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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

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**Determining of the softening point of phenolic resin for digital
printing material - Microscopic melting point method**

数字印刷材料用酚醛树脂软化点的测定 显微熔点仪法

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1 Scope

This document describes the principle, the test environment, the instrument, the test procedure and the test report for determining the softening point of phenolic resin for digital printing material by the microscopic melting point apparatus method.

This document applies to the determination of the softening point of thermoplastic phenolic resins polymerised from alkylphenol and formaldehyde and having a flat fracture face.

2 Normative references

The contents of the following documents constitute indispensable provisions of this document through the normative references made to them in the text. For dated references, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies to this document.

GB/T 6679 General rules for sampling solid chemical products

GB/T 8170 Rules of rounding off for numerical values and expression and judgement of limiting values

3 Terms and definitions

There are no terms and definitions that need to be defined in this document.

4 Principle

The flat fracture face of the phenolic resin under test is placed on the sample stage; the temperature is first raised quickly and then raised slowly. The state of the sample is

observed carefully, and the temperature at which the surface of the sample under test becomes smooth and crystal-clear is the softening point of the phenolic resin.

5 Test environment

Temperature: 23 °C plus or minus 3 °C; relative humidity: 60 % plus or minus 20 %.

6 Instrument

Microscopic melting point apparatus (with digital display), accurate to 1 °C. Measuring range from room temperature to 320 °C, with a steady heating rate that is continuously and steplessly adjustable. Total magnifications of 20 times, 40 times and 80 times.

7 Test procedure

7.1 Sample preparation. Sampling is carried out as specified in GB/T 6679; from the sample collected, at least two phenolic resin samples with a flat fracture face are selected, the fracture face being not less than 1.5 mm by 1.5 mm, and kept ready for use.

7.2 Determination. The power switch is turned on and the melting point apparatus displays the current temperature value, which shows that the instrument is ready. According to the softening point of the substance under test, the fast heating knob is adjusted (heating rate 3 °C per minute) so that the temperature of the sample stage of the melting point apparatus comes to about 30 °C below the sticking temperature of the sample under test; the slow heating knob (heating rate 0.5 °C per minute) is then used to raise the temperature of the sample stage slowly. At this point a glass slide is placed on the hot stage and the phenolic resin sample prepared as in 6.1 is placed on the slide; when the surface of the sample under test becomes smooth and crystal-clear, the temperature at that moment is recorded, and it is the softening point of the phenolic resin.

7.3 Calculation of the result. Two samples are determined in parallel and the mean is taken as the softening point of that sample; the calculated result is expressed to 1 °C. The data are treated in accordance with the rounding rules of GB/T 8170.

7.4 Permissible difference. One sample is determined twice in parallel, and the absolute difference between the two results is not greater than 2 °C.

8 Test report

The test report is to include the following: a) a statement of the method standard used; b) the place of origin of the sample, the batch number and other identifying data; c) the detailed test conditions, including the model of the instrument, the test environment and so on; d) the test result, the accuracy of the result being controlled to 1 °C; e) the test date and the operator.