International Standard ISO 2742

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Vitreous and porcelain enamels — Determination of resistance to boiling citric acid

Émaux vitrifiés — Détermination de la résistance à l'acide citrique bouillant

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (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 authorized 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 2742 was developed by Technical Committee ISO/TC 107, *Metallic and other non-organic coatings*.

This second edition was submitted directly to the ISO Council, in accordance with clause 6.11.2 of part 1 of the Directives for the technical work of ISO. It cancels and replaces the first edition (i.e. ISO 2742-1973), which had been approved by the member bodies of the following countries:

Australia	Israel	South Africa, Rep. of
Chile	Italy	Spain
Egypt, Arab Rep. of	Japan	Sweden
France	Netherlands	Switzerland
Germany, F.R.	New Zealand	Thailand
Hungary	Poland	United Kingdom
India	Portugal	USSR
Ireland	Romania	

No member body had expressed disapproval of the document.

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Vitreous and porcelain enamels — Determination of resistance to boiling citric acid

1 Scope and field of application

This International Standard specifies a method of test for determining the resistance of flat surfaces of vitreous and porcelain enamels to boiling citric acid.

It is especially intended for the testing of enamels for articles which are used with boiling, slightly dissociated acids, for example cooking utensils.

NOTE — This method of test is also suitable for determining the chemical resistance of enamels to other acid solutions.

This method of test is not suitable for enamels used in the chemical industry or those exposed to heavy attack by inorganic acids for a long period.

For testing enamels at room temperature, see ISO 2722.

For testing acid resistance of enamels for containers and apparatus for the chemical industry, see ISO 2743.

2 References

ISO 2722, *Vitreous and porcelain enamels — Determination of resistance to citric acid at room temperature.*

ISO 2723, *Vitreous and porcelain enamels for sheet steel — Production of specimens for testing.*

ISO 2724, *Vitreous and porcelain enamels for cast iron — Production of specimens for testing.*

ISO 2733, *Vitreous and porcelain enamels — Apparatus for testing with acid and neutral liquids and their vapours.* [1)]

ISO 2743, *Vitreous and porcelain enamels — Determination of resistance to condensing hydrochloric acid vapour.* [2)]

ISO 3585, *Glass plant, pipeline and fittings — Properties of borosilicate glass 3.3.*

ISO 4788, *Laboratory glassware — Graduated measuring cylinders.*

3 Principle

Exposure of an enamelled specimen to attack by a boiling 6 % (*m*/*m*) solution of citric acid for 2,5 h which, if information is desired on the further corrosion curve, may be extended to 6, 24, or more hours.

Determination of the loss in mass and calculation therefrom of the loss in mass per unit area.

The lower the loss in mass per unit area, the higher is the resistance of the vitreous and porcelain enamel to boiling citric acid.

4 Reagents

4.1 Citric acid, 6 % (*m*/*m*) solution.

Dissolve 32 g of pure crystalline citric acid ($C_6H_8O_7.H_2O$) in 500 ml of distilled or demineralized water.

A fresh solution, prepared the same day, is required for each test.

4.2 Distilled or **demineralized water,** for cleaning the testing apparatus and specimens.

4.3 Grease solvent, such as trichloroethene or acetone, suitable for cleaning the specimens when necessary.

5 Apparatus

5.1 Testing apparatus and **packing B or C,** both in accordance with ISO 2733.

The cylinder of the testing apparatus is covered by a plate of borosilicate glass 3.3 complying with the requirements of ISO 3585, having a diameter of 105 mm.

5.2 Hot-air oven, capable of maintaining a temperature of at least 130 °C.

1) At present at the stage of draft. (Revision of ISO 2733-1973.)

2) At present at the stage of draft. (Revision of ISO 2743-1973.)