

ICS 59.060.20
CCS W 52

FZ

**TEXTILE INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

FZ/T 54027-2022

**Ultra-high molecular weight polyethylene (UHMWPE) filament
yarns
(English Translation)**

Issued on: April 8, 2022

Implemented on: October 1, 2022

**Issued by: Ministry of Industry and Information Technology of the
People's Republic of China**

Table of Contents

- Foreword
- 1 Scope
- 2 Normative references
- 3 Terms and Definitions
- 4 Classification and identification
 - 4.1 Product classification
 - 4.2 Product identification

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.

This document replaces FZ/T 54027-2010 "Ultra High Molecular Weight Polyethylene Filament". Compared with FZ/T 54027-2010, except for editorial in addition to the modification, the main technical changes are as follows.

- Expanded the scope of application of the document (see Chapter 1, Chapter 1 of the 2010 edition).
- Deleted the definition of "ultra-high molecular weight polyethylene filament" (see Chapter 3, Chapter 3 of the 2010 edition).
- Classification and identification (see Chapter 4, Chapter 4 of the 2010 edition).
- Added five series of TM25, TM38, TM40, TM42, TM45;
- Canceled the classification of linear density by "low, medium, thick and high";
- Technical requirements (see Chapter 5, Chapter 5 of the 2010 edition).
- For product grading, the expression "lower than qualified products are substandard products" has been deleted;
- The numerical digits of the breaking strength index are changed from integer digits to one decimal place;
- The index value of elongation at break is adjusted from " $\leq 4\%$ " to " $M1 \pm 0.5\%$, M1 is determined through negotiation between the supplier and the buyer, and $M1 \leq 5.0$ ";
- Added 1 performance item and index. coefficient of variation of fracture strength;

- Added the performance index values of TM25, TM38, TM40, TM42, TM45 series products.

- Appearance requirements, testing and evaluation (see Appendix A, Appendix A of the 2010 edition) - Appearance index grading, delete the expression "lower than qualified products are inferior products";

- Removed the "knot" indicator;

- Added 2 appearance indexes and index values. tripwire (cobweb thread), forming, and added its inspection steps;

- Adjusted the judgment rules.

Please note that some contents of this document may refer to patents. The issuing agency of this document assumes no responsibility for identifying patents.

1 Scope

This document specifies the terms and definitions, classification and identification, technical requirements, test methods, inspection rules and Marking, packaging, transportation and storage requirements.

This document applies to ultra-high molecular weight polyethylene filaments with a nominal linear density ranging from 22dtex to 3555dtex, and other specifications with ultra-high grades Quantum polyethylene filament can be used as reference.

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 2828.1-2012 Counting sampling inspection procedure Part 1: Batch-by-batch inspection sampling retrieved by acceptance quality limit (AQL) plan GB/T 4146 (all parts) Chemical fibers for textiles GB/T 6502 Sampling method of chemical fiber filament GB/T 14343 Test method for linear density of chemical fiber filaments GB/T 14344 Test method for tensile properties of chemical fiber filaments

3 Terms and Definitions

The terms and definitions defined in GB/T 4146 (all parts) apply to this document.

4.1 Product classification

UHMWPE filaments are divided into TM25, TM27, TM30, TM32, TM35, TM38, TM40, TM42, TM45 nine series, T, M take the first English letter of the English word tenacity (strength) and modulus (modulus) respectively.

4.2 Product identification

4.2.1

The specifications of the product are expressed by the linear density of the multifilament (dtex) and the number of single filaments (f). For example, the linear density is 444dtex, and the number of single filaments is 120 the ultra-high molecular weight polyethylene filament, whose product specification is expressed as 444dtex/120f.

4.2.2

Product identification is identified by product series code and product specification.

Product series code

product specification

Figure 1 Schematic diagram of product identification