Celanese
The chemistry inside innovation™

Crastin® 6129 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, 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.

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® 6129 is an unreinforced, high viscosity polybutylene terephthalate for extrusion and injection moulding.

Product information

Resin Identification	PBT	ISO 1043
Part Marking Code	>PBT<	ISO 11469

Rheological properties

Melt volume-flow rate	8	cm^3/10min	ISO 1133
Melt mass-flow rate	10	g/10min	ISO 1133
Temperature	250	°C	
Load	2.16	kg	
Melt mass-flow rate, Temperature	250	°C	
Melt mass-flow rate, Load	2.16	kg	
Viscosity number	150	cm^3/g	ISO 307, 1157, 1628
Intrinsic viscosity	1.2		ISO 307, 1157, 1628
Moulding shrinkage, parallel	1.7	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.5	%	ISO 294-4, 2577
Postmoulding shrinkage, normal, 48h at 80°C	0.6	%	ISO 294-4
Postmoulding shrinkage, parallel, 48h at 80°C	0.3	%	ISO 294-4

Typical mechanical properties

Tensile Modulus	2600	MPa	ISO 527-1/-2
Yield stress, 50mm/min	58	MPa	ISO 527-1/-2
Yield strain, 50mm/min	5	%	ISO 527-1/-2
Nominal strain at break	>50	%	ISO 527-1/-2
Strain at break, 50mm/min	200	%	ISO 527-1/-2
Flexural Modulus	2400	MPa	ISO 178
Flexural Strength	85	MPa	ISO 178
Tensile creep modulus, 1h	2500	MPa	ISO 899-1
Tensile creep modulus, 1000h	1800	MPa	ISO 899-1
Charpy impact strength, 23°C	N	kJ/m^2	ISO 179/1eU

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Charpy impact strength, -30 °C	N	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23 °C	5.5	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30 °C	4	kJ/m²	ISO 179/1eA
Ball indentation hardness, H 358/30	139	MPa	ISO 2039-1
Poisson's ratio	0.38		

Thermal properties

Melting temperature, 10 °C/min	225	°C	ISO 11357-1/-3
Glass transition temperature, 10 °C/min	55	°C	ISO 11357-1/-3
Temp. of deflection under load, 1.8 MPa	50	°C	ISO 75-1/-2
Temp. of deflection under load, 1.8 MPa, annealed	60	°C	ISO 75-1/-2
Temp. of deflection under load, 0.45 MPa	115	°C	ISO 75-1/-2
Temp. of deflection under load, 0.45 MPa, annealed	180	°C	ISO 75-1/-2
Vicat softening temperature, 50 °C/h, 50N	175	°C	ISO 306
Vicat softening temperature, 50 °C/h 10N	215	°C	ISO 306
Coeff. of linear therm. expansion, parallel	130	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	130	E-6/K	ISO 11359-1/-2
Thermal conductivity of melt	0.25	W/(m K)	Internal
Spec. heat capacity of melt	2090	J/(kg K)	Internal
RTI, electrical, 1.5mm	75	°C	UL 746B
RTI, electrical, 3mm	75	°C	UL 746B
RTI, impact, 1.5mm	75	°C	UL 746B
RTI, impact, 3mm	75	°C	UL 746B
RTI, strength, 1.5mm	75	°C	UL 746B
RTI, strength, 3mm	75	°C	UL 746B

Flammability

Burning Behav. at 1.5mm nom. thickn.	HB	class	UL 94
Thickness tested	1.5	mm	UL 94
UL recognition	yes		UL 94
Burning Behav. at thickness h	HB	class	UL 94
Thickness tested	0.9	mm	UL 94
UL recognition	yes		UL 94
Oxygen index	22	%	ISO 4589-1/-2
Glow Wire Flammability Index, 1.5mm	960	°C	IEC 60695-2-12
Glow Wire Flammability Index, 3mm	850	°C	IEC 60695-2-12
Glow Wire Ignition Temperature, 0.75mm	825	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 0.4mm	825	°C	IEC 60695-2-12
Glow Wire Ignition Temperature, 1mm	825	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 1.5mm	825	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 2mm	825	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 3mm	825	°C	IEC 60695-2-13
FMVSS Class	B		ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	21	mm/min	ISO 3795 (FMVSS 302)

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Hot Wire Ignition, 1.5mm	15	s	UL 746A
Hot Wire Ignition, 3mm	30	s	UL 746A

