BRITISH STANDARD

BS EN ISO
8442-4:1998
Incorporating
Amendment No. 1

Materials and articles in contact with foodstuffs — Cutlery and table holloware —

Part 4: Requirements for gold-plated cutlery

The European Standard EN ISO 8442-4:1997 incorporating amendment No. 1:1999 has the status of a British Standard

ICS 67.250; 97.040.60

National foreword

This British Standard is the English language version of EN ISO 8442-4:1997. It is identical with ISO 8442-2:1997.

The UK participation in its preparation was entrusted to Technical Committee CW/17, Cutlery and table holloware, which has the responsibility to:

— aid enquirers to understand the text;

— present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;

— monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this committee can be obtained on request to its secretary.

The textual errors set out below were discovered when the English language version of EN ISO 8442-4 was adopted as the national standard. They have been reported to CEN is a proposal to amend the text of the European Standard.

In **5.5** second paragraph delete “inclined” and replace with “included”

In **D.3.3**: replace “Connect the test load” by “Connect the test load (30N ± 1N)”

Cross-references

Attention is drawn to the fact that CEN and CENELEC standards normally include an annex which lists normative references to international publications with their corresponding European publications. The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN ISO title page, page 2, the ISO title page, pages ii to iv, pages 1 to 11 and a back cover.

The BSI copyright notice displayed in this document indicates when the document was last issued.

Sidelining in this document indicates the most recent changes by amendment.

This British Standard, having been prepared under the direction of the Consumer Products and Services Sector Board, was published under the authority of the Standards Board and comes into effect on 15 February 1998

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 8442-4

December 1997

ICS 67.250; 97.040.60

Descriptors: See ISO document

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.

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.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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

Ref. No. EN ISO 8442-4:1997 E

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, Luxemburg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

INTERNATIONAL STANDARD

ISO 8442-4

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Materials and articles in contact with foodstuffs — Cutlery and table holloware —

Part 4:
Requirements for gold-plated cutlery

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

Reference number
ISO 8442-4:1997(E)

Contents

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 8442-4 was prepared by the European Committee for Standardization (CEN) in collaboration with ISO Technical Committee TC 186, *Cutlery and table and decorative metal hollow-ware*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

ISO 8442 consists of the following parts, under the general title *Materials and articles in contact with foodstuffs — Cutlery and table holloware:*

— *Part 1: Requirements for cutlery for the preparation of food;*

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Annex A to Annex E form an integral part of this part of ISO 8442. Annex G is for information only.

Descriptors: Tableware, flatware, gold plating, cutlery, specifications, materials specifications, performance, tests, performance tests, marking, labelling.

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Introduction

This Standard does not cover those features of cutlery which are matters 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.

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).

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**.

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.

Table 1 — Metals for table cutlery, compositions limit

Applications	Materials	Chemical composition[a]							
		C	P max.	S max.	Cr min.	Ni min.	Mo max.[b]	V max.[b]	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	2,0		
		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	80,0	20,0						
	Silver 925	92,5	7,5						
	Nickel-silver		60,0	9,0	24,0	0,50	0,30	0,05	0,50
Coatings	Gold	Au min. 98,5							
	Silver	Ag min. 98,5							

[a] See EN 10088-1 for additional chemical compositions

[b] Additions of Mo and V are optional.

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

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.

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:

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 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 mm^2) elsewhere;

c) there shall be no pits having an area greater than a circle of 0,75 mm diameter (0,442 mm^2) 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.

Table 2 — Average thickness of classes of gold coating

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

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 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.

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 $(100\ ^{0}_{-5})$ °C[1)], the item is subjected to

a) a pulling force of $(180\ ^{0}_{-10})$ N for 10 s;

b) a torque of (4,5 – 0,2) Nm for items whose handles have a surface area of 37 cm^2 or more, or a torque of $(3{,}70^{0}_{-0{,}2}$ Nm for items whose handles have a surface area of less than 37 cm^2. 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 $(100\ ^{0}_{-5})$ °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.

