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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 12416.1-1990

Replacing GB/T 12416.2-1990

**Glass - Hydrolytic resistance of glass grains at 12-degree
Celcius - Method of test and classification**
(English Translation)

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document replaces GB/T 12416.2-1990 "Test Method and Classification of Water Resistance of Glass Particles at 121°C", and is consistent with GB/T 12416.2-Compared to 1990, aside from structural adjustments and editorial changes, the main technical changes are as follows.

---The principle has been changed (see Chapter 4, Chapter 3 of the 1990 edition);

---General rules for reagents and requirements for distilled water have been added (see 5.1, 5.2);

---The requirements for test water, the preparation method of methyl red indicator solution, and the requirements for hydrochloric acid solution and acetone have been changed (see 5.3~).

5.6 (4.1, 4.4, 4.2, and 4.5 of the 1990 edition);

---Sodium hydroxide reagent has been removed (see 4.3 in the 1990 edition);

---Changes have been made to the requirements for burettes, narrow-mouth conical flasks, beakers, the O-sieve aperture in standard sieves, ovens, and autoclaves (see 6.2).

6.4, 6.5, 6.11, 6.15, 6.16 (5.3, 5.5, 5.6, 5.12, 5.13, 5.1 of the 1990 edition);

---Requirements and testing environments for ball mills, vibrating screens, ultrasonic cleaners, and electric heating plates have been added (see 6.12~6.14, 6.17, and section

7).

chapter);

---The requirements for coarsely crushed samples have been changed (see 8.1, 6.2 of the 1990 edition);

---A method for mechanically preparing particles has been added (see 8.2.2);

---The sample cleaning method has been changed (see 8.3, 6.4 of the 1990 edition);

---The requirement for pellet storage time has been removed (see 6.4 in the 1990 edition);

---Increased the material used to cover the narrow-mouthed conical flask and the time required for the autoclave to reach a state where a large amount of steam escapes from the exhaust port.

(See Chapter 9);

---The requirement for heating rate has been removed (see Chapter 7 of the 1990 edition);

---The heating time, cooling time, and the amount of methyl red indicator solution have been changed (see Chapter 9, Chapter 7 of the 1990 edition);

---The units for hydrochloric acid consumption and alkali equivalents have been changed (see Tables 1 and 2, 1990 editions of Tables 1 and 2);

---The method of representing the water resistance level of glass particles has been changed (see 10.2, 10.3, and 8.2 and 8.3 of the 1990 edition);

---The requirements for test reports have been changed (see Chapter 11, Chapter 9 of the 1990 edition);

---The appendix "Dithizone Limit Tests for Heavy Metals" has been deleted (see Appendix A of the 1990 edition).

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed by the China National Light Industry Council.

This document is under the jurisdiction of the National Technical Committee on Standardization of Daily-Use Glass (SAC/TC377).

1 Scope

This document describes the test method and classification of the water resistance of glass particles when subjected to water erosion at $(121\pm1)^{\circ}\text{C}$ for (30 ± 1) min.

This document applies to glass with high water resistance.

Note: Such as borosilicate glass.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

GB/T 6005 Basic Dimensions of Mesh Sizes for Test Sieve Wire Braided Mesh, Perforated Plates and Electroformed Sheet Plates GB/T 6682 Specifications and test methods for water used in analytical laboratories GB/T 12805-2011 Burettes for Laboratory Glassware GB/T 12808-2015 Laboratory Glassware - Single-mark Pipettes GB/T 15723 Laboratory Glassware Desiccators GB/T 15724 Laboratory Glassware Beakers GB/T 22362 Laboratory Glassware Flasks

3 Terms and Definitions

This document does not contain any terms or definitions that need to be defined.

4 Principles

This method involves testing glass as a glass particle material.

10g of glass particles with a particle size of 300 μ m~425 μ m were added to a certain amount of test water and heated at (121 $\pm$ 1) $^{\circ}$ C for (30 $\pm$) $^{\circ}$ C.

1) min, the water erosion resistance of the particles was determined by analyzing the extraction solution.

Note: The density of glass particles at 20 $^{\circ}$ C is generally (2.4 $\pm$ 0.2) g/cm³.

5.1 General Rules

Unless otherwise specified, reagents of analytical purity or higher should be used.

5.2 Distilled water

The following methods can be used to obtain it.