

DuPont™ Crastin® HR5330HF NC010

THERMOPLASTIC POLYESTER RESIN

Product Information

Common features of Crastin® thermoplastic polyester resin include mechanical and physical properties such as stiffness and toughness, heat resistance, friction and wear resistance, excellent surface finishes and good colourability. Crastin® thermoplastic polyester resin has excellent electrical insulation characteristics and high arc-resistant grades are available. Many flame retardant grades have UL recognition (class V-0). Crastin® thermoplastic polyester resin typically has high chemical and heat ageing resistance.

The good melt stability of Crastin® thermoplastic polyester resin normally enables the recycling of properly handled production waste.

If recycling is not possible, DuPont recommends, 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.

Crastin® thermoplastic polyester resin typically is used in demanding applications in the electronics, electrical, automotive, mechanical engineering, chemical, domestic appliances and sporting goods industry.

Crastin® HR5330HF is a 30% glass reinforced PBT with high flow (HF), moderately toughened, hydrolysis resistant (HR) resin. Excellent balance of properties between terminal pullout and impact resistance. Developed for USCAR Class 3 and 4 environments.

General information	Value	Unit	Test Standard
Resin Identification	PBT-IGF30	-	-
Part Marking Code	>PBT-IGF30<	-	ISO 11469
Rheological properties	Value	Unit	Test Standard
Viscosity number	95	cm ³ /g	ISO 307, 1157, 1628
Moulding shrinkage, parallel	0.3	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.0	%	ISO 294-4, 2577
Mechanical properties	Value	Unit	Test Standard
Tensile Modulus	8400	MPa	ISO 527-1/-2
Stress at break	132	MPa	ISO 527-1/-2
Strain at break	3.5	%	ISO 527-1/-2
Flexural Modulus	7700	MPa	ISO 178
Flexural Strength	200	MPa	ISO 178
Charpy impact strength, 23°C	75	kJ/m ²	ISO 179/1eU
Charpy notched impact strength			ISO 179/1eA
23°C	13	kJ/m ²	
-30°C	11.5	kJ/m ²	
Izod notched impact strength			ISO 180/1A
23°C	14	kJ/m ²	
-40°C	11	kJ/m ²	
Izod impact strength, 23°C	65	kJ/m ²	ISO 180/1U
Thermal properties	Value	Unit	Test Standard
Melting temperature, 10°C/min	225	°C	ISO 11357-1/-3
Temp. of deflection under load			ISO 75-1/-2
1.8 MPa	207	°C	
0.45 MPa	221	°C	
Vicat softening temperature, 50°C/h, 50N	215	°C	ISO 306
Coeff. of linear therm. expansion, parallel	30	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	85	E-6/K	ISO 11359-1/-2
Thermal conductivity of melt	0.28	W/(m K)	-
Spec. heat capacity of melt	1730	J/(kg K)	-
Flammability	Value	Unit	Test Standard
Burning Behav. at 1.5mm nom. thickn.	HB	class	IEC 60695-11-10
Thickness tested	1.5	mm	IEC 60695-11-10
UL recognition	UL	-	-
Burning Behav. at thickness h	HB	class	IEC 60695-11-10
Thickness tested	0.8	mm	IEC 60695-11-10

To find out more, visit [DuPont Performance Polymers](#) or contact nearest DuPont location.

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Electrical properties			
	Value	Unit	Test Standard
Oxygen index	19	%	ISO 4589-1/-2
Relative permittivity, 100Hz	4.4	-	IEC 60250
Dissipation factor			IEC 60250
100Hz	25	E-4	
1MHz	200	E-4	
Volume resistivity	>1E13	Ohm*m	IEC 60093
Surface resistivity	>1E15	Ohm	IEC 60093
Electric strength	31	kV/mm	IEC 60243-1
Comparative tracking index	350	-	IEC 60112
Electric Strength, Short Time, 1mm	31	kV/mm	IEC 60243-1
Dissipation Factor			ASTM D 150
1 MHz	200	-	
100 Hz	25	-	
1000 Hz	70	-	
Other properties			
	Value	Unit	Test Standard
Humidity absorption, 2mm	0.15	%	Sim. to ISO 62
Water absorption, 2mm	0.35	%	Sim. to ISO 62
Density	1500	kg/m ³	ISO 1183
Density of melt	1290	kg/m ³	-
VDA Properties			
	Value	Unit	Test Standard
Burning rate, Thickness 1 mm	30	mm/min	ISO 3795 (FMVSS 302)

