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International Standard



719

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Glass — Hydrolytic resistance of glass grains at 98 °C — Method of test and classification

Verre — Résistance hydrolytique du verre en grains à 98 °C — Méthode d'essai et classification

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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 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.

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. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 719 was prepared by Technical Committee ISO/TC 48, *Laboratory glassware and related apparatus*.

ISO 719 was first published in 1981. This second edition cancels and replaces the first edition, of which it constitutes a technical revision.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

Glass — Hydrolytic resistance of glass grains at 98 °C — Method of test and classification

1 Scope and field of application

This International Standard specifies

- a) a method for determining the hydrolytic resistance of glass grains at 98 °C. The resistance is measured and expressed by the volume of acid required for titration of the alkali extracted from the unit mass of glass, and may also be expressed by the amount of sodium oxide equivalent to this volume of acid;
- b) a classification of glass according to the hydrolytic resistance determined by the method of this International Standard.

This International Standard is intended for use on the less resistant types of glass. For the more resistant glasses, the method specified in ISO 720 is preferable.

NOTE — It is emphasized that there is no exact correlation between the classification laid down in this International Standard and that laid down in ISO 720, and it is therefore essential to identify which classification is being used.

2 References

ISO 385/1, *Laboratory glassware — Burettes — Part 1: General requirements.*

ISO 385/2, *Laboratory glassware — Burettes — Part 2: Burettes for which no waiting time is specified.*

ISO 565, *Test sieves — Woven metal wire cloth, perforated plate and electroformed sheet — Nominal sizes of openings.*

ISO 648, *Laboratory glassware — One-mark pipettes.*

ISO 720, *Glass — Hydrolytic resistance of glass grains at 121 °C — Method of test and classification.*

ISO 1042, *Laboratory glassware — One-mark volumetric flasks.*

ISO 1773, *Laboratory glassware — Boiling flasks (narrow-necked).*

ISO 3696, *Water for laboratory use — Specifications.*¹⁾

ISO 3819, *Laboratory glassware — Beakers.*¹⁾

3 Principle

The method of test is a test for glass as a material applied on glass grains. Extraction of 2 g of grains, of particle size between 300 and 500 µm, with grade 2 water for 60 min at 98 °C. Measurement of the degree of the hydrolytic attack by analysis of the extraction solutions.

4 Reagents

During the test, unless otherwise stated, use only reagents of recognized analytical grade.

4.1 Grade 2 water, which complies with the requirements specified in ISO 3696 and which has been freed from dissolved gases, such as carbon dioxide, by boiling for at least 15 min in a boiling flask (5.6).

Such water can normally be stored for 24 h in a stoppered flask without change of the pH value.

When tested immediately before use the water shall be neutral to methyl red, i.e. it shall produce an orange-red (not a violet-red or yellow) colour corresponding to $\text{pH } 5,5 \pm 0,1$ when two drops of the methyl red indicator solution (4.4) are added to 25 ml of the water.

NOTE — The water, so coloured, may also be used as a reference solution (see clause 7).

4.2 Hydrochloric acid, standard volumetric solution, $c(\text{HCl}) = 0,01 \text{ mol/l}$.

4.3 Hydrochloric acid, solution, $c(\text{HCl}) \approx 1 \text{ mol/l}$.

4.4 Methyl red, indicator solution.

Dissolve 25 mg of the sodium salt of methyl red ($\text{C}_{15}\text{H}_{14}\text{N}_3\text{NaO}_2$) in 100 ml of the grade 2 water (4.1).

4.5 Acetone (CH_3COCH_3).

¹⁾ At present at the stage of draft.