



THERMOPLASTIC POLYESTER ELASTOMER

Common features of Hytrel® thermoplastic polyester elastomer include mechanical and physical properties such as exceptional toughness and resilience, high resistance to creep, impact and flex fatigue, flexibility at low temperatures and good retention of properties at elevated temperatures. In addition, it resists many industrial chemicals, oils and solvents. Special grades include heat stabilised, flame retardant, food contact compliant, blow molding and extrusion grades. Concentrates offered include black pigments, UV protection additives, heat stabilisers, and flame retardants. Hytrel® thermoplastic polyester elastomer is plasticiser free.

The good melt stability of Hytrel® thermoplastic polyester elastomer normally enables the recycling of properly handled production waste. If recycling is not possible, we recommend, as the preferred option, incineration with energy recovery (-24 kJ/g of base polymer) in appropriately equipped installations.

For disposal, local regulations have to be observed.

Hytrel® thermoplastic polyester elastomer typically is used in demanding applications in the automotive, fluid power, electrical/electronic, consumer goods, appliance and power tool, sporting goods, furniture, industrial and off-road transportation/equipment industry.

Hytrel® 6356 is a medium modulus grade with nominal hardness of 63D. It contains non-discoloring stabilizer. It can be processed by many conventional thermoplastic processing techniques like injection molding and extrusion.

Typical applications:

Hose and tubing, mandrels, wire and cable, film, profiles, seals, gears, sprockets, fuel tanks, containers with good permeation resistance to gases and liquids.

Product information

Resin Identification	TPC-ET		ISO 1043
Part Marking Code	>TPC-ET<		ISO 11469
Rheological properties			
Melt volume-flow rate	8.5	cm ³ /10min	ISO 1133
Temperature	230	-	
Load	2.16	kg	
Melt mass-flow rate		g/10min	ISO 1133
Melt mass-flow rate, Temperature	230		
Melt mass-flow rate, Load	2.16	kg	
Moulding shrinkage, parallel	1.5	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.5	%	ISO 294-4, 2577
Typical mechanical properties			
Tensile modulus	280	MPa	ISO 527-1/-2
Tensile stress at yield	20	MPa	ISO 527-1/-2
Tensile strain at yield	31	%	ISO 527-1/-2
Stress at 5% strain	12	MPa	ISO 527-1/-2
Stress at 10% strain	15	MPa	ISO 527-1/-2
Tensile stress at 50% strain, 1BA	18.8	MPa	ISO 527-1/-2
Tensile stress at 100% strain	19	MPa	ISO 527-1/-2
Tensile stress at break	43	MPa	ISO 527-1/-2
Nominal strain at break	500	%	ISO 527-1/-2
Tensile strain at break	>300	%	ISO 527-1/-2
Flexural modulus	290	MPa	ISO 178
Tensile creep modulus, 1h	248	MPa	ISO 899-1

