**4023 Determination of Shading Property for Colored Glass Containers**

Shading refers to the property of an object to block light transmission. Colored glass containers can provide protection for drugs that are sensitive to light. Shading property is usually expressed in terms of spectral transmission. When light passes through the sample, spectral transmission varies with the wavelength of light, the composition, color depth, and thickness of glass.

This method applies to the determination of shading of colored glass containers.

**Determination Principle:** In this method, the light beam emitted by the light source passes through the monochromator and is transformed into parallel beams of different wavelengths that vertically irradiate the sample, and calculate the ratio of the transmitted light intensity to the incident light intensity.

**Instruments:** UV-Vis spectrophotometer equipped with either a photodiode detector or a photomultiplier tube coupled with an integrating sphere.

Wall thickness tester, with an accuracy of 0.01 mm.

**Sample preparation:** Take 5 samples and make them into strips for testing. The sample shall be able to be fixed on the colorimetric bracket of the instrument, with the length direction parallel to the axis of the sample. The length of the sample in axial direction shall cover the instrument slit.

Clean the cut sample with purified water or anhydrous ethanol, wipe the surface of the sample with mirror wiping paper or absorbent cotton and allow them to air dry, avoiding any fingerprints or other stains on the surface. Avoid scratching the surface or crack of the sample during cutting and cleaning.

**Determination:** Place the sample in a UV-Vis spectrophotometer with the cylindrical axis parallel to the slit to ensure that the light beam is perpendicular to the surface of the section to reduce the loss caused by reflection. With air as the reference, measure the spectral transmission of intervals not greater than 20 nm of the sample in the spectral range of 290-450 nm.

If the shading property of the colored glass material itself is concerned, the thickness of the sample needs to be measured: select three different points in the middle of the sample, measure the thickness with a wall thickness tester, and take the average thickness of the three points as the result.

**Result representation:** The shading property of colored glass containers is expressed as the maximum spectral transmission (%) measured in the wavelength range. If the shading property of the colored glass material itself is concerned, it is expressed as the ratio of the maximum spectral transmission (%) measured in the wavelength range to the average thickness (mm) of the spot covered by the sample.

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