Crastin® LW9030 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® LW9030 NC010 is a 30% 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+ASA-GF30	ISO 1043
Part Marking Code	>PBT+ASA-GF30<	ISO 11469

Rheological properties

Melt mass-flow rate	10	g/10min	ISO 1133
Melt mass-flow rate, Temperature	250	°C	ISO 1133
Melt mass-flow rate, Load	5	kg	ISO 1133
Moulding shrinkage, parallel	0.2	%	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	0.15	%	ISO 294-4

Typical mechanical properties

Tensile Modulus	9500	MPa	ISO 527-1/-2
Stress at break	130	MPa	ISO 527-1/-2
Strain at break	2.5	%	ISO 527-1/-2
Flexural Modulus	8500	MPa	ISO 178
Flexural Strength	190	MPa	ISO 178
Tensile creep modulus, 1h	9000	MPa	ISO 899-1
Tensile creep modulus, 1000h	7300	MPa	ISO 899-1
Charpy impact strength, 23°C	60	kJ/m²	ISO 179/1eU
Charpy impact strength, -30°C	65	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23°C	10	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30°C	9	kJ/m²	ISO 179/1eA
Izod notched impact strength, 23°C	8	kJ/m²	ISO 180/1A

Crastin® LW9030 NC010

THERMOPLASTIC POLYESTER RESIN

Izod notched impact strength, -30°C	8	kJ/m²	ISO 180/1A
Izod impact strength, 23°C	50	kJ/m²	ISO 180/1U
Izod impact strength, -30°C	50	kJ/m²	ISO 180/1U
Poisson's ratio	0.34	-	

Thermal properties

Melting temperature, 10°C/min	225	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	120	°C	ISO 11357-1/-2
Temp. of deflection under load, 1.8 MPa	170	°C	ISO 75-1/-2
Temp. of deflection under load, 0.45 MPa	215	°C	ISO 75-1/-2
Vicat softening temperature, 50°C/h, 50N	150	°C	ISO 306
Coeff. of linear therm. expansion, parallel	25	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	0.26	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, electrical, 6mm	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, impact, 6mm	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
RTI, strength, 6mm	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	3	mm	IEC 60695-11-10
UL recognition	yes	-	UL 94
Oxygen index	19	%	ISO 4589-1/-2
Glow Wire Flammability Index, 3mm	675	°C	IEC 60695-2-12
Glow Wire Ignition Temperature, 3mm	675	°C	IEC 60695-2-13
FMVSS Class	B	-	ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	42	mm/min	ISO 3795 (FMVSS 302)

Crastin® LW9030 NC010

THERMOPLASTIC POLYESTER RESIN

Electrical properties

Relative permittivity, 100Hz	3.9	-	IEC 62631-2-1
Relative permittivity, 1MHz	3.6	-	IEC 62631-2-1
Dissipation factor, 100Hz	24.1	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	170	E-4	IEC 62631-2-1
Volume resistivity	>1E13	Ohm.m	IEC 62631-3-1
Surface resistivity	1E14	Ohm	IEC 62631-3-2
Electric strength	36	kV/mm	IEC 60243-1
Comparative tracking index	425	-	IEC 60112
Electric Strength, Short Time, 2mm	21	kV/mm	IEC 60243-1

Other properties

Humidity absorption, 2mm	0.24	%	Sim. to ISO 62
Water absorption, 2mm	0.72	%	Sim. to ISO 62
Density	1440	kg/m³	ISO 1183
Density of melt	1280	kg/m³	

VDA Properties

Emission of organic compounds	100	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
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

