BRITISH STANDARD

BS EN ISO 4535:2000

BS 1344-19: 2000

Incorporating Amendment No. 1 to BS 1344-19 (renumbers the BS as BS EN ISO 4535:2000)

Vitreous and porcelain enamels — Apparatus for determination of resistance to hot detergent solutions used for washing textiles

The European Standard EN ISO 4535:1998 has the status of a British Standard

ICS 25.220.50

Committees responsible for this standard

The preparation of this British Standard was entrusted by the Surface Coatings (other than Paints) Standards Committee (SRC/-) to Technical Committee SRC/7 upon which the following bodies were represented:

Association of Manufacturers of Domestic Electrical Appliances
Bcira
British Bath Manufacturers' Association
British Gas Corporation
Consumer Standards Advisory Committee of BSI
Electricity Supply Industry in England and Wales
Institute of Vitreous Enamellers
Metal Sink Manufacturers' Association
Society of British Gas Industries
Vitreous Enamel Development Council
Coopted members

This British Standard, having been prepared under the direction of the Surface Coatings (other than Paints) Standards Committee, was published under the authority of the Board of BSI and comes into effect on 31 October 1984

The following BSI references relate to the work on this standard:
Committee reference SRC/7
Draft for comment 82/53070 DC

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Amendments issued since publication

Amd. No.	Date of issue	Comments
10426	May 2000	Renumbers the BS as BS EN ISO 4535:2000

National foreword

This British Standard is the official English language version of EN ISO 4535:1998. It is dual numbered as BS 1344-19:2000. It supersedes BS 1344-19:1984 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee STI/36, Vitreous enamel coatings, 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.

BS 1344 is now published in 22 parts.

— *Part 1: Determination of resistance to thermal shock of coatings on articles other than cooking utensils and fabricated sheet steel components*;

— *Part 2: Resistance to citric acid at room temperature*;

— *Part 3: Determination of resistance to sulfuric acid at room temperature* (now numbered as BS EN ISO 8290);

— *Part 4: Resistance to abrasion* (obsolescent);

— *Part 5: Determination of resistance to hot detergent solutions used for washing textiles*;

— *Part 6: Resistance to alkali*;

— *Part 7: Determination of resistance to heat*;

— *Part 8: Determination of resistance to boiling citric acid*;

— *Part 9: Determination of resistance to boiling water and water vapour*;

— *Part 10: Determination of resistance to boiling hydrochloric acid vapour*;

— *Part 11: High voltage test for enamelled articles for service under highly corrosive conditions*;

— *Part 12: Production of specimens for testing coatings on sheet steel*;

— *Part 13: Production of specimens for testing coatings on cast iron*;

— *Part 14: Apparatus for testing with acid and neutral liquids and their vapours*;

— *Part 15: Apparatus for testing with alkaline liquids*;

— *Part 16: Resistance to thermal shock of coatings on cooking utensils*;

— *Part 17: Resistance to hot sodium hydroxide solution*;

— *Part 18: Determination of fluidity behaviour — Fusion flow test*;

— *Part 19: Apparatus for determination of resistance to hot detergent solutions used for washing textiles* (now numbered as BS EN ISO 4535);

— *Part 20: Low voltage test for detecting and locating defects*;

— *Part 21: Determination of the resistance of vitreous enamelled articles to impact — Pistol test*;

— *Part 22: Determination of resistance to thermal shock of coatings for fabricated sheet steel components such as burners and pan supports for cookers.*

BS ISO 4528 (in preparation) provides a guide to the selection of test methods for vitreous and porcelain enamelled areas of articles.

Various steels suitable for vitreous enamelling are described in BS EN 10208 and in BS 1449-2.

