ICS 83.060
CCS G40

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 11205-2009

Replacing GB 11205-1989

Rubber - Determination of thermal conductivity by means of hot -wire method

橡胶 热导率的测定 热线法

Issued on: April 24, 2009 **Implemented on: December 1, 2009**

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Standardization Administration of China

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Foreword

This standard replaces GB/T 11205-1989 "rubber thermal conductivity measurement of transient hot wire method." The main technical differences between standard compared with GB/T 11205-1989 as follows:

--- Modify the standard name;

--- Increased warnings;

--- Deleted provisions thermal conductivity test range (see Chapter 1);

--- The definition of thermal conductivity supplemented (see Chapter 3);

--- Added a sample size of 50mm x 6.3mm (1989 Edition 6.3;

--- Adjust the sample has been modified (see 7.2);

--- Remove the formula test error (1989 edition 8.6);

--- Added "test results to three significant figures" (edition 9.2). The standard proposed by China Petroleum and Chemical Industry Association. This standard by the National Standards Commission Oak Common test methods for Standardization Technical Committee (SAC/TC35/SC2) centralized. This standard was drafted. Northwest Rubber Plastic Research and Design Institute. The main drafters of this standard. Gao Yun, Zhu Wei. This standard replaces the standards previously issued as follows:

--- GB/T 11205-1989. Determination of the thermal conductivity of rubber wire method Warning. Use of this standard laboratory staff should have regular experience. This standard does not point out all possible security issue, use Those who have the responsibility to take appropriate safety and health practices and to ensure compliance with the relevant provisions of state laws and regulations.

1 Scope

GB/T 11205-2009 is the Chinese national standard on rubber - determination of thermal conductivity by means of hot -wire method, in the field of rubber and plastic industries. The

/T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 24 April 2009 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 December 2009. Classification: ICS 83.060, CCS G40. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This standard specifies the method for determining the thermal conductivity of the rubber material with a hot wire method. This standard applies to the determination of vulcanized rubber and unvulcanized rubber thermal conductivity. This standard does not apply to water-swellable rubber, rubber and metal powder.

2 Normative references

The following documents contain provisions which, through reference in this standard and become the standard terms. For dated references, subsequent Amendments (not including errata content) or revisions do not apply to this standard, however, encourage the parties to the agreement are based on research Whether the latest versions of these documents. For undated reference documents, the latest versions apply to this standard.

GB/T 2941 rubber physical test method for preparing and conditioning General Procedure (GB/T 2941-2006, ISO 23529.2004, IDT)

3 Terms and Definitions

The following terms and definitions apply to this standard.

3.1 Under heat transfer conditions represent two plane temperature difference per unit length apart as one unit (K) when, in unit time through unit area Product heat transfer. Units of W/(m · K).

4 Test principle

The use of thermal resistance material made of a plane probe, making it as a heat source and a temperature sensor. Thermal coefficient resistance temperature of the material

--- And a linear relationship between the degree of resistance that by understanding the change in resistance can know the heat loss, reflecting the thermal properties of the samples. In the test Process, the probe is placed in the middle of two samples tested, the current through the resistance of the material to produce a certain amount of heat, the

temperature rises, The heat generated at the same time to the two sample diffusion, diffusion rate depends on the heat transfer characteristics of the material. By responding to and recording temperature probe Time, the properties of the material can be calculated. A constant current I, will be produced per unit length q = I 2R (R being the wire resistance, L is the length of the wire) of Joule heat. Heat will lead week It conforms to the following mathematical relationship between. 4pilambda - [] C (1) Where. lambda

--- thermal conductivity of the medium, in units of watts per meter Kelvin [W/(m · K)]; Thermal diffusivity Rao

--- medium, in units of meters per second (m2/s); C

--- Euler's constant, to 0.5772; T0

--- initial temperature when the unit is Kelvin (K);