

ICS 59.060.20
CCS W 50



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

GB/T 47427-2026

**Synthetic filament yarns - Determination of dynamic thermal
draw-force of partially oriented yarns (POY)**

合成纤维 预取向丝 (POY) 动态热应力试验方法
(English Translation)

Issued on: April 30, 2026

Implemented on: November 1, 2026

Issued by: State Administration for Market Regulation

Table of Contents

Preface	
1 Scope	
2 Normative References	
3 Terms and Definitions	
4 Principle	
5 Instruments and Equipment	
5.1 Dynamic Thermal Stress Tester	
5.2 Sample rack	
6 Test conditions	
6.1 Pretension	
6.2 Heating temperature	
6.3 Draw ratio	
6.4 Test speed	
6.5 Test length	
7 Sampling	
8 Experimental Procedure	
8.1 Sample Preparation	
8.2 Setting Test Conditions	
8.3 Install the test specimen	
8.4 Determination of Sample	
9 Result Calculation and Representation	
10 Precision	
11 Test Report	
Appendix A (Informative) Optimization of Heating Temperature, Test Speed, and Draw Ratio for Dynamic Thermal Stress Testing	
A.1 Overview	
A.2 Select the draw ratio	
A.3 Selecting the heating temperature and test speed	
A.4 Example	
Appendix B (Normative) Calculation of Statistical Values	
B.1 Arithmetic Mean	
B.2 Standard Deviation	

B.3 Coefficient of Variation

Appendix C (Informative) Precision

C.1 Overview

C.2 Repeatability

C.3 Reproducibility

References

Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document adopts ISO 12834:2024 "Textiles - Tests for dynamic thermal stress in pre-oriented synthetic fiber filaments (POY)".

method".

The following minimal editorial changes have been made to this document.

---To align with existing standards, the standard name has been changed to "Test Method for Dynamic Thermal Stress of Synthetic Fiber Pre-oriented Yarn (POY)".

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed and is under the jurisdiction of the National Technical Committee on Standardization of Chemical Fibers (SAC/TC586).

1 Scope

This document describes the experimental method for dynamic thermal stress in pre-oriented synthetic fiber yarns.

This document applies to pre-oriented polyester (PES), polyamide (PA), and polypropylene (PP) yarns with a linear density of less than 800 dtex.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

testing)

Note: GB/T 6529-2008 Standard atmosphere for conditioning and testing of textiles (ISO 139:2005, MOD) ISO 2076 Textiles - Man-made fibers - Generic names Note. GB/T 4146.1-2020 Textiles - Chemical Fibers - Part 1: Genus Names (ISO 2076:2013, MOD)

3 Terms and Definitions

The terms and definitions defined in ISO 2076, as well as the following terms and definitions, apply to this document.

The URLs for the terminology databases maintained by ISO and IEC for standardization are as follows.

The force generated when a pre-oriented yarn is drawn to a specific ratio at a certain heating temperature and test speed.

4 Principles

Continuous pre-oriented yarns are introduced into a dynamic thermal stress tester at a certain test speed under constant pretension. The yarn bundle passes through a heating device and is then drawn.

The device measures dynamic thermal stress under specified conditions.

5.1 Dynamic Thermal Stress Tester

The following requirements must be met.

- a) Tension device, which applies a certain pretension to the pre-oriented yarn and maintains a tension accuracy of $\pm 10\%$;
- b) Heating device, temperature control accuracy $\pm 2^{\circ}\text{C}$;

Note: Test results of dynamic thermal stress for heating devices of different lengths may vary.