Characteristics

Processing	• Injection Moulding		
Delivery form	• Pellets		
Additives	• Release agent		
Regional Availability	• North America	• Asia Pacific	• Near East/Africa
	• Europe	• South and Central America	• Global

Processing Texts

Injection molding

PREPROCESSING

Drying recommended = Yes
 Drying temperature = 110-130°C
 Drying time, dehumidified dryer = 2-4 h
 Processing moisture content = <0.04 %

PROCESSING

Melt temperature optimum = 250°C
 Melt temperature range = 240-260°C
 Mould temperature optimum = 80°C
 Mould temperature range = 30-130°C

Use of hot-runners is possible with Crastin® HR resins.
 However we do not recommend temperature settings above 270°C
 and residence times at 265°C should be below 10 minutes.
 In case of longer residence times using hot-runners, for example after a shut-down,
 the complete system must be purged with glass reinforced Crastin® (type SK602/605) before starting up again.
 For successful processing of Crastin® HR with hot-runners, care should be taken
 to maintain a uniform temperature, avoid hot-spots and long residence times.

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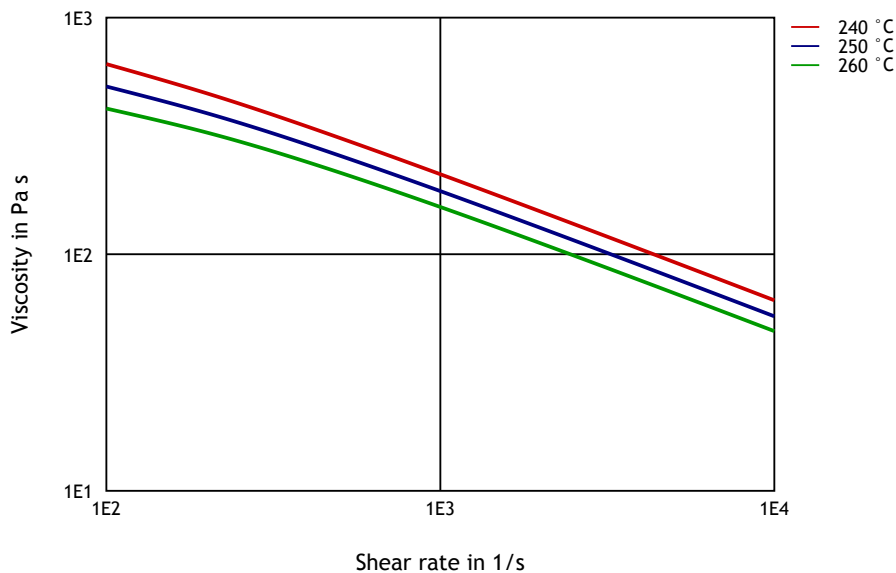


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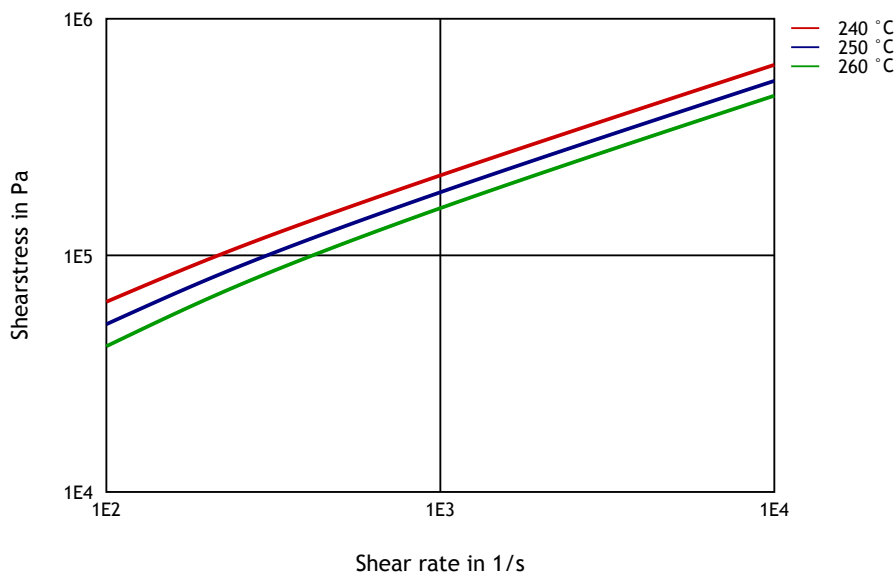
THERMOPLASTIC POLYESTER RESIN

