substrate prior to exposure to a corrosive environment

[SOURCE: EN ISO 4628-8:2012, 3.2]

3.2.1

circular defect

circular holiday through a coating, deliberately introduced in order to expose the underlying metal substrate prior to exposure in a corrosive environment

[Source: EN ISO 4628-8:2012, 3.3]

3.2.2

scribe

linear holiday through a coating, deliberately introduced in order to expose the underlying metal substrate prior to exposure in a corrosive environment

[SOURCE: EN ISO 4628-8:2012, 3.6]

3.2.3

edge

unprotected cut edge, deliberately introduced in order to expose the underlying metal substrate prior to exposure in a corrosive environment

3.3

corroded area

area around a defect where the substrate has been attacked by corrosion

[SOURCE: EN ISO 4628-8:2012, 3.4]

3.4

delaminated area

area around a defect where loss of adhesion of a coating from a substrate or an underlying coating has occurred

[SOURCE: EN ISO 4628-8:2012, 3.5]

4 Principle

A test specimen is exposed to a salt spray (fog) for a specified period of time and assessed for possible corrosion expressed by a degree of delamination or corrosion and a degree of blistering.

5 Apparatus

Ordinary laboratory apparatus and glassware, together with the following:

5.1 Salt spray cabinet, in accordance with EN ISO 9227.

5.2 Test solution, as specified in 5.2.1 or 5.2.2 respectively.

5.2.1 For neutral salt spray fog, the test solution shall be prepared by dissolving sodium chloride in water of at least grade 3 purity, as defined in EN ISO 3696 to produce a concentration of (50 ± 5) g/l.

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The sodium chloride shall be white, of minimum assay 99,6 % (by mass), and substantially free from copper and nickel; it shall contain not more than 0,1 % (by mass) of sodium iodide. If the pH of the solution is outside the range 6,0 to 7,0, the presence of undesirable impurities in the salt or the water or both shall be investigated. The pH of the test solution shall be adjusted so that the pH of sprayed solution collected within the salt spray cabinet (5.1) is between 6,5 and 7,2. Any necessary adjustment to the pH shall be made by additions of solutions of either hydrochloric acid or sodium bicarbonate of analytical grade. (See also EN ISO 9227, NSS test.)

5.2.2 For acetic acid salt spray (fog), add a sufficient amount of glacial acetic acid to the sodium chloride solution (5.2.1) to ensure that the pH of sprayed solution collected within the salt spray cabinet (5.1) is between 3,1 and 3,3. If the pH of the solution initially prepared is 3,0 to 3,1, the pH of the sprayed solution is likely to be within the specified limits. (See also EN ISO 9227, AASS test.)

Under normal conditions, the level of glacial acetic acid required is approximately 0,3 % (by mass).

5.3 Cutting tool, with a hard metal tip having a radius or width capable of exposing at least 0,2 mm of metal substrate according to EN ISO 17872.

5.4 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.

5.5 Sharp drill bit or hole punch, of diameter approximately 5 mm for creating the hole.

5.6 Appropriate pressing (bending) apparatus, as described in EN 13523-19:2011, 5.2, or EN 13523-7:2014, 5.1.2.

6 Sampling

See EN 13523-0.

7 Test panels

7.1 General

See EN 13523-0.

Design of the panels:

There are two options (7.2 and 7.3), both having the following in common:

- the protection of edges is optional;
- if not otherwise specified, the edges of the exposed panels shall be sheared with the burrs away from the test surface;
- the reverse side shall be protected to stop any corrosive influence from the reverse side to the front side. The protection to the reverse side shall be applied before the drilling of the hole;
- the scribes shall be prepared by means of the cutting tool (5.3) and extend down just through the coating to the substrate. The scribed indentation shall expose at least 0,2 mm of metal substrate. If the substrate is zinc- or zinc-alloy coated steel, the scribe shall be to the zinc coating, and not down to the steel;

Special care shall be taken when preparing the scribe. Geometry and depth of the scribe can influence the testing results significantly.