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**Man-made fiber - Test method for thermal
decomposition temperature**

化学纤维 热分解温度试验方法

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Foreword

This Standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This Standard was proposed by and shall be under the jurisdiction of China Textile Industry Federation.

The drafting organizations of this Standard: Guangzhou Fiber Product Testing Institute, Shanghai Textile Industry Technical Supervision Institute, Fiber Inspection Center of Lianyungang City, Sinopec Yizheng Chemical Fiber Co., Ltd., Xiamen Xianglu Chemical Fiber Co., Ltd., Shenma industrial co., Ltd., Shanghai Textile Group Testing Standard Co., Ltd., Zhejiang Haorui New Material Technology Co., Ltd., Tongkun Group Co., Ltd., Shenzhen Zhongke Zhongju Innovative Materials Co., Ltd., Shanghai Institute of Quality Supervision and Inspection Technology, Changxing Shanying Chemical Fiber Co., Ltd., Textile Chemical Fiber Product Development Center.

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Man-made fiber - Test method for thermal decomposition temperature

1 Scope

This Standard specifies the method that uses thermogravimetry to measure thermal decomposition temperature of chemical fiber.

This Standard is applicable to chemical fiber. Chemical fiber raw materials may refer to this Standard for use.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 4146 (all parts), *Textiles - Man-made fibers*

GB/T 6425, *Nomenclature for thermal analysis*

3 Terms and definitions

For the purposes of this document, the terms and definitions defined in GB/T 4146 and GB/T 6425 apply.

4 Principle

Under program temperature control, measure the relationship between specimen mass and temperature change to obtain the relationship curve (thermogravimetric curve) between specimen mass and temperature, thus obtain the decomposition temperature of the specimen.

5 Devices

5.1 Thermogravimetric analyzer

6.2 Sample preparation method

Use scissors to cut the sample short. The specimen length shall be less than the inner diameter of the crucible used.

6.3 Specimen mass

The specimen mass is 5mg~10mg. If the specimen density is small or there is overflow in the crucible, it may reduce the specimen mass.

7 Test steps

7.1 Clean the specimen dish.

7.2 Load the specimen dish that is cleaned but not loaded with specimen into the instrument. Set test parameters such as gas type, gas flow rate, start temperature, end temperature, and ramp rate between program temperatures. Zero the thermogravimetric analyzer.

Recommended test parameters: nitrogen atmosphere, 100mL/min purge flow rate, 15°C/min heating rate, starting temperature is 50°C, ending temperature is 800°C.

NOTE 1: Then it is accessed to air flow, it shall cause changes in buoyancy of mass weighing system and convection in the thermogravimetric analyzer. Even if the actual mass does not change, an apparent change in mass shall be observed, and the mass measurement accuracy shall decrease. It is better to pre-run without specimen under the same heating rate and gas flow rate as the actual measurement, so as to observe the apparent change in mass.

NOTE 2: Test parameters can be changed according to actual application requirements, such as ambient atmosphere, purge flow rate, heating rate, start and end temperatures.

7.3 Place the specimen dish that is loaded with specimen into the instrument. After the gas flow rate is stable, record the specimen mass.

7.4 Start temperature program and record the thermogravimetric curve.

NOTE: It can change gas during measurement but it needs to use the same flow rate. In addition, it is better to use the gas that has similar density so as to reduce the effect of buoyancy on the results. If a gas with a similar density cannot be used, buoyancy correction is required.

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