

HUNTSMAN

Enriching lives through innovation

About Huntsman

Huntsman is a global manufacturer and marketer of differentiated chemicals. Combining international reach with local support, Huntsman's operating companies manufacture products for a variety of global industries. These include chemicals, plastics, automotive, aviation, textiles, footwear, paints, coatings, construction, technology, agriculture, healthcare, detergents, personal care, furniture, appliances and packaging.

Originally known for pioneering innovations in packaging, and, later, for rapid and integrated growth in petrochemicals, Huntsman now has 15,000 employees and operates from multiple locations worldwide.

As a business division of Huntsman Corporation, one of the largest chemical companies in the world, Huntsman Polyurethanes has made a long-term commitment to global market development and in the Asia Pacific region, is focused on increasing its market share. The company's network in Asia Pacific covers China, Japan, Korea, Singapore, Vietnam, Indonesia, Thailand and Australia. Today, the business strives with passion and determination to improve people's lives, by creating value through innovation, research and development, and helping to build an energetic, sustainable world for future generations.

A trustworthy TPU partner

With over 40 years' experience in the polyurethanes industry, Huntsman is a global leader in the provision of high-performance, top quality thermoplastic polyurethanes (TPUs). Well known for their outstanding versatility, our TPUs provide infinite possibilities for innovation, enabling designers and manufacturers, working in different industries, to meet the challenges of a fast-changing world.

In the hot-melt adhesive film industry, where our technologies are globally recognized, we are renowned for providing innovative solutions to customers, helping them improve their products and manufacturing technologies across a wide range of applications.



Huntsman TPU:
The first choice substrate for high-quality, hot-melt adhesive films

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Huntsman Polyurethanes is committed to working closely with its customers and can offer a fast and flexible response to your needs. We offer direct links to our laboratories with full technical backup. Commercial support and dedicated customer service is available throughout Europe, the Middle East, Asia-Pacific and the Americas.

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About Huntsman:
Huntsman Corporation is a publicly traded global manufacturer and marketer of differentiated chemicals with 2012 revenues of over \$11 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 and R&D facilities in over 30 countries and employ approximately 12,000 associates within our 5 distinct business divisions. For more information about Huntsman, please visit the company's website at www.huntsman.com.

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Huntsman Polyurethanes (TPU)

Hot-melt adhesive films – designed to deliver excellent performance

Huntsman TPU: The first choice substrate for high-quality, hot-melt adhesive films

Huntsman's range of IROGRAN® TPUs for the hot-melt adhesive film industry combines exceptional abrasion, friction and mold resistance properties with a soft touch, outstanding low-temperature flexibility and tensile strength, as well as excellent adhesion. The result in your film products is unparalleled, seamless, adhesion performance.

Our TPUs for the hot-melt film industry can deliver numerous benefits in many everyday applications from your car seats to the coat you wear when it rains. They can help producers reduce system costs. They can also help improve performance and design flexibility, making it easier to differentiate end products.

If you are producing a high-quality, hot-melt adhesive film, your first choice substrate should be Huntsman TPU.

Key benefits of Huntsman TPU in hot-melt adhesive film applications

- A wide range of products
- Suitable for a broad range of applications
- Flexibility in both high and low temperature adhesion applications
- Excellent adhesion strength
- Soft
- Highly flexible
- Compatible with different processing technologies
- Environmentally friendly and recyclable
- REACH and RoHS compliant.

Physical Properties	Test method	Unit	A 60 E 4902	CA 116-201	CA 117-200	PS 455-203	PS 455-218	PS 456-202
Hardness	ISO 7619	Shore A	55	95	92	78	75	84
Tensile Strength	DIN 53504	Mpa	10	33	20	22	39	19
Elongation @ Break	DIN 53504	%	860	400	660	700	580	710
Specific Gravity	ISO 1183-1	g/cm ³	1.14	1.15	1.15	1.19	1.19	1.18
TMA Melt Range	Huntsman/TMA	°C	110-145	90-120	70-95	110-130	125-144	60-90
TMA Melt Range	Huntsman/TMA	°F	230-295	194-248	160-200	230-266	257-291	140-194
Extrusion Temperature	Huntsman	°C	145-155	160-170	135-145	140-150	160-170	135
Melt Index	Huntsman	g/10min	35	15	45	22	6	40
Melt Index test conditions	Huntsman	°C/kg	160°C /8.7kg	190°C /5kg	190°C /5kg	177°C /2.16kg	177°C /2.16kg	177°C /2.16kg
Appearance			Transparent	Transparent	Transparent	Transparent	Transparent	Transparent

Infinite possibilities for innovative fashion designers

The quest to create high-quality clothing for the fast moving fashion industry depends upon the continuous development of new products that can be used as a substitute for traditional methods and materials. TPU hot-melt adhesive films are indispensable when it comes to creating non-sewn garments and waterproof clothes that need to be practical but also retain a sense of style.

Huntsman TPUs contain no plasticizers, are recyclable and are easy to process, helping to make manufacturing methods more energy efficient. Hot melt adhesive films based on our TPU materials can be firmly bonded together with multiple media and composites. Achieving accurate temperature, rigorous environmental and the best performance standards, they are suitable for the production of key parts across various markets, including automotive, construction and textile industries.



Lingerie

High flexibility; softness, better stretchability and rebound; seamless adhesion; smooth, for a good aesthetic finish; lightweight for reduced friction; a comfortable touch; and no plasticizers.

Recommended grade:
IROGRAN® A 60 E 4902



Rain jackets

Seamless adhesion and waterproofing properties; resistance to washing, abrasion and scratches; strong adhesion; and excellent flexibility.

Recommended grades:
IROGRAN® PS 455-203
IROGRAN® PS 456-202
IROGRAN® CA 116-201



Professional sportswear

Resistant to high temperatures and washing; lightweight and durable; high flexibility; and comfortable to touch.

Recommended grades:
IROGRAN® A 60 E 4902
IROGRAN® PS 455-218



Footwear

Seamless adhesion to different materials including leather, lint and fabric; better adhesion compared with wet glue, sprays and binders; waterproofing; resistance to abrasion; a good aesthetic finish; smooth and comfortable.

Recommended grade:
IROGRAN® CA 116-201



Automobile

Outstanding low-temperature flexibility; a soft touch; no plasticizers or solvents; easy to process and recyclable.

Typical applications:

Airbags; door panels; dashboard; seating; and headliners.

Recommended grades:
IROGRAN® PS 455-218
IROSTIC® M 7090*

*IROSTIC® M 7090 is an adhesive product that is particularly well suited to TPU hot-melt adhesive film applications requiring high adhesion performance.



Construction

Enduring adhesive strength; potential to reduce time and effort for higher cost efficiencies compared with spray adhesives; no plasticizers or solvents; easy to process and recyclable.

Typical applications:

Woodwork including decorative materials.

Recommended grade:
IROGRAN® PS 456-202



Textiles

Lightweight, slim line and durable; resistant to washing and bending; smooth for an aesthetically pleasing finish; good at retaining their shape; high flexibility; and a low adhesion temperature.

Typical applications:

Clothing fabrics; flexible textiles; carpet backing, tent and life rafts.

Recommended grades:
IROGRAN® PS 455-218
IROGRAN® CA 117-200

TPU hot-melt adhesive films can also be used in applications such as printing, sportswear production; puzzle manufacturing, linings and belts.