SLOVENSKI STANDARD
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Metoda za simulacijo 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 objects revêtus

Ta slovenski standard je istoveten z: **prEN 12472**

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39.060	Nakit	Jewellery

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English Version

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This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 347.

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.

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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 12472:2018) has been prepared by Technical Committee CEN/TC 347 “Analysis of allergens”, the secretariat of which is held by SNV.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 12472:2005+A1:2009.

The major changes are:

— Reference to REACH Regulations 1907/2006 instead to Directive 94/27/EC;

— use of the term article instead of items, in order to adopt the use of terms in REACH regulation;

— update of normative references;

— document was editorially updated.

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 European Standard.

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 a nickel outer coating and those which are inserted into pierced ears and other parts of the human body are excluded from the scope of this standard.

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 http://www.iso.org/obp

3.1
article
object that is concerned by the nickel release according to Entry 27 of Annex XVII of Commission Regulation (EC) N° 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 and 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 and sunglasses frames. EN 16128 is applicable to spectacle and sunglasses frames.

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.

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 de-ionized 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 De-ionized water

De-ionized water, specific conductivity maximum 1 µS/cm.

5.2.5 Laboratory oven

Laboratory oven, capable of maintaining a temperature of (50 ± 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:

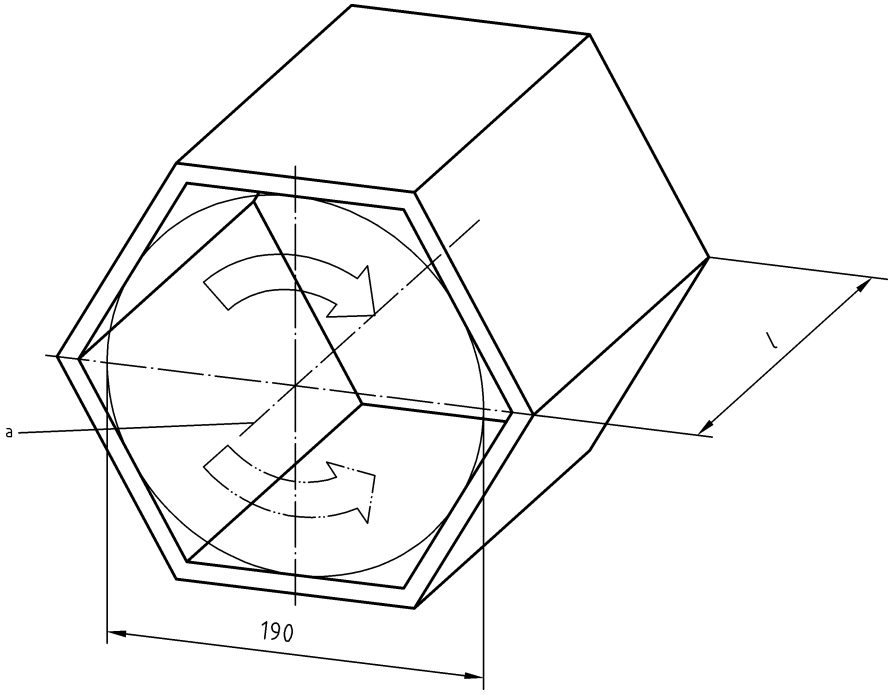
— barrel of hexagonal cross-section and internal diameter of 19 cm perpendicular distance between opposite sides designed to rotate around its axis which is orientated horizontally (see Figure 1);

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

Dimensions in millimetres



Key

l length of barrel axis, as required

a axis of rotation

Figure 1 — View of tumbling barrel

5.3.2 Wear test apparatus

A device capable of imparting to the barrel (4.2.1) a constant speed of (30 ± 2) rotations per minute. The device shall be capable of allowing 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 % to 8 % Ester wax of montanic acids-Wax E [CAS No. 73138-45-1];

— 3 % Octadecanoic acid (stearic acid) [CAS No. 57-11-4];

— 30 % to 35 % Petroleum distillates, hydrotreated light paraffinic [CAS No. 64742-55-8];

— 2 % Polyethylene glycol cetyl/oleyl ether [CAS No. 68920-66-1)] or Triethanolamine [CAS No. 102-71-6];

— 48 % Silicon dioxide (quartz) 200 µm mesh size [CAS No. 14808-60-7];

— 6 % to 9 % De-ionized water.

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

5.3.4 Granules

This material shall have the following composition:

— outer shells of coconuts, walnuts, peanuts and almonds, mixed in a ratio 1:1:1:1 by weight, ground and sieved to give a mixture of particles having dimensions between 0,8 mm and 1,3 mm.

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

5.3.5 Wear medium

The medium is composed of abrasive paste (4.2.3) and granules (4.2.4) which are mixed as indicated in 5.3.1.

6 Procedure

6.1 Article preparation

Before being subjected to the corrosion (5.2) and wear (5.3) procedures, different parts of some articles may need to be separated from each other to become test parts.

NOTE 1 Parts of articles which are not intended to come into prolonged contact with the skin may be removed before being subjected to corrosion and/or wear.

Gently swirl the test part(s) for 2 min in a degreasing solution (4.1.3) at room temperature. Rinse thoroughly with de-ionized water (4.1.4) and gently dry with absorbent paper. After degreasing, test parts should be handled with plastic forceps or clean protective gloves.

NOTE 2 This cleaning stage is intended to remove extraneous grease and skin secretions due to handling, but not any protective coatings.

6.2 Corrosion procedure

If applicable, the test parts to be tested shall first be opened to expose critical surfaces. The test parts are suspended a few centimetres above the corrosive medium (4.1.2) in a closed container (4.1.1) and placed in the laboratory oven (4.1.5) for 2 h at 50 °C. Remove the container from the oven and carefully open it under a fume hood. Rinse the test parts with de-ionized water (4.1.4). Place on absorbent paper and allow to dry at room temperature for about 1 h, then perform the wear procedure (5.3) without delay.

NOTE This stage is intended to affect metallic coatings, as well as lacquers and plastic coatings.

6.3 Wear procedure

6.3.1 Preparation of wear medium

Weigh a sufficient quantity of granules in order to fill the tumbling barrel to half its depth. Take 7,5 g of abrasive paste for every kg of the total amount of granules. Using appropriate personal protective equipment and protective gloves, add the abrasive paste to about 10 % of the weighed granules and thoroughly homogenize by hand until there is no abrasive paste visible.

Add the remaining weighed granules, and continue to homogenize the complete mixture by rotating it in the tumbling barrel for 5 h. If the wear medium has not been used within 1 week, re-homogenize by rotating it in the barrel for 1 h.”

NOTE This procedure coats the granules with the abrasive paste, forming the wear medium that is used to simulate wear.

Keep the wear medium in a closed container until use and between uses.