Electrical properties

Relative permittivity, 1MHz	3.2		IEC 62631-2-1
Dissipation factor, 1MHz	200	E-4	IEC 62631-2-1
Volume resistivity	>1E13	Ohm.m	IEC 62631-3-1
Surface resistivity	1E12	Ohm	IEC 62631-3-2
Electric strength	26	kV/mm	IEC 60243-1
Comparative tracking index	600		IEC 60112
Electric Strength, Short Time, 2mm	15	kV/mm	IEC 60243-1

Other properties

Humidity absorption, 2mm	0.2	%	Sim. to ISO 62
Water absorption, 2mm	0.4	%	Sim. to ISO 62
Density	1320	kg/m³	ISO 1183
Density of melt	1120	kg/m³	Internal

VDA Properties

Emission of organic compounds	150	µgC/g	VDA 277

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	Internal
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	4	s/mm	
Back pressure	As low as possible	MPa	
Ejection temperature	170	°C	Internal

Extrusion

Drying Temperature	110 - 130	°C	
Drying Time, Dehumidified Dryer	2 - 4	h	
Processing Moisture Content	≤0.04	%	
Melt Temperature Optimum	250	°C	

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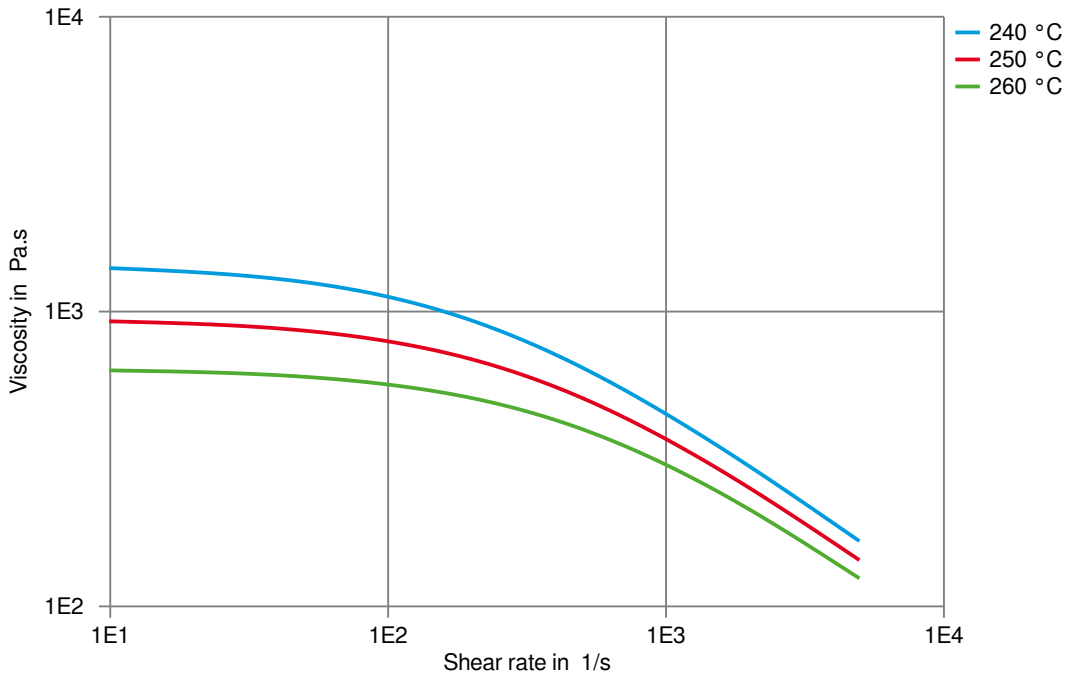
Melt Temperature Range	240 - 260 °C

