

ICS 71.100.40

QB

**LIGHT INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

QB/T 4309-2012

**Rewettability evaluation of fabrics softener
(English Translation)**

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1 Scope

This standard specifies the test method for the capillary effect time of white cotton cloth, which is soaked in a softener solution and dried.

This standard applies to the evaluation of the rewettability of liquid type fabric softeners.

2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) is applicable to this standard.

GB/T 6529 Textiles - Standard atmospheres for conditioning and testing

GB/T 6682 Water for analytical laboratory use - Specification and test methods

GB/T 13174-2008 Determination of detergency and cycle of washing property for laundry detergents

FZ/T 01071-2008 Textiles - Test method for capillary effect

3 Principle

Fabric's capillary effect refers to the measurement of the dispersion speed of water on the fabric, that is, the measurement of the speed of water rising along the capillary. It is expressed in terms of the height of rising for a certain period of time OR the time required for rising of a certain height.

This method expresses the capillary effect of the cotton fabric, after treated with the fabric

softener, by measuring the time, which is required for the water to rise to a certain height, along the capillary tube. It is used to evaluate the rewettability of the fabric softener.

4 Reagents and materials

Unless otherwise specified, only confirmed analytical reagents and distilled or deionized water or water of equivalent purity, are used in the analysis.

4.1

JB-00 white cotton cloth, in line with the provisions of Appendix A in GB/T 13174-2008.

4.2

Calcium chloride (CaCl_2).

Note: It may also use the calcium chloride, which has a certain hydration number.

However, it needs to be converted, according to the consumption of CaCl_2 , which is specified in 6.1.2.

4.3

Magnesium chloride ($\text{MgCl}_2 \cdot 6\text{H}_2\text{O}$).

Note: Anhydrous or magnesium chloride, which has a certain number of hydration, can also be used. However, in actual use, it needs to be converted, according to the consumption of $\text{MgCl}_2 \cdot 6\text{H}_2\text{O}$, which is specified in 6.1.2.

4.4

Capillary effect test solution. Grade 3 water conforming to GB/T 6682.

Note: In order to facilitate observation and measurement, it can add an appropriate amount of blue and black (or red) ink or other suitable colored reagents, to the grade

3 water.

5 Instrument and equipment

5.1

Vertical decontamination testing machine, which is in line with the requirements of GB/T 13174-2008.

5.2

Capillary effect test device, as shown in Figure 1.

5.2.1

Lifting bench, which has adjustable height.

5.2.2

Container. Used to hold the test solution; the height of the test solution can be at least 50mm.

5.2.3

Beam frame.

5.2.4

Specimen clamp, which is placed on the beam frame, to fix the specimen.

5.2.5

Tension clamp, the mass is about 2g ~ 3g, OR the mass that makes the test piece neither float nor stretch.

10.0L of 2500mg/kg hard water. When using, take 1.0L and dilute it to 10.0L, which is 250mg/kg hard water.

6.1.3 Use 250mg/kg hard water, to prepare the tested fabric softener specimen, into a 1.0g/L solution. Take 250mL of the test solution, in the bathtub of the vertical decontamination tester (5.1). Meanwhile take 250mL of 250mg/kg hard water, in another bathtub for, a blank test. Adjust the washing test temperature, to keep it at $(30 \pm 1)^{\circ}\text{C}$. Prepare for measurement.

Note: For concentrated fabric softener, reduce the consumption of fabric softener proportionally, according to its concentration ratio or instructions for use.

6.1.4 Put a piece of JB-00 white cotton cloth (6.1.1), in the specimen and the blank test bathtub. Start stirring. Keep the stirring speed at 120r/min. Stop after washing for 10min.

6.1.5 Take out the JB-00 white cotton cloth, from the bathtub. Put it into the inner bucket of the rinsing device (5.3). Dehydrate the test piece manually, for about 15s (rotating speed is about 1800r/min). Take out the dehydrated JB-00 white cotton cloth. Hang it to dry, at room temperature.

6.2 Cutting and humidity conditioning of test piece

6.2.1

Cut the naturally dried JB-00 white cotton cloth, into 4 test pieces of

150mm (warp direction) x 30mm (weft direction). During cutting, the distance from the test piece to the cloth edge shall be more than 40mm. Use a pencil to make two horizontal markings, along the weft direction, at 10mm and 30mm from one end of the test piece. After cutting, the test piece shall be free of burrs or loosening lines. Use filter paper, to separate

the test pieces of different specimens, after cutting. Place them in a constant temperature and humidity box [temperature $(20 \pm 2)^{\circ}\text{C}$, relative humidity $(65 \pm 4)\%$], for 24h. OR place them in a glass drier (5.6), which contains saturated sodium nitrite solution, for

24h, at a constant humidity. Prepare for use.

6.2.2

Before the test, place the capillary effect test solution (4.4), in a constant temperature water bath, which has a temperature of $(20 \pm 2)^{\circ}\text{C}$.

6.3 Determination of capillary effect time

6.3.1

The test shall be carried out, under standard atmospheric conditions, at a temperature of $(20 \pm 2)^{\circ}\text{C}$ and a relative humidity of $(65 \pm 4)\%$.

6.3.2

Fix the unmarked end of the test piece on the beam frame (5.2.3). Adjust the weft level of the test piece.

6.3.3

Install a tension clamp (5.2.5), which is about 2g ~ 3g, at about 5mm, from the lower end of the test piece, to keep the test piece vertical.

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