



# Crastin® LW9320 NC010

## THERMOPLASTIC POLYESTER RESIN

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® LW9320 NC010 is a 20% glass fiber reinforced polybutylene terephthalate blend for injection moulding. It has improved surface aesthetics, excellent dimensional stability and low warpage characteristics.

### Product information

Resin Identification	PBT+SAN-GF20	ISO 1043
Part Marking Code	>PBT+SAN-GF20<	ISO 11469

### Rheological properties

Melt volume-flow rate	15 cm <sup>3</sup> /10min	ISO 1133
Temperature	250 °C	ISO 1133
Load	5 kg	ISO 1133
Viscosity number	120 cm <sup>3</sup> /g	ISO 307, 1157, 1628
Moulding shrinkage, parallel	0.4 %	ISO 294-4, 2577
Moulding shrinkage, normal	0.7 %	ISO 294-4, 2577
Postmoulding shrinkage, normal, 48h at 80°C	0.2 %	ISO 294-4
Postmoulding shrinkage, parallel, 48h at 80°C	0.1 %	ISO 294-4

### Typical mechanical properties

Tensile Modulus	7500 MPa	ISO 527-1/-2
Stress at break	120 MPa	ISO 527-1/-2
Strain at break	2.5 %	ISO 527-1/-2
Flexural Modulus	6500 MPa	ISO 178
Flexural Strength	170 MPa	ISO 178
Charpy impact strength, 23°C	50 kJ/m <sup>2</sup>	ISO 179/1eU
Charpy impact strength, -30°C	45 kJ/m <sup>2</sup>	ISO 179/1eU
Charpy notched impact strength, 23°C	8.5 kJ/m <sup>2</sup>	ISO 179/1eA
Charpy notched impact strength, -30°C	8 kJ/m <sup>2</sup>	ISO 179/1eA
Izod notched impact strength, 23°C	7 kJ/m <sup>2</sup>	ISO 180/1A



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Izod notched impact strength, -30°C	7 kJ/m <sup>2</sup>	ISO 180/1A
Izod notched impact strength, -40°C	7 kJ/m <sup>2</sup>	ISO 180/1A
Izod impact strength, 23°C	45 kJ/m <sup>2</sup>	ISO 180/1U
Izod impact strength, -40°C	45 kJ/m <sup>2</sup>	ISO 180/1U
Poisson's ratio	0.34 -	

### Thermal properties

Melting temperature, 10°C/min	220 °C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	110 °C	ISO 11357-1/-2
Temp. of deflection under load, 1.8 MPa	175 °C	ISO 75-1/-2
Ball pressure test	190 °C	IEC 60695-10-2
Coeff. of linear therm. expansion, parallel	30 E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	100 E-6/K	ISO 11359-1/-2
Thermal conductivity of melt	0.24 W/(m K)	
Spec. heat capacity of melt	1900 J/(kg K)	
RTI, electrical, 0.75mm	130 °C	UL 746B
RTI, electrical, 1.5mm	130 °C	UL 746B
RTI, electrical, 3mm	130 °C	UL 746B
RTI, impact, 0.75mm	125 °C	UL 746B
RTI, impact, 1.5mm	125 °C	UL 746B
RTI, impact, 3mm	130 °C	UL 746B
RTI, strength, 0.75mm	130 °C	UL 746B
RTI, strength, 1.5mm	130 °C	UL 746B
RTI, strength, 3mm	130 °C	UL 746B

### Flammability

Burning Behav. at 1.5mm nom. thickn.	HB class	IEC 60695-11-10
Thickness tested	1.5 mm	IEC 60695-11-10
UL recognition	yes -	UL 94
Burning Behav. at thickness h	HB class	IEC 60695-11-10
Thickness tested	0.75 mm	IEC 60695-11-10
UL recognition	yes -	UL 94
FMVSS Class	B -	ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	31 mm/min	ISO 3795 (FMVSS 302)

### Electrical properties

Comparative tracking index	500	IEC 60112
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### Other properties

Humidity absorption, 2mm	0.3 %	Sim. to ISO 62
Density	1340 kg/m <sup>3</sup>	ISO 1183
Density of melt	1170 kg/m <sup>3</sup>	



