



# SLOVENSKI STANDARD SIST EN 12472:2021

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Nadomešča:

SIST EN 12472:2006+A1:2009

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**Metoda za simulacijo pospešene obrabe in korozije za zaznavanje sproščanja niklja iz prevlečenih predmetov**

Method for the simulation of accelerated wear and corrosion for the detection of nickel release from coated items

Simulierte Abrieb- und Korrosionsprüfung zum beschleunigten Nachweis der Nickelabgabe von mit Auflagen versehenene Gegenständen

Methode pour la simulation de accélérée de l'usure et de la corrosion pour la détermination du nickel libéré par les objets revêtus

**Ta slovenski standard je istoveten z: EN 12472:2020**

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**ICS:**

39.060          Nakit                                  Jewellery

**SIST EN 12472:2021**                                  en,fr,de

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

EN 12472

September 2020

ICS 39.060

Supersedes EN 12472:2005+A1:2009

English Version

Method for the simulation of accelerated wear and  
corrosion for the detection of nickel release from coated  
items

Méthode de simulation de l'usure et de la corrosion  
accéléérées pour la détermination de la teneur en nickel  
libéré par les objets revêtus

Simulierte Abrieb- und Korrosionsprüfung zum  
beschleunigten Nachweis der Nickelabgabe von mit  
Auflagen versehenen Gegenständen

This European Standard was approved by CEN on 24 May 2020.

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.

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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

<b>Contents</b>	<b>Page</b>
European foreword.....	3
Introduction .....	4
<b>1 Scope</b> .....	<b>5</b>
<b>2 Normative references</b> .....	<b>5</b>
<b>3 Terms and definitions</b> .....	<b>5</b>
<b>4 Principle</b> .....	<b>5</b>
<b>5 Reagents and materials</b> .....	<b>6</b>
5.1 General.....	6
5.2 Corrosion.....	6
5.2.1 Container.....	6
5.2.2 Corrosive medium .....	6
5.2.3 Degreasing solution.....	6
5.2.4 Deionized water.....	6
5.2.5 Laboratory oven .....	6
5.3 Wear.....	6
5.3.1 Tumbling barrel and retaining assembly.....	6
5.3.2 Wear test apparatus.....	7
5.3.3 Abrasive paste.....	7
5.3.4 Granules.....	8
5.3.5 Wear medium .....	8
6 Procedure.....	8
6.1 Article preparation.....	8
6.2 Corrosion procedure.....	8
6.3 Wear procedure.....	8
6.3.1 Preparation of wear medium.....	8
6.3.2 Attachment of test parts .....	9
6.3.3 Tumbling .....	9
6.4 Determination of nickel release .....	9
7 Test report.....	9
<b>Annex A (informative) Detailed examples of how to attach different types of test parts</b> .....	<b>10</b>
A.1 General.....	10
A.2 Attachment of test parts with only one side in contact with the skin .....	10
A.3 Spectacle frames and sunglasses.....	10
A.4 Chains, watches, bracelets, rings etc. ....	14
<b>Bibliography</b> .....	<b>16</b>

## European foreword

This document (EN 12472:2020) has been prepared by Technical Committee CEN/TC 347 “Methods for analysis of allergens”, the secretariat of which is held by SNV.

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 March 2021, and conflicting national standards shall be withdrawn at the latest by March 2021.

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 12472:2005+A1:2009.

This document includes the revised text of EN 12472:2005+A1:2009, as well as the changes proposed by CEN/TC 170 regarding spectacle frames and sunglasses.

The major changes are:

- reference to Regulation (EC) No 1907/2006 (REACH) instead of Directive 94/27/EC;
- use of the term article instead of items, in order to adopt the use of terms in the REACH Regulation;
- update of normative references;
- clarification of articles covered by the scope of this document;
- clarification of concentration of the lactic acid stock solution;
- requirements for granules have been changed;
- A.3 regarding spectacle frames has been updated;
- the document has been editorially updated.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

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.

**EN 12472:2020 (E)****Introduction**

The wear and corrosion of objects in contact with the skin depends very much on the composition, environment, and shape of the article and the activities of the person concerned. This procedure attempts to simulate the wear and corrosion on a coated article during two years of normal use. By its nature this is a pragmatic solution to the problems posed by the evaluation of coated articles in contact with the skin, which may be subject to several kinds and varying degrees of wear.

In order to show compliance with the Commission Regulation (EC) No 1907/2006 (REACH) of the European Parliament and the Council in the current version, articles should be tested in accordance with the appropriate European harmonized standard(s), the references of which have been published by the European Commission in the Official Journal of the European Communities. Currently, these are EN 1811, EN 16128 and this document.

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## 1 Scope

This document specifies a method for the simulation of accelerated wear and corrosion, to be used prior to the detection of nickel release from coated articles that come into direct and prolonged contact with the skin. According to the Commission Regulation (EC) No 1907/2006 (REACH), articles with an outer coating containing nickel and those which are inserted into pierced ears and other parts of the human body are excluded from the scope of this document.

## 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 1811, *Reference test method for release of nickel from all post assemblies which are inserted into pierced parts of the human body and articles intended to come into direct and prolonged contact with the skin*

EN 16128, *Ophthalmic optics — Reference method for the testing of spectacle frames and sunglasses for nickel release*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions 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 <https://standards.iteh.ai/catalog/standards/sist/45bd7164-3e42-4029-b897-a73500b3e56e/sist-en-12472-2021> or <https://www.iso.org/obp>

### 3.1

#### article

object that is subjected to the nickel release requirements according to Entry 27 of Annex XVII of Commission Regulation (EC) No 1907/2006 (REACH)

### 3.2

#### test part

article or sub-part of a dismantled and/or cut article that has to be tested according to EN 1811 or EN 16128

## 4 Principle

The articles to be tested are exposed to a corrosive atmosphere before being placed into a tumbling barrel together with a wear medium of abrasive paste and granules. The barrel is rotated so as to subject the test parts to wear from the wear medium. The test parts are then tested for nickel release in accordance with the applicable European standard.

