INTERNATIONAL STANDARD ISO 2743

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

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

First edition — 1973-12-15

UDC 666.293 : 620.193 : 661.419

Ref. No. ISO 2743-1973 (E)

Descriptors : non-metallic coatings, vitreous enamels, tests, chemical tests, chemical resistance, hydrochloric acid, high temperature tests.

Price based on 2 pages

FOREWORD

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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 2743 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	Israel	South Africa, Rep. of
Chile	Italy	Spain
Egypt, Arab Rep. of	Japan	Sweden
France	Netherlands	Switzerland
Germany	New Zealand	United Kingdom
Hungary	Poland	U.S.S.R.
India	Portugal	
Ireland	Romania	

No Member Body expressed disapproval of the document.

Printed in Switzerland

Vitreous and porcelain enamels — Determination of resistance to boiling hydrochloric 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 for containers and chemical apparatus to boiling hydrochloric acid.

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

The method allows determination of the resistance of enamels to the liquid and vapour phases of the corrosive medium.

2 REFERENCES

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.*

3 PRINCIPLE

Each set of similarly enamelled specimens is exposed to attack by a boiling 20 % (*m/m*) solution of hydrochloric acid for 48 h (2 days) or 336 h (14 days), the specimens being placed in the liquid chamber and in the vapour chamber of the testing apparatus as required.

The loss in mass is determined and the corrosion speed calculated therefrom.

The lower the corrosion speed, the higher is the resistance of the vitreous and porcelain enamel to boiling hydrochloric acid.

4 REAGENTS

4.1 Hydrochloric acid, 20 % (*m/m*) solution, analytically pure, ρ_{20} 1,098 g/ml.

A fresh solution is required for each test.

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

5 APPARATUS

5.1 Testing apparatus and packing A, both in accordance with ISO 2733.

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

5.3 Desiccator, for example with an internal diameter of 200 mm.

5.4 Graduated measuring cylinder, capacity 500 ml.

5.5 Beakers.

5.6 Balance, accurate to ± 0,2 mg.

5.7 Sponge, soft.

6 TEST SPECIMENS

6.1 The specimens to be used shall be specially prepared in accordance with the International Standards for the appropriate basis metal.

NOTE — Specimens for testing vitreous and porcelain enamels

- for sheet steel, see ISO 2723;
- for cast iron, see ISO 2724.

6.2 For each determination, two tests with each set of specimens shall be carried out.

6.3 Each specimen shall be rinsed with distilled or demineralized water and dried for 2 h in the hot-air oven (5.2) at 110 ± 5 °C, then cooled for at least 2 h in the desiccator (5.3) and weighed to the nearest 0,2 mg (starting mass).

7 PROCEDURE

7.1 Fix the specimens in the testing apparatus (5.1) so that the cover coat sides of the specimens are facing the interior of the cylinder.

Screw down the three wing nuts evenly to make the testing apparatus watertight.