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**YB**

PHARMACEUTICAL INDUSTRY STANDARD  
OF THE PEOPLE'S REPUBLIC OF CHINA

**YBB 00342004-2015**

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**Test for Resistance to Attack of Glass by Boiling**

**Hydrochloric Acid**

玻璃耐沸腾盐酸侵蚀性测定法

## Test for Resistance to Attack of Glass by Boiling Hydrochloric Acid

This standard applies to the test for resistance of all kinds of pharmaceutical glass containers and tubes to attack of boiling hydrochloric acid.

In accordance with different test principles and methods, it includes the gravimetric method and the flame photometric method or the atomic absorption spectrometric method.

### Method I -- The gravimetric method

This method is to immerse about 100 cm<sup>2</sup> of glass sample in boiling 6 mol/L  $\pm$  0.2 mol/L hydrochloric acid for 6 hours; then determine the mass of loss per unit surface area.

**[Preparation of test samples]** Cut samples into glass tubes or pieces in regular shapes, with a total surface area 100 cm<sup>2</sup>  $\pm$  10 cm<sup>2</sup>. Sections are finely ground; no fire shall be used for polishing. The newly cut surface area shall not be greater than about 10% of the total surface area. Use water to clean; then use absolute ethyl alcohol or acetone to rinse; dry in the drying oven for 45 minutes at 150°C; transfer to the desiccator to cool for 45 minutes; weigh precisely, accurate to 0.1 mg; record the mass ( $m_1$ ). Use the same method to prepare 2 samples.

When testing the acid resistance of glass materials, the effect of the surface structure shall be considered, and samples shall be pretreated using mixed acid. The operation is as follows: place samples in the plastic beaker; add the mixed solution of 40% hydrofluoric acid solution - 2 mol/L hydrochloric acid solution (1:9) to fully immerse them; use the magnetic stirring apparatus to stir for 10 minutes; use tweezers (the head is clad with plastic or platinum; use diluted hydrochloric acid for treatment prior to use; and then use water to wash) to take out samples; as specified above, conduct washing, drying, cooling and weighing.

**[Determination method]** In the conical flask, add 800 mL of 6 mol/L  $\pm$  0.2 mol/L hydrochloric acid solution; heat to boiling; use platinum wire to suspend the samples in the boiling acid (samples shall be fully immersed and suspended at the center); mount the condenser above the bottle mouth; after boiling uniformly for 6 hours (Figure 1), take out samples; use water to clean; dry in the drying oven for 45 minutes at 150°C; transfer to the desiccator to cool for 45 minutes; weigh precisely, accurate to 0.1 mg; record the mass ( $m_2$ ).

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