NOTE EN 1811 is applicable to all products except spectacle frames and sunglasses. EN 16128 is applicable to spectacle frames and sunglasses.

If only indicative information on the extent of nickel release or the presence of nickel is required, such information can be obtained by performing the tests specified in CR 12471.

## EN 12472:2020 (E)

## 5 Reagents and materials

### 5.1 General

Except where indicated, all reagents and materials that can come into contact with test parts or reagents shall be demonstrably free of nickel, and all reagents shall be of recognized analytical grade or better.

### 5.2 Corrosion

#### 5.2.1 Container

Container with a lid and a device for suspending the test parts, all container parts made of inert material (e.g. glass or plastic).

#### 5.2.2 Corrosive medium

Dissolve 50 g DL-lactic acid, > 88 % purity, and 100 g sodium chloride in 1 000 ml deionized water.

#### 5.2.3 Degreasing solution

An appropriately diluted, neutral, commercially available detergent shall be used, for example, a 0,5 % aqueous solution of sodium dodecylbenzene sulfonate.

#### 5.2.4 Deionized water

Deionized water, specific conductivity maximum 1  $\mu$ S/cm.

#### 5.2.5 Laboratory oven

Laboratory oven, capable of maintaining a temperature of  $(50 \pm 2)$  °C.

### 5.3 Wear

#### 5.3.1 Tumbling barrel and retaining assembly

The tumbling barrel and retaining assembly shall be in accordance with the following description:

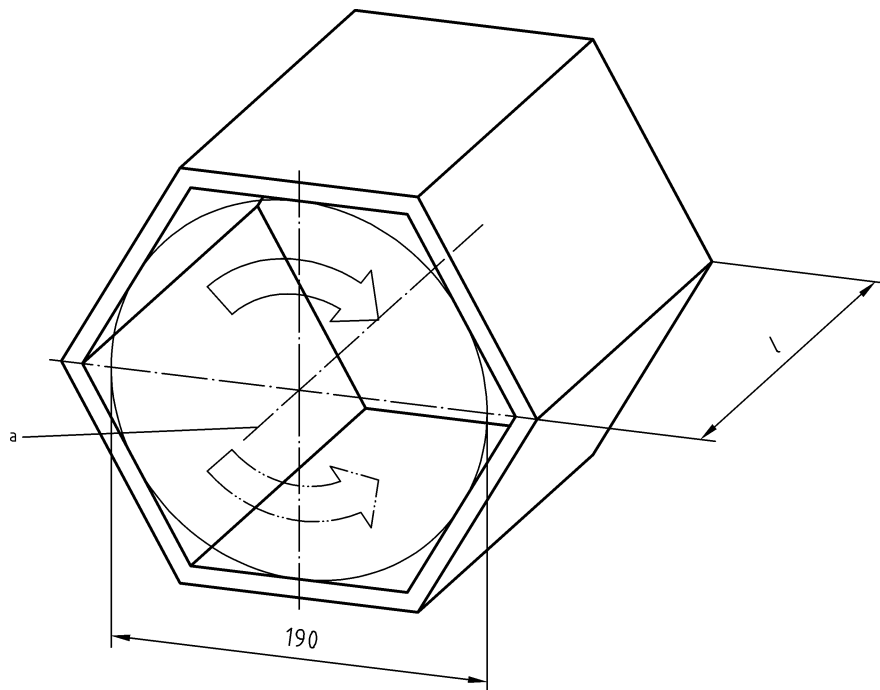
- barrel of hexagonal cross-section and internal diameter of 19 cm perpendicular distance between opposite sides designed to rotate around its axis which is orientated horizontally (see Figure 1);
- retaining assembly, suitable for attaching the test parts so that they do not come into contact with each other during tumbling;
- retaining assembly, with test parts attached, shall be inserted into the barrel for tumbling.

NOTE 1 Examples are given in Annex A of retaining assemblies suitable for attaching typical test parts.

NOTE 2 The length of the barrel depends on the dimensions of the articles to be tested.



Dimensions in millimetres

**Key**

- l* length of barrel axis, as required  
*a* axis of rotation

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**Figure 1 — View of tumbling barrel**

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**5.3.2 Wear test apparatus**

A device capable of imparting to the barrel (5.3.1) a constant speed of  $(30 \pm 2)$  rotations per minute. The device shall be capable of reversing the direction of rotation.

NOTE Information on suitable equipment sourcing is available from the CEN Management Centre.

**5.3.3 Abrasive paste**

Abrasive paste produced for dry-tumbling barrels. The abrasive paste shall comprise:

- 6 % [weight] to 8 % [weight] ester wax of montanic acids-wax E [CAS No. 73138-45-1];
- 3 % [weight] octadecanoic acid (stearic acid) [CAS No. 57-11-4];
- 30 % [weight] to 35 % [weight] petroleum distillates, hydrotreated light paraffinic [CAS No. 64742-55-8];
- 2 % [weight] polyethylene glycol cetyl/oleyl ether [CAS No. 68920-66-1] or triethanolamine [CAS No. 102-71-6];
- 48 % [weight] silicon dioxide (quartz) 200  $\mu\text{m}$  mesh size [CAS No. 14808-60-7];
- 6 % [weight] to 9 % [weight] deionized water.

NOTE Information on suitable paste sourcing is available from the CEN Management Centre.