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Vitreous and porcelain enamels for cast iron – Production of specimens for testing

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up 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.

Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 2724 was drawn up by Technical Committee ISO/TC 107, *Metallic and other non-organic coatings*, and circulated to the Member Bodies in June 1972.

It has been approved by the Member Bodies of the following countries:

Australia	Italy	Spain
Chile	Japan	Sweden
Egypt, Arab Rep. of	Netherlands	Switzerland
France	Poland	Thailand
Germany	Portugal	United Kingdom
Hungary	Romania	U.S.S.R.
Israel	South Africa, Rep. of	

No Member Body expressed disapproval of the document.

Vitreous and porcelain enamels for cast iron – Production of specimens for testing

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method for the production of specimens suitable for testing vitreous and porcelain enamels for cast iron and enamelled cast iron articles.

When the loss in mass per unit area of the enamel coating is to be determined quantitatively, specimens specially produced according to clause 4 shall be used, as specimens cut from enamelled articles (clause 5) may reduce the accuracy of the test method.

2 REFERENCE

ISO 2746, *Vitreous and porcelain enamels – Enamelled articles for service under highly corrosive conditions – High voltage test.*

3 SHAPE AND DIMENSIONS OF SPECIMENS

The specimens shall be flat, enamelled, circular or square plates of cast iron with a diameter or side length of 100 ± 5 mm. Shape and dimensions depend upon the dimensions of the testing apparatus and the kind of balance if loss of mass is to be determined. The required weighing accuracy is $\pm 0,2$ mg.

The specimens may be specially cast plates or plates cut from a cast iron bar with a minimum thickness of 2,5 mm, or they may be cut from enamelled cast iron articles. If the mass of cut specimens exceeds the carrying capacity of the balance, it is permissible to reduce the thickness by machining.

NOTE – For a balance with a carrying capacity of 200 g, specimens according to the following specifications are suitable :

a) specially cast plates of cast iron with a diameter of 95 mm and a thickness of $3,0 \pm 0,2$ mm;

or

b) plates with a diameter of 105 mm and a thickness of 2,5 mm cut from a cast iron bar or cut from enamelled articles.

4 PRODUCTION OF SPECIALLY PREPARED SPECIMENS

4.1 Specification of specimens

The cast iron upon which the enamel is applied shall be enamelling quality cast iron.

Before preparing the cast plates for enamelling, the plates shall be annealed at a temperature between 700 and 800 °C.

The cast iron may be prepared for enamelling by any one of the recognized procedures, but specimens for comparison shall be prepared using the same procedure and materials.

4.2 Enamelling of specimens

4.2.1 Dry-process enamels

Ground coat may be poured or sprayed onto one side of the specimen so that an agreed coating thickness is applied.

After drying and fusing of the specimen, the cover coat is powdered onto one side and fused again. Care shall be taken to ensure that there is a minimum of build-up around the edge of the specimen.

For most purposes two cover coats are standard procedure, but in cases where even more cover coats are considered to be usual practice, the additional coats shall be applied.

Coating thickness may vary but comparative specimens shall be approximately of the same thickness.

4.2.2 Wet-process enamels

Ground coat may be poured or sprayed onto one side of the specimen so that an agreed coating thickness is applied.

After drying, fusing and cooling of the specimen, the cover coat is sprayed onto one side. Care must be taken to ensure that there is a minimum of build-up around the edge of the specimen.

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For most purposes one cover coat is standard procedure, but in cases where two or three cover coats are considered to be usual practice, the additional coats shall be applied.

Coating thickness may vary but comparative specimens shall be of the same thickness.

4.2.3 *Direct-on enamels for cast iron*

The enamel shall be applied to one side of the specimen according to accepted practice.

When in practice the usual application consists of one coat only, one coat shall be applied. In cases where additional coatings are a necessary part of the finish, these coatings shall be applied.

Coating thicknesses may vary but comparative specimens shall be of the same thickness.

4.3 **Surface of enamelled specimens**

The surface of the enamelled specimens shall be flat and free from defects.

The specimens shall be checked by visual inspection for freedom from defects, except those for enamels for containers and apparatuses to be used in the chemical industry. These are checked with high voltage for freedom from weak places and pinholes (see ISO 2746). The voltage to be used for the test shall be agreed between the interested parties.

5 SPECIMENS FROM PRODUCTION ARTICLES

5.1. Specimens shall be taken only from flat areas of enamelled articles.

5.2 Before cutting off the specimens, the enamel shall be removed along the cutting surface by means of grinding. The width of the zone from which the enamel is to be removed is determined by the width of the cutting tool and an extra margin of 2 mm for safety.

NOTE – Grinding machines are suitable for grinding off the enamel, where silicon carbide stones, corundum stones or diamond stones are applied.

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