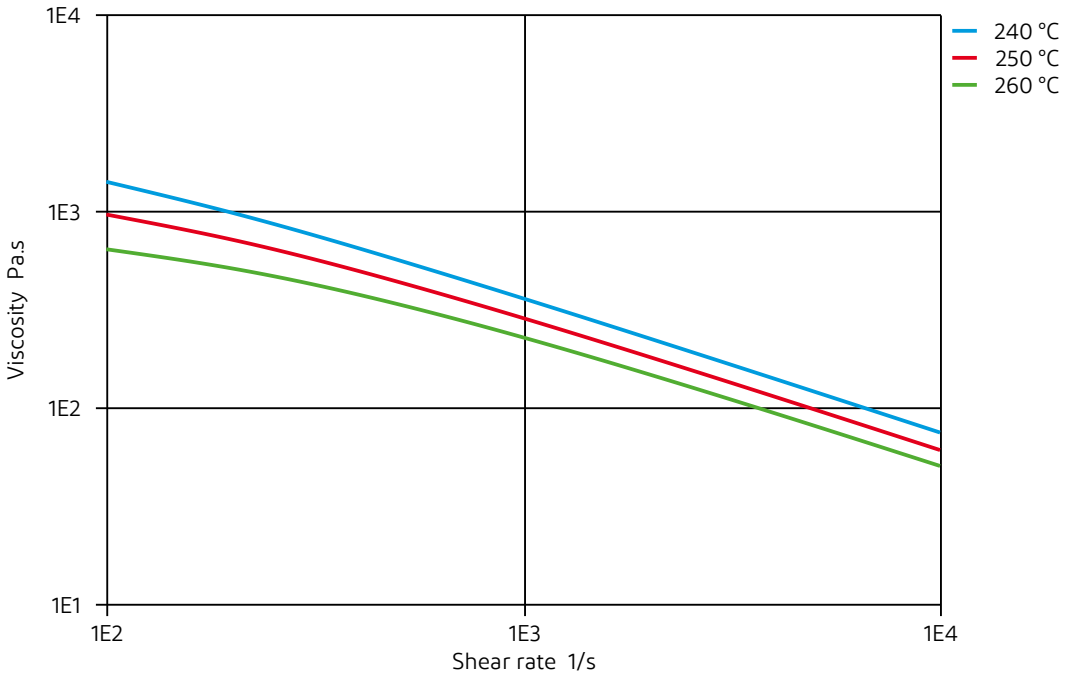
Characteristics

Additives	Release agent

Crastin® LW9030 NC010

THERMOPLASTIC POLYESTER RESIN

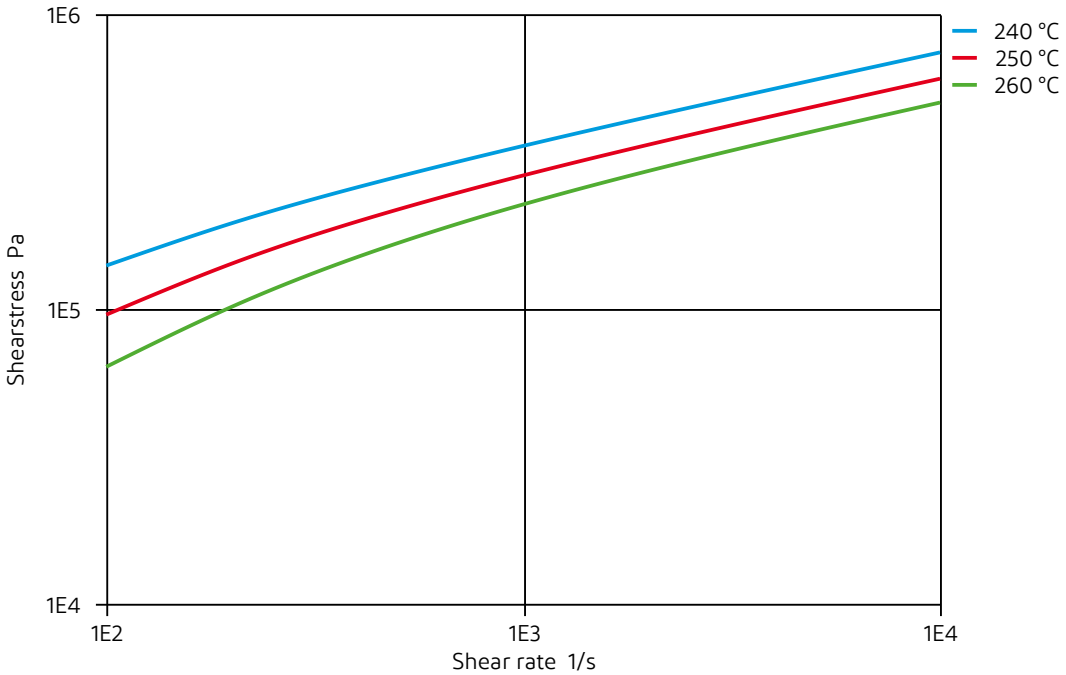
