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

GB/T 32681-2016

**Plastics -- Phenolic resins -- Determination of heats and
temperatures of reaction by differential scanning calorimetry**

塑料 酚醛树脂 用差示扫描量热计法 测定反应热和反应温度

(English Translation)

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Foreword

This standard is drafted in accordance with the rules given in GB/T 1.1-2009.

This standard uses the re-drafting method to modify ISO 11409.:1993 "plastic phenolic resin with differential scanning calorimetry Heat and reaction temperature "(English version).

The technical differences between this standard and ISO 11409.:1993 are as follows.

--- on the normative reference documents, in order to meet the technical conditions of our country, this standard has been adjusted, the adjustment of the situation reflected in the Chapter 2, "Normative references", as follows.

Replace ISO 472. 1988 with GB/T 2035-2008 equivalent to ISO 472.:1999.

This standard has made the following editorial changes.

- Deleted the preface of ISO 9771.:1995;
- an introduction to the national standard;
- to 3.4 "Note 1" to "note";
- "crucible" instead of "sample container";
- change the title "average" of 4.5.3.3 to "result representation";
- Change the precision of ISO 11409.:1993 to note;
- Information is included in Appendix A.

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

This standard by the National Plastics Standardization Technical Committee Thermosetting Plastics Subcommittee (SAC/TC15/SC11) centralized.

This standard is responsible for drafting units. Changshu Southeast Plastic Co., Ltd.

This standard participates in the drafting unit. Zhongguang dawn Chemical Research and Design Institute Co., Ltd., Shaxian Hongsheng Plastic Co., Ltd., Shanghai Eurasia Materials Co., Ltd., Shandong Shengquan Chemical Co., Ltd., National Synthetic Resin Quality Supervision and Inspection Center.

1 Scope

1.1

This standard specifies the method of determining the reaction heat and reaction temperature of phenolic resin by differential scanning calorimetry.

1.2

The process is applicable to phenolic resins having exothermic behavior, such as resole phenolic resins, or novolak resins and hexamethylenetetramine or Other curing agents.

1.3

This method is used to characterize a product or study.

2 Normative reference documents

The following documents are indispensable for the application of this document. For dated references, only the dated edition applies to this article Pieces. For undated references, the latest edition (including all modifications) applies to this document.

GB/T 2035-2008 Plastics terminology and definitions (ISO 472.:1999, IDT) ISO 5725. 1986 Precision of test methods Intermittent laboratory tests for reproducibility and reproducibility (Precision of test methods-Determination of repeatability and reproducibility for a standard test method by inter-laboratory tests)

3 Terms and definitions

The following terms and definitions apply to this document.

Differential scanning calorimeter differential scanning calorimetry;

The polymer sample was placed under the same temperature control procedure as a reference and the polymer sample was measured with the reference substance to absorb or release heat A technique of temperature and/or time function.

Phenolic resin A class of resins derived from the condensation of phenol and its homologues and/or their derivatives with aldehydes or ketones.

Novolac

Non-self-curable, soluble and fusible, stable storage of phenolic resin, the benzene ring between the main rely on methylene bridge connection. There is cure in the presence of the resin, the resin may be crosslinked by further reaction by heating.

See GB/T 2035-2008 for the contents of the novolac resin.

Resole phenolic resole Soluble fusible phenolic resin, and novolac resin is different from it contains hydroxymethyl and methylene ether groups, and sometimes also contain methylene Amine bridge. Such resins are self-curable and can be cured by heat and/or under the action of accelerators to be insoluble and insoluble without the need for Add other reaction components.

Note: The terms "heat" and "heat of reaction" used in this standard correspond to "enthalpy" and "reaction enthalpy".

4.1 Principles

Measure the heat flux (energy) of the supplied sample as a function of time or temperature under the specified atmosphere and temperature control procedures.