7.6 Adhesion of gold coatings

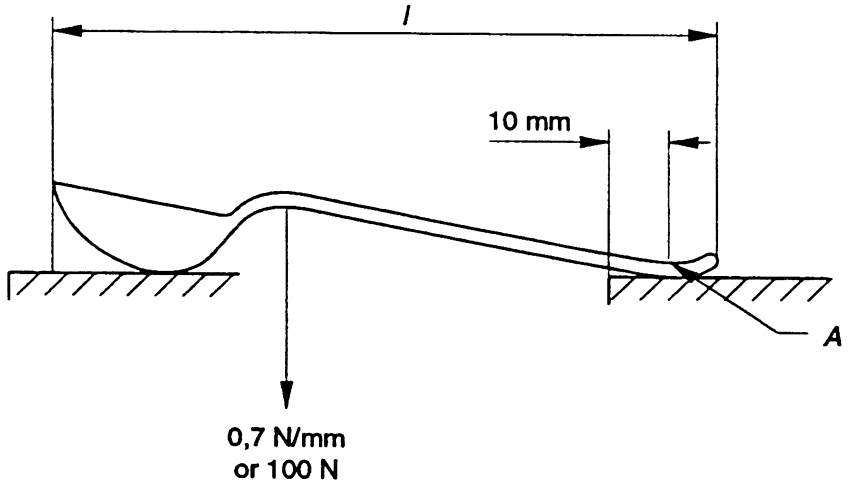
Gold plated table cutlery shall not show any sign of abrasion of the gold coating after polishing for 40 min by a silver polishing machine, using an ordinary polishing solution (see test in Annex E).

8 Marking and labelling

8.1 Marking

8.1.1 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 supplier;



l length
A point of rest

Figure 1 — Strength test for a spoon

[1)] Boiling water

b) A reference to this Standard in combination with the following roman numerals (See **6.2**):

I for first class gold coating;

II for second class gold coating;

III for third class gold coating.

NOTE National marks already in use may also be used if required.

8.2 Labelling

The following information shall be made available at the point of sale:

a) the number of this Standard and a statement that the cutlery meets the requirements of the standard;

b) for gold plated cutlery, whether the gold coating is of first, second or third class and whether the base metal is of ferritic stainless steel or of austenitic stainless steel or nickel-silver or solid silver;

c) if there is an undercoat of silver, whether the silver coating is of first, second or third class. (see EN ISO 8442-2)

This information may be provided as leaflets on the packaging or by means of labelling or on a display card or in any other suitable form.

8.3 Marking, labelling and advertising the fineness of gold content of the coating

There shall be no indication of the fineness of the gold content.

Annex A (normative)
Test method for average thickness of gold coating

A.1 Principle

The gold coating is chemically dissolved from the item. Then the gold content of the solution is measured by means of the Atomic absorption spectroscopy (AAS). The calculated factor is reduced to the surface.

A.2 Stripping solution

For removing the gold coating from gold plated stainless steel or nickel-silver use a suitable stripping solution[2)].

A.3 Procedure

Degrease the item with a dishwashing detergent, rinse in water and put into the stripping solution prepared as prescribed. After the gold coating has been completely removed, wash down the item with completely distilled water above the retort in order to measure also the stripping solution which is still sticking to the item. After refilling to a defined volume the determination is done by the AAS-flame-method.

A.4 Expression of results

Calculate the average thickness of gold coating, δ, in µm by the following formula:

$$\delta = \frac{m \times 10000}{A \times 19,3}$$

where:

m is the measured gold content of the stripping solution in g;

A is the area in cm^2 (see Annex B);

19,3 is the specified weight of the gold.

Annex B (normative)
Schlegel method of determining surface area

B.1 Principle

Under controlled conditions, the test item is coated with an adhesive and dipped in a fluidized bed of water-repellent or perfectly dry glass beads of uniform size; the mass of beads adhering to the item is proportional to the surface area of the test item.

The relationship between the mass of beads and the surface area of the item is determined by applying the test to a standard specimen of known area, i.e. a regular shape whose area can be measured easily.

B.2 Apparatus and materials

B.2.1 *Fluidized bed*, bed of glass beads (see **B.2.5**) with a supply of fluidizing air and means for heating the incoming air if water repellent beads are not used; this may be in the form of an electric heating element, near to the bottom of the bed, regulated by a voltage control, and sufficient to raise the temperature of the fluidized beads to between 50 °C and 80 °C.

