INTERNATIONAL STANDARD

ISO 8442-3

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

Part 3:
Requirements for silver-plated table and decorative holloware

Matériaux et objets en contact avec les denrées alimentaires — Coutellerie et orfèvrerie de table —

Partie 3: Exigences relatives à l'orfèvrerie de table et décorative en métal argenté

Reference number
ISO 8442-3:1997(E)

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 8442-3 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*

— *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*

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— *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*

Annexes C to K form an integral part of this part of ISO 8442. Annexes A and B are for information only.

Contents

Foreword

The text of EN ISO 8442-3:1997 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.

Introduction

This Standard is based on ISO/TC186 work and is concerned only with the performance of silver-plated table and decorative holloware and does not include requirements for design, size or any other characteristics which are matters of personal choice or which can be readily assessed by the purchaser at 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 part of this Standard specifies material, performance requirements and test methods for silver-plated table and decorative holloware made principally from metals, and intended for use at or upon the dining table.

Composition limits are specified for the basic metals for fabrication of the holloware prior to silver-plating.

This standard applies to decorative items such as vases and trophies and includes such items as jugs, dishes, tea- and coffee-pots, trays and tureens, candlesticks, wine-coolers etc.

Requirements are specified for brass, copper, nickel-silver, pewter and stainless steel holloware with a silver-plated coating and for silver-plated cast attachments thereto.

The thickness levels of silver coatings are specified as first, second and third class, these deposits can also be protected by lacquer.

The standard does not apply to holloware made entirely of precious metals, brass, nickel-silver, pewter, stainless steel or that made from ceramics or glass.

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
EN ISO 8442-2:1997	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 those from EN ISO 8442-2 : 1997 apply together with the following.

3.1 table holloware: Items generally formed into a hollow shape for the containment of food or drink (see annex A).

3.2 decorative holloware: Items generally formed into a hollow shape but not performing a purpose with respect to food or drink and including items which may not have a discernible interior surface (see annex A).

3.3 functional surface: The exterior surface of table or decorative holloware and trophies or the interior surface of a shallow item of holloware, the surface of which will receive usage equivalent to, or exceeding that, of the exterior.

3.4 non functional surface: The surface of an item of holloware which is silver-plated principally for aesthetic reasons e.g. the interiors of coffee-pots and vases or which is silver-plated for use with food or drink but which will receive a minimum of abrasive usage.

3.5 attachment: Components of an item of holloware joined to it by a process such as welding, brazing or soldering and comprising such items as handles, knobs, feet, spouts, stems and hinges.

3.6 load-bearing attachment: An attachment upon which a force resulting from the support of the mass of the holloware and/or its contents will be applied in normal use and comprising such items as handles, taps, feet, bases, spouts and goblet stems.

3.7 burrs: Metal in excess of that required to shape an article and which forms a thin plate at its edges.

3.8 oven-to-tableware: Items of holloware suitable for use in an oven or on a hotplate at temperatures of up to 250 °C such as e.g. vegetable dishes, meat flats, gravy boats, soup tureens, entrée dishes.

3.9 vessel: An item of holloware specifically intended as a container for food and/or liquid.

3.10 usable capacity: The volume of liquid required to fill a vessel to 15 mm ± 1 mm of its rim.

3.11 popping: Sudden transformation of an apparently flat surface of an item of holloware from convex to concave when a load is applied to the convex side, usually accompanied by a distinctive sound.

3.12 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 Metals

4.1.1 The composition of the metals of fabrication of the holloware shall be as given in table 1.

4.1.2 Silver coatings shall be a minimum of 98,5 % Ag.

4.2 Non-metals

Non-metal parts of silver-plated holloware may be made of such materials as glass, ceramic, bone, horn, vulcanized fibres, plastics, wood, wood-plastics laminates or impregnated wood provided that the finished holloware complies with the relevant performance requirements of clause 6. Non-metal parts of table holloware shall be capable of withstanding washing processes in aqueous solutions at 60 °C.

Table 1: Basis metals for silver-plated table and decorative holloware, composition limits

Materials	Chemical composition % [1]									
	C max.	Cr min.	Ni min.	Cu min.	Mn max.	Fe max.	Pb max.	As max.	Sn min.	Zn min.
Austenitic stainless steel	0,10	17	8							
Ferritic stainless steel		16	-							
Nickel-silver (Cu, Ni,Zn)			9	60	0,5	0,3	0,5			balance
Brass(Cu, Zn)				62						
Copper				99,4			0,2	0,2		
Pewter							0,5		90	
Alloy[2]							0,3			balance

1) Further chemical compositions are given in EN 10088-1.

