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

GB/T 12009.3-2009

Replacing GB/T 12009.3-1989

**Plastics -- Polyethylene polyphenol isocyanate -- Part 3:
Determination of viscosity**

塑料 多亚甲基多苯基异氰酸酯 第3部分：黏度的测定

(English Translation)

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Foreword

GB/T 12009 "plastic polymethylene polyphenyl isocyanate" is divided into five sections.

--- Part 1. Determination of total chlorine content;

--- Part 2. Determination of hydrolyzable chlorine content;

--- Part 3. Determination of viscosity;

--- Part 4. Determination of isocyanato content;

--- Part 5. Determination of acidity.

This section GB/T Section 312,009, modifications adopted ISO 3219:1993 "plastic liquid state or as emulsions or dispersions of poly Polymer/resin was measured at a rotational viscometer with defined shear rate viscosity "(in English).

This section according to ISO 3219:1993 redrafted in order to facilitate comparison, are listed in this section with informative Appendix B ISO 3219:1993 technical differences, and in the text with a single vertical line identification.

For ease of use, this section made the following editorial changes.

a) to the "international standards" be replaced by "this section";

b) Remove the ISO 3219:1993 Foreword;

c) increase the national standard foreword;

d) For the ISO 3219:1993 international standard other references have been adopted as the equivalent of a standard, this part of the country with references National standards instead of the corresponding international standards;

e) use of decimal notation. "" instead of the international standard decimal symbol "." this Part replaces GB/T 12009.3-1989 "polymethylene polyphenyl isocyanate viscosity measurement method." this section compared with the GB/T 12009.3-1989 The main changes are as follows.

- Shear rate gives two series;
- Precision instrument made provisions;
- Measured for 3 times;
- Added two appendices;
- Increasing the viscosity meter calibration;
- Circulating bath temperature (0 ~ 50) °C range can be constant at ± 0.2 °C;
- Increase the accuracy of the thermometer should be 0.05 °C.

Appendix A to this part of the normative appendix, Appendix B is an informative annex.

This part is proposed by the China Petroleum and Chemical Industry Association.

This part of the National Standardization Technical Committee of plastic products and plastic resins General Methods Chapter (SAC/TC15/SC4) centralized.

This section is responsible for drafting. National Quality Supervision and Inspection Center of synthetic resin.

This section participated in the drafting unit. China National Bluestar (Group) Co., Ltd., Lansing (Tianjin) Chemical Co., Ltd., Cangzhou Dahua Group Company Secretary of Jiangsu Province Chemical Research Institute Co., Ltd., Yantai Wanhua Polyurethane Co., Ltd.

1 Scope

This section GB/T 12009 gives the coaxial having a predetermined shear rate double cylindrical rotary viscometer viscosity method.

This section applies to multi-polymethylene polyphenyl isocyanate ester viscosity measurement.

Principle 2

With used with the specified characteristics of the viscometer according to the shear rate and shear stress measurements obtained viscosity liquid sample.

(1) viscosity η is defined by the formula.

$\eta =$

$\frac{\tau}{\dot{\gamma}}$

Where.

--- viscosity $[\eta]$, in units of Pascal seconds (Pa · s);

[tau] --- shear force unit Pascals (Pa);

gamma --- shear rate in second (s⁻¹).

According to the International System of Units (SI) unit of viscosity is Pascal seconds (Pa · s) 1Pa · s = 1N · s/m²

Note 1: Sign and GB 3102.3 "Quantities and units of mechanics" agreement.

Kwan called Newtonian liquids.

3.1.1 Measuring System

Measurement system shall include coaxial surfaces of two rigid symmetrical, during which the viscosity of the fluid into the test. Wherein a surface at a constant angular velocity Degree rotation, while the other surface remain stationary. Measurement system should be determined for each measurement of the shear rate.

Torque measuring device shall be connected to a surface which can be measured so as to overcome the viscous resistance of the fluid torque required.

Suitable for the coaxial cylinder measuring system.

Size measurement system shall meet the conditions specified in Appendix A, which is designed to ensure that all test measurement types and all common models of the instrument Weight region having a similar geometry.

3.1.2 Basic instrument

Basic instrument should be designed to be able to install alternative rotor and the stator to form a series of predetermined rotational frequency (stepwise or continuously Change), and the corresponding torque can be measured, and vice versa (ie. generating a predetermined torque and rotational frequency corresponding measurements).

Torque measuring instrument accuracy should be within the full scale count of 2%. Within the normal operating range of the instrument, the instrument precision rotational frequency Degree should be within 2% of the measured value. Viscosity measurement repeatability shall be ± 2%.

Note: For different measuring systems and the rotational frequency of use, most have a viscosity measuring instruments means that range, the minimum range (10⁻² ~

10³) Pa · s.

A shear rate range of different instruments vary widely, it should be based on the viscosity and shear rate range of measurements required to select a particular on the basis of appropriate instruments and measurement systems.