NOTE It is not advisable to control bead temperature by means of a thermostatic device because, when the power supply is disconnected from the heating element, the beads may pick up moisture from the air supply.

B.2.2 *Laboratory balance*, capable of weighing to an accuracy of ± 2 mg.

B.2.3 *Hoist*, for withdrawing the test item from the adhesive at 20 mm/min.

B.2.4 *Adhesive*, composed of

alkyd resin	1 part by mass
toluene (sulphur free)	1 part by mass

B.2.5 *Glass beads*, graded from 200 µm to 250 µm, preferably of water repellent type.

NOTE Commercially available glass beads nominally graded to these limits may contain an undesirable proportion outside the limits; normally they should be regraded.

B.2.6 *Specimens of known area*, (at least two) in stainless steel, as follows:

a) a cylinder, of approximately 16 mm diameter and 100 mm in length, to indicate the mass of glass beads per square centimetre picked up by hollow handles;

b) a rectangle, of approximately 100 mm × 30 mm × 1 mm, to indicate the mass of glass beads per square centimetre picked up by areas other than hollow handles.

[2)] Stripping solution 645 is the trade name of a product supplied by Degussa Ag, Office : Electroplating, Klarenbergstr. 53-79, D-73525 Schwaebisch Gmuend. Enstrip Au-78 is the trade name of a product supplied by Enthone-OMI (Germany) GmbH, Niermannsweg 3-5, D-40699 Erkrath. This information is given for the convenience of users of this standard and does not constitute an endorsement by CEN of the products named. Equivalent products may be used if they can be shown to lead to the same results.

B.3 Procedure

B.3.1 Ensure that the glass beads (see **B.2.5**), not of the water-repellent type, are thoroughly dry so that they do not adhere to each other. Beads, not of the water-repellent type, may be dried and prevented from reabsorbing moisture from the air supply by preheating them in the fluidized bed at between 50 °C and 80 °C until no beads will adhere to a clean, dry item of cutlery that is dipped into them. Usually a drying time of 1 h is adequate.

NOTE It has been found that once any moisture has been eliminated the beads will stay dry while the heating element remains switched on.

Maintain the temperature of the fluidized bed of glass beads at 50 °C to 80 °C until the procedure described in **B.3.8** has been reached. If water-repellent beads are used, the bed may be used at ambient temperature for the procedure described in **B.3.7**.

B.3.2 Attach a thin wire hanger to the test item with a loop for suspension during weighing etc.

B.3.3 Thoroughly clean the test item in methylated spirits.

B.3.4 Dip the test item in the adhesive (see **B.2.4**) and withdraw at 20 mm/min using the hoist (see **B.2.3**). If the surface area of the handle only is to be measured, only the handle should be immersed in the adhesive. Do not allow the test item surface to come into contact with anything until stage **B.3.7** is reached.

B.3.5 Allow the adhesive to dry for 60 min ± 5 min.

B.3.6 Weigh the test item to the nearest 2 mg.

B.3.7 Immerse and continuously agitate the test item in the fluidized bed of glass beads for 10 s ± 1 s. During immersion the air flow should be vigorous enough to raise mounds of beads to a height of at least 40 mm above the bed of fluidized beads. Do not immerse more suspension wire than necessary.

B.3.8 Reweigh the test item to the nearest 2 mg.

B.3.9 Carry out a duplicate test on each item; include at least two specimens of known area (see **B.2.6**) in each batch of items tested.

B.4 Expression of results

B.4.1 *Method of calculation*

Calculate the area, A, in square centimetres, of the item using the formula

$$A = \frac{m}{Q_A}$$

where

m is the mean mass, in grams, of beads adhering to the test item;

Q_A is the mean surface mass density, in grams per square centimetre, of beads corresponding to the mass adhering to the relevant specimen of known area.

B.4.2 *Accuracy*

The method is capable of an accuracy of ± 1,5 % for all sizes and items of cutlery.

