
Materiali in predmeti v stiku z živilni - Pribor in namizna posoda - 2. del: Zahteve za pribor iz nerjavnega jekla in posrebrnen pribor (ISO 8442-2:1997)

Materials and articles in contact with foodstuffs - Cutlery and table holloware - Part 2: Requirements for gold-plated cutlery (ISO 8442-2:1997)

Werkstoffe und Gegenstände in Kontakt mit Lebensmitteln - Schneidwaren und Tafelgeräte - Teil 2: Anforderungen für vergoldete Bestecke (ISO 8442-2:1997)

Matériaux et objets en contact avec les denrées alimentaires - Coutellerie et orfèvrerie de table - Partie 2: Exigences relatives à la coutellerie et aux couverts dorés (ISO 8442-2:1997)

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97.040.60	Kuhinjska posoda, jedilni servisi in jedilni pribor	Cookware, cutlery and flatware

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English version

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)

Matériaux et objets en contact avec les denrées alimentaires - Coutellerie et orfèvrerie de table - Partie 2: Exigences relatives à la coutellerie et aux couverts en acier inoxydable et en métal argenté (ISO 8442-2:1997)

Werkstoffe und Gegenstände in Kontakt mit Lebensmitteln - Schneidwaren und Tafelgeräte - Teil 2: Anforderungen für versilberte und nichtrostende Eßbestecke (ISO 8442-2:1997)

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

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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 Central Secretariat has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Page 2
EN ISO 8442-2:1997

Contents

Foreword	
Introduction	
1 Scope	
2 Normative references	
3 Definitions	
4 Materials	
5 Construction	
6 Silver-plated cutlery	
7 Performance requirements	
8 Marking and labelling	
Annex A (normative)	Test method for average thickness of silver coatings
Annex B (normative)	Schlegel method of determining surface area
Annex C (normative)	Test method for corrosion resistance of unplated steel cutlery
Annex D (normative)	Test method for strength of knives with martensitic stainless steel blades and carving forks
Annex E (normative)	Test method for adhesion of silver coatings
Annex F (informative)	Bibliography

Foreword

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The text of EN ISO 8442-2:1997 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".

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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 and decorative hollowware
- 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 hollowware
- Part 7: Specification for table cutlery made of precious metals and their alloys, especially silver cutlery
- Part 8: Specification for silver table and decorative hollowware

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, based on ISO 8442, is concerned with performance and does not include requirements for design, size, type of finish, blade flexibility, or similar characteristics which are matters of personal choice or which can be readily assessed by the purchaser at the point of sale. In this Standard the thickness of silver deposit is stipulated for each and every item, in contrast to traditional methods which relate to an average of 12 or 24 items, amongst which some items can have a significantly lower thickness of silver coating.

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 part of this Standard specifies material, performance requirements and test methods for table cutlery (knives, forks, spoons, carving sets, ladles, children's cutlery and other serving pieces).

This Standard is applicable to stainless steel cutlery and to silver-plated nickel silver, or silver-plated stainless steel, cutlery. It does not cover cutlery made wholly of precious metals, aluminium, non-stainless steel or that made entirely of nickel silver, nor does it cover gold-plated or chromium-plated cutlery.

Three minimum thicknesses of silver are specified for silver-plated cutlery.

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 backscatter 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)

3 Definitions

For the purposes of this Standard the definitions given in ISO 4481:1977 apply together with the following.

3.1 items of frequent use: Pieces of cutlery regularly used at the dining table. They are listed in ISO 4481 : 1977 as: coffee or teaspoon, soup spoon, dessert spoon, menu spoon, table spoon, dessert fork, menu fork, fish eating fork, table fork, dessert knife, menu knife, fish eating knife, table knife.

3.2 items of infrequent use: Pieces of cutlery which are occasionally used at the dining table. These items are defined in ISO 4481 : 1977 and exclude those listed in 3.1.

3.3 significant surfaces: Parts of cutlery in contact with a flat horizontal surface upon which they are laid; for spoons, forks and ladles this will be the convex face, i.e. their bowls or fork prongs are uppermost; for knives both sides are regarded as having significant surfaces.

3.4 unsharpened knives: Knives that do not have a sharpened blade because they are intended for use with soft foods and whose blades are therefore not made of martensitic stainless steel. This includes the following items: butter knife, fish serving knife, ice cream knife, fish eating knife, spreading knife.

3.5 monobloc knives: Knives made of one piece.

3.6 normal corrected vision: The naked eye corrected to normal vision if necessary.

NOTE. This is usually done by the wearing of spectacles.

4 Materials

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 release 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 Any parts of table cutlery made of nickel silver (copper zinc nickel alloy) shall be silver-plated (see clause 6).

4.2.3 Any parts of table cutlery made of stainless steel and claimed to be silver-plated shall conform with the requirements of clause 6.