2) For attachments not coming into contact with food only.

5 Construction

5.1 Silver-plating

5.1.1 General

The requirements for minimum thicknesses of silver coating given in 5.1.2 and 5.1.3 shall not apply to the internal surfaces of: spouts, candelabra or any narrow ribbed sections of an item of holloware.

5.1.2 Average thickness

The average thickness of silver coating on the appropriate surface of each finished item, when measured in accordance with the methods described in annex A (mass of coating) and annex B (area of coating), of EN ISO 8442-2 : 1997 shall not be less than those given in table 2.

NOTE: For routine quality control purposes the average thickness can be determined by a non-destructive technique such as weighing before and after plating or by a statistically significant number of local thickness measurements provided that the technique adopted can be shown to give equivalent results to the specified method.

5.1.3 Local thickness

The minimum local thickness of silver coatings on functional and non-functional surfaces (see annex A of EN ISO 8442-2:1997) shall be not less than 60 % of the average thickness deemed to be on the item. Minimum local thickness shall be measured in accordance with one of the methods specified in ISO 2177, ISO 1463, ISO 3543 or ISO 3497.

In cases of dispute the thickness shall be measured by the method described in ISO 1463.

Table 2: Average thickness of classes of silver-coatings

Class of quality	**Symbol**	**Type of holloware**	Min. average thickness	
			Functional surface	**Non-functional surface**
First class	I	Table holloware Decorative holloware	15 µm 10 µm	3 µm 3 µm
Second class	II	Table holloware Decorative holloware	9 µm 6 µm	2 µm 2 µm
Third class	III	Table holloware Decorative holloware	5 µm 3 µm	2 µm 2 µm

5.2 Uniformity and absence of defects

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

5.2.2 All accessible edges shall be free from burrs and the roughness of blanked edges shall have been removed.

5.2.3 There shall be no gaps in excess of 0,4 mm between components and seams joining hollow sections together shall be watertight unless required by the design.

5.2.4 Compliance with the requirements of 5.2.1 to 5.2.3 shall be checked by touch or by visual inspection with normal corrected vision and 5.2.3 with a feeler gauge of appropriate thickness.

5.3 Lacquered products

NOTE: If lacquer is applied, attention is drawn to the current food contact regulations.

5.3.1 Performance in dishwashers

Subject the test specimens to 50 dishwashing cycles. After dishwashing the lacquer shall be free from white colourations and shall show no signs of looseness, blistering or peeling.

NOTE: A test procedure is being developed.

Slight damage to the lacquer starting at the edge is permissible.

5.3.2 Resistance to scratching

After testing in accordance with annex C the lacquer shall exhibit only insignificantly matt stripes.

5.3.3 Resistance to ultra-violet radiation

After testing in accordance with annex D the lacquer shall be free from discolouration.

6 Performance requirements

6.1 Strength under load

6.1.1 Resistance of rectangular and square trays and dishes to twisting

The temporary deflection of a rectangular or square tray or flat dish exceeding 300 mm at its maximum axis shall not exceed 3,5 mm in 100 mm deviation from flat in any diagonal across the surface of the base when tested in accordance with annex E.

6.1.2 Resistance of trays and dishes to popping

A tray or dish shall not exhibit popping when tested in accordance with annex F.

6.1.3 Load strength of vessels

A vessel shall exhibit no visible permanent deformation when tested in accordance with annex G.

6.2 Attachment strength

There shall be no breakage, visible deformation or disengagement of any load bearing attachment when it is tested in accordance with annex H.

There shall be no breakage, visible deformation or disengagement of a lid knob or any hinge retaining the lid when a vessel is suspended by the lid knob whilst containing a mass in grams, equal to 1,5 times its usable capacity in millilitres.

6.3 Stability

When placed on a hard plane surface an item with feet shall be stable to within the clearance limit given in table 3 and no flat item shall be capable of being spun around by the application of a tangential force.

Table 3: Stability requirements

Overall width of item at its widest axis mm	Maximum permitted clearance between any foot and a plane surface mm
width ≤ 99	0,25
99 < width < 150	0,40
width ≥ 150	1,0

6.4 Pouring

Spout openings shall pour cleanly without dribbling when tested in accordance with annex J.