Annex C (normative)
Test method for corrosion resistance of unplated stainless steel cutlery

C.1 Principle

The test samples are intermittently immersed in a 1 % solution of sodium chloride (NaCl) maintained at 60 °C ± 2 °C for 6 h. The number and size of any pits that have formed are measured visually with the aid of a microscope lens.

C.2 Reagents

During the test, unless otherwise stated, use only reagents of recognised analytical grade and only distilled water or water of equivalent quality.

Sodium chloride, 1 % (m/m) solution consisting of one part by mass sodium chloride in 99 parts demineralised/distilled water.

C.3 Apparatus

A suitable apparatus is shown in Figure C.1, and comprises a glass or plastics container and a cover, which may be glass or plastics, and a plastics specimen rack with means to raise and lower this into the container.

NOTE Other methods of specimen support may be used provided that there is a minimal contact of the specimen with the supporting means.

Calibrated microscope or lens of at least 4 times magnification.

C.4 Procedure

C.4.1 Wash the selected samples thoroughly in hot soapy water. Thoroughly rinse and then degrease the samples in acetone or methylated spirits.

C.4.2 Fill the container with the sodium chloride solution (see **C.2**) using at least 1 litre of solution for every square decimetre of area of the stainless steel parts of the samples. Bring the container and contents to 60 °C ± 2 °C. Maintain at this temperature. Do not allow the temperature of the solution to exceed 62 °C at any time, even before the start of the test. Use a fresh sodium chloride solution for each test.

NOTE The temperature of the sodium chloride solution can be conveniently maintained at 60 °C ± 2 °C by positioning the apparatus in a thermostatically controlled water bath, the level of which is maintained at approximately the same level as that of the sodium chloride solution.

C.4.3 Place the sample in the rack and, in the case of knives with stainless steel handles, support the handles in such a way that they do not come into contact with the rack. Replace the cover.

C.4.4 Completely immerse and completely withdraw the samples from the solution at the rate of from two to three times per minute for 6 h.

C.4.5 At the conclusion of the test period, thoroughly wash and rinse the samples and examine for corrosion.

NOTE Products of corrosion that impede visual examination of corrosion pits can be removed by hand rubbing the surface of the cutlery with a stainless steel polishing paste applied with a soft cloth.

C.5 Expression of results

Assess the size of pits and the length of longitudinal cracks per test specimen visually with the aid of a calibrated microscope or lens of at least four times magnification. Where two pits have obviously merged together they shall be assessed as two separate pits.

NOTE The use of wires of diameter 0,4 mm and 0,75 mm respectively, placed in contact with the sample surface, provides a convenient method of assessing the size of pits with a hand lens.

