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

GB/T 24148.4-2009

**Plastics -- Unsaturated polyester resin -- Part 4: Determination
of viscosity**

塑料 不饱和聚酯树脂(UP-R) 第4部分：粘度的测定

(English Translation)

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Foreword

GB/T 24148 "plastic unsaturated polyester resins (UP-R)" is divided into the following nine sections.

- Part 1. Designation system;
- Part 2. Sample preparation and performance measurement;
- Part 3. Technical requirements;
- Part 4. Determination of viscosity;
- Part 5. Determination of solid content;
- Part 6. 130 °C reactivity was measured;
- Part 7. Determination of gel time at ambient temperature;
- Part 8. platinum-cobalt colorimetry color;
- Part 9. Total volume shrinkage rate determination.

This section GB/T Section 424,148, modifications adopted ISO 3219:1993 "plastic liquid state or as emulsions or dispersions of poly Polymer/resin with defined shear rate rotary viscometer viscosity "(English version), listed in Appendix C of this part of the reg number and ISO 3219:1993 Number of reg table.

This part made the following technical corrections.

- Range only for liquid unsaturated polyester resins (see Chapter 1);
- Procedure to do a more detailed description (see Chapter 7);
- Instead of the "Normative references" of international standards with the corresponding national standards listed chapter.

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

--- To the "international standards" be replaced by "this section", the "ISO 3219 in this section" to "GB/T 24148 in this section," or "headquarters Minute";

--- Remove the ISO 3219:1993 Foreword;

--- Increase the national standard foreword;

--- Use of decimal notation. "" Instead of the international standard decimal symbol "." this part of the Appendix A and Appendix B for the normative appendix, Appendix C is informative appendix.

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. Zhejiang Tianhe Resin Co., Ltd. Tianjin All material resin, synthetic resin National Quality Supervision and Inspection Test center.

Participated in the drafting of this section. Guangdong Panyu Futian Chemical Co., Ltd., Jiangsu Yabang Paint Co., Ltd., East China University of Technology Huachang Polymer Co., Ltd., Jiangsu Fu Ling Chemical Co., Ltd., Changzhou Tianma Group Co., Ltd.

1 Scope

This section GB/T 24148 specifies the unsaturated polyester resin viscosity measurement method.

This section applies to the use of having a defined shear rate viscometer measured viscosity liquid unsaturated polyester resins.

2 Normative references

The following documents contain provisions which, through reference GB/T 24148 in this section constitute provisions of this section. For dated reference documents Member, all subsequent amendments (not including errata content) or revisions do not apply to this section, however, encouraged to reach under this section Parties to research agreement to use the latest versions of these documents. For undated reference documents, the latest versions apply to this section.

GB/T 2918-1998 standard plastic sample conditioning and environmental tests (idtISO 291.1997) GB 3102.3-1993 mechanical quantity and unit (eqvISO 31-3.1992) Principle 3 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.

$\eta =$

gamma

Where.

--- viscosity $[\eta]$, in units of Pascal seconds ($\text{Pa} \cdot \text{s}$);

$[\tau]$ --- 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 ($\text{Pa} \cdot \text{s}$) $1\text{Pa} \cdot \text{s} = 1\text{N} \cdot \text{s}/\text{m}^2$

Note 1: Sign and GB 3102.3-1993 "Quantities and units of mechanics" agreement.

Kwan called Newtonian liquids.

4.1.1 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 measurement system and cone system board systems.

Size measurement system shall meet the conditions specified in Appendix A and Annex B, which is designed to ensure that all types of measuring instruments and all common models the measurement area having a similar geometry.