

TPE

Thermoplastic Elastomer · Flexible Orthotic Grade

HARDNESS — SHORE D
51

ISO 868 · flexible, semi-rigid

CHARACTERISTICS

- Flexible yet fatigue-resistant (rubber + PP)
- More flexible than PP; more rigid than LDPE
- Retains toughness at low temp (–28 °C)
- Lightweight; skin-friendly for orthotics
- Deep-draw thermoformable

APPLICATIONS

- Ankle-foot orthoses (AFOs)
- Spinal orthoses & body jackets
- Scoliosis jackets
- Orthotic & prosthetic devices
- Padding & flexible formed parts

COMPLIANCE Rubber + PP Elastomer · Latex-Free · RoHS · REACH SVHC · ISO 9001:2015

TYPICAL PROPERTIES
All values are typical · ASTM / ISO methods · may vary by brand and grade

PROPERTY	TEST METHOD	VALUE	UNIT
MECHANICAL			
Tensile Strength @ Yield	ASTM D638	12	MPa
Elongation @ Yield	ASTM D638	31	%
Flexural Modulus	ASTM D790	On request	
HARDNESS			
Hardness — Shore D	ISO 868	51	—
PHYSICAL			
Specific Gravity	ASTM D792	0.950	—
Appearance	—	Opaque	
Moisture Behaviour	—	Hygroscopic	

PROPERTY	TEST METHOD	VALUE	UNIT
THERMAL			
Brittleness Temp	ASTM D746	–28	°C
Max Service Temp	—	On request	
FLEXIBILITY			
Flexibility	—	High	
vs Polypropylene	—	More flexible	
vs LDPE	—	More rigid	
PROCESSING			
Pre-Drying Temp	—	65	°C
Pre-Drying Time	—	3 - 4	hours
Forming Temp	—	On request	

NOTES

TPE is a thermoplastic elastomer (rubber + polypropylene) combining flexibility with fatigue resistance — more flexible than PP or copolymer, more rigid than LDPE. Tensile strength at yield 1740 psi (12 MPa) and elongation 31% measured across flow at 23 °C (ASTM D638); Shore D 51 (ISO 868). Higher forming temperature than PP; uniform cooling after forming minimises warpage and distortion. TPE is hygroscopic — store in a cool, dry place in a polyethylene bag or with PE masking intact. Pre-dry before forming (3–4 hours at ~65 °C / 150 °F); surface pitting on formed parts indicates the need for pre-drying. Widely used for orthotic and prosthetic devices — AFOs, spinal orthoses, scoliosis and body jackets. Resin sourced from globally-certified suppliers. Values are typical and may vary by brand and grade; intended as guide only. Final product suitability must be validated under actual application conditions. Flexural modulus, service temperature and forming parameters available on request.

PERFORMANCE PROFILE
51 Shore D

Flexible, semi-rigid

–28 °C

Low-temp toughness

0.95 SG

Lightweight elastomer

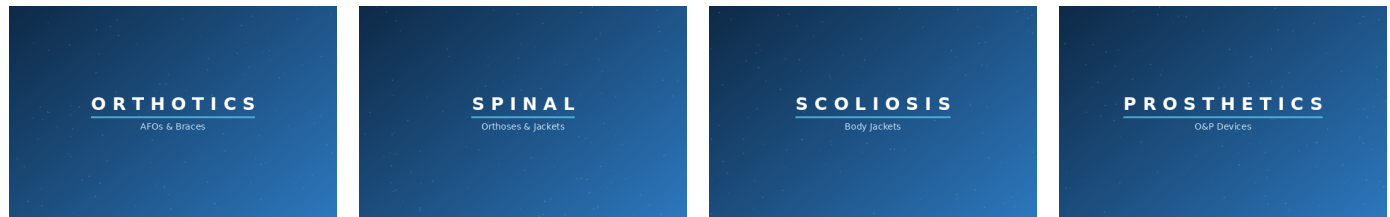
31% yield

Elongation ductility

Flexible, fatigue-resistant TPE — engineered for orthotics and deep-draw formed parts.

APPLICATIONS

Where TPE gets specified — flexible, fatigue-resistant sheet for orthotic and prosthetic devices.



Orthotics AFOs & Braces

Ankle-foot orthoses and braces. Flexible, fatigue-resistant, comfortable to wear.

Spinal Orthoses

Spinal orthoses and support jackets. Deep-draw, retains toughness in service.

Scoliosis Body Jackets

Scoliosis and body jackets. Lightweight, skin-friendly, holds shape under flex.

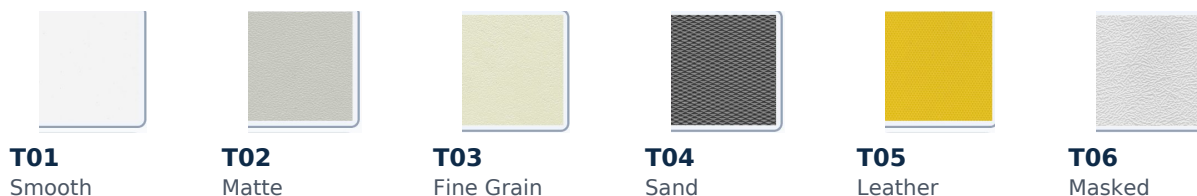
Prosthetics O&P Devices

Prosthetic and orthotic device components. Repeated-flex durability, easy to form.

PRODUCTION SPECIFICATIONS

Sheet Thickness	1 - 10 mm	O&P gauges, cut-to-size
Sheet Width	up to 2000 mm	Line-dependent
Sheet Length	up to 6 m	Custom cut-to-size on request
Finish	Smooth / Masked	PE masking for storage
Colour	Natural / White	Opaque; custom on request
Storage	Cool & dry	Keep PE bag/masking; pre-dry if needed

SURFACE FINISHES



HOW TO READ THESE NUMBERS

Quick reference for what each test actually tells you about how the sheet behaves.

- Tensile Yield**
 Force before the sheet permanently deforms.
- Elongation**
 How far it stretches at yield. Higher = more give.
- Shore D Hardness**
 Surface hardness. 51 = flexible, semi-rigid.
- Brittleness Temp**
 Coldest temp before it turns brittle. -28 °C.
- Specific Gravity**
 0.95 = lightweight; lighter than water.
- Fatigue Resistance**
 Survives repeated flexing without cracking.
- Flexibility**
 Bends more than PP, less than LDPE.
- Hygroscopic**
 Absorbs air moisture — store dry, pre-dry if needed.
- Pre-Drying**
 3-4 h at 65 °C before forming to avoid pitting.
- Thermoforming**
 Forms deep-draw parts; needs higher heat than PP.
- Uniform Cooling**
 Even cooling after forming prevents warpage.
- Opacity**
 Solid, non-transparent sheet.