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

Cross-references

The British Standaards which implement international or European publications referred to in this doucment 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 to iv, the EN title page, pages 2 to 7 and a back cover.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 4535

November 1998

ICS 25.220.50

Descriptors: see ISO document

English version

Vitreous and porcelain enamels — Apparatus for determination of resistance to hot detergent solutions used for washing textiles

(ISO 4535:1983)

Ernaux vitrifié — Appareiliage pour la détermination de la résistance aux solutions chaudes de déetergent utiliséees pour le lavage des textiles
(ISO 4535:1983)

Ernails — Geräte für die Bestimmung der Beständigkeit gegen heße Waschmitteliösungen für Textilien
(ISO 4535:1983)

This European Standard was approved by CEN on 30 October 1998.

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, Sweden, 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 4535:1998 E

Contents

Foreword

The text of the International Standard from Technical Committee ISO/TC 107, Metallic and other inorganic coatings, of the International Organization for Standardization (ISO) has been taken over as a European Standard by Technical Committee CEN/TC 262, Metallic and other inorganic coatings, the Secretariat of which is held by BSI.

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 May 1999, and conflicting national standards shall be withdrawn at the latest by May 1999.

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.

1 Scope and field of application

This International Standard specifies requirements for the apparatus to be used for the determination of the resistance of flat surfaces of vitreous and porcelain enamels to attack by hot detergent solutions used for washing textiles.

2 Reference

ISO 48, *Vulcanized rubbers — Determination of hardness (Hardness between 30 and 85 IRHD).*

3 General description

The apparatus (see Figure 1 to Figure 4) consists of a hexagonal vessel having a circular opening in each side. A specimen is pressed against each of these openings by means of gripping plates which are held in place by wing nuts, sealing rings being placed between the vessel and the specimens. A lid having four holes, for a paddle stirrer, two immersion heaters and a temperature controlling device, is screwed on to the vessel, a sealing ring being placed between the vessel and the lid. The paddle stirrer, immersion heaters and temperature controlling device are fixed such that their distance from the bottom of the vessel is 30 mm.

4 Requirements

4.1 Hexagonal vessel

The vessel (see Figure 1 to Figure 3) shall have four threaded bolts welded to each side for fastening the gripping plates, and six threaded bolts welded to the upper surface for fastening the lid. The vessel should preferably have an outlet for drainage.

4.2 Lid

The lid (see Figure 4; shown also in Figure 1 and Figure 3) shall have a centrally placed support for receiving the paddle stirrer, and three further supports for receiving the immersion heaters and the temperature controlling device.

4.3 Gripping plates

Six gripping plates, of thickness 4 mm, and which can be fitted to the sides of the hexagonal vessel, are required.

4.4 Fasteners

Thirty wing nuts are required for fastening the gripping plates and the lid to the vessel.

4.5 Sealing rings

Six sealing rings, of external diameter 100 mm, internal diameter 80 mm and thickness 8 mm, are required for sealing the side openings.

An additional ring, of internal diameter 140 mm, and of thickness 3 mm, is required to serve as in intermediate layer between the lid and the vessel.

4.6 Paddle stirrer

The paddle stirrer shall have the dimensions shown in Figure 3. It shall operate at a rotational frequency of $1\,350 \pm 50\ \text{min}^{-1}$.

4.7 Immersion heaters

Two cylindrical immersion heaters, each of 600 W, are required.

4.8 Temperature controlling device

This shall be a contact thermometer with a temperature controlling device, accurate to ±1 °C. The use of a temperature recording instrument is recommended.

5 Materials

5.1 The vessel (**4.1**), lid (**4.2**), gripping plates (**4.3**) and paddle stirrer (**4.6**) shall be made of the same austenitic stainless steel.

5.2 The cylindrical immersion heaters (**4.7**) shall be made of nickel-plated copper or of austenitic stainless steel.

5.3 The sealing rings (**4.5**) shall be made of a synthetic rubber of hardness 70 IRHD when determined in accordance with ISO 48. The material shall be resistant to alkaline solutions at 100 °C (chloroprene is suitable for example).

