



smartLite® PF 1560 TPU

A lightweight, responsive and durable material solution

For high performance sports applications

The innovative and lightweight smartLite® PF 1560 thermoplastic polyurethane (TPU) can transform the comfort and performance of sports application, specifically running shoes that need to offer excellent energy return and cushioning properties.

Elastic, durable, and easy to work with, this expanded bead technology is 100% recyclable. It also has tunable density and rebound properties, meaning manufacturers can customize the bounce effect delivered by their product for specific applications.

Key features

- Bulk density: 0.1 - 0.15 g/cm³
- High elasticity (> 55% rebound)
- Soft yet durable
- Easy to shape and mold
- Hydrolysis resistant
- UV resistant
- Performance is maintained over a wide temperature range
- 100 % recyclable

Benefits

Performance benefits

- Lightweight
- Comfortable
- High rebound
- Wear resistant

Processing benefits

- Multiple design options
- Easier to assembly compared to EVA
- Processing on standard expanded polypropylene steam molding machines

Cost benefits

- 100% recyclable
- No adhesives or release agents required
- Reduced energy consumption and fast production cycle*

* When compared to thermoplastic rubber

smartLite® PF 1560 TPU - processing

Four steps are needed to use smartLite® PF 1560 TPU:

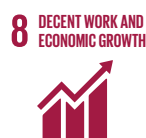
- 1 Inject smartLite® PF 1560 TPU beads into the mold
- 2 Apply steam
- 3 Cool mold
- 4 De-mold part/s

Striving for sustainability

We are dedicated to the development of sustainable soiling solutions that can support the footwear industry's environmental ambitions. A signatory to the United Nations Global Compact (UNGC) - the world's largest voluntary corporate citizenship initiative - our work is guided by the UN's 17 Sustainable Development Goals. All 17 UN Sustainable Development Goals are important to our business - with three of particular relevance to our work in the global footwear sector.



- Lightweight material for comfort
- Plasticizer-free
- High rebound and cushioning effect increase comfort
- Cold temperature resistant



- Low VOC emissions
- Steam molding process without dust and noxious gas
- No chemical blowing agent
- No unpleasant odors
- Suitable for automation



- Lightweight
- Long lasting products
- Energy efficient production process
- 100% recyclable

Committed to our customers

We are committed to providing our customers with outstanding levels of support. We achieve this by:

- Employing experienced technical service people
- Providing trouble shooting advice
- Performing regular quality checks
- Offering sampling and proto-typing services
- Developing tailor-made solutions
- Co-innovating for the future
- Supporting product compliance needs

Typical molded properties*

	Norm	Unit	Value	Value	Value
Density	ISO 845	g/cm ³	0.20	0.25	0.30
Pendulum rebound	DIN 53512	%	50	52	52
Tensile strength	ISO 1798	kPa	1000	1200	1400
Elongation at break	ISO 1798	%	110	100	90
Compression set (50%, 23°C, 22 hours)	ISO 1856	%	<10	<10	<10
Compression stress	ISO 844	kPa			
@ 10% compression			30	40	50
@ 25% compression			100	140	180
@ 50% compression			300	350	400
Dimensional stability under heat	ISO 2796	%			
4 days @ 60°C			n.m.	<2	n.m.
4 days @ 110°C			n.m.	<6	n.m.
Water uptake (24 hours at 23°C)	Huntsman	%	<1	<1	<1

* Based on TPU with a hardness equal to or greater than 87 Shore A measured according to DIN 53 505

HUNTSMAN

Enriching lives through innovation

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About Huntsman:

Huntsman Corporation is a publicly traded global manufacturer and marketer of differentiated and specialty chemicals with 2018 revenues more than \$9 billion. Our chemical products number in the thousands and are sold worldwide to manufacturers serving a broad and diverse range of consumer and industrial end markets. We operate more than 75 manufacturing, R&D and operations facilities in approximately 30 countries and employ approximately 10,000 associates within our four distinct business divisions. For more information about Huntsman, please visit the company's website at www.huntsman.com.

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