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Coated canvas - Test method for thermal conductivity

浸胶帆布 导热性能试验方法

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Table of Contents

Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for Standardization Work Part

1.Structure and Drafting Rules for Standardization Documents" drafting. Please note that some contents of this document may refer to patents. The issuing agency of this document assumes no responsibility for identifying patents. This document is proposed by China Petroleum and Chemical Industry Federation. This document is prepared by the Technical Committee of National Standardization Technical Committee on Rubber and Rubber Products (SAC/TC35/SC13) Focus on. This document is drafted by: Anhui Engineering University, Anhui Huaye Special Materials Co., Ltd., Qingdao University of Science and Technology, Qingdao Tianbang Wire Industry Co., Ltd. Division, Qingdao Shengke Materials Co., Ltd., Qingdao New Material Technology Industrial Park Development Co., Ltd., Qingdao Keda New Rubber and Plastic Technology Service Co., Ltd. The main drafters of this document. Xie Yanxia, Zhou Yechang, Liu Li, Yu Baige, Du Aihua, Ding Naixiu, Zhang Baogang. Test method for thermal conductivity of dipped canvas

1 Scope

China's national test method for the thermal conductivity of coated canvas. Coated canvas is the material of tarpaulins, tents, awnings, truck curtains and temporary structures - a woven base with a polymer coating that makes it waterproof and durable. Thermal conductivity matters for the applications where the fabric is the building envelope rather than a cover: a tent, a temporary shelter, an insulated truck curtain, or a cold store's flexible door. Measuring it on a coated fabric is awkward in ways that a bulk material measurement is not. The material is thin, so the temperature difference across it is small and hard to resolve; it is not homogeneous, being a coating on a weave with air in the interstices; it is flexible, so the contact with the measuring plates depends on how it is clamped; and the result varies with the moisture it holds, which for a fabric in service is never zero.

This document describes the test method for the determination of the thermal conductivity of dipped canvas at temperatures ranging from 50 °C to 250 °C using the planar heat

source method. This document is applicable to the test of thermal conductivity of dipped canvas.

2 Normative references

The contents of the following documents constitute the essential provisions of this document through normative references in the text. Among them, dated references For documents, only the version corresponding to the date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to this document.

GB/T 2941 Rubber physical test methods Specimen preparation and general procedures for adjustment

GB/T 8170 Numerical rounding off rules and expression and determination of limit values

GB/T 31334.6 Test methods for dipped canvas - Part

3 Terms and Definitions

The following terms and definitions defined in GB/T 32110 apply to this document.

3.1 Heat flux heatflux The amount of heat transferred per unit area per unit time.

3.2 The heat flux in a body under the action of a unit temperature gradient.

4.Test principle This experiment is mainly based on the principle of steady-state heat transfer with two-layer flat walls without internal heat source, as shown in Fig. 1, for the steady-state heat transfer along the heat transfer direction, generally The heat flux through each flat wall is equal. Acquisition of hot plate temperature, dipped canvas/standard module temperature, standard module surface temperature, based on Fourier The leaf heat transfer equation calculates the heat flux according to the temperature difference along the heat transfer direction of the standard module, the thickness of the module and the thermal conductivity of the module; according to the heat flux, The temperature difference in the heat transfer direction of the dipped canvas and the thickness of the dipped canvas are used to calculate the comprehensive thermal conductivity of the dipped canvas. Characterization of dipped sails by comprehensive thermal conductivity The thermal conductivity of the cloth.

6 Measurement of basic items such as size and grammage

GB/T 32110 Terms and definitions of impregnated framework materials