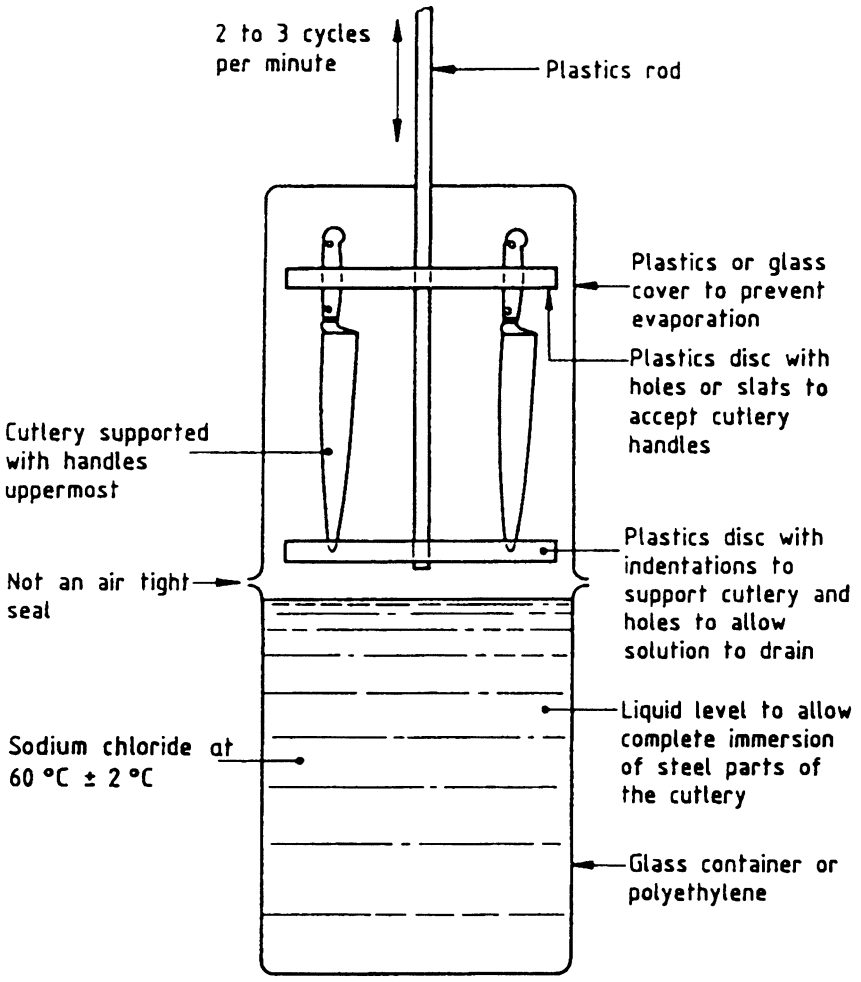


Figure C.1 — Apparatus for corrosion test

Annex D (normative)
Test method for strength of knives with martensitic stainless steel blades and carving forks

D.1 Principle

The knife, or carving fork, clamped at the handle and loaded at the blade or prong tip, is raised until the load is just lifted. The angle of permanent deformation after release of the load is measured.

D.2 Apparatus

Apparatus suitable for carrying out the test as shown in Figure D.1.

NOTE The hand lever shown in Figure D.1 should not be attached before both scales are set to zero and should be removed before the angle of permanent set is measured; otherwise the hand lever exerts a torque on the pivoted clamp which will result in false measurements of permanent set.

D.3 Procedure

D.3.1 Clamp the handle of the sample to be tested in the pivoted clamp. Position the handle in the clamp so that during the test the tip of the blade, or carving fork prongs, and the end of the handle will remain in essentially the same horizontal plane.

D.3.2 Clamp the blade to the unloaded tip clamp, ensure that the hand lever is removed from the apparatus and then set both scales to zero.

D.3.3 Connect the test load to the tip clamp and rotate the shaft of the pivoted clamp by means of the hand lever until the tip clamp just rises from the guide rails. Maintain it in this position for 10 s. Return the hand lever to a position of rest and remove the hand lever. Remove the load from the tip clamp and read off the angles of deflection, a and b from the relevant scales. Add these two angles to give the angle of permanent deformation (see Figure D.2).

D.3.4 Turn the sample over and repeat the test in the opposite direction.

D.4 Expression of results

Calculate the permanent deformation as the average of the angles of permanent deformation in the two directions.

