STANDARD **9689**

First edition
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Raw optical glass — Resistance to attack by aqueous alkaline phosphate-containing detergent solutions at 50 °C — Testing and classification

Verre d'optique brut — Résistance à l'attaque par des solutions aqueuses de détergent contenant du phosphate alcalin à 50 °C — Essai et classification

Reference number
ISO 9689:1990(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 9689 was prepared by Technical Committee ISO/TC 172, *Optics and optical instruments*.

It is based on a test method approved by the International Optical Glass Expert Group of Technical Committee 2 "Chemical durability and analysis" of the International Commission on Glass (ICG/TC 2).

Annex A of this International Standard is for information only.

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Raw optical glass — Resistance to attack by aqueous alkaline phosphate-containing detergent solutions at 50 °C — Testing and classification

1 Scope

This International Standard specifies a method for testing the resistance of raw optical glasses to attack by aqueous alkaline phosphate-containing detergent solutions (phosphate solutions) at 50 °C and a classification of optical glasses according to the aqueous alkaline phosphate-containing detergent resistance (phosphate resistance) determined by this method.

This International Standard is applicable to samples of raw optical glasses.

NOTE 1 The test method may also be used for other types of glasses.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 2768-1:1989, *General tolerances — Part 1: Tolerances for linear and angular dimensions without individual tolerance indications.*

ISO 3585:1976, *Glass plant, pipeline and fittings — Properties of borosilicate glass 3.3.*

ISO 3696:1987, *Water for analytical laboratory use — Specification and test methods.*

3 Principle

Attack on polished glass by an aqueous solution containing 0,01 mol/l tripolyphosphate at 50 °C for specified times. Weighing to determine the loss in mass and calculation of depth of attack based on the density of the glass. Comparison of the time required for the apparent attack to a depth of 0,1 µm with time scales given in a classification table to obtain the phosphate resistance class.

4 Reagents

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

4.1 Water, complying with the grade 2 requirements of ISO 3696.

4.2 Phosphate solution.

4.2.1 Purifying of commercially available tripolyphosphate

Prepare an aqueous solution containing 10 % (*m*/*m*) to 15 % (*m*/*m*) tripolyphosphate, filter out any insoluble matter and add ethanol (4.5) gradually, until one volume of ethanol has been added to four volumes of the phosphate solution. Stir for 30 min and filter off the hexahydrate crystals, wash twice with a mixture of one volume of ethanol and one volume of water and redissolve in a minimum amount of water. Repeat the process at least four times. Then dry the crystals at room temperature at a relative humidity of (50 ± 10) %. The yield is about 40 % to 45 % (based on the initial commercially available substance) and has impurities of less than 0,5 %.