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Tensile creep modulus, 1000h		MPa	ISO 899-1
Charpy notched impact strength, 23°C	120 ^[P]	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30°C	25	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -40°C	15	kJ/m²	ISO 179/1eA
Tensile notched impact strength, 23°C	300	kJ/m²	ISO 8256/1
Izod notched impact strength, 23°C	81	kJ/m²	ISO 180/1A
Izod notched impact strength, -40°C	19.0	kJ/m²	ISO 180/1A
Poisson's ratio	0.48		
Brittleness temperature	-96	°C	ISO 974
Shore D hardness, 15s	57		ISO 48-4 / ISO 868
Shore D hardness, max	63		ISO 868
Tear strength, parallel	160	kN/m	ISO 34-1
Tear strength, normal	140	kN/m	ISO 34-1
Abrasion resistance	110	mm³	ISO 4649
[P]: Partial Break			
Thermal properties			
Melting temperature, 10°C/min	210	°C	ISO 11357-1/-3
Glass transition temperature, 1 Hz		°C	ISO 6721
Temperature of deflection under load, 1.8 MPa		°C	ISO 75-1/-2
Temperature of deflection under load, 1.5 MPa		°C	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	100		ISO 306
Vicat softening temperature, 50 °C/h 10N	195		ISO 306
Coeff. of linear therm. expansion, parallel, -40-23°C		E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion		E-6/K	ISO 11359-1/-2
(CLTE), parallel	130	L-0/10	100 11005 17 2
CLTE, Parallel, 23-55°C(73-130°F)	190	E-6/K	ASTM E 831
Coeff. of linear therm. expansion, normal, -40-23°C		E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE),		E-6/K	ISO 11359-1/-2
normal	170	2 0/10	100 11000 1/ 2
Coeff. of linear therm. expansion, Normal,23-55°C	170	E-6/K	ASTM E 831
(73-130°F)		_ 0/	, 10 1 2 00 1
Thermal conductivity of melt	0.15	W/(m K)	ISO 22007-2
Effective thermal diffusivity, flow	5.44E-8	, ,	ISO 22007-4
Specific heat capacity of melt		J/(kg K)	ISO 22007-4
RTI, electrical, 1.5mm		°C	UL 746B
RTI, electrical, 3.0mm		°C	UL 746B
RTI, impact, 1.5mm		°C	UL 746B
RTI, impact, 3.0mm		°C	UL 746B
RTI, strength, 1.5mm	75	°C	UL 746B
RTI, strength, 3.0mm	80	°C	UL 746B
TGA curve	available		ISO 11359-1/-2
Flammability			
Burning Behav. at 1.5mm nom. thickn.	HR	class	IEC 60695-11-10
Thickness tested		mm	IEC 60695-11-10
UL recognition	ves	111111	UL 94
Burning Behav. at thickness h	•	class	IEC 60695-11-10
Thickness tested		mm	IEC 60695-11-10
	G		

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UL recognition Oxygen index FMVSS Class	yes 21 SE	%	UL 94 ISO 4589-1/-2 ISO 3795 (FMVSS 302)
Electrical properties			
Relative permittivity, 100Hz Relative permittivity, 1MHz Dissipation factor, 100Hz Dissipation factor, 1MHz Volume resistivity Surface resistivity Electric strength	>1E15	E-4 Ohm.m	IEC 62631-2-1 IEC 62631-2-1 IEC 62631-2-1 IEC 62631-3-1 IEC 62631-3-2 IEC 60243-1
Physical/Other properties			
Humidity absorption, 2mm Water absorption, 2mm Water absorption, Immersion 24h Density Density of melt		%	Sim. to ISO 62 Sim. to ISO 62 Sim. to ISO 62 ISO 1183
VDA Properties			
Emission of organic compounds Odour Fogging, G-value (condensate)		μgC/g class mg	VDA 277 VDA 270 ISO 6452
Injection			
Drying Recommended Drying Temperature Drying Time, Dehumidified Dryer Processing Moisture Content Melt Temperature Optimum Min. melt temperature Max. melt temperature Mold Temperature Optimum Min. mould temperature Max. mould temperature Hold pressure range Ejection temperature	35 46	h % °C °C °C °C C MPa	
Extrusion			
Drying Temperature Drying Time, Dehumidified Dryer Processing Moisture Content Melt Temperature Optimum Melt Temperature Range	90 - 110 2 - 3 ≤0.06 230 225 - 240	h % °C	

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Characteristics

Processing Injection Moulding, Film Extrusion, Extrusion, Sheet Extrusion, Other Extrusion,

Casting, Thermoforming

Delivery form Pellets

Special characteristics Light stabilised or stable to light

Automotive

OEM STANDARD ADDITIONAL INFORMATION

General Motors GMW17327P-TPC-ET-Type 4

Mercedes-Benz DBL5562 AA39 TPC
Mercedes-Benz DBL5562.50 TPC

Stellantis - Chrysler MS-DB-448 / CPN-2198 Natural Stellantis - Chrysler MS-DB-448 / CPN-2270 Natural