Viscosity-shear rate



Crastin® LW9030 NC010

THERMOPLASTIC POLYESTER RESIN

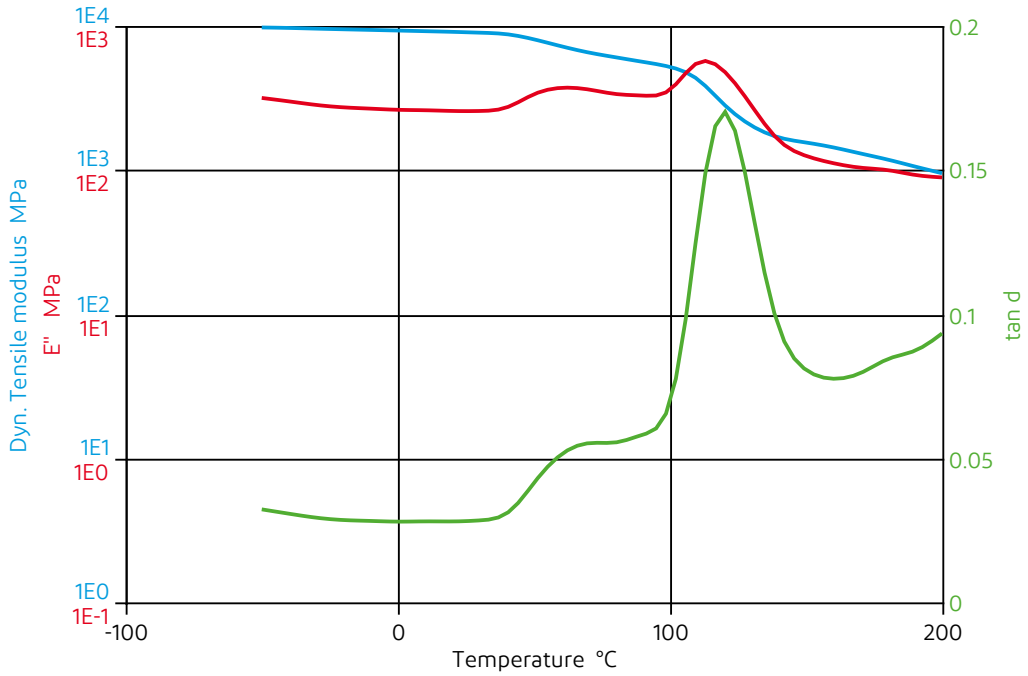
Shearstress-shear rate