6.5 Temperature of handles and leakage

The maximum temperature of any point which is contacted by the hand in normal use on a handle of a vessel intended to contain hot liquid shall not exceed the following when tests in accordance with the method described in annex K.

- for handles of plastics, wood or similar material: 70 °C;
- for glass, porcelain or similar: 60 °C;
- for insulated metal handles: 50 °C.

There shall be no leakage from the vessel during the test.

6.6 Adhesion of silver coating

Silver coatings shall show no signs of looseness, blistering or peeling, when the holloware is tested in accordance with Annex E of EN ISO 8442-2 : 1997, or where the item of holloware is too large to be fitted within this apparatus, when subjected to 250 °C ± 10 °C for 30 min ± 5 min followed by immediate quenching in water at 20 °C ± 5 °C.

All attachments shall be secure (see 6.2) following the test described in annex H.

The disintegration in the heat/quench test described in this clause of a soft-soldered item not claimed to be oven-to-tableware is disregarded provided that the adhesion of the silver plating is satisfactory.

6.7 Heat resistance

Items identified by the manufacturer as oven-to-table ware and vessels in which hot liquids such as coffee, tea, water, or milk can be reheated on a stove top (see 7.2 e)) shall exhibit no discolouration or signs of failure or weakness either in seams or at welded and soldered areas during or after subjection to the heating and quenching test described in clause 6.6.

7 Marking and labelling

7.1 Marking

7.1.1 Each item of silver-plated holloware shall be legibly and indelibly marked with the following:

a) the name and/or trademark or other means of identifying the manufacturer or supplier;

b) a reference to this Standard in combination with the following roman numerals:

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.

7.2 Labelling

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

a) the number of this Standard;

b) whether the item is table holloware or decorative holloware;

c) whether the silver coating is of the first, second or third class, the material of the basis metal and whether the item is protected by lacquer;

d) the materials from which any non-metal parts are made;

e) whether the item is oven-to-tableware and whether it can be reheated on a stove top.

Annex A (informative)

Classification by product type

Table A.1: Classification by product type

Typical Products	Classification	
	Article in contact with foodstuffs[1)] (Table holloware)	**Article not in contact with foodstuffs (Decorative holloware)**
Food plates, dishes, trays, bowls, baskets, containers and any lids thereof	+	
Trays (general purpose), ashtrays		+
Finger bowls, knife rests, napkin rings		+
Cups, mugs, goblets	+	
Saucers, coasters, mats, stands		+
Teapots, coffee pots, strainers	+	
Jugs, pitchers, ewers, sauceboats	+	
Condiment and sugar containers and dispensers	+	
Condiment and cruet stands		+
Bread, fruit and vegetable baskets, bowls and plates	+	
Food tongs, skewers, crackers, scissors, squeezers, graters	+	
Nutcrackers, cork tongs		+
Cocktail shakers, preparation tools and serving equipment	+	
Wine bottle stoppers, pouring lips, tasting and decanting equipment	+	
Wine baskets, buckets, trays, racks, corkscrews, bottle openers		+
Place markers, menu holders, centrepiece accessories		+
Flower holders, vases, bells, candle holders, lamps		+
Hotplates		+
Trophies, display plates, photo frames		+

1) If unlined

Annex B (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 Journal 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

Materials and articles in contact with foodstuffs - Test methods for mechanical dishwashing resistance of domestic utensils (WI: 00194013).

Annex C (Normative)

Test method for resistance of lacquering to scratching

C.1 Principle

The test specimen is secured on a horizontal surface and is mechanically rubbed with a felt pad. The test specimen is then examined for scratching.

C.2 Materials

Felt pad[2)] made from 100 % wool fibre with a thickness of 3 mm $\pm$ 0,3 mm and a density of 0,36 g/cm^3.

C.3 Apparatus

A schematic diagram of a suitable apparatus is given in figure C.1.