VW Group VW 50123 TPC-ET 55D

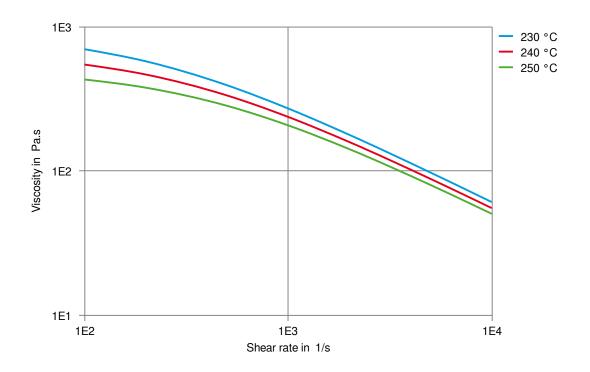
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Viscosity-shear rate



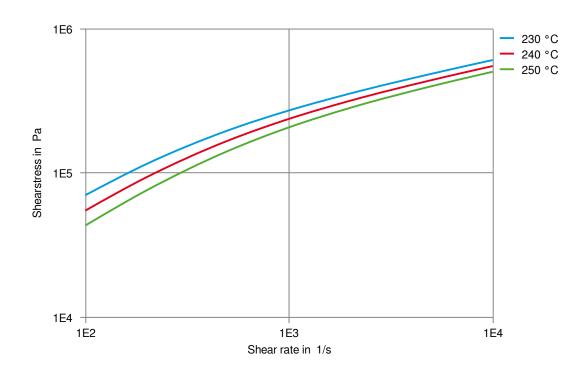
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Hytrel® 6356 THERMOPLASTIC POLYESTER ELASTOMER

Shearstress-shear rate



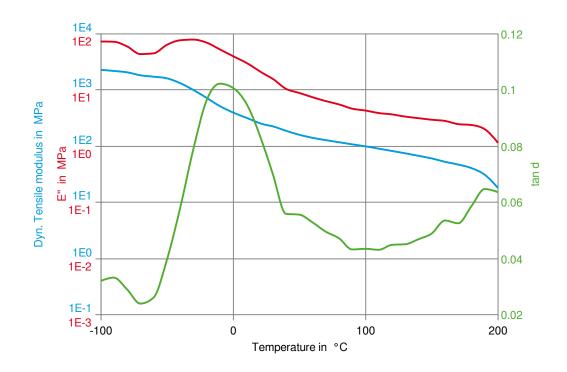
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Dynamic Tensile modulus-temperature



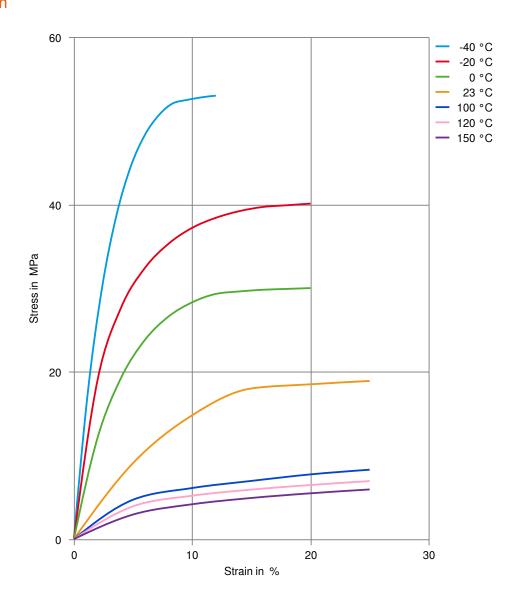
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Stress-strain



