TEST SUMMARY

UHMW-PE

Ultra-high-molecular-weight polyethylene

Laboratory	SGS-CSTC Standards Technical Services (Qingdao) Co., Ltd. — tests 8 to 12 performed by the Guangzhou Branch (CNAS L0167)
Source report	No. QDIN2107004251PS, issued on Aug 30, 2023
Testing period	Jul 12, 2023 to Aug 30, 2023
Sample	UHMW-PE sheet, submitted by the manufacturer; test specimens cut from the sample
Lab environment	(23 ± 2) °C · (50 ± 5)% RH

Test	Method	Condition	Result
PHYSICAL AND MECHANICAL PROPERTIES			
Density	ISO 1183-1:2019, Method A	Absolute alcohol, 23.4 °C	**0.934 g/cm^3**
Static coefficient of friction (μs)	ASTM D1894-14	Smooth surface · 150 mm/min	**0.139**
Kinetic coefficient of friction (μk)	ASTM D1894-14	Smooth surface · 150 mm/min	**0.104**
Flexural strength	ISO 178:2019, Method A	2 mm/min · span 64 mm	**23.1 MPa**
Flexural modulus	ISO 178:2019, Method A	2 mm/min · span 64 mm	**940 MPa**
Tensile modulus	ISO 527-1:2019 / 527-2:2012	Type 1B · 1 mm/min	**1050 MPa**
Compressive stress at 25% strain	ISO 604:2002	Type B · 1 mm/min	**36.0 MPa**
Shore D hardness	ISO 868:2003	15 s reading	**63**
Rockwell hardness	Ref. ISO 2039-2:1987	R scale	**47.1**
Water absorption	ASTM D570-98(2018)	24 h immersion at 23 °C	**0.005%**
THERMAL PROPERTIES			
Deflection temperature under load (HDT)	ISO 75-1:2020 / 75-2:2013, Method A	1.8 MPa · 120 °C/h	**46 °C**
Vicat softening temperature	ISO 306:2013, Method B50	50 N · 50 K/h	**83.0 °C**
Mean coefficient of linear thermal expansion	ISO 11359-1:2014 / 11359-2:1999	0 °C to 50 °C	**149 × 10^{-6} K^{-1}**
Melting peak temperature (DSC)	ISO 11357-3:2018	1st / 2nd heating	**138.0 / 138.3 °C**

DETAIL — MELTING TEMPERATURE

DSC analysis (10 °C/min, N_2, 40–200 °C)	1st heating	2nd heating
Extrapolated onset melting temperature	**128.2 °C**	**124.8 °C**
Melting peak temperature	**138.0 °C**	**138.3 °C**
Extrapolated end melting temperature	**143.3 °C**	**143.5 °C**

Results refer only to the sample tested and do not constitute a product specification.

This document is an informative summary prepared by BOLD from the SGS report cited above. It is not issued or reviewed by SGS and does not replace the original report, which is the only valid document.