Crastin® LW9030 NC010

THERMOPLASTIC POLYESTER RESIN

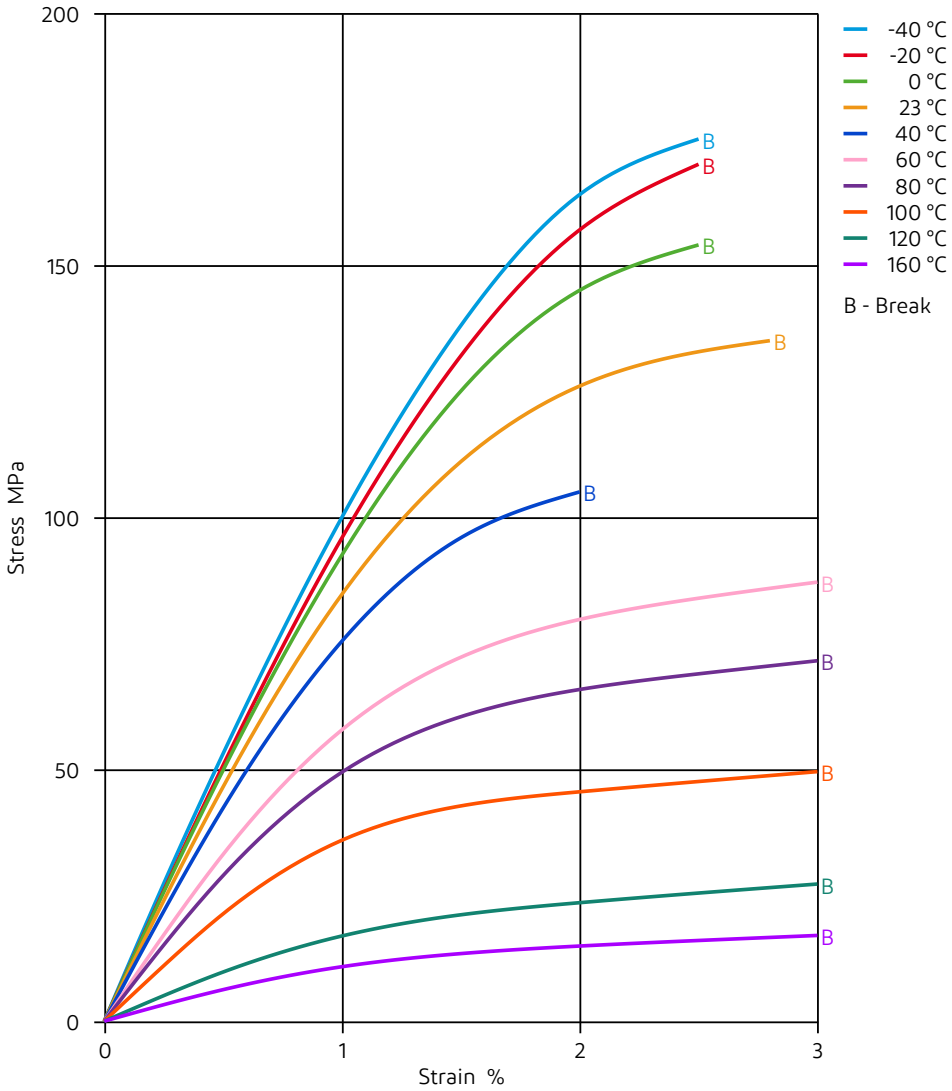
Dynamic Tensile modulus-temperature



Crastin® LW9030 NC010

THERMOPLASTIC POLYESTER RESIN

