

**SLOVENSKI STANDARD
SIST EN ISO 8442-4:1998****01-oktober-1998**

Materiali in predmeti v stiku z živilni - Pribor in namizna posoda - 4. del: Zahteve za pozlačen pribor (ISO 8442-4:1997)

Materials and articles in contact with foodstuffs - Cutlery and table holloware - Part 4: Requirements for gold-plated cutlery (ISO 8442-4:1997)

Werkstoffe und Gegenstände in Kontakt mit Lebensmitteln - Schneidwaren und Tafelgeräte - Teil 4: Anforderungen für vergoldete Bestecke (ISO 8442-4:1997)

Matériaux et objets en contact avec les denrées alimentaires - Coutellerie et orfèvrerie de table - Partie 4: Exigences relatives à la coutellerie et aux couverts dorés (ISO 8442-4:1997)

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67.250	Materiali in predmeti v stiku z živilni	Materials and articles in contact with foodstuffs
97.040.60	Kuhinjska posoda, jedilni servisi in jedilni pribor	Cookware, cutlery and flatware

SIST EN ISO 8442-4:1998**en**

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EUROPEAN STANDARD
 NORME EUROPÉENNE
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EN ISO 8442-4

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English version

Materials and articles in contact with foodstuffs - Cutlery and table holloware - Part 4: Requirements for gold-plated cutlery (ISO 8442-4:1997)

Matériaux et objets en contact avec les denrées alimentaires - Coutellerie et orfèvrerie de table - Partie 4: Exigences relatives à la coutellerie et aux couverts dorés (ISO 8442-4:1997)

Werkstoffe und Gegenstände in Kontakt mit Lebensmitteln - Schneidwaren und Tafelgeräte - Teil 4: Anforderungen für vergoldete Bestecke (ISO 8442-4:1997)

This European Standard was approved by CEN on 11 October 1997.

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.

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CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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Foreword

The text of EN ISO 8442-4:1997 has been prepared by Technical Committee CEN/TC 194 "Utensils in contact with food", the secretariat of which is held by BSI, in collaboration with Technical Committee ISO/TC 186 "Cutlery and table and decorative metal hollow-ware".

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 1998, and conflicting national standards shall be withdrawn at the latest by June 1998.

EN ISO 8442 consists of the following parts:

- Part 1: Requirements for cutlery for the preparation of food
- Part 2: Requirements for stainless steel and silver-plated cutlery
- Part 3: Requirements for silver-plated table and decorative holloware
- Part 4: Requirements for gold-plated cutlery

Further parts are proposed with the following titles:

- Part 5: Specific cutting test
- Part 6: Lacquered lightly silver-plated table and decorative holloware
- Part 7: Specification for table cutlery made of precious metals and their alloys, especially silver cutlery
- Part 8: Specification for silver table and decorative holloware

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

This Standard does not cover those features of cutlery which are matter of personal choice for the user: such as the design, size, type of finish, blade flexibility or similar characteristics which can be readily identified by the purchaser at the point of sale.

Attention is drawn to Directives of the European Community concerning materials and articles in contact with food, in particular to Directives EC 89/109 and EC 90/128.

1 Scope

This Standard specifies the following requirements for gold plated cutlery:

- a) performance requirements for table cutlery (for example, knives, forks, spoons, carving sets, ladles, and other serving pieces);
- b) composition limits for base metals for cutlery;
- c) tests for resistance to permanent deformation, firmness of handle attachment, hardness of blades, resistance to corrosion and the thickness and adhesion of gold coatings;
- d) three minimum thicknesses of gold plating: a first class, a second class, and a third class.

This Standard specifies the method of defining gold deposits for each and every item and also test methods.

This Standard does not apply to table cutlery which has only small areas of gold plate as inlays in non gold plated decoration.

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2 Normative references

This Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

ISO 1463	Metallic and oxide coatings - Measurement of coating thickness - Microscopical method
ISO 2177	Metallic coatings - Measurement of coating thickness - Coulometric method by anodic dissolution
ISO 3497	Metallic coatings - Measurement of coating thickness - X-ray spectrometric methods
ISO 3543	Metallic and non-metallic coatings - Measurement of thickness - Beta scatter method
ISO 4481 : 1977	Cutlery and flatware - Nomenclature
ISO 6508 : 1986	Metallic materials - Hardness test - Rockwell test (scales A -B - C - D - E - F - G - H - K)
EN ISO 8442-2	Materials and articles in contact with foodstuffs - Cutlery and table holloware - Part 2: Requirements for stainless steel and silver plated cutlery (ISO 8442-2:1997)

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3 Definitions

For the purposes of this Standard the definitions given in ISO 4481:1977 and EN ISO 8442-2 apply together with the following.