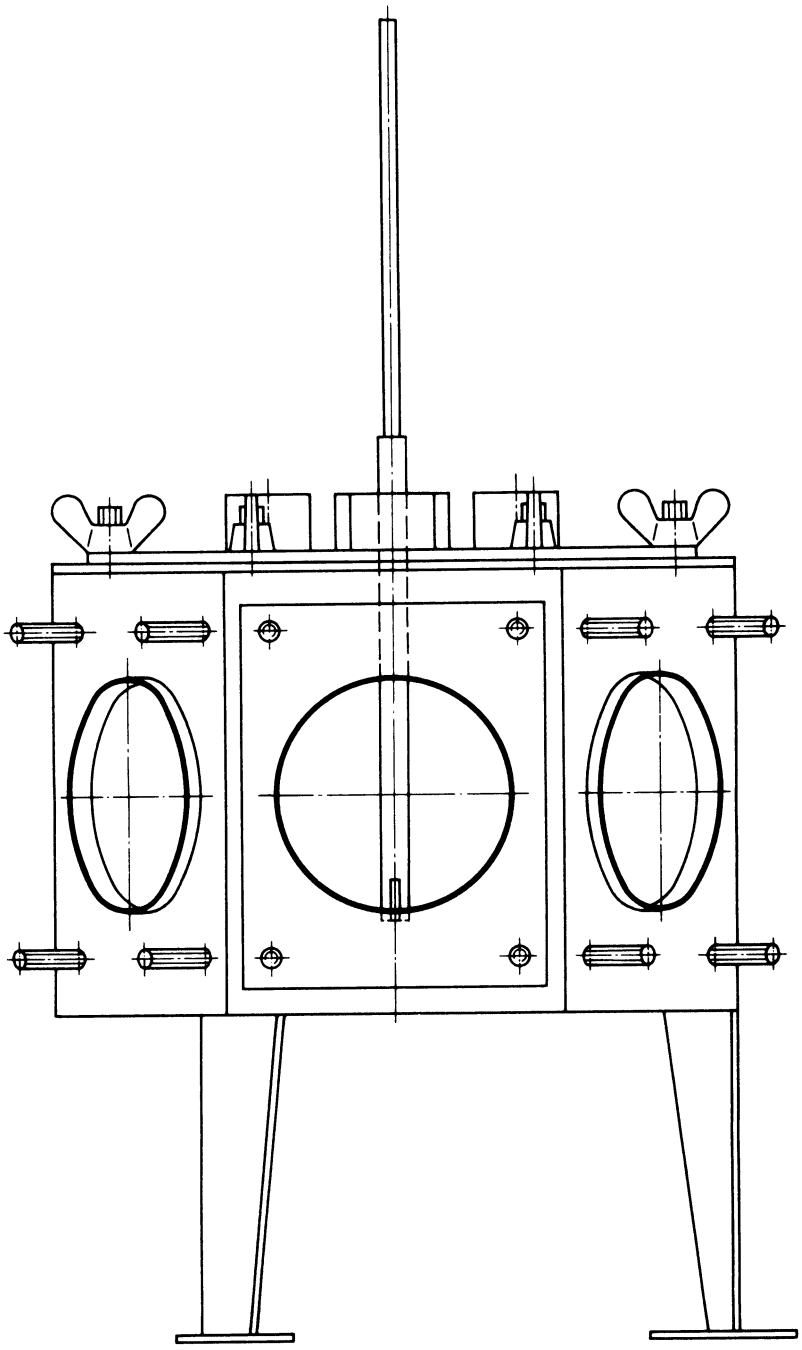

Figure 1 — Hexagonal vessel with lid, stirrer and gripping plate

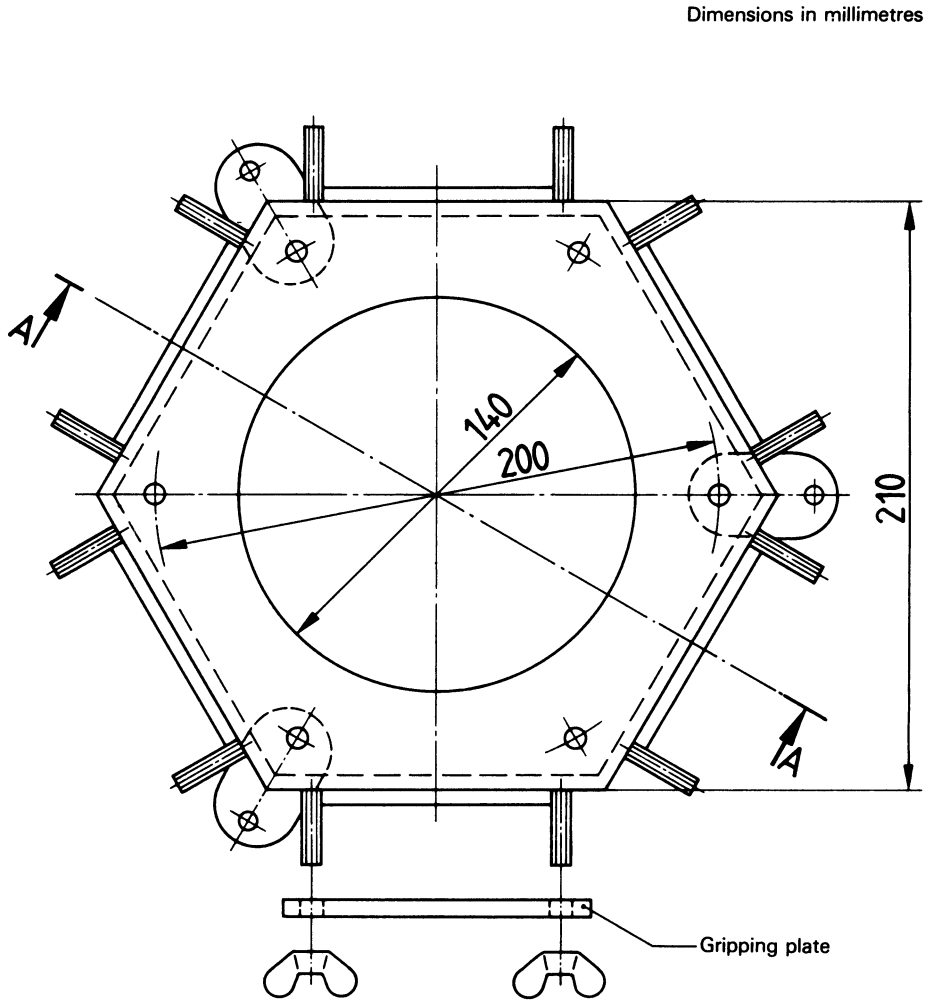