Viscosity-shear rate



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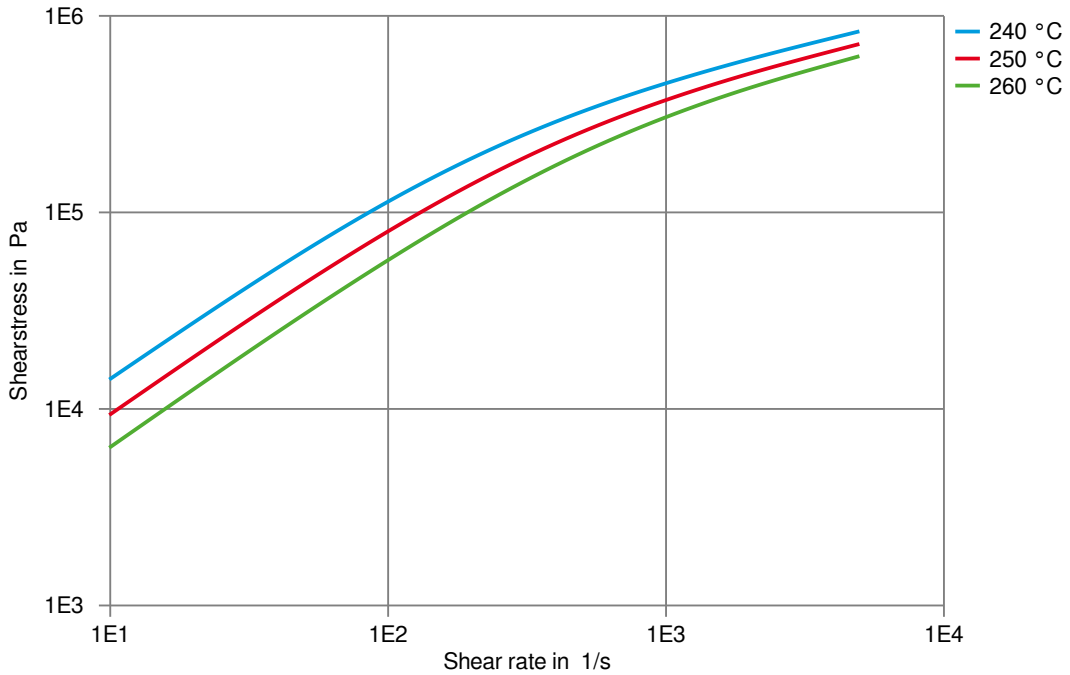
Shearstress-shear rate



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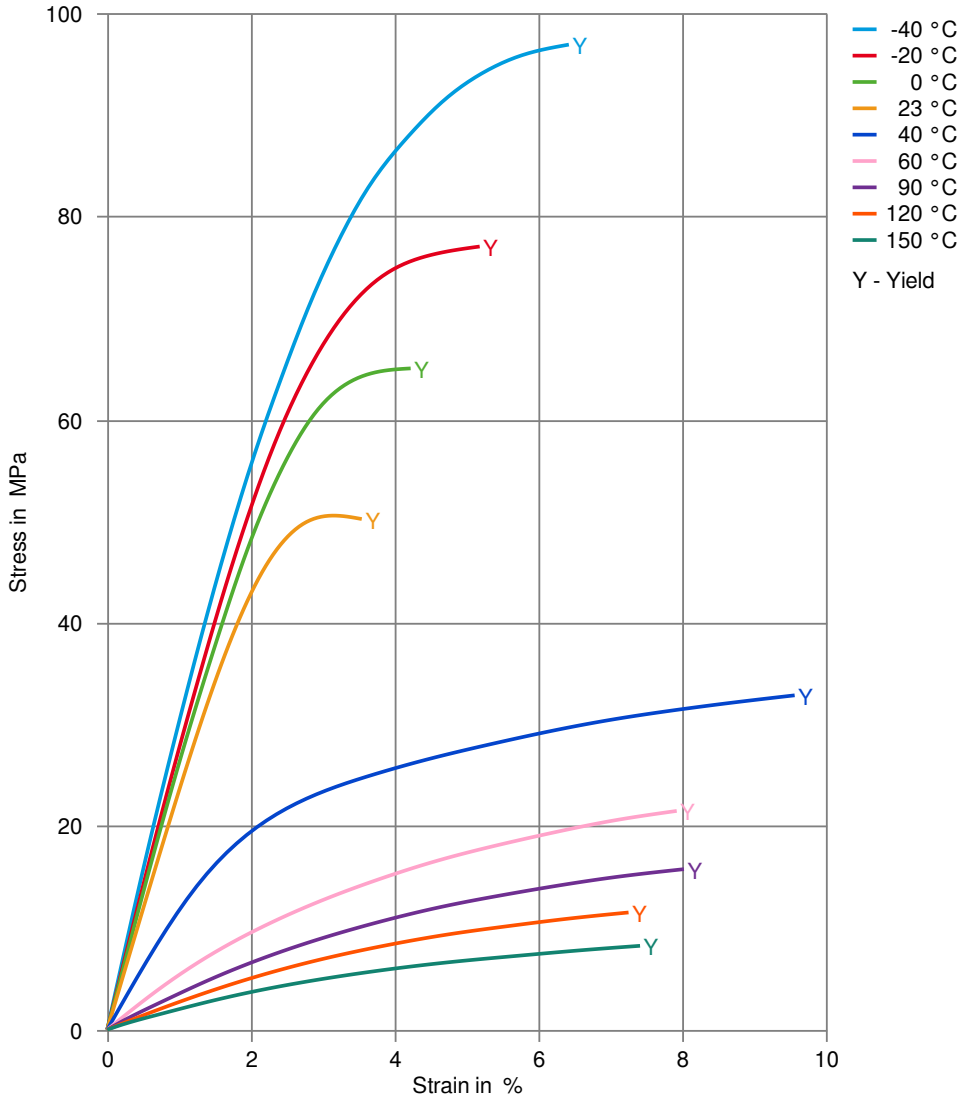
Stress-strain



