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**Safety requirement for the educational equipment -- Vitreous
equipment and attachments**

教学仪器设备安全要求 玻璃仪器及连接部件

(English Translation)

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Reference

Foreword

This standard Chapter 4, Chapter 5, Chapter 6 and Chapter 7 are mandatory, others are recommended.

This standard appendix A, to Appendix B, appendix C, Appendix D, Appendix F., Appendix G are normative, Appendix E is an information appendix.

2 Normative references

Terms of the following documents cited by this standard and become provisions of this standard. For dated references, subsequent All amendments (not including errata content) or revisions do not apply to this standard, however, encourage the parties to agreements based on this standard To study whether the latest versions of these documents. For

undated references, the latest version applies to this standard. Preparation GB/T 601 standard titration solution Chemicals

GB/T 603 Test Methods Chemicals The Preparations used Frequency under test. GB/T 1408.1 electric strength test method of insulating materials - Part 1 The GB/T 4545 glass containers Stress Test Method

GB/T 4547 glass vessel thermal shock resistance and thermal shock durability test method Part 1 GB/T 5137.1-2002 Standard Test Method for Automotive Safety Glass. Mechanical performance test

GB/T 6552-1986 glass containers mechanical impact test method

GB/T 6580-1997 boiling mixed alkali-resistant glass to attack by an aqueous solution of test methods and classification

GB/T 6582-1997 glass particles 98 °C water resistance test method and grading

GB/T 10701 Shi Ying glass thermal stability test method (neq ISO 718. 1982)

GB/T 12806-1991 laboratory glassware flask single reticle The GB/T 15726 glassware stress test method

GB/T 15728-1995 resistant glass boiling hydrochloric acid etching of weight Test method and classification Determination GB/T 16920 coefficient of thermal expansion of glass average (eqv ISO 7991. 1987)

GB/T 18144-2000 Glass Stress Test Method

Where. P --- compressive strength of glass, in megapascals (MPa);

3 Terms and Definitions

The following terms and definitions apply to this standard.

3.2

Common glassware mainly used in teaching experiments and fine glassware

3.1

Insulating material connecting two straight line from the charging member

3.3

On the other teaching equipment machinery, and electronics to glass as a material components.

3.4 Glass equipment and for connecting

the interface as glassware, glass as a material of parts (appendix).

4 Mechanical safety requirements

4.3.2

internal stress of the glass components on the instrument teaching, the maximum withstand the pressure member should not exceed 80nm/cm (birefringent optical path difference, the The same), the non-member under pressure, the maximum should not exceed 120nm/cm, gauges (except burette) should not exceed 100nm/cm.

Teaching equipment in all kinds of glass in Table 1 allowable stress.

The mirror glass 30 to 40 The glass tube 120 Filling glass bottles 50 to 180

4.3.3

Test Method stress annealing the glassware by GB/T 15726, the stress testing of glass containers according to GB 4545.

4.3.4

tempered glass, semi-tempered glass, and chemically tempered glass stress test according to GB/T 4.1 (the surface stress 18144-2000 test).

4.3.6

finished glass article after processing, should be annealed. After the thin wall thickness and a large diameter glass tube (capillary) docking, should Simple annealing immediately.

4.3.7

Sandwich Joints in a large area (including an annular fitting) a sealing portion should be fully blow. Sealing the plurality of large diameter single flat joints, or from Near the glass article from the plurality of annular joint, a joint after the annealing treatment should be completed, and then sealing the second head.

Linear thermal expansion coefficient of 4.4 glassware 4.4.1 required instruments and fire the heated glass parts linear thermal expansion coefficient in the range of 20 °C ~ 300 °C should be less than $3.4 \times 10^{-6}/^{\circ}\text{C}$.

4.4.2

glassware linear thermal expansion coefficient of greater than $6.0 \times 10^{-6}/^{\circ}\text{C}$ not heated.

Linear thermal expansion coefficient was measured according to 4.4.3 glassware GB/T 16920.

Glassware surface defect 4.5 4.5.1 glassware or parts shall have the following defects.

4.5.2

under pressure or hot flame directly on the glass instruments should be individually packaged with a soft liner material, to gently transport.

4.8

children play aids in the use of glass as a material of the device 4.8.1 play aids children alone should try not to use glass material.

4.8.2

When the function required, must be used in the glass material components, should be a reliable protection measures (e.g., additional plastic protective cover glass A soft glass material as a buffer device, etc.). After precautions should be possible to increase the strength to prevent broken glass, broken glass and case, cullet Enclosed in a shroud, and the structure is to be detached from children.

4.8.3

When playing device aids in the glass, should indicate the position of protective measures in the specification means a glass, and damage Precautions After allowing the replacement parts specifications.

4.1 Mechanical strength

4.1.1

can be affected by mechanical impact on the components of glass containers and glass containers class teaching equipment, should be resistant to not less than Mechanical shock, according to the test methods 0.6J GB/T 6552-1986 of provisions.

4.1.2

respond glass parts on the teaching load equipment suffered a comprehensive analysis, the total value of the stress suffered by the glass, with the kind of glass Comparing design stress and mechanical strength, long-term load, stress should be designed to the actual stress 6 to 10 times.

Tensile strength of the glass material, the flexural strength, compressive strength and impact strength (glass) test method Annex A (normative).

4.1.3

Glass teaching equipment parts on the surface contact should be fixed using mounting, and should make the glass uniform force components, to avoid point contact, To avoid over stressing the glass components of the design. The site should be sealed using a flexible sealant installation, the edges of the cover glass It is not damaged.