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JIS

JAPANESE INDUSTRIAL STANDARD

Testing Methods for Viscosity of Epoxide Resins and Hardeners

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Testing Methods for Viscosity of
Epoxide Resins and Hardeners

K 7233-1986

1. Scope

This Japanese Industrial Standard specifies the testing methods for the viscosity of epoxide resins and hardeners which are under liquid state at ordinary temperature or are dissolved in solvents.

2. Definitions

The definitions of main terms used in this standard shall be as follows:

- (1) epoxide resin This is in accordance with the definition in JIS K 7231.
- (2) hardener This is in accordance with the definition in JIS K 7231.
- (3) viscosity This is in accordance with the definition in JIS Z 8803.

3. Classification of Testing Methods

The methods shall be classified into the following three methods for testing.

- (1) Capillary Viscometer Method
- (2) Single Cylinder Rotational Viscometer Method
- (3) Bubble Viscometer Method

Applicable Standards, Corresponding International Standards and
Reference Standards: See page 14.

4. Testing Methods4.1 Capillary Viscometer Method

4.1.1 Summary of Testing Method Letting the sample flow under laminar flow in a capillary tube having uniform inside diameter, find the viscosity of the sample after measuring the time required for that the sample of definite volume passes through the capillary tube.

4.1.2 Devices and Apparatus Devices and apparatuses shall be as follows:

- (1) Cannon-Fenske Viscometer This is that specified in 5.2.1 of JIS Z 8803. Its shape is shown in Fig. 1 and the dimension of an example in Table 1.
- (2) Thermostatic Bath The thermostatic bath is to be able to control at $25.0 \pm 0.1^{\circ}\text{C}$, and is structured so that inside can be seen through from outside horizontally when testing viscosity.
- (3) Stop Watch This has the minimum scale of 0.2 sec. or less.
- (4) Thermometer This is the thermometer specified in VIS 17 of JIS B 7410 or the equivalent thereto.

4.1.3 Procedures of Test The procedures of test shall be as follows:

- (1) Making a viscometer upside down, dip the narrower end of the viscometer (2) into the sample, and suck up the sample from the other end (1) until the level of the sample comes to m_2 . Then recover its original position (refer to Fig. 1).
- (2) After putting the sample in, attach vertically the viscometer in a thermostatic bath to be free from any shaking. In this case, aline the centers of bulbs B, D, and G with the same vertical line, and locate the viscometer so that the sample level while testing may be 20 mm or more lower than the water level of the thermostatic bath (refer to Fig. 1).
- (3) When the temperature of the sample has reached measuring temperature (the leaving alone for 10 to 30 minutes is satisfactory), confirm no bubbles inside of the sample, and, after letting the sample level rise 5 to 10 mm upper than the upper marked line of the bulb D by means of sucking or pressurizing, allow the sample flow down naturally. Measure the time needed for the sample to pass through between the upper and lower marked lines (between m_1 , m_2) on the measuring bulb (¹).

Note (¹) When the measured time is 100 sec. or less, make use of the viscometer having smaller diameter of capillary tube F instead.