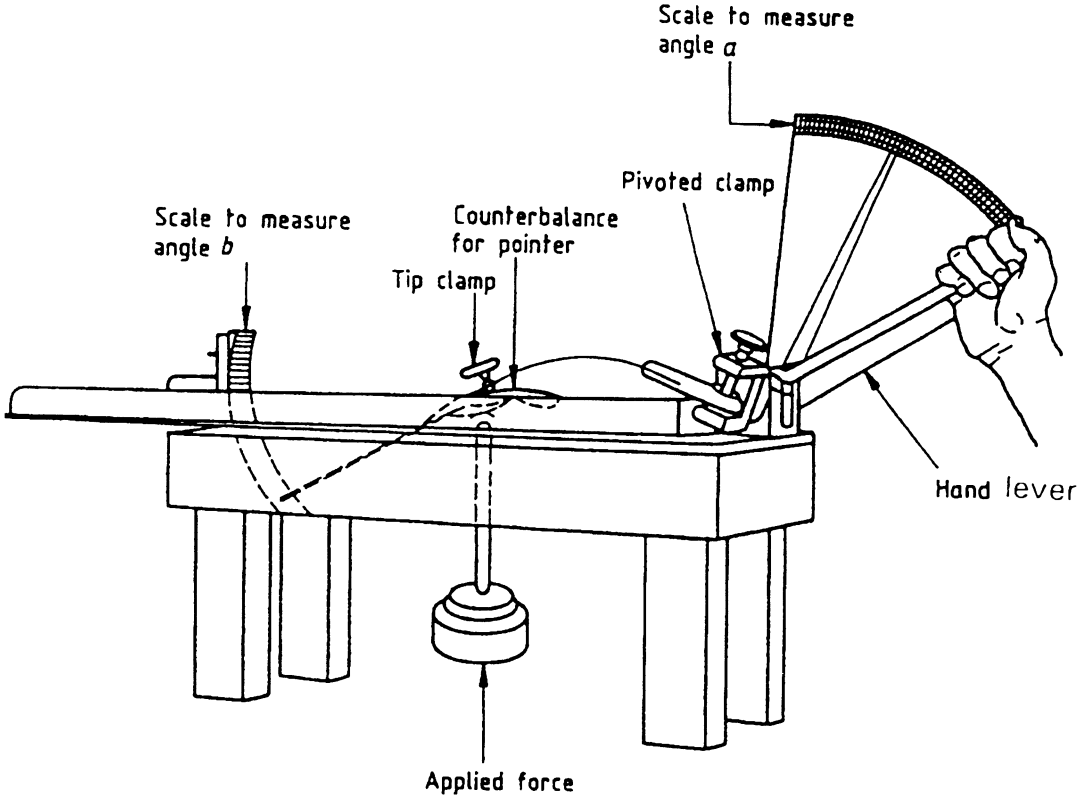


Figure D.1 — Strength test apparatus for knives

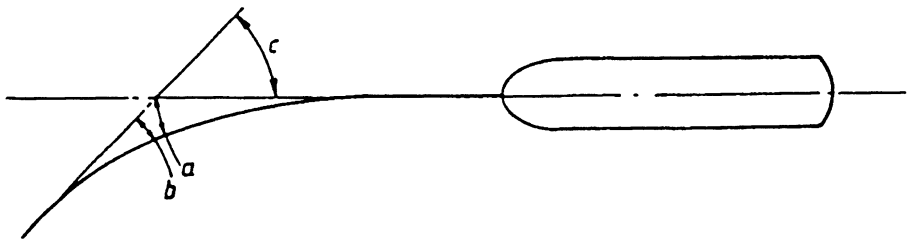


Figure D.2 — Determination of angle of permanent deformation

Annex E (normative) Test method for adhesion of gold coatings

E.1 Principle

Cutlery items are examined after polishing in a silver polishing machine, using a polishing solution.

E.2 Method of test and materials

Items are polished for 40 min using a polishing solution[3)].

E.3 Expression of results

Report any signs of abrasion of the gold coating.

Annex F (informative) A-Deviations

A-deviation: National deviation due to regulations, the alteration of which is for the time being outside the competence of the CEN/CENELEC member.

This European Standard does not fall under any Directive of the EU. In the relevant CEN/CENELEC countries these A-deviations are valid instead of the provisions of the European Standard until they have been removed.

Clause	Deviation
Table 1	**France** Order of 13 January 1976 relative to stainless steel materials and objects in contact with foodstuffs: Article 2 Where the minimum chromium content given in Table 1 is less than 13,00 %, replace with “13,00 % min Cr”

[3)] WMF — Paragan (supplier: WMF-Wuerttembergische Metallwarenfabrik AG, POB 1401, D-73309 Geislingen/Steige) is an example of a suitable product available commercially. This information is given for the convenience of users of this standard and does not constitute an endorsement by CEN of the products named.

Annex G (informative)
Bibliography

Directives of the European Community

EC 89/109	Dated 11.02.1989, Official Journal EC 1989, No L 40/38 page 38 Directive of the Council for the Harmonization of the Legal Procedures of the Member States concerning Materials and Utensils determined to come into contact with Foodstuffs
EC 90/128	Dated 23.06.92, Official Gazette EC 1992, No L 168/21 Directive of the Council for the Harmonization of the Legal Procedures of the Member States relating to plastics materials and articles intended to come into contact with Foodstuffs

European Standards

EN 10088-1:1995	Stainless steels — Part 1: List of stainless steels

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