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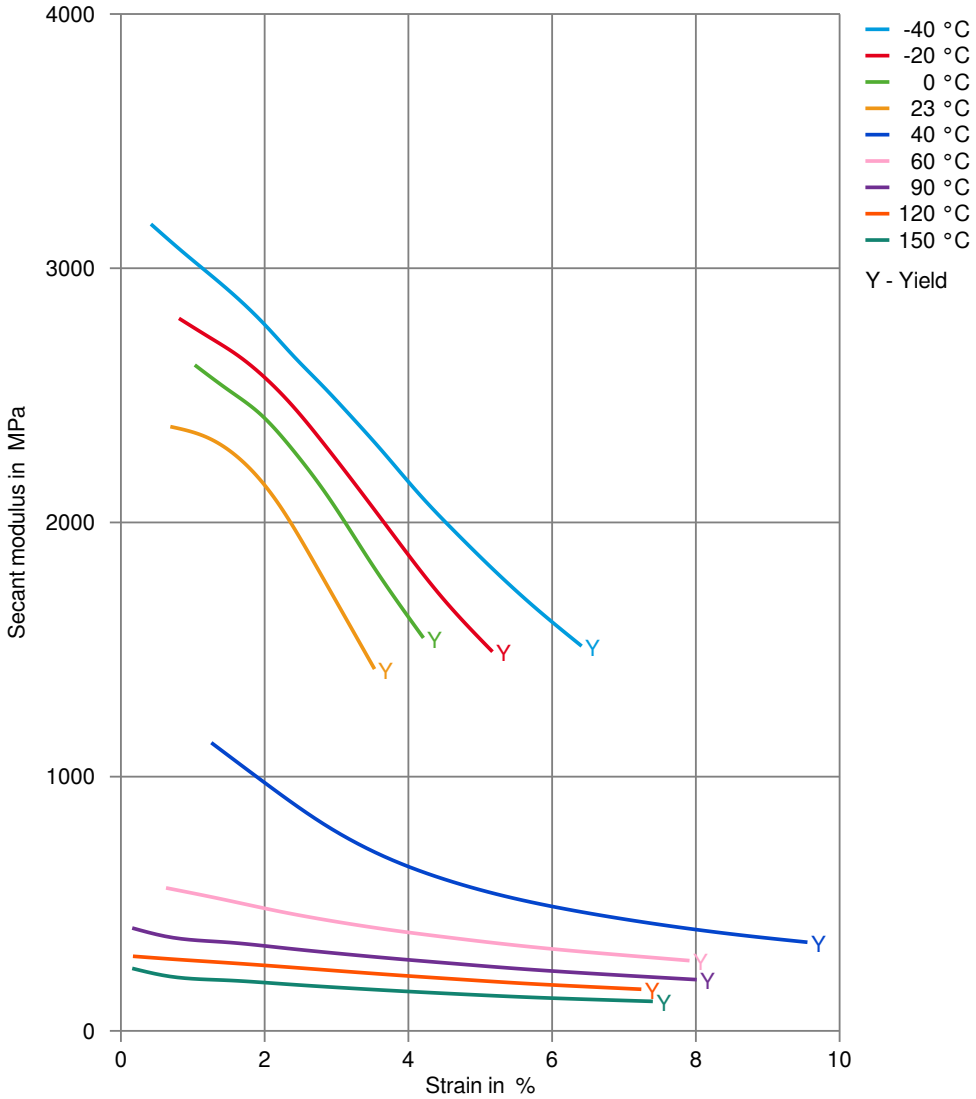
Secant modulus-strain



