

Chemical resistance of glass used in the production of laboratory glassware —

Part 3: Method for determination of hydrolytic resistance of glass grains at 121 °C

[ISO title: Glass — Hydrolytic resistance of glass grains
at 121 °C — Method of test and classification]

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Committees responsible for this British Standard

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- British Glass Industry Research Association
- Glass Manufacturers' Federation
- Society of Glass Technology

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Contents

	Page
Committees responsible	Inside front cover
National foreword	ii
1 Scope and field of application	1
2 References	1
3 Principle	1
4 Reagents	1
5 Apparatus	1
6 Preparation of sample	3
7 Procedure	4
8 Expression of results	4
9 Test report	4
Figure — Mortar and pestle	2
Table 1 — Permissible range of the values obtained	5
Table 2 — Limit values in the hydrolytic resistance grain test (autoclave test)	5
Publications referred to	Inside back cover

National foreword

This revision of this Part of BS 3473 has been prepared under the direction of the Laboratory Apparatus Standards Committee. It is identical with ISO 720:1985 “Glass — Hydrolytic resistance of glass grains at 121 °C — Method of test and classification” published by the International Organization for Standardization (ISO). It has been prepared by subcommittee 5 of Technical Committee ISO/TC 48, Laboratory glassware and related apparatus, with the active participation and approval of the UK. The previous edition of ISO 720 was published in 1981 and was based on ISO Recommendation 720:1968.

BS 3473 was first published in 1962 as a single publication which described procedures for determining the resistance of glass used in the production of laboratory glassware to attack by a boiling aqueous solution of mixed alkali, and to water at 100 °C and 121 °C. To facilitate alignment with corresponding International Standards the revision of BS 3473 was begun in 1982 with the publication of the first three Parts of what was then intended to be a six-Part standard. Part 6, which was to deal with classification, will not now be issued as it has been agreed internationally to include classification in the individual test methods. This revision of BS 3473-3 supersedes the 1982 edition which is withdrawn.

BS 3473 currently consists of the following Parts:

- *Part 1: Method for determination of resistance of glass to attack by a boiling aqueous solution of mixed alkali* (Identical with ISO 695:1984);
- *Part 2: Method for determination of hydrolytic resistance of glass grains at 98 °C* (Identical with ISO 719:1985);
- *Part 3: Method for determination of hydrolytic resistance of glass grains at 121 °C* (Identical with ISO 720:1985);
- *Part 4: Method for determination of hydrolytic resistance of the interior surfaces of glass containers* (Identical with ISO 4802:1982);
- *Part 5: Method for determination of the resistance of glass to attack by 6 mol/L hydrochloric acid at 100 °C* (Identical with ISO 1776:1985).

The procedures described in BS 3473 are recommended as being capable of yielding consistent results in the hands of independent workers in different laboratories and offer a means of assessing the chemical resistance of glass used in the production of laboratory ware when tested by the specified procedure.

Because the term “laboratory glassware” covers a wide variety of articles to serve many different purposes and the glass types used include both borosilicate and soda-lime-silica glass, methods of test are required which are widely applicable. Tests of fractured surfaces, such as the grain test described in Parts 2 and 3, give an assessment of the chemical behaviour of the body of the glass and can be applied to articles of laboratory glassware because they are usually used many times. Such tests have a more limited value for assessing the chemical resistance of glass articles which are to be used once only, because the resistance depends more on the condition of the surface than on the body of the glass; BS 3473-4 relates to such applications.

It should be realized that whilst these procedures can be used to assess the behaviour of glass under the stated conditions, and thus to select glasses for general laboratory purposes, they can only reveal or measure limited aspects of chemical behaviour. Where articles are designed for a specific purpose, it is essential that the performance of the glass should be evaluated in terms of precise service requirements by using simulative or functional tests.

The principal differences between BS 3473-3:1982 and this edition include an improved specification for the purity of water, a more detailed procedure for the preparation and cleaning of the sample, a modified titration procedure and a modified classification system for the glass. A clause giving the principle of the method has been included and provision has been made for a test report.

Terminology and conventions. The text of the International Standard has been approved as suitable for publication as a British Standard without deviation. Some terminology and certain conventions are not identical with those used in British Standards; attention is drawn especially to the following.

The comma has been used as a decimal marker. In British Standards it is current practice to use a full point on the baseline as the decimal marker.

The symbol “l” has been used to denote litre (and in its submultiples). In British Standards it is current practice to use the symbol “L”.

Wherever the words “International Standard” appear, referring to this standard, they should be read as “this Part of BS 3473”.

CAUTION. Attention is drawn to the Health and Safety at Work etc. Act, 1974, and the need for ensuring that the method of test specified in this standard is carried out with suitable precautions.

The procedure described in this standard method is intended to be carried out by qualified chemists or other suitably trained and/or supervised personnel. Normal safety precautions should be observed throughout the use of the method.

Particular attention is drawn to the need to wear suitable eye-protectors during the preparation and handling of glass fragments; see BS 2092 “*Industrial eye-protectors*” for details of suitable types.

Cross-references

International Standards	Corresponding British Standards
	BS 3473 <i>Chemical resistance of glass used in the production of laboratory glassware</i>
ISO 719:1985	Part 2:1987 <i>Method for determination of hydrolytic resistance of glass grains at 98 °C</i> (Identical)
ISO 1773:1976	BS 2734:1984 <i>Specification for boiling flasks (narrow-necked), conical, flat bottom and round bottom</i> (Identical)

BS 846:1985 “*Specification for burettes*” is related to ISO 385-1:1984 and ISO 385-2:1984. BS 410:1976 “*Specification for test sieves*” is related to ISO 565:1983. BS 1583:1986 “*Specification for one-mark pipettes*” is related to ISO 648:1985.

In the context of 5.2, 5.3 and 5.13 items of apparatus complying with BS 846, BS 1583 and BS 410 respectively are equally valid.

ISO 3696 and ISO 3819, to which reference is made in the text, are in preparation. Pending publication of these International Standards, it is recommended that reference be made to BS 3978 “*Water for laboratory use*” and BS 6523 “*Specification for glass beakers for laboratory use*”, respectively.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 6, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.