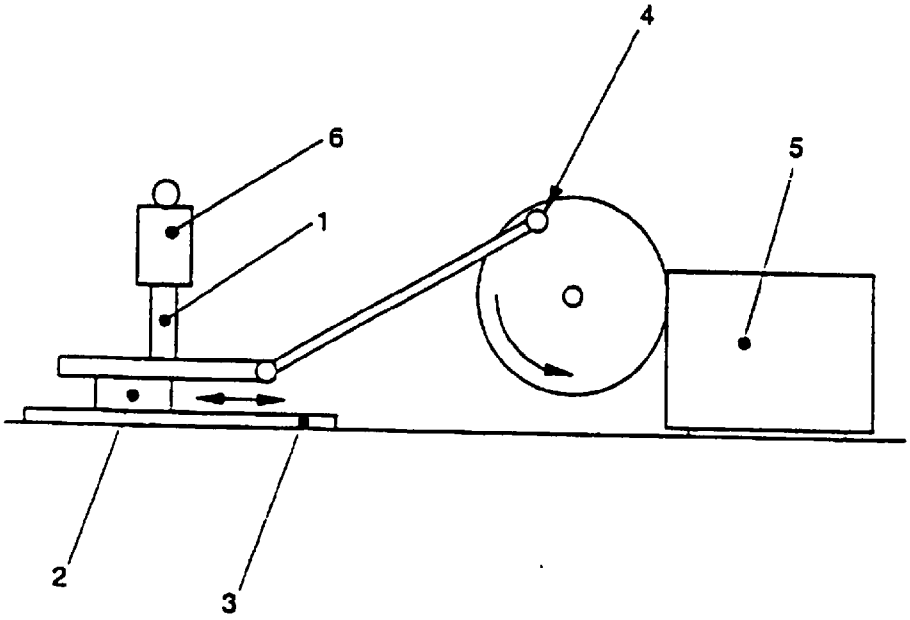
C.4 Procedure

Secure the test specimen (3) on a horizontal surface. Secure the felt pad (2) on the horizontal slide (1) so that the total area of felt in contact with the test specimen is 3 cm^2, apply a load (6) so that the total load on the felt pad is 10 N and rotate the eccentric cam (4), by means of the gear motor (5), 100 times so that the felt pad reciprocates across the surface of the test specimen. The felt pad shall move 40 mm in each direction.

C.5 Assessment

Examine the rubbed surface (see 5.2.4) by moving the surface to display any scratching. There shall be either no scratching of the lacquer or not more than slight sporadic scratches.

[2)] Felt pad, Type T22/O36, 3 mm thick, supplied by Vereinigte Filzfabriken AG, Hermaringen/Gerschweiler, Geingener Weg 66, D-89537 Giengen, Germany 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 this product.



1 Slide
2 Felt pad
3 Surface of test specimen
4 Eccentric cam
5 Gear motor
6 Load

NOTE: Not to scale

Figure C.1 Diagram illustrating the mechanism of a suitable resistance to scratching apparatus.

Annex D (Normative)

Test method for resistance of the lacquer to ultraviolet radiation

D.1 Principle

Lacquered, lightly silver-plated table and decorative holloware is subject to an irradiation of 80 h by a spot lamp with a wave length of 366 nm, capacity 180 W.

D.2 Apparatus

A lamp capable of providing ultraviolet radiation with a wavelength of 366 nm, capacity 180 W for 80 h.[3)]

D.3 Procedure

Cover half the test specimen so that it receives no ultra violet radiation. Expose the uncovered half of the test specimen to the ultraviolet radiation for 80 h.

D.4 Assessment

After completion of the test no yellowing shall be detectable on the radiated surface in comparison with the screened off part.

[3)] The Fluotest Forte ® produced by Heraeus GmbH, P.O. Box 1553, 63457 Hanau, Germany 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 this product.

Annex E (normative)

Test method for the resistance of rectangular and square trays and dishes to twisting

E.1 Principle

Rectangular and square trays and dishes are examined for twisting deformation during the application of a load simulating that likely to occur in normal use.

E.2 Apparatus

E.2.1 Supports, rigid rectangular bars with one side 70 mm ± 5 mm.

E.2.2 Loads, cylindrical weights of diameter 80 mm ± 5 mm and a mass 2,5 kg ± 0,1 kg.

NOTE: The supporting area of the bars and the base area of the weights may be covered by, for example, felt or baize to minimize scratching of plated surfaces.

E.3 Procedure

E.3.1 Support the test specimen on two bars placed at diagonally opposite corners, as shown in figure E.1 and load the supported test specimen with two weights disposed at the adjoining extreme corners of the test specimen. After not less than 30 s measure and record the temporary deflection of the loaded surface.

E.3.2 Move the supporting bars to the adjoining corners of the test specimen and repeat.

