

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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TECNOTHANE® VTER engineering urethane elastomers Equipped to excel in extreme working conditions

TECNOELASTOMERI
Engineering Urethane Elastomers

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TECNOTHANE® VTER engineering urethane elastomers

TECNOTHANE® VTER engineering elastomers are a range of MDI-based high-performance materials offering customizable features to match customer specific needs. Designed for the manufacture of wheels, castors and industrial parts, TECNOTHANE® VTER engineering elastomers can operate under very low temperatures and are equipped to withstand punishing physical conditions.

Easy to process compared to NDI-based technologies, TECNOTHANE® VTER engineering elastomers are exceptionally resilient. Less inclined to generate heat, they are well suited to high speed, high frequency applications. Equally, they can excel in heavy-duty, high load tasks. Offering outstanding tear and cut resistance, TECNOTHANE® VTER engineering elastomers are particularly designed for use in extreme environments.

TECHNICAL PROPERTIES TECNOTHANE® VTER FAMILY

	TECNOTHANE® VTER CATEGORIES					
	VTER-N BASE VERSION	VTER-V * LOW TEMPERATURE	VTER-E MULTI-PURPOSE WITH IMPROVED PROPERTIES	VTER-R MULTI-PURPOSE WITH IMPROVED PROPERTIES, EASIER TO PROCESS	VTER-H HIGH HARDNESS	VTER-M MONORAIL
DIN 53505						
Hardness, ShA	92±2	92±2	95±2	95±2	98±2	98±2
Hardness, ShD	46±2	46±2	52±2	52±2	57±2	57±2
Tg glass transition temperature, °C	-42°C	-52°C	-35°C	-35°C	-42°C	-32°C
tan δ at 25°C	0.110	0.080	0.090	0.090	0.110	0.100
DIN 53504						
Modulus 50%, MPa	7	6	10	10	13	13
Modulus 100%, MPa	9	9	13	13	16	16
Modulus 300%, MPa	18	17	22	22	25	25
Tensile strength, MPa	47	36	50	52	45	42
Elongation, %	510	520	500	500	450	480
DIN ISO 34-1						
Tear resistance – DIE B/a, KN/m	95	75	115	110	125	120
Tear resistance – DIE C, KN/m	90	60	110	105	119	115
DIN ISO 815						
Compression set 23H/70°C, %	16	12	16	16	20	18
DIN ISO 4662						
Rebound resilience, %	55	72	67	60	50	59
DIN ISO 4649						
Abrasion resistance, mg	70	65	75	75	85	80
Abrasion resistance, mm ³	58	59	62	62	71	70
DIN 53505						
Hardness range, ShA	78ShA - 57ShD	78ShA - 95ShA	78ShA - 57ShD	78ShA - 57ShD	57ShD	95ShA - 57ShD

* Under final development phase. TECNOTHANE® VTER products offer a wide range of properties, which can be specified to match customers' needs.

Typical applications:

- Roller coasters
- Automated warehouses
- Mining monorails
- AGV (automatic guided vehicles)
- High performing industrial parts.

Product range:

- **TECNOTHANE® VTER-N: A multi-purpose product**
 - Three-component system
 - Hardness can be adjusted according to the mix ratio
 - Customer can satisfy various end-use applications with just one system
- **TECNOTHANE® VTER-V: A solid product**
 - Performs well at low temperatures
 - Recommended for bumpers and applications undergoing very high frequency stress
 - Still elastic at -50°C
- **TECNOTHANE® VTER-R: For large wheels**
 - Three-component system
 - Outstanding physical and mechanical properties e.g. tear resistance and rebound
 - Easy to process / easy post-curing
- **TECNOTHANE® VTER-E: For high-performance wheels**
 - Three-component system
 - Outstanding physical and mechanical properties e.g. tear resistance and rebound
- **TECNOTHANE® VTER-H: A high hardness product**
 - Two-component system
 - Recommended for wheels used on AGVs and in automated warehouses
 - Copes very well in high load applications
- **TECNOTHANE® VTER-M: For monorail applications**
 - A high performance, high hardness product for very heavy load wheel applications
 - Capable of withstanding demanding high load / high speed operating conditions
 - Easy to process.