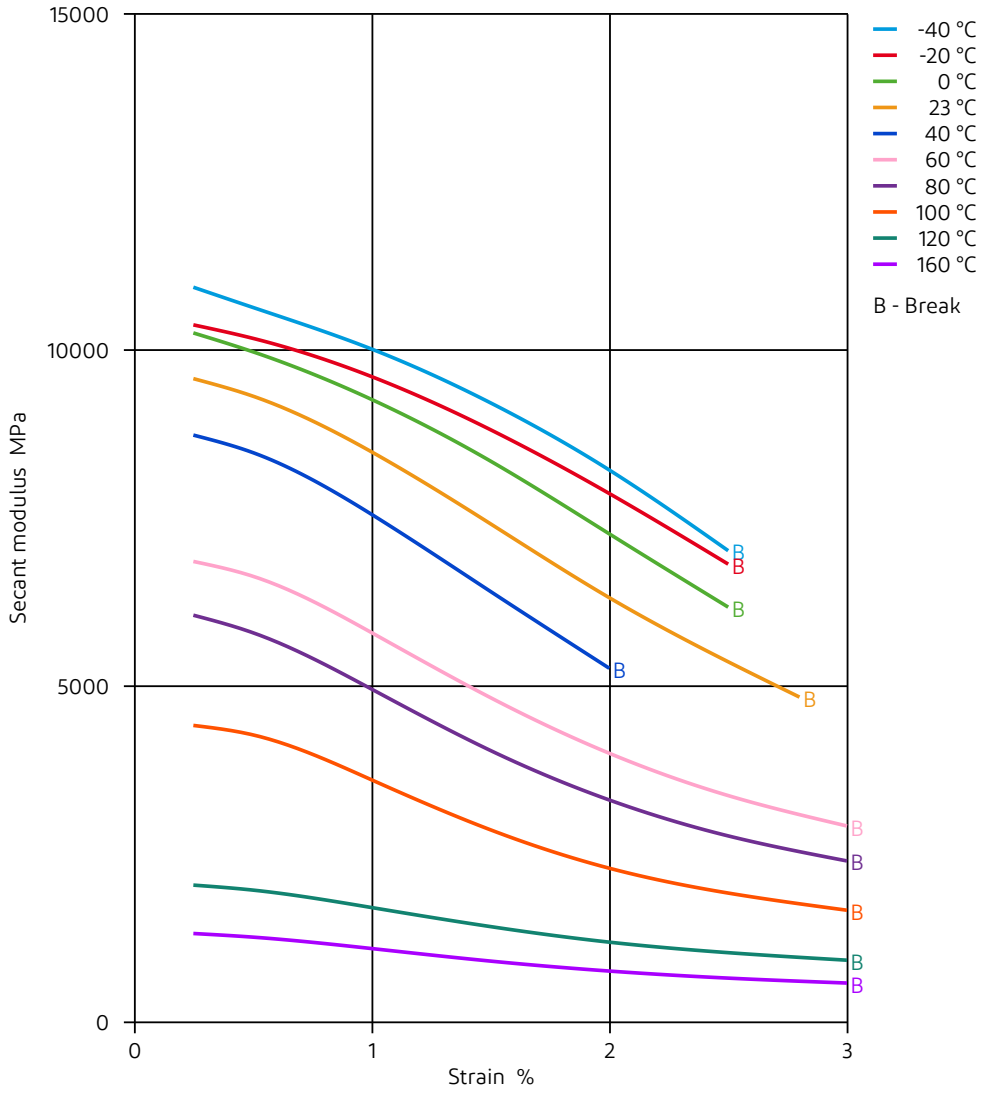
Stress-strain



Crastin® LW9030 NC010

THERMOPLASTIC POLYESTER RESIN

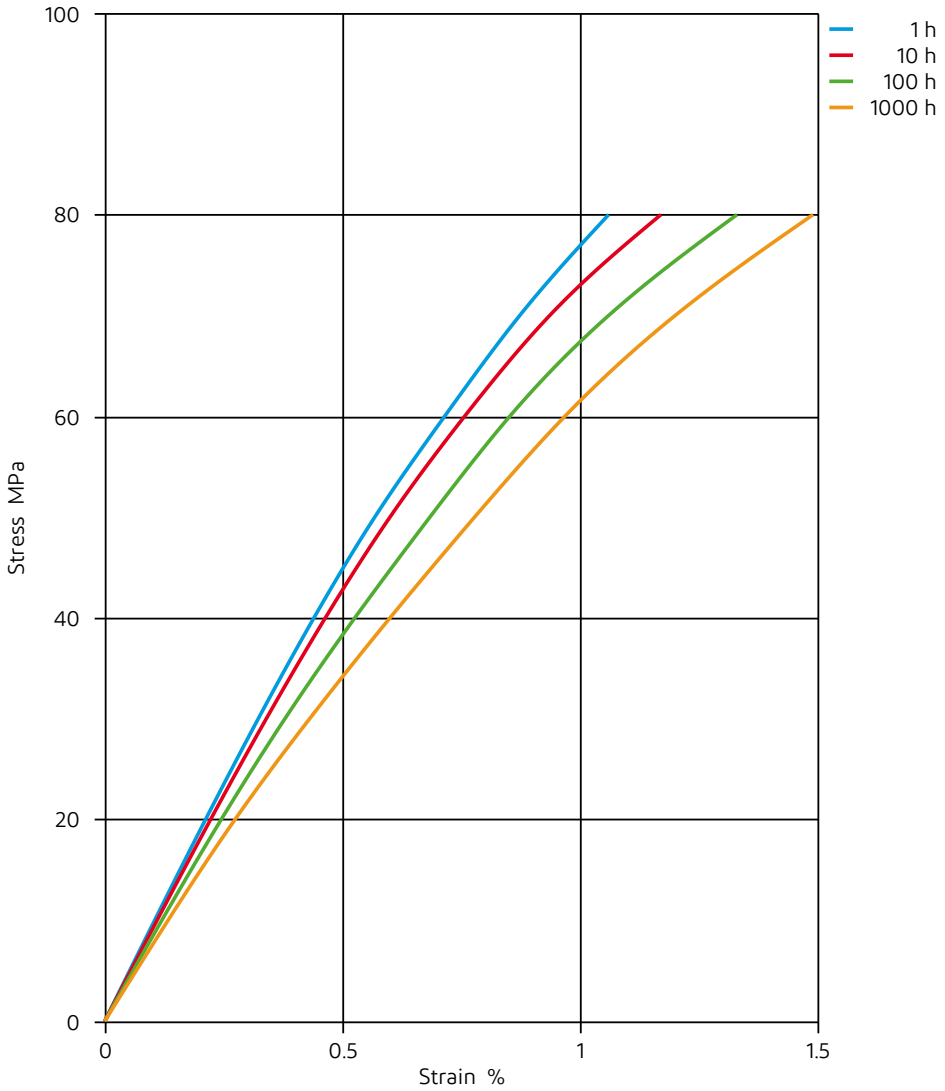
