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**Method for the determination of the hot-end coating
thickness of glass bottle**

玻璃瓶罐热端涂层厚度的测定方法

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Method for the determination of the hot-end coating thickness of glass bottle

1 Scope

This document describes a method for the determination of the hot-end coating thickness of glass bottle tin oxide.

This document applies the determination of the hot-end coating thickness in the range of 0 Å ~ 99 Å on the mouth and bottle body of various glass bottles.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the version corresponding to that date is applicable to this document; for undated references, the latest version (including all amendments) is applicable to this document.

GB/T 8170, Rules of rounding off for numerical values & expression and judgment of limiting values

3 Terms and definitions

The following terms and definitions are applicable to this document.

3.1

Hot-end coating

A layer of tin oxide coating formed by the decomposition of the spray material on the hot outer surface of the glass (400 °C ~ 600 °C).

4 Principle

After the hot-end spraying of glass bottles, a tin oxide coating shall be formed on the outer surface of the glass. The amount of light reflected on the surface of the glass with tin oxide is related to the incident angle, refractive index and thickness of the tin oxide material. Where the incident angle and refractive index are known, the thickness of the tin oxide coating can be measured by the amount of reflected light.

5 Reagents or materials

5.1 Induction fluid

The refractive index is close to the refractive index of conventional glass $n_D^{20} = 1.5$ (Sodium lamp D line with wavelength of $5\,893 \times 10^{-10}$ m); there shall be no bubbles; it should be stored in the dark and avoid humid environment.

5.2 Calibration samples

5.2.1 Standard parts without hot-end spraying ($0\text{ \AA}$).

5.2.2 Standard parts with known hot-end spraying thickness ($17\text{ \AA} \sim 35\text{ \AA}$).

Note: $\text{\AA}$ is the unit of measurement data of the hot-end coating thickness of glass bottles. The glass industry at home and abroad usually adopts CTU (coating thickness unit), $1\text{ CTU} \approx 1\text{ \AA}$ (10^{-10} m).

6 Apparatus

6.1 Hot-end coating thickness measuring equipment, with an accuracy of $2\text{ \AA}$.

6.2 The equipment shall include a testing table that can fix glass bottles, and the testing table shall be able to rotate manually or automatically.

7 Sample

7.1 The thickness of the glass at the measured position of the sample shall not be less than 1.1 mm .

7.2 The measured position of the sample shall be free from defects such as stains and bubbles.

7.3 The sample shall be annealed normally, cooled to room temperature, and kept dry.

8 Test procedure

8.1 Turn on the hot-end coating thickness measuring instrument; check the induction liquid pipe, and confirm that there are no air bubbles. Use calibration samples to check the measurement accuracy of the instrument after the equipment is turned on the day of use.

8.2 Put the sample on the testing table and adjust the measuring probe to the target height.

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