3.1 hard gold plating: Refined gold plating containing elements which increase the hardness.

4 Materials and their application

4.1 General

The cutlery shall be made from materials that enable the finished product to meet all of the performance requirements of this standard.

NOTE: The cutlery should not under foreseeable conditions of use transfer any substance likely to be detrimental to health or to have any detrimental organoleptic effects.

4.2 Metals

4.2.1 The composition of metal parts of table cutlery shall be as given in table 1.

4.2.2 All gold plated parts of table cutlery shall be in accordance with the requirements of clause 6.

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Table 1: Metals for table cutlery, compositions limit

Applications	Materials	Chemical composition ¹⁾									
		C	P max.	S max.	Cr min.	Ni min.	Mo max. ²⁾	V max. ²⁾	Mn max.	Total impurities max. %	
Spoons, forks, ladles, unsharpened knives, handles of knives and carving forks	Austenitic stainless steel	0,07 max.	0,045	0,015	17,0	8,0	2,0				
		0,15 max.	0,045	0,015	17,0	4,0					10,5
Guards and prongs of carving items	Ferritic stainless steel	0,08 max.	0,040	0,015	16,0		1,30				
Guards and prongs of carving items	Martensitic stainless steel (low carbon)	0,16 min.	0,040	0,015	12,0						
Knife blades handles of monobloc knives	Martensitic stainless steel (higher carbon)	0,26 min.	0,040	0,015	12,0		1,30			0,20	
		Ag min.	Cu min.	Ni min.	Zn	Mn max.	Fe	Pb	Total impurities max. %		
Spoons, forks, ladles, unsharpened knives and carving forks	Silver 800 Silver 925	80,0	20,0								
		92,5	7,5								
	Nickel-silver		60,0	9,0	24,0	0,50	0,30	0,05	0,50		
Coatings	Gold Silver	Au min. 98,5 Ag min. 98,5									

1) See EN 10088-1 for additional chemical compositions 2) Additions of Mo and V are optional.

5 Construction

5.1 General

Cutlery manufactured from the materials specified in clause 4 shall be so constructed that it meets all the relevant performance requirements of this standard.

5.2 Alignment, uniformity and absence of defects

5.2.1 All surfaces shall be free from cracks, pits and other defects.

5.2.2 All cutlery shall be essentially straight and symmetrical except when the lack of straightness or symmetry is an intentional feature of the design.

5.2.3 Identical items within a batch shall show no variation in dimension or form.

5.2.4 All edges, including the edges of spoons, forks, ladles and the insiders of fork prongs, shall be free from burrs and the roughness of blanked edges shall have been removed by a suitable operation.

5.2.5 Table knives shall be balanced such that when the knife is pivoted on its bolster, or at the junction of the handle and blade if no bolster is present, the handle shall be heavier than the blade.

5.2.6 Compliance with the requirements for 5.2.1 to 5.2.5 shall be checked by touch or by visual inspection using normal corrected vision.

5.3 Hollow handles

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The seams joining hollow handles together shall be watertight.

5.4 Knife blades

Stainless steel knife blades shall not be gold plated.

5.5 Knife edges

The cutting edge of sharpened table knives shall be either scalloped or serrated or shall be whetted to an included angle not greater than 50°.

The cutting edges of a carving knife blade shall be whetted to an inclined angle not greater than 40° and shall not be thicker than 0,46 mm when measured 1 mm from the external side of the edge.

5.6 Sprung fork guards

When fitted, sprung fork guards shall have a positive opening and closing snap action.

6 Gold plated cutlery

6.1 General

Items of cutlery claimed to be gold plated shall comply with the additional requirements of 6.2 and 6.3.

6.2 Average thickness

The average thickness of gold coating on each and every finished item when measured in accordance with the methods described in annex A (weight of coating) and annex B (area of coating) shall be as specified in table 2.

Description	Symbol	Items for frequent use	Items for infrequent use
First class	I	min. 4,5 μm	min. 2,5 μm
Second class	II	min. 2 μm	min. 1 μm
Third class	III	min. 0,2 μm	min. 0,1 μm

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6.3 Local thickness

The minimum local thickness of gold coating on significant surfaces (i.e. those parts of cutlery subject to the greatest wear; see 3.4) of articles of frequent use shall not be less than 60% of the average thickness deemed to be on the item.

The minimum local thickness shall be measured in accordance with one of the methods specified in ISO 2177, ISO 1463, ISO 3497 or ISO 3543. In case of dispute the thickness shall be measured in accordance to ISO 1463.