E.3.3 Expression of results

Calculate the total deflection under load from the following:

$$d = \frac{100\,(a + b)}{L}$$

where

d is the total deflection under load expressed as millimetres of deflection per 100 mm of tray length (mm / 100 mm)

a is the temporary deflection of the loaded surface at point a

b is the temporary deflection of the loaded surface at point b

L is the diagonal length.

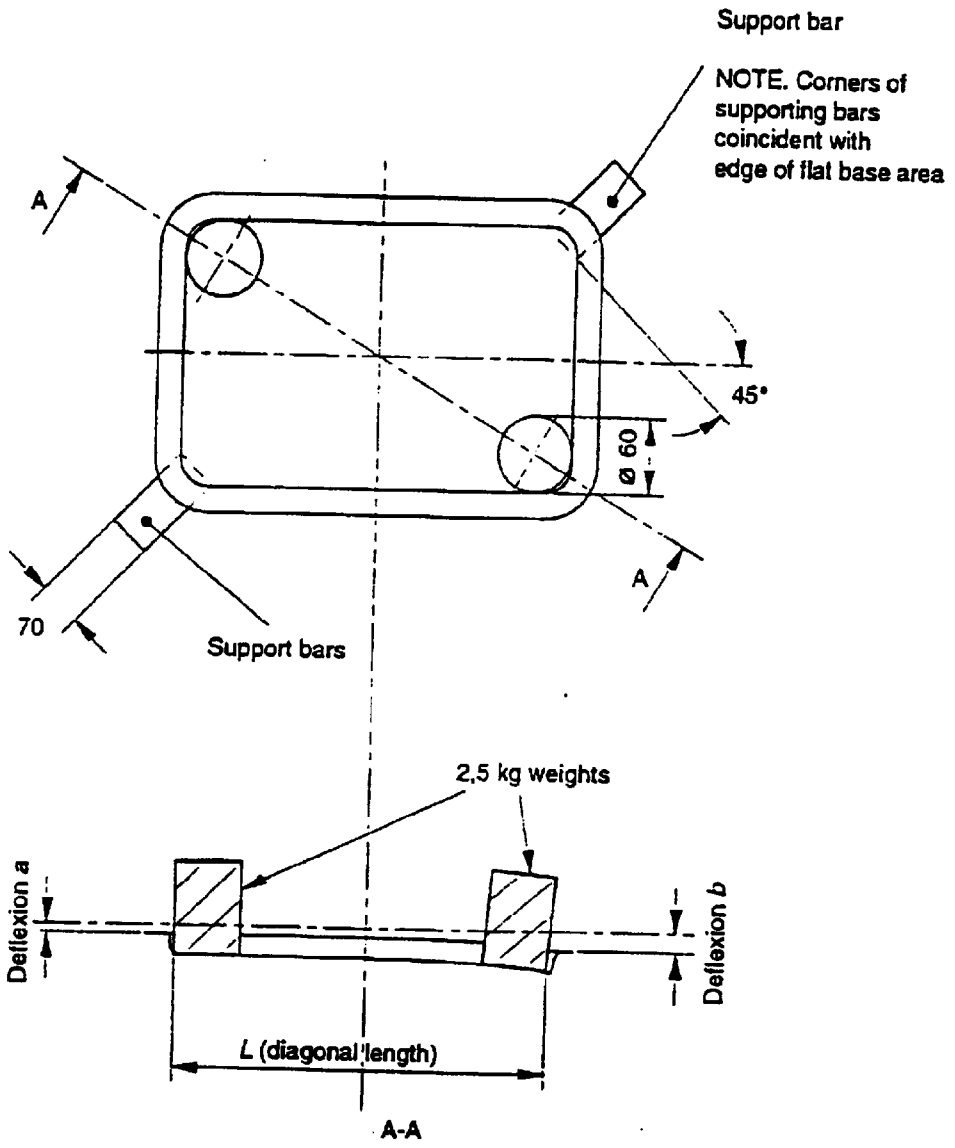


Figure E.1: Twist test for trays and dishes

Annex F (normative)

Test method for the resistance of trays and dishes to popping

F.1 Principle

Trays and dishes are examined for popping by the application of a load simulating that likely to occur in normal use.

F.2 Apparatus

F.2.1 Load, according to annex E.2.2.

F.3 Procedure

F.3.1 Raise the test specimen clear of any supporting surface by its normal means of lifting and apply the cylindrical weight to any appropriate point on the flat surface of the test specimen and then remove it. Record whether any popping of the loaded surface occurs during application and/or removal of the load.