Figure 2 — Top view of hexagonal vessel without lid and paddle stirrer

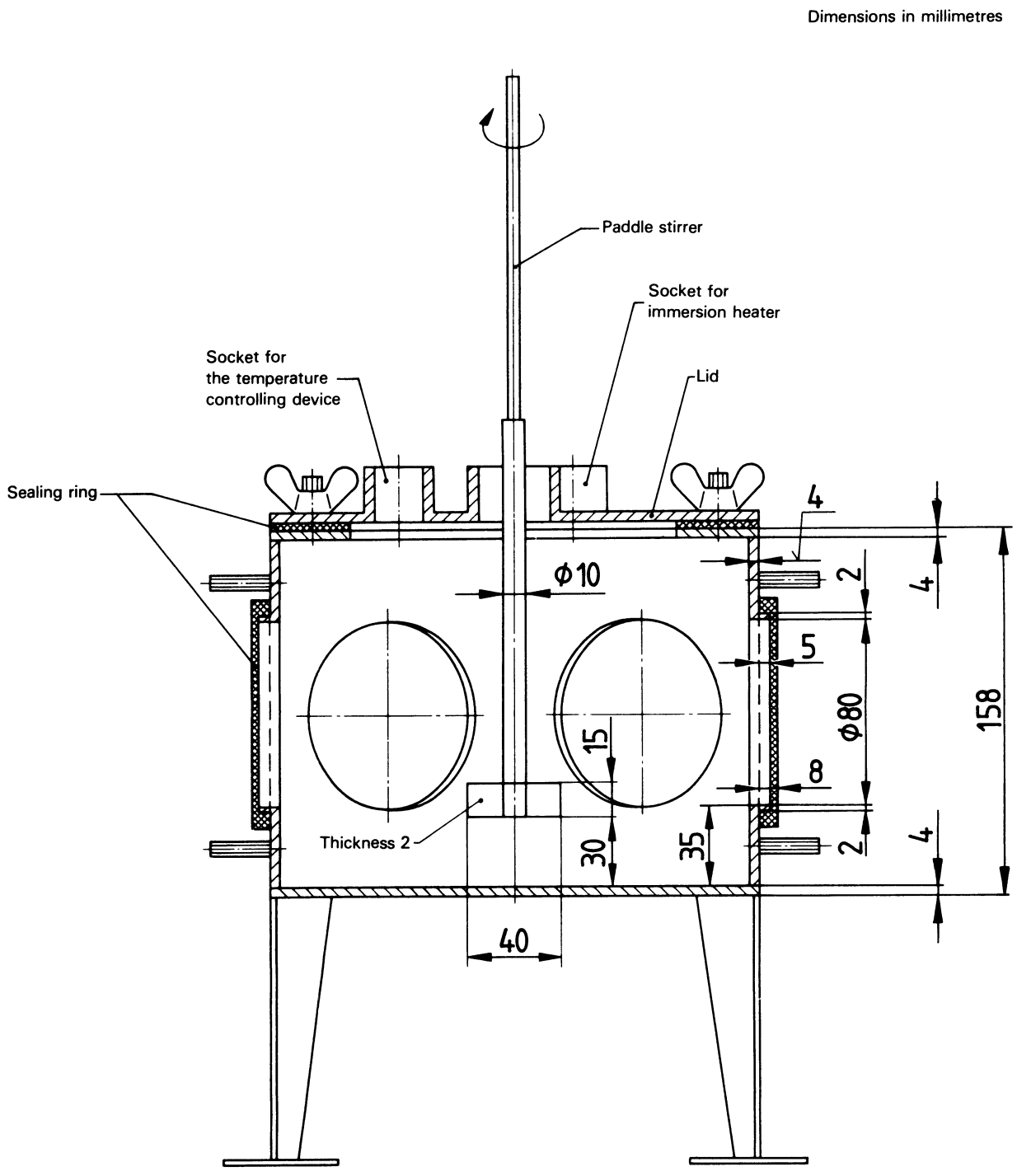

Figure 3 — Section A-A of the hexagonal vessel, lid