INTERNATIONAL STANDARD

ISO 718

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Laboratory glassware — Thermal shock and thermal shock endurance — Test methods

Verrerie de laboratoire — Choc thermique et endurance au choc thermique — Méthodes d'essai

Reference number
ISO 718:1990(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 718 was prepared by Technical Committee ISO/TC 48, *Laboratory glassware and related apparatus*.

This second edition cancels and replaces the first edition (ISO 718:1982), of which it constitutes a technical revision.

Annex A of this International Standard is for information only.

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Laboratory glassware — Thermal shock and thermal shock endurance — Test methods

1 Scope

This International Standard specifies a thermal shock test and the procedure for determining the thermal shock endurance for laboratory glassware in the condition received by the customer.

This International Standard does not apply to fused silica ware and annealed containers made from soda-lime-silicate glass.

Annealed containers made from soda-lime-silicate glass shall be tested according to ISO 7459.

2 Definitions

For the purposes of this International Standard, the following definitions apply.

2.1 thermal shock: A sudden change in temperature applied to laboratory glassware.

2.2 thermal shock endurance Δt_{50}: A temperature difference interpolated by linear regression at which 50 % of the samples will probably fail.

2.3 temperature variation: The difference at any moment between the temperature at the centre of the working space and at any other point in the working space of the cold water bath or the test oven.

2.4 temperature fluctuation: The short term changes in temperature at any point in the working space of the cold water bath or the test oven.

3 Apparatus

3.1 Cold water bath, comprising a bath or tank capable of containing at least five times the total volume of the samples being tested at one time. It shall be fitted with a water circulator, a thermometer and a thermostatic control capable of maintaining the water temperature to within $\pm$ 1 °C of a specified lower temperature, t_2, within the range 0 °C to 27 °C.

NOTE 1 The total volume of the samples is taken as the sum of the volume of the individual samples when each is regarded as being solid.

3.2 Test oven, preferably electrically heated with a temperature range up to at least 300 °C. It shall be fitted with an air circulating device to ensure that the temperature variation does not exceed $\pm$ 5 °C and a thermostatic control capable of maintaining the test oven temperature fluctuation within $\pm$ 1 °C up to 180 °C and within $\pm$ 2 °C between 180 °C and 300 °C.

3.3 Tongs, with tips protected by a heat resisting material such as glass or mineral wool.

3.4 Gloves, gauntlet-type and preferably made from an asbestos- substitute material.

3.5 Basket for testing two or more samples simultaneously. It shall be made out of or coated with a material which will not scratch or scuff the samples during the test procedure. It shall be capable of holding the samples upright and separate and of allowing a free passage of water and air between them. It shall prevent the sample from floating when immersed. For the multiple testing of samples, it may be combined with an automatic device for placing the basket of samples in the test oven (3.2) and transferring it to the cold water bath (3.1).

4 Sampling

The test shall be performed on a predetermined number of articles.

The number of articles to be taken as samples from a consignment should be specified in the appropriate standard for the type of article to be tested. In default of this the number should be agreed between the interested parties.