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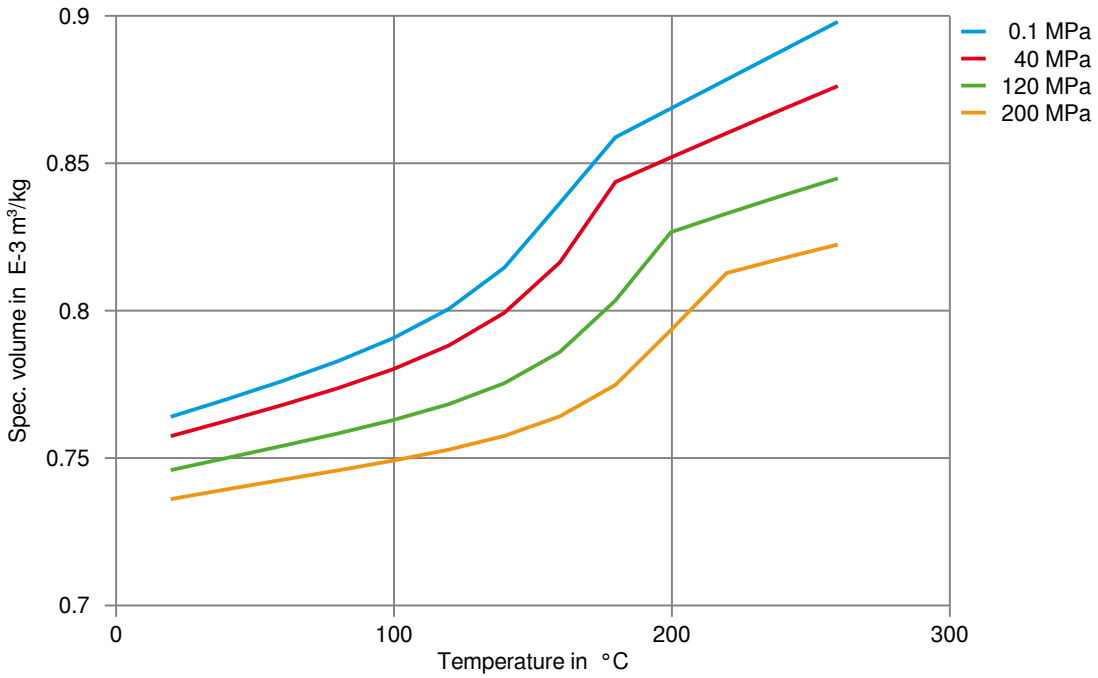
Specific volume-temperature (pvT)



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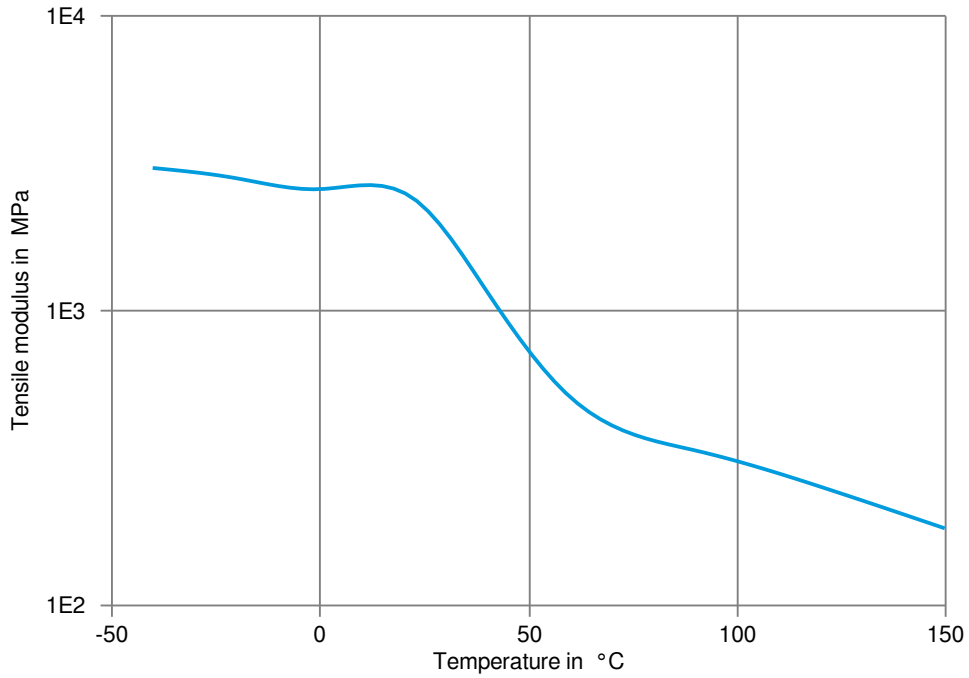
Tensile modulus-temperature



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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).