Table 1: Metals for table cutlery, composition limits

Applications	Materials	Chemical composition (%) ¹⁾										
		C	P max.	S max.	Cr min.	Ni min.	Mo max. ²⁾	V max. ²⁾	Mn max.	Cu min.	Ni min.	Mn 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	2,00					
		0,15 max.	0,045	0,015	17,0	4,0			10,5			
Guards and prongs of carving items	Ferritic stainless steel	0,07 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	
Spoons, forks, ladles, unsharpened knives and carving forks	Nickel silver	60,0	9,0	0,50	0,30	0,05	0,50			0,05	0,50	24
Coatings	Silver											
Ag min. 98,5												

1) Two alternatives are given for austenitic stainless steel. Further chemical compositions are given in EN 10088-1.
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 of 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 As far as is practicable, all cutlery shall be 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, as far as is practicable, show no variation in dimension or form.

5.2.4 All edges, including the edges of spoons, forks, ladles and the insides 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.

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5.3 Hollow handles

The seams joining hollow handles together shall be watertight.

5.4 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 60°.

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.

5.5 Sprung fork guards

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

6 Silver-plated cutlery

6.1 General

All silver-plated surfaces shall comply with the requirements of 6.2, 6.3, 6.4 and 6.5.

6.2 Average thickness

The average thickness of silver 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. 30 μm	min. 17 μm
Second class	II	min. 20 μm	min. 12 μm
Third class	III	min. 10 μm	min. 7 μm

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6.3 Local thickness

The minimum local thickness of silver coating on significant surfaces (i.e. those parts of cutlery subject to the greatest wear; see 3.3) 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.

6.4 Minimum hardness of hard silver coatings

A silver coating claimed to be hard shall have a minimum hardness of 130 HV, measured after immersion in boiling water for 2 h.

6.5 Adhesion of silver coatings

Silver coatings shall show no signs of flaking, blistering or peeling when the cutlery is ball burnished for 40 min in a burnishing machine as described in annex E.

NOTE: Alternative methods of determining the adhesion of silver coatings can be used, provided the results obtained are in correlation with those given by ball burnishing.

7 Performance requirements

7.1 Resistance to corrosion

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

- a) no transverse cracks shall have developed and no longitudinal cracks of a length exceeding 1,5 mm shall have developed;
- b) there shall not be more than three pits or zones of intergranular corrosion 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;
- c) there shall be no pits or zones of intergranular corrosion having an area greater than a circle of 0,75 mm diameter (0,442 mm²) on any part.

7.2 Strength

7.2.1 Knives with martensitic stainless steel blades and carving forks

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

7.2.2 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 millimetre 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.

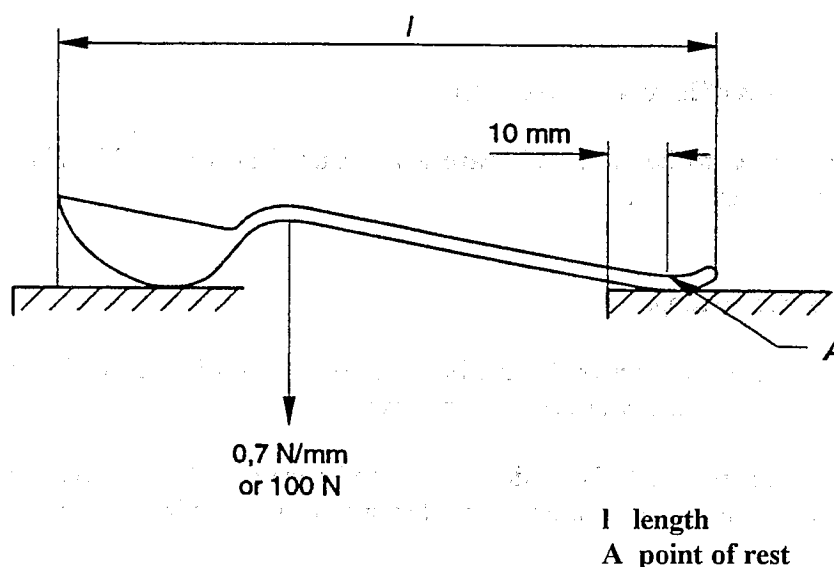


Figure 1: Example of a strength test showing a spoon

7.3 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 $(100_{-5}^0 \text{ } ^\circ\text{C}^1)$, the item is subjected to

- a) a pulling force of (180_{-10}^0) N for 10 s;
- b) a torque of $(4,5_{-0,2}^0)$ Nm, for items whose handles have a surface area of 37 cm² or more, or a torque of $(3,7_{-0,2}^0)$ 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 $(100_{-5}^0 \text{ } ^\circ\text{C}^1)$ immediately before the application of each force.

7.4 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.

8 Marking and labelling

8.1 Marking

Each item of cutlery shall be legibly and indelibly marked with the following:

- a) name and/or trade mark or other means of identifying the manufacturer or responsible supplier;
- b) A reference to this Standard in combination with either the following roman numerals (see 6.2):
 - I for first class silver coating;
 - II for second class silver coating;
 - III for third class silver coating.

Note: National marks already in use can also be used if required.

- c) for unplated stainless steel cutlery the reference to this Standard shall be accompanied by identification of the average percentage chromium content of the steel or, for austenitic stainless steel, by the identification of the average percentage chromium and nickel content of the steel, e.g. 18/10.

¹⁾ Boiling water