and paddle stirrer, with additional sealing in the cutting plane

Dimensions in millimetres

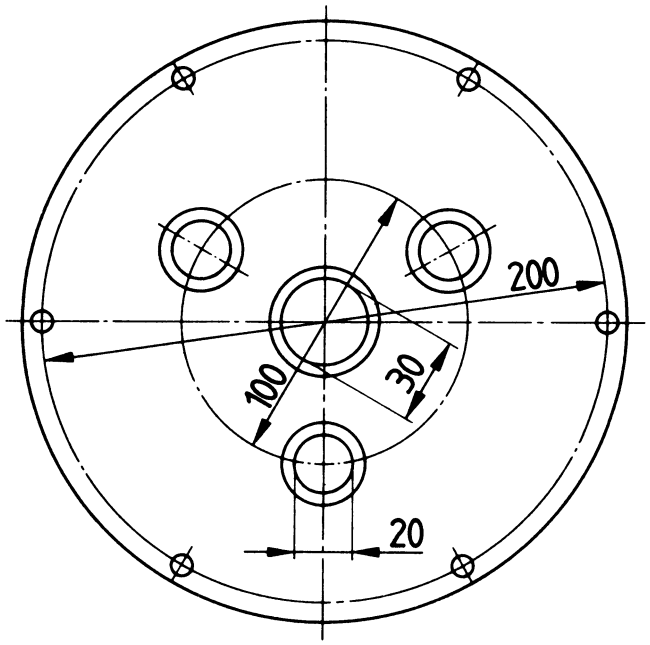

Figure 4 — Top view of lid