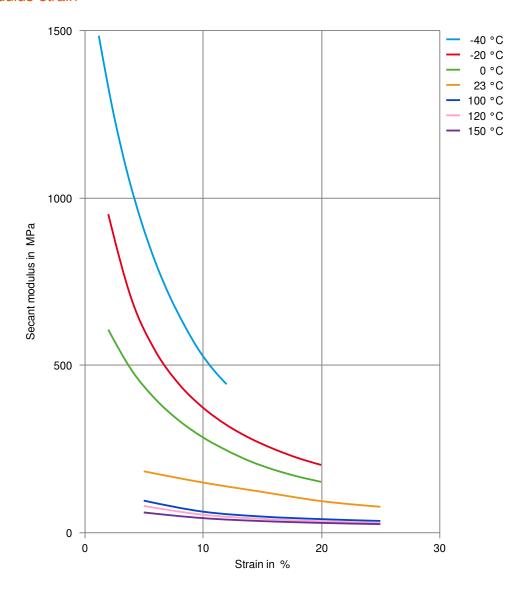
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Secant modulus-strain



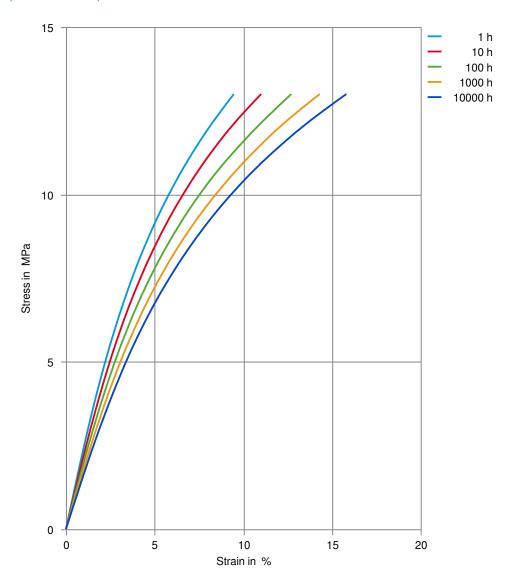
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Stress-strain (isochronous) 23°C



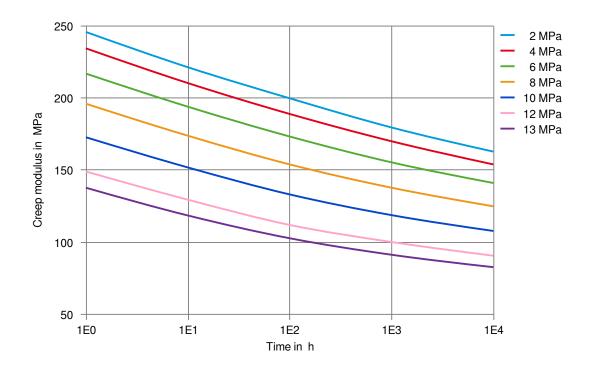
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Creep modulus-time 23°C



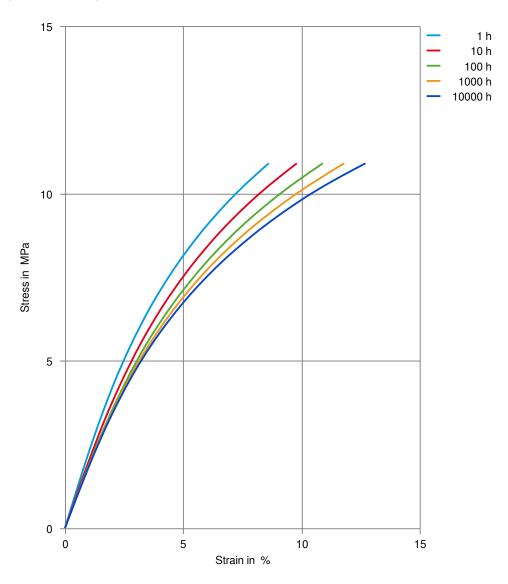
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Stress-strain (isochronous) 40°C