F.3.2 Turn the test specimen over and repeat F.3.1.

Annex G (normative)

Test method for load strength of a vessel

G.1 Principle

Vessels are examined for deformation after lifting when filled with a load exceeding that likely to occur in normal use.

G.2 Apparatus

G.2.1 Load, metal spheres of diameter 10 mm ± 5 mm.

G.3 Procedure

G.3.1 Determine the usable capacity of the test specimen by filling it to within 15 mm ± 1 mm of the rim with a known volume of water at 20 °C ± 5 °C.

G.3.2 Place into the test specimen, without undue impact, a mass of metal spheres equivalent to 3 g for every millilitre of usable capacity of the item for items of capacity 5 l or less, or 1,5 g for every millilitre of usable capacity for items of capacity over 5 l. Raise the test specimen clear of any supporting surface by its normal means of lifting; after not less than 30 s remove the metal spheres, observe and record any permanent deformation of the test specimen.

NOTE: The metal spheres can be retained within a flexible plastics bag for convenience of handling.

Annex H (normative)

Test methods for strength of attachments

H.1 Principle

Attachments to holloware are examined for breakage, deformation or disengagement resulting from the application of a force simulating that likely to occur as the result of a minor abuse such as dropping.

H.2 Apparatus

H.2.1 Load, metal weight of mass 10 kg ± 0,01 kg suspended from a cord terminating in a loop or clamp.

H.3 Procedure

H.3.1 Loop the cord around, or clamp it to, the attachment to be tested and raise the test specimen so that the weight is in free suspension with its mass acting vertically downwards.

H.3.2 Rotate the test specimen so that the force is transferred to all relevant points on the attachment and record any breakage, deformation or disengagement of the attachment.

Annex J (normative)

Test method for pouring

J.1 Principle

The pouring efficiency of spouts is evaluated by tilting the vessel, filled to its usable capacity with water at a controlled rate.

NOTE: Traces of detergent from washing processes promote dribbling; any vessel which has been washed with the aid of a detergent should be thoroughly rinsed not less than five times in deionized water prior to testing for pouring efficiency.

J.2 Apparatus

J.2.1 Tilt platform, capable of traversing an angle of 70° at 5° ± 1°/min.

J.3 Procedure

J.3.1 With the platform in the horizontal position, place the test specimen under test upon it (suitably restrained, e.g. by means of a large rubber band) and fill it to within 15 mm ± 1 mm of the rim with deionized water at 20 °C ± 5 °C. Tilt the platform at 5° ± 1° per minute so that water emerges only from the spout, until an angle of 10° ± 1° to the horizontal is reached. Record the form of pouring which takes place. Return the test specimen to the horizontal position at the same speed and record whether dribbling down the outside of the test specimen occurs.

NOTE: If water emerges over the rim of a vessel in this test, the pouring angle should be reduced progressively until this no longer occurs.

J.3.2 Repeat the procedure described in J.3.1 for angles increasing successively by 10° ± 1° to a maximum of 70°.

Annex K (normative)

Test method for temperature of handles and leakage

K.1 Principle

The vessel is filled to its usable capacity with hot water simulating its use in service and the maximum temperature reached by the handle is measured. A dye is added to the water to provide indication of any leakage which may occur.

K.2 Apparatus

K.2.1 Thermocouple, accurate to ± 3 °C in the range 30 °C to 100 °C and consisting of a surface contact probe capable of being held in intimate contact with a handle.

K.2.2 Soluble dye

K.3 Procedure

K.3.1 Fill the test specimen under test to within 15 mm ± 1 mm of the rim with boiling water.

After approximately 30 s pour away the water and quickly replace it with an equal quantity of boiling water coloured using the soluble dye.

K.3.2 Place the vessel on white filter paper and by means of the thermocouple measure, at frequent intervals, the temperature attained on all parts of the handle which will be contacted in normal use of the item, until this temperature begins to fall. Record the ambient temperature during testing and the maximum temperature attained at any point on the handle.

K.3.3 Remove the filter paper after approximately 30 min and examine this for any traces of dye resulting from leakage of the test specimen.

ICS 67.250; 97.040.60

Descriptors: tableware, silver plating, holloware, specifications, materials specifications, performance, tests, performance tests, marking, labelling.

Price based on 19 pages