Diagrams

Viscosity-shear rate



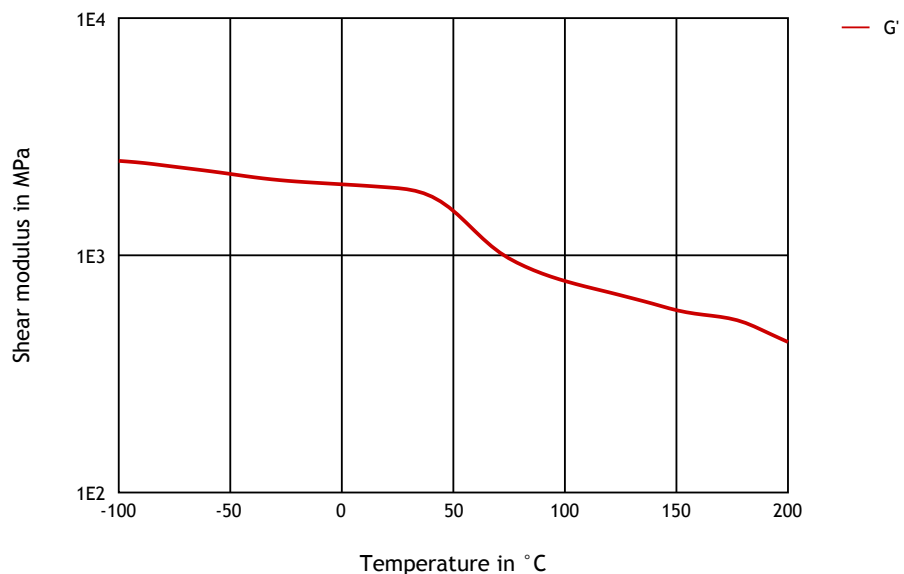
Shearstress-shear rate



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Dynamic Shear modulus-temperature



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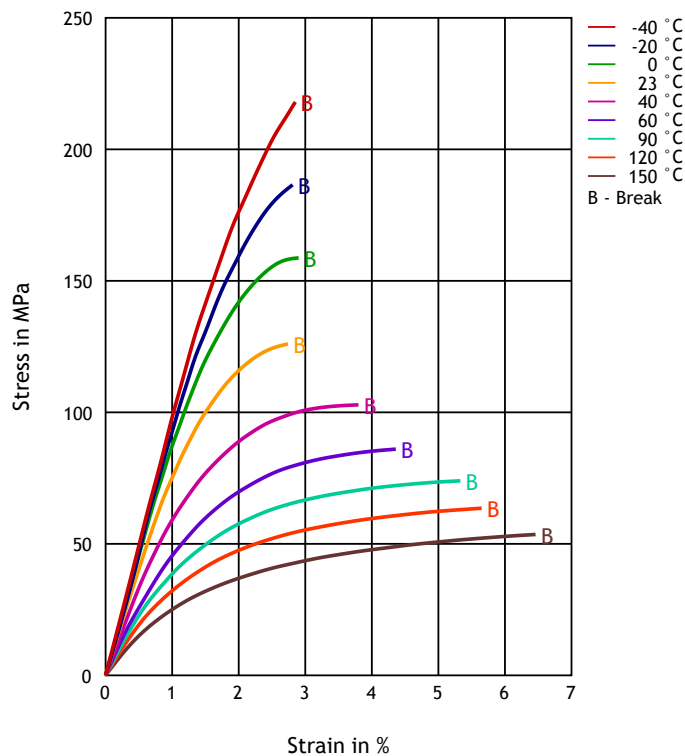
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Stress-strain