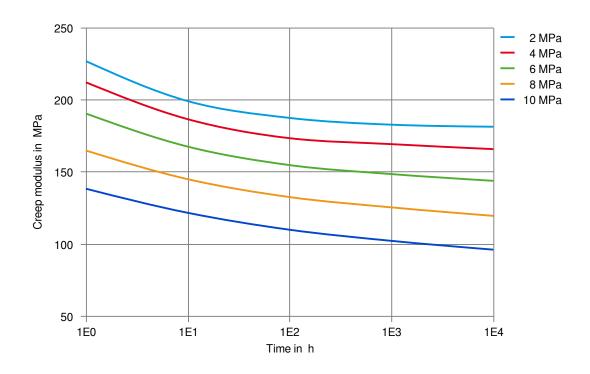
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Creep modulus-time 40°C



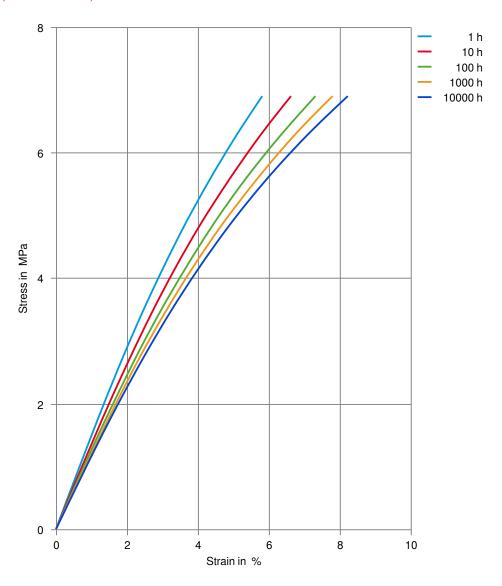
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Stress-strain (isochronous) 80°C



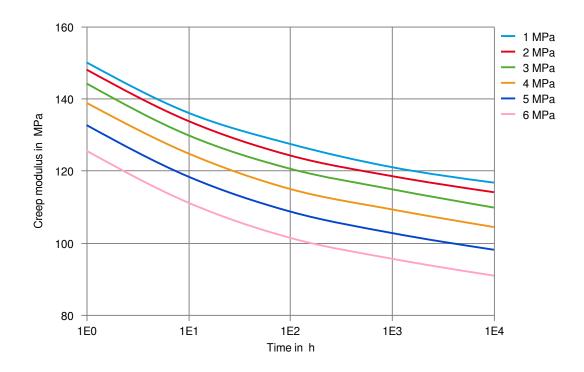
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Creep modulus-time 80°C



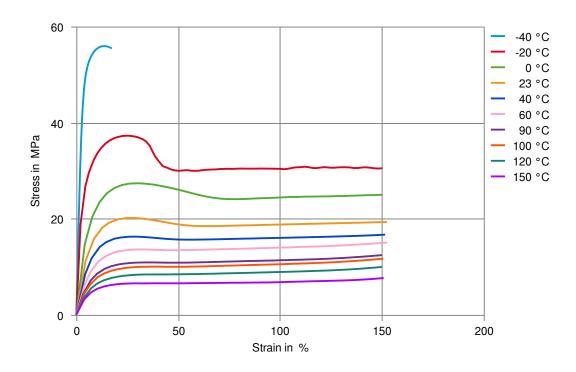
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Stress-Strain (Flexible Materials)



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Hytrel® 6356

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Chemical Media Resistance

Acids

- ✓ Acetic Acid (5% by mass), 23°C
- ✓ Citric Acid solution (10% by mass), 23°C
- ✓ Lactic Acid (10% by mass), 23°C
- X Hydrochloric Acid (36% by mass), 23°C
- X Nitric Acid (40% by mass), 23°C
- X Sulfuric Acid (38% by mass), 23°C
- ✓ Sulfuric Acid (5% by mass), 23°C
- X Chromic Acid solution (40% by mass), 23°C

Bases

- ✓ Sodium Hydroxide solution (35% by mass), 23°C
- ✓ Sodium Hydroxide solution (1% by mass), 23°C
- ✓ Ammonium Hydroxide solution (10% by mass), 23°C