7 Performance requirements

7.1 Minimum hardness of hard gold coatings

Gold coatings deemed to be hard shall contain 0,2 % minimum of Co or Ni or Fe or any other element which increases the hardness.

7.2 Resistance to corrosion

The surfaces of stainless steel table knives shall comply with the requirements a) to c) when tested in accordance with the method described in annex C:

- no transverse cracks shall have developed and no longitudinal cracks of a length exceeding 1,5 mm shall have developed;
- there shall not be more than three pits each having an area greater than a circle of 0,4 mm diameter on the handle, and not more than three pits each having an area greater than a circle of 0,4 mm diameter (0,126 mm²) elsewhere;
- there shall be no pits having an area greater than a circle of 0,75 mm diameter (0,442 mm²) on any part.

7.3 Strength

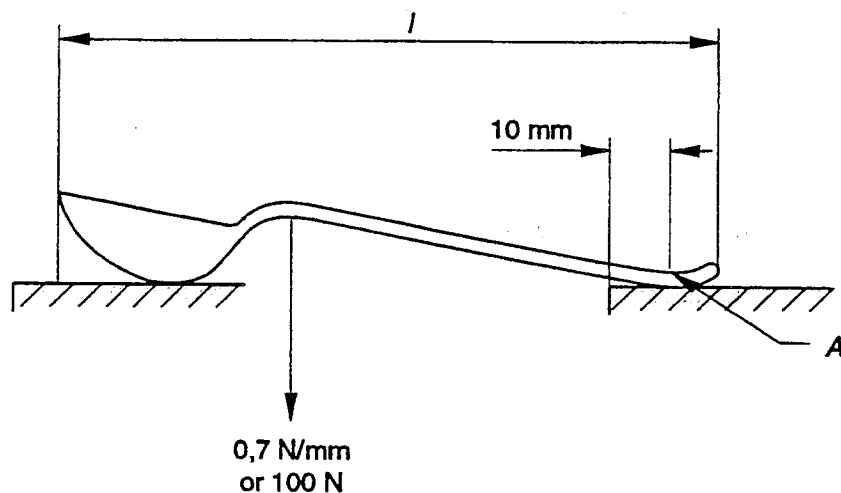
7.3.1 Knives with martensitic stainless steel blades

A knife shall not crack or break and shall not acquire a permanent deformation of more than 3° when tested in accordance with the method described in annex D. In addition, the handle blade joint shall not become loose.

7.3.2 Spoons, forks, ladles and unsharpened knives

An item shall not have a permanent deformation of more than 1 mm when tested as follows:

An item shall be laid on a plane with the highest point of the handle facing upward. A force shall be applied equivalent to 0,7 N/mm for each centimetre of overall length or 100 N whichever is the lesser for 10 s (see figure 1 for a spoon). During the application of this force the point of rest of the handle (A in figure 1) shall not be more than 10 mm from the edge of the supporting surface.



l length
A point of rest

Figure 1: Strength test for a spoon

7.4 Firmness of handle attachment

Handles that are not an integral part of the rest of the item shall be attached by a method that prevents the handle turning relative to the rest of the item or pulling away from the blade when, immediately after being immersed for 10 min in water at a temperature of $(100 \begin{smallmatrix} 0 \\ -5 \end{smallmatrix})$ °C¹⁾, the item is subjected to

- a) a pulling force of $(180 \begin{smallmatrix} 0 \\ -10 \end{smallmatrix})$ N for 10 s;
- b) a torque of $(4,5 - 0,2)$ Nm for items whose handles have a surface area of 37 cm² or more, or a torque of $(3,7 \begin{smallmatrix} 0 \\ -0,2 \end{smallmatrix})$ Nm for items whose handles have a surface area of less than 37 cm². The torque shall be applied for 10 s.

The pulling force and torque shall be applied successively, immersing the handles for 10 min in water at $(100 \begin{smallmatrix} 0 \\ -5 \end{smallmatrix})$ °C immediately before the application of each force.

7.5 Hardness of knife blades

Knife blades made from martensitic stainless steel shall have a minimum hardness of 48 HRC when tested in accordance with ISO 6508:1986. Readings shall be taken not less than 40 mm from the handle.

Carving knife blades shall have a minimum of 52 HRC.

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7.6 Adhesion of gold coatings

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Gold plated table cutlery shall not show any sign of abrasion of the gold coating after polishing for 40 min by a silver polishing machine, using an ordinary polishing solution (see test in annex E).

¹⁾ Boiling water