SLOVENSKI STANDARD
oSIST prEN 13523-23:2022

01-september-2022

Prevlečene kovine, ki se navijajo - Preskusne metode - 23. del: Odpornost proti vlažni atmosferi, ki vsebuje žveplov dioksid

Coil coated metals - Test methods - Part 23: Resistance to humid atmospheres containing sulfur dioxide

Bandbeschichtete Metalle - Prüfverfahren - Teil 23: Beständigkeit gegen feuchte, Schwefeldioxid enthaltende Atmosphären

Tôles prélaquées - Méthodes d'essai - Partie 23 : Résistance à des atmosphères humides contenant du dioxyde de soufre

Ta slovenski standard je istoveten z: **prEN 13523-23**

ICS:

25.220.60	Organske prevleke	Organic coatings

oSIST prEN 13523-23:2022 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 13523-23

August 2022

ICS 17.180.20; 25.220.60

Will supersede EN 13523-23:2015

English Version

Coil coated metals - Test methods - Part 23: Resistance to humid atmospheres containing sulfur dioxide

Tôles prélaquées - Méthodes d'essai - Partie 23 : Résistance à des atmosphères humides contenant du dioxyde de soufre

Bandbeschichtete Metalle - Prüfverfahren - Teil 23: Beständigkeit gegen feuchte, Schwefeldioxid enthaltende Atmosphären

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

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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.

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.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.

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 **3**
Introduction **5**
1 Scope **6**
2 Normative references **6**
3 Terms and definitions **6**
4 Principle **6**
5 Apparatus **6**
6 Sampling **7**
7 Test specimens **7**
8 Procedure **7**
9 Expression of results **8**
10 Precision **8**
11 Test report **8**
Bibliography **9**

European foreword

This document (prEN 13523-23:2022) 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 13523-23:2015.

In comparison with the previous edition, the following technical modifications have been made:

a) the normative references have been updated;

b) the text has been editorially revised.

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)*

Introduction

Previous work by the European Coil Coating Association (ECCA) has established that this test method is not a reliable or reproducible test for assessing the degree of corrosion on coil coated products, but that the test method may be used to evaluate the colour fastness of coil coated products.

The procedure has been aligned with ISO 22479, except for the amount of sulfur dioxide.

1 Scope

This document describes the procedure for determining the resistance of an organic coating on a metallic substrate to humid atmospheres containing sulfur dioxide.

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 13523-3, *Coil coated metals - Test methods - Part 3: Colour difference and metamerism - Instrumental comparison*

EN 13523-22, *Coil coated metals - Test methods - Part 22: Colour difference - Visual comparison*

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 apply.

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

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

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

4 Principle

Test specimens are exposed to an atmosphere containing sulfur dioxide. The degree of colour change is measured or visually assessed. The degree of other types of degradation, e.g. spotting, streaking, loss of gloss, of the test specimen may also be assessed.

5 Apparatus

An apparatus consisting of an airtight cabinet of capacity (300 ± 10) l, in the base of which is a water-tight trough fitted with a means of heating the water so that it can raise the air temperature in the cabinet to (40 ± 3) °C in about 1 1/2 h and maintain this temperature for a total period of 8 h from the commencement of the test cycle.

The dimensions and design of the cabinet are not critical provided the stand for supporting the test panels is made of, or coated with an inert material and is of sufficient size to accommodate test specimens with a total surface area of (0,5 ± 0,1) m^2.

The cabinet shall also be constructed of an inert material and have a roof which prevents condensed moisture dripping onto the test specimens.

The cabinet shall be provided with a means of relieving excess pressure and a gas inlet pipe which shall be situated immediately above the water trough.

A gas cylinder or gas generating apparatus fitted with appropriate regulating and measuring apparatus to ensure the supply of the correct volume of sulfur dioxide.

The cabinet shall also be provided with a means of controlling the temperature which shall be measured in the space above the test specimens.

NOTE Some typical designs of apparatus are shown in ISO 22479:2019, Figure A.1.

6 Sampling

See EN 13523-0.

7 Test specimens

See EN 13523-0.

The test specimens shall be nominally 150 mm × 100 mm, unless otherwise specified or agreed.

The reverse face and edges of the panel shall be coated with a suitable protective material such as a lacquer or adhesive tape to prevent attack by the sulfur dioxide.

8 Procedure

Condition the test specimens for at least 24 h under ambient conditions of temperature and humidity. If required, for instance in case of dispute, conditioning shall be carried out at (23 ± 2) °C and a relative humidity of (50 ± 5) %, in accordance with EN 23270.

During this conditioning, the test specimens shall not be exposed to direct sunlight.

After conditioning, carry out the test procedure as soon as possible.

Set-up the testing apparatus (Clause 5) in an environment protected from draughts and direct sunlight.

Arrange the test specimens vertically in the test apparatus so that they are at least 100 mm from any wall or cover, at least 20 mm from each other and so that the lower edges of the specimens are at least 200 mm above the water. Where possible, arrange the test specimens at the same level for comparative tests. Care shall be taken to ensure that water condensed on upper specimens does not drip onto the lower specimens.

As the same volume of sulfur dioxide is introduced at each test cycle, the total surface area of the test specimens in the cabinet is important. For comparative tests, the total test specimen area in the cabinet should be the same.

Fill the trough with (2,0 ± 0,2) l of distilled or deionised water. Prior to each test cycle, drain and renew this distilled or deionised water.

After closing the apparatus, introduce (2,0 ± 0,2) l of sulfur dioxide into the test cabinet, switch on the heating appliance and raise the air temperature to (40 ± 3) °C in about 1 1/2 h. Maintain this temperature for a total period of 8 h from the commencement of the test cycle. At the end of this period, switch off the heating appliance and ensure the chamber is fully purged. Open the door completely or raise the hood of the apparatus to at least the height of the upper edges of the test specimens.

Leave the test specimens in the cabinet for a further 16 h. This constitutes one test cycle. Start a new cycle by changing the water and introducing fresh sulfur dioxide. Repeat for a total of 5 test cycles. Cycles shall be continuous and without interruption.

At the end of 5 test cycles, remove the test specimens from the cabinet, wash with clean water, blot with absorbent paper and immediately examine the whole test surface of each specimen for colour change using EN 13523-3 or EN 13523-22.

Measure or assess visually the degree of colour change. The degree of other types of degradation, e.g. spotting, streaking, loss of gloss, of the test specimen may also be assessed.

9 Expression of results

Express the result as the mean of the measurements taken or the visual difference in colour.

If specified, report observations on spotting, streaking, loss of gloss and any other degradation effects.

10 Precision

No precision data are currently available.

11 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 document, i.e. prEN 13523-23:2022;

c) the results of the test, as indicated in Clause 9;

d) any deviation from the test method specified;

e) any unusual features (anomalies) observed during the test;

f) the date of the test.