Alcohols

- ✓ Isopropyl alcohol, 23°C
- ✓ Methanol, 23°C
- ✓ Ethanol, 23°C

Hydrocarbons

- ✓ n-Hexane, 23°C
- ✓ Toluene, 23°C
- ✓ iso-Octane, 23°C

Ketones

X Acetone, 23°C

Ethers

X Diethyl ether, 23°C

Mineral oils

- ✓ SAE 10W40 multigrade motor oil, 23°C
- X SAE 10W40 multigrade motor oil, 130°C
- X SAE 80/90 hypoid-gear oil, 130 °C
- ✓ Insulating Oil, 23°C

Standard Fuels

- X ISO 1817 Liquid 1 E5, 60°C
- X ISO 1817 Liquid 2 M15E4, 60°C
- X ISO 1817 Liquid 3 M3E7, 60°C
- X ISO 1817 Liquid 4 M15, 60°C
- ✓ Standard fuel without alcohol (pref. ISO 1817 Liquid C), 23°C
- ✓ Standard fuel with alcohol (pref. ISO 1817 Liquid 4), 23°C
- ✓ Diesel fuel (pref. ISO 1817 Liquid F), 23°C
- ✓ Diesel fuel (pref. ISO 1817 Liquid F), 90°C
- ➤ Diesel fuel (pref. ISO 1817 Liquid F), >90°C

Salt solutions

- ✓ Sodium Chloride solution (10% by mass), 23°C
- ★ Sodium Hypochlorite solution (10% by mass), 23°C

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- ✓ Sodium Carbonate solution (20% by mass), 23°C
- ✓ Sodium Carbonate solution (2% by mass), 23°C
- ✓ Zinc Chloride solution (50% by mass), 23°C

Other

- ✓ Ethyl Acetate, 23°C
- X Hydrogen peroxide, 23°C
- X DOT No. 4 Brake fluid, 130°C
- ➤ Ethylene Glycol (50% by mass) in water, 108°C
- √ 1% nonylphenoxy-polyethyleneoxy ethanol in water, 23°C
- ✓ 50% Oleic acid + 50% Olive Oil, 23°C
- ✓ Water. 23°C
- X Water, 90°C
- ✔ Phenol solution (5% by mass), 23°C
- ★ Coolant Glysantin G48, 1:1 in water, 125°C

Symbols used:

possibly resistant

Defined as: Supplier has sufficient indication that contact with chemical can be potentially accepted under the intended use conditions and expected service life. Criteria for assessment have to be indicated (e.g. surface aspect, volume change, property change).

x not recommended - see explanation

Defined as: Not recommended for general use. However, short-term exposure under certain restricted conditions could be acceptable (e.g. fast cleaning with thorough rinsing, spills, wiping, vapor exposure).

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Revised: 2025-04-17 Source: Celanese Materials Database

NOTICE TO USERS: Values shown are based on testing of laboratory test specimens and represent data that fall within the standard range of properties for natural material. These values alone do not represent a sufficient basis for any part design and are not intended for use in establishing maximum, minimum, or ranges of values for specification purposes. Colourants or other additives may cause significant variations in data values. Properties of moulded parts can be influenced by a wide variety of factors including, but not limited to, material selection, additives, part design, processing conditions and environmental exposure. Other than those products expressly identified as medical grade (including by MT® product designation or otherwise), Celanese's products are not intended for use in medical or dental implants. Regardless of any such product designation, any determination of the suitability of a particular material and part design for any use contemplated by the users and the manner of such use is the sole responsibility of the users, who must assure themselves that the material as subsequently processed meets the needs of their particular product or use. To the best of our knowledge, the information contained in this publication is accurate; however, we do not assume any liability whatsoever for the accuracy and completeness of such information. The information contained in this publication should not be construed as a promise or guarantee of specific properties of our products. It is the sole responsibility of the users to investigate whether any existing patents are infringed by the use of the materials mentioned in this publication. Moreover, there is a need to reduce human exposure to many materials to the lowest practical limits in view of possible adverse effects. To the extent that any hazards may have been mentioned in this publication, we neither suggest nor guarantee that such hazards are the only ones that exist. We recommend that persons intending to rely on any recommendation or to use any e

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