Secant modulus-strain



Crastin® LW9030 NC010

THERMOPLASTIC POLYESTER RESIN

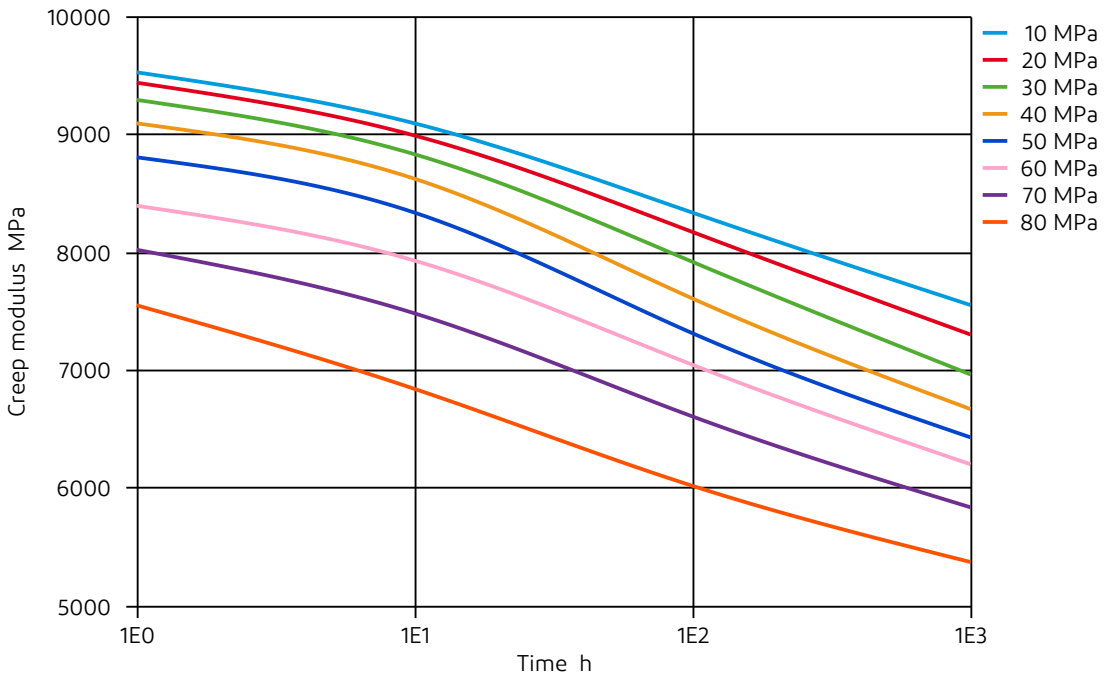
Stress-strain (isochronous) 23°C