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## VDA Properties

Emission of organic compounds	130 µgC/g	VDA 277
Odour	3.5 class	VDA 270

## Injection

Drying Recommended	yes
Drying Temperature	120 °C
Drying Time, Dehumidified Dryer	2 - 4 h
Processing Moisture Content	≤0.04 %
Melt Temperature Optimum	250 °C
Min. melt temperature	240 °C
Max. melt temperature	260 °C
Mold Temperature Optimum	80 °C
Min. mould temperature	30 °C
Max. mould temperature	130 °C
Hold pressure range	≥60 MPa
Hold pressure time	3 s/mm
Back pressure	As low as possible MPa
Ejection temperature	170 °C

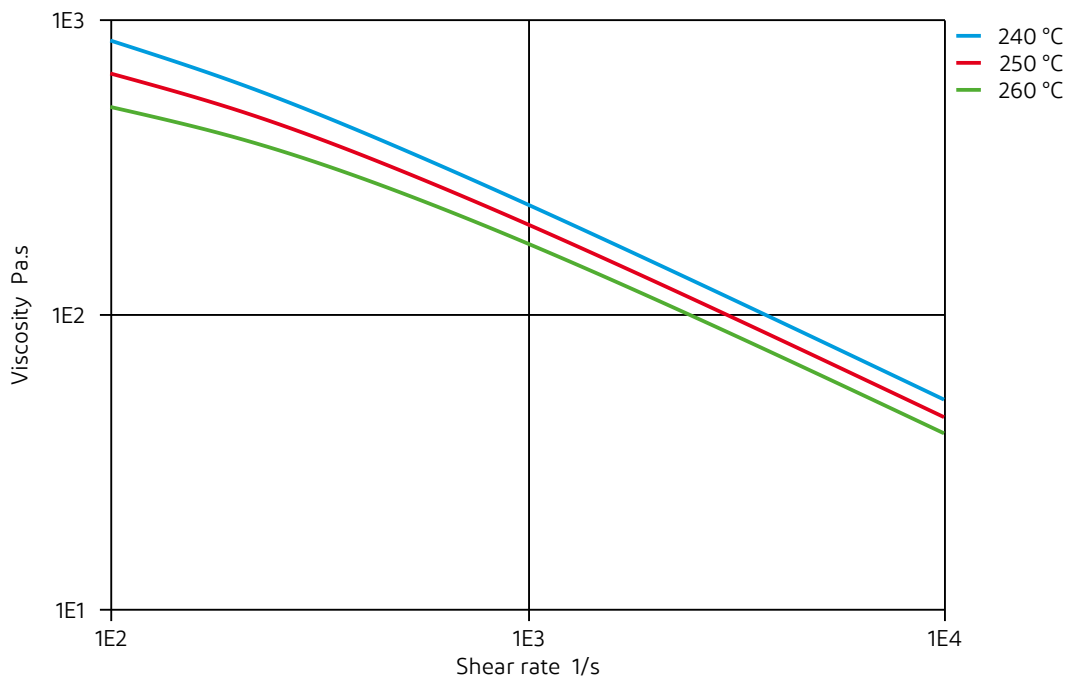
## Characteristics

Additives	Release agent
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Viscosity-shear rate