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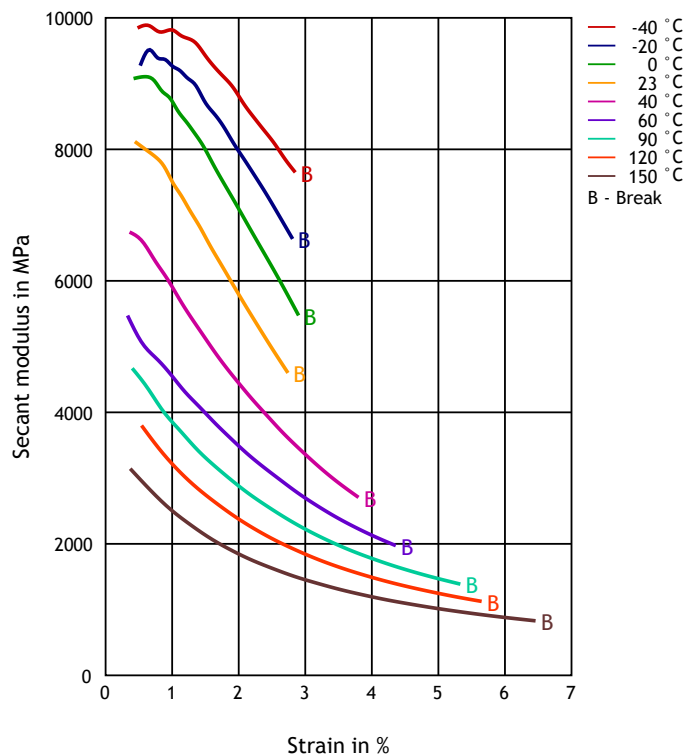
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Secant modulus-strain



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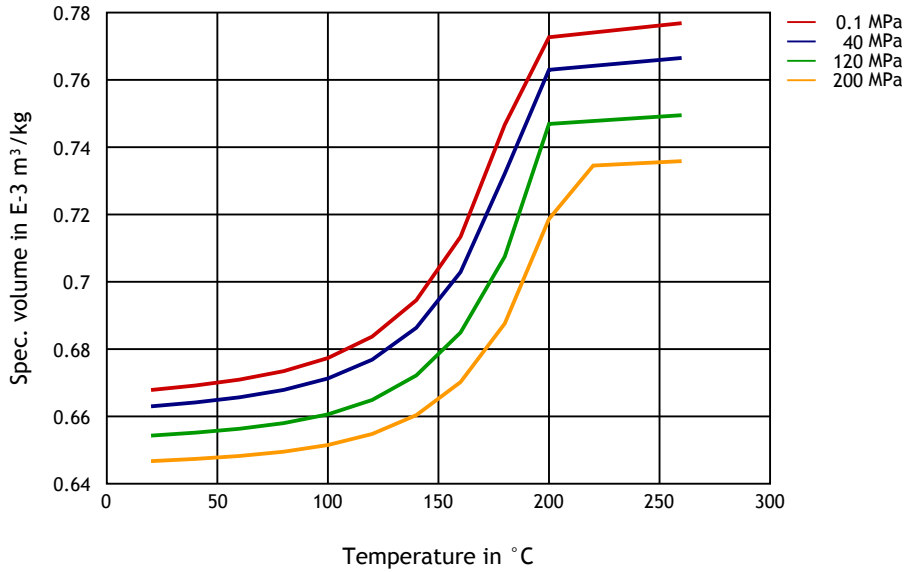
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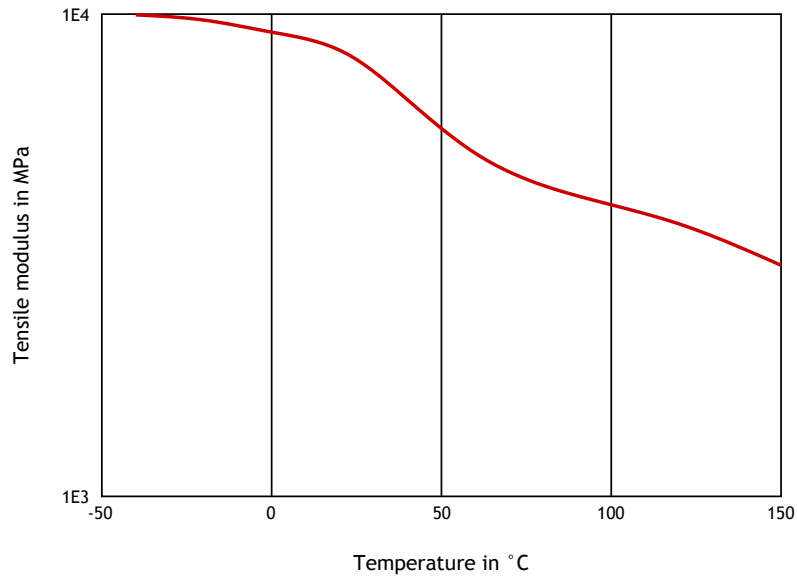
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Specific volume-temperature (pvT)



