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New textile materials - Datasheet of thermal properties

纺织新材料 热学性能数据表

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Foreword

This instructional document has been drafted in accordance with the rules given in GB/T 1.1-2009. This Guidance Document is proposed by China National Textile and Apparel Council. The guidance of technical documents by the National Textile Standardization Technical Committee (SAC/TC209) centralized. The drafting of the guidance of technical documents. Textile Industry Standardization Institute, Textile Industry Science and Technology Development Center, Changshu Jinquan Weaving limited liability company, Yantai Taihe New Materials Co., Ltd., China Chemical Fiber Industry Association. The main drafters of this technical document Liu Feifei, Xu Lu, Han Yuru, Li Deli, Wang Guojian, Fan Haibin, Ma Qianli.

At present, aramid, polyphenylene sulfide fibers, ultra-high molecular weight polyethylene fibers, new polyester fibers, chitosan fibers, polylactic acid fiber and other high Fibers and new textile fibers developed rapidly, but mostly in the industrialization process, the basic data of a serious shortage of some books, information mentioned Part of the scattered data there is a big difference, and did not indicate the test method, is not comparable, can not meet the product development and application design Department of the material itself

based on the performance data needs. The data of this instructional technical document originated from the scientific research special item "Research on basic performance data of textile new material" Fruit, is collected on the basis of the measured value of the sample is given, there are some limitations. Unlike the existing product standards, this guidance document is not a specification of the performance of the final product and is not intended as a Determine whether the product is qualified basis. This guideline is for reference only. The suggestions and opinions on this technical document are directed to the standardization administration under the State Council Department reflected. Thermal Properties Data Sheet for Textile New Materials

1 Scope

This guiding technical document gives the basic thermal property data of certain textile fibres: the glass transition temperature, the melting point, the enthalpy of fusion, the thermal decomposition temperature and the thermal mass-loss ratio. This guiding technical document applies to ultra-high molecular weight polyethylene fibre, aramid 1414, aramid 1313, polyphenylene sulfide fibre, polyimide fibre, polytrimethylene terephthalate fibre, polybutylene terephthalate fibre, polylactic acid fibre, chitosan fibre and lyocell fibre.

This guideline documents the heat of glass fibers, melting points, enthalpies of melting, thermal decomposition and thermal weight loss of certain textile fibers Learn the basic performance data. This guideline is applicable to UHMWPE fibers, aramid 1414, aramid 1313, polyphenylene sulfide fibers, polyimides Fibers, polytrimethylene terephthalate fibers, polybutylene terephthalate fibers, polylactic acid fibers, chitosan fibers and Lyocell fibers.

2 Terms and definitions

The following terms and definitions apply to this document.

2.1 Glass transition temperature glasstransitiontemperature Transition temperature of amorphous (or semi-crystalline) polymer from rubbery (viscoelastic) to glassy. [

GB/T 6425-2008, the definition of 3.5.4.1]

2.2 Melting point meltingpoint The crystallization zone inside the material changes from the crystalline state to the molten state.

2.3 Enthalpy of fusion enthalpyoffusion The amount of heat, unit, KJ/kg, or J/g required to melt the material at constant pressure. [

GB/T 19466.3-2004, Definition 3.3]

2.4 Thermal decomposition temperature thermaldecompositiontemperature Macromolecules inside the material are destroyed as small molecules.

2.5 Thermal mass loss rate The ratio of mass loss to initial mass when heated to a certain

temperature, expressed as a percentage.

2.6 Differential scanning calorimetry differential scanning calorimetry In the program temperature and under certain atmosphere, measuring the heat flow rate or heating power (difference) and the temperature or time Technology. [

GB/T 6425-2008, Definition 3.2.9]

2.7 Differential Scanning Calorimetry (DSC curve) differential scanning calorimetry curve (DSC curve) The heat flow rate or heating power (difference) to the sample and reference measured by differential scanning calorimeter versus temperature or time Illustration. The ordinate of the curve is the heat flow rate, or heat flow, in mW.s⁻¹; the abscissa For temperature or time. [

GB/T 6425-2008, Definition 3.2.10]