Crastin® LW9030 NC010

THERMOPLASTIC POLYESTER RESIN

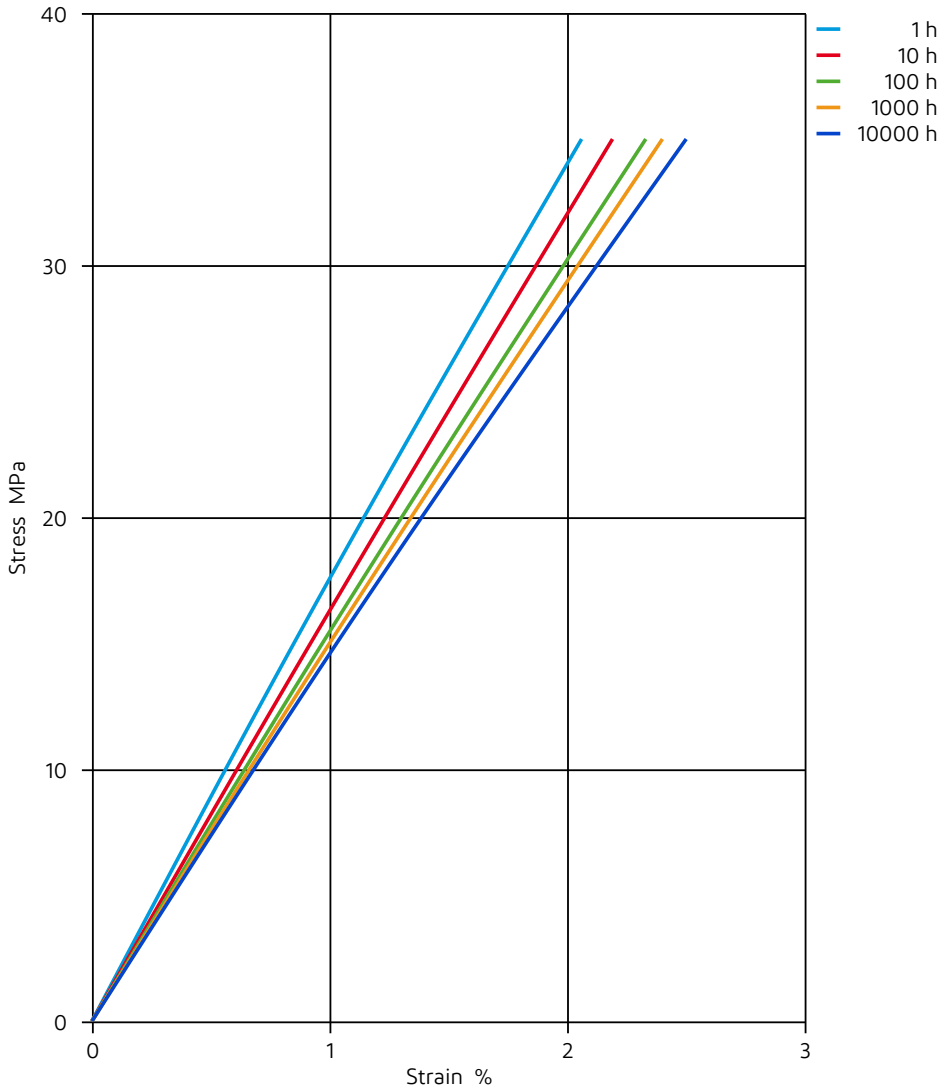
Creep modulus-time 23°C



Crastin® LW9030 NC010

THERMOPLASTIC POLYESTER RESIN