Tensile modulus-temperature



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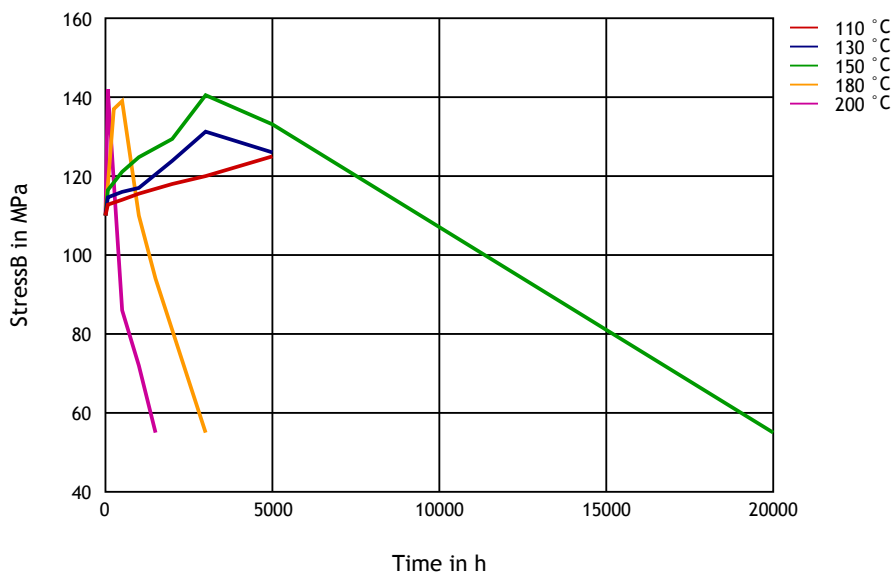
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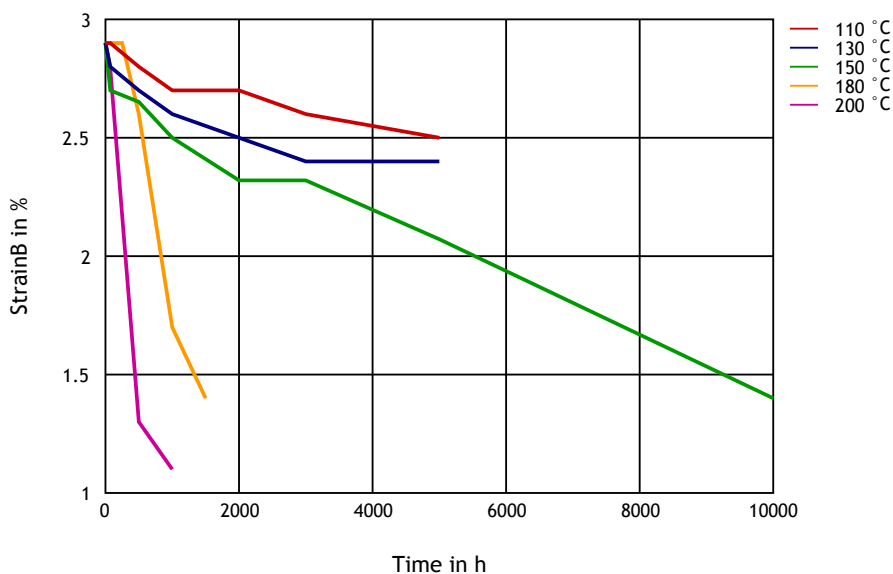
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LTHA-Stress at Break 4mm



