



**SLOVENSKI STANDARD**  
**SIST EN 12472:2006**  
**01-marec-2006**

**BUXca Yý U.**  
**SIST EN 12472:1999**

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

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

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Méthode de simulation de l'usure et de la corrosion pour la détermination du nickel libéré par les objets revetus

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**Ta slovenski standard je istoveten z: EN 12472:2005**

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**ICS:**

39.060

Nakit

Jewellery

**SIST EN 12472:2006**

**en**

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English Version

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

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

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

This European Standard was approved by CEN on 21 November 2005.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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

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## Foreword

This European Standard (EN 12472:2005) has been prepared by Technical Committee CEN/TC 283 “Precious metals - Applications in jewellery and associated products”, the secretariat of which is held by UNI.

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 June 2006, and conflicting national standards shall be withdrawn at the latest by June 2006.

This European Standard supersedes EN 12472:1998.

This European Standard 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 organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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## Introduction

The wear of objects in contact with the skin depends very much on the type and shape of the objects 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 items in contact with the skin, which may be subject to several kinds and varying degrees of wear.

In order to show compliance with Directive 94/27/EC, items should be tested in accordance with the appropriate European harmonised 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 1810, EN 1811 and this European Standard.

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## 1 Scope

This European Standard specifies a method for accelerated wear and corrosion, to be used prior to the detection of nickel release from coated items that come into direct and prolonged contact with the skin.

## 2 Normative references

The following referenced documents are indispensable for the application of this European Standard. 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 products intended to come into direct and prolonged contact with the skin*

## 3 Principle

The items 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 pieces to wear from the wear medium. The items are then tested for nickel release in accordance with EN 1811.

## 4 Reagents and materials

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

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### 4.1 Corrosion

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#### 4.1.1 Container

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

#### 4.1.2 Corrosive medium

Dissolve 50 g DL-lactic acid, > 85 % purity, and 100 g sodium chloride in 1 000 ml de-ionized water.

#### 4.1.3 Degreasing solution

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

#### 4.1.4 De-ionized water

De-ionized water, specific conductivity maximum 1  $\mu$ S/cm.

#### 4.1.5 Laboratory oven

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

### 4.2 Wear

#### 4.2.1 Tumbling barrel and retaining assembly

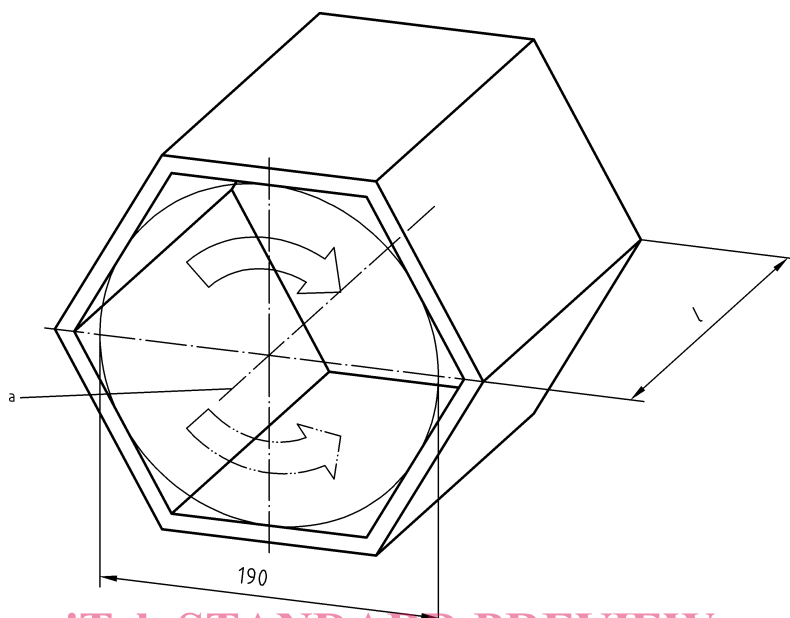
The tumbling barrel and retaining assembly shall be in accordance with the following description:

- 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 items so that they do not come into contact with each other during tumbling;
- retaining assembly, with items attached, shall be inserted into the barrel for tumbling.

NOTE Examples are given in Annex A of retaining assemblies suitable for attaching typical items.



Dimensions in millimetres



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**Key**

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

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**Figure 1 — View of tumbling barrel**

#### 4.2.2 Wear test apparatus

A device capable of imparting to the barrel (4.2.1) a constant  $(30 \pm 2)$  rotations per minute. The device shall be capable of allowing the direction of rotation to be reversed.

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

#### 4.2.3 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  $\mu\text{m}$  mesh size [CAS No. 14808-60-7];
- 6 % to 9 % De-ionized water.

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