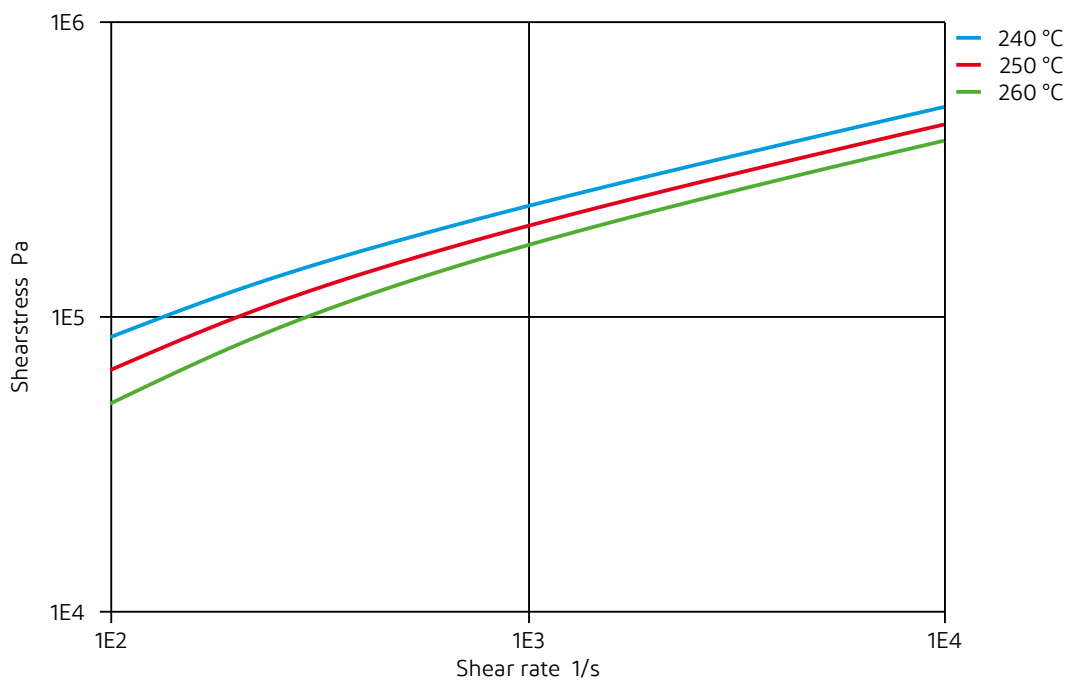




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THERMOPLASTIC POLYESTER RESIN

Shearstress-shear rate

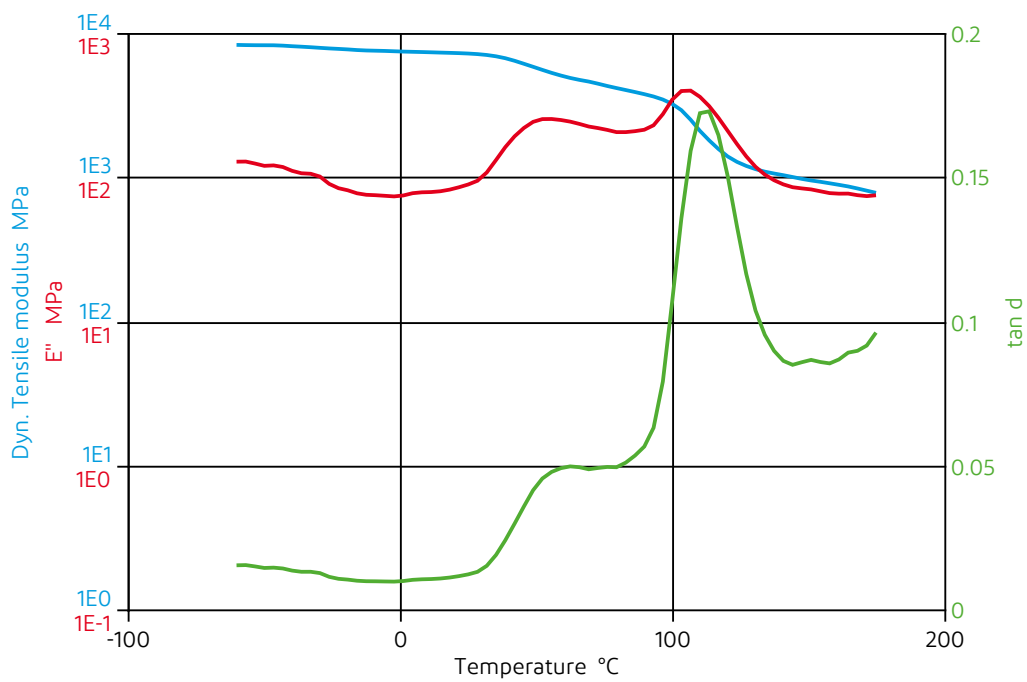




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Dynamic Tensile modulus-temperature