LTHA-Strain at Break 4mm



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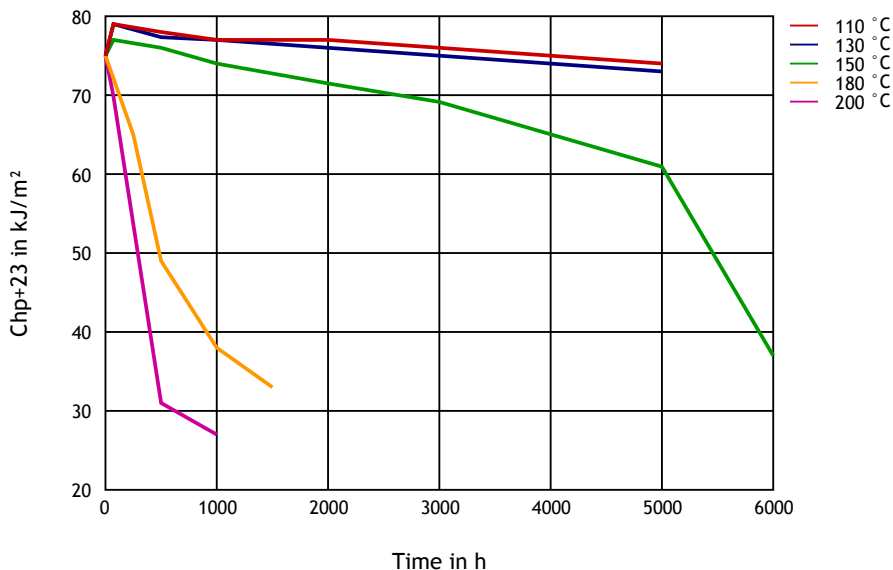
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LTHA-Charpy Impact Strength (23 °C) 4mm



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)
- ✗ Hydrochloric Acid (36% by mass) (23 °C)
- ✗ Nitric Acid (40% by mass) (23 °C)
- ✗ Sulfuric Acid (38% by mass) (23 °C)
- ✗ Sulfuric Acid (5% by mass) (23 °C)
- ✗ 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)



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✓ iso-Octane (23°C)

Ketones

✓ Acetone (23°C)

Ethers

✓ Diethyl ether (23°C)

Mineral oils

- ✓ SAE 10W40 multigrade motor oil (23°C)
- ✗ SAE 10W40 multigrade motor oil (130°C)
- ✗ SAE 80/90 hypoid-gear oil (130°C)
- ✓ Insulating Oil (23°C)

Standard Fuels

- ✗ ISO 1817 Liquid 1 (60°C)
- ✗ ISO 1817 Liquid 2 (60°C)
- ✗ ISO 1817 Liquid 3 (60°C)
- ✗ ISO 1817 Liquid 4 (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)
- ✓ 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)
- ✗ Hydrogen peroxide (23°C)
- ✗ 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)
- ✗ Water (90°C)
- ✓ Phenol solution (5% by mass) (23°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).

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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).

Contact DuPont for Material Safety Data Sheet, general guides and/or additional information about ventilation, handling, purging, drying, etc. ISO Mechanical properties measured at 4.0mm (Hytrel® measured at 2 mm), IEC Electrical properties measured at 2.0mm, all ASTM properties measured at 3.2mm, and test temperatures are 23° C unless otherwise stated.

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