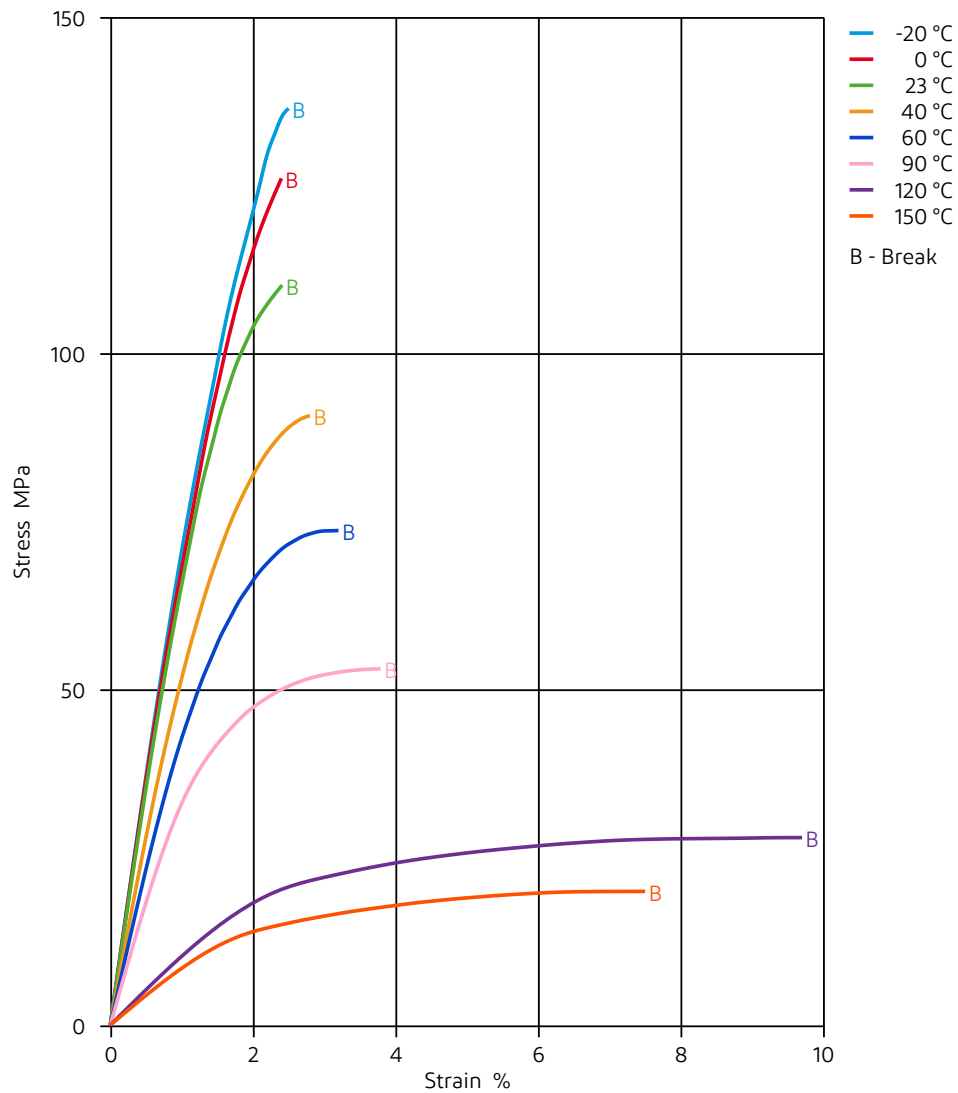




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THERMOPLASTIC POLYESTER RESIN

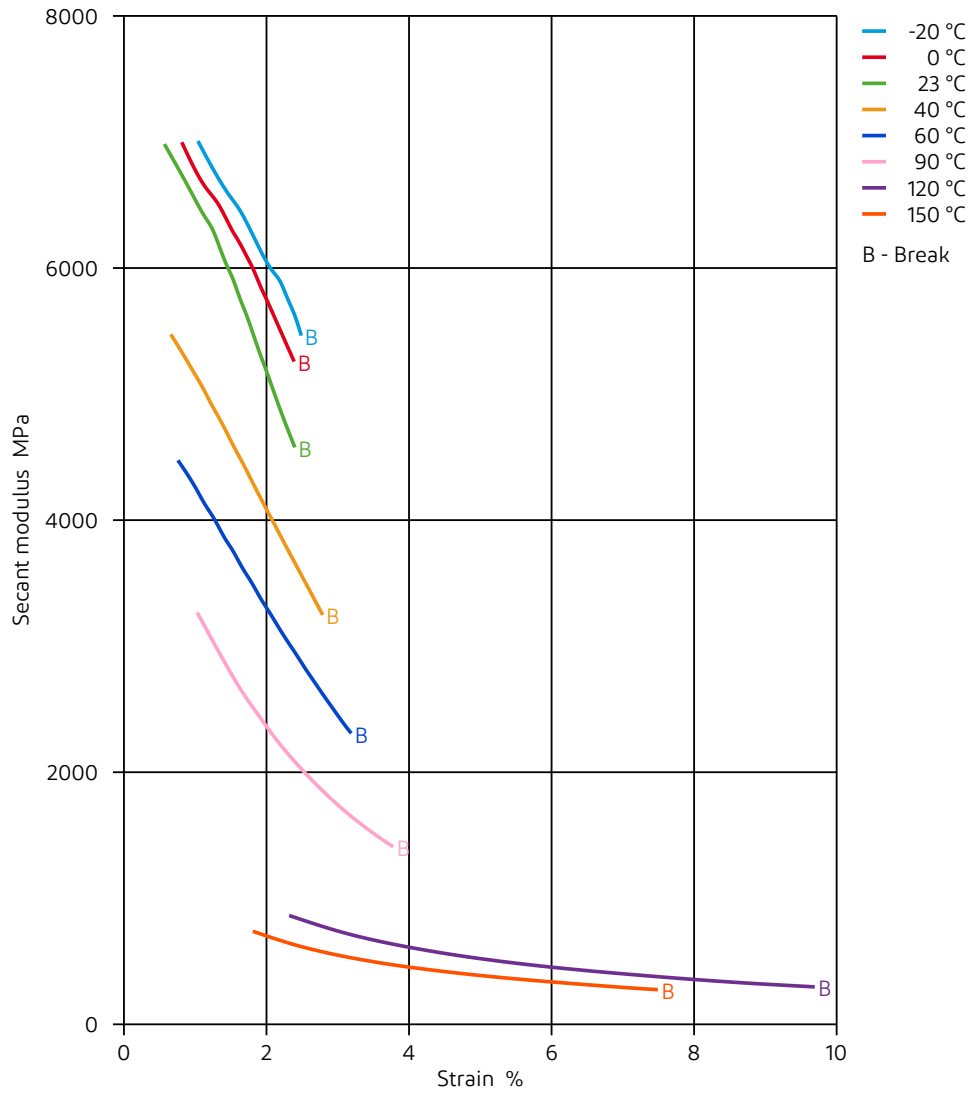
## Stress-strain



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## Secant modulus-strain

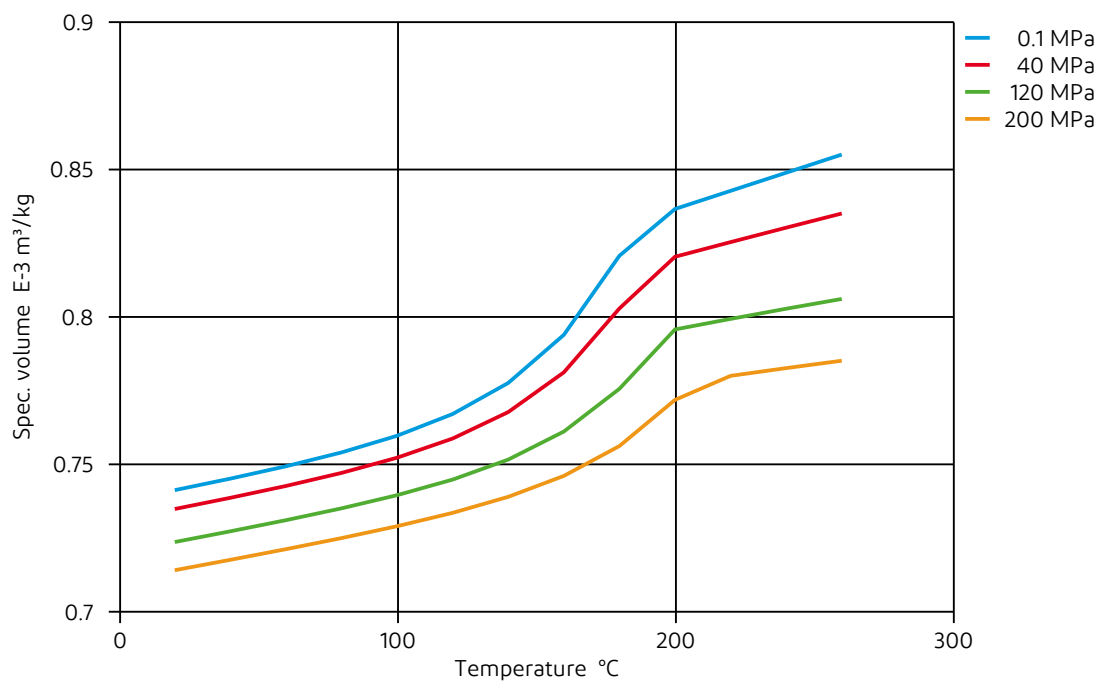




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Specific volume-temperature (pvT)



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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
- ✗ 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
- ✓ 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 - E5, 60°C
- ✗ ISO 1817 Liquid 2 - M15E4, 60°C
- ✗ ISO 1817 Liquid 3 - M3E7, 60°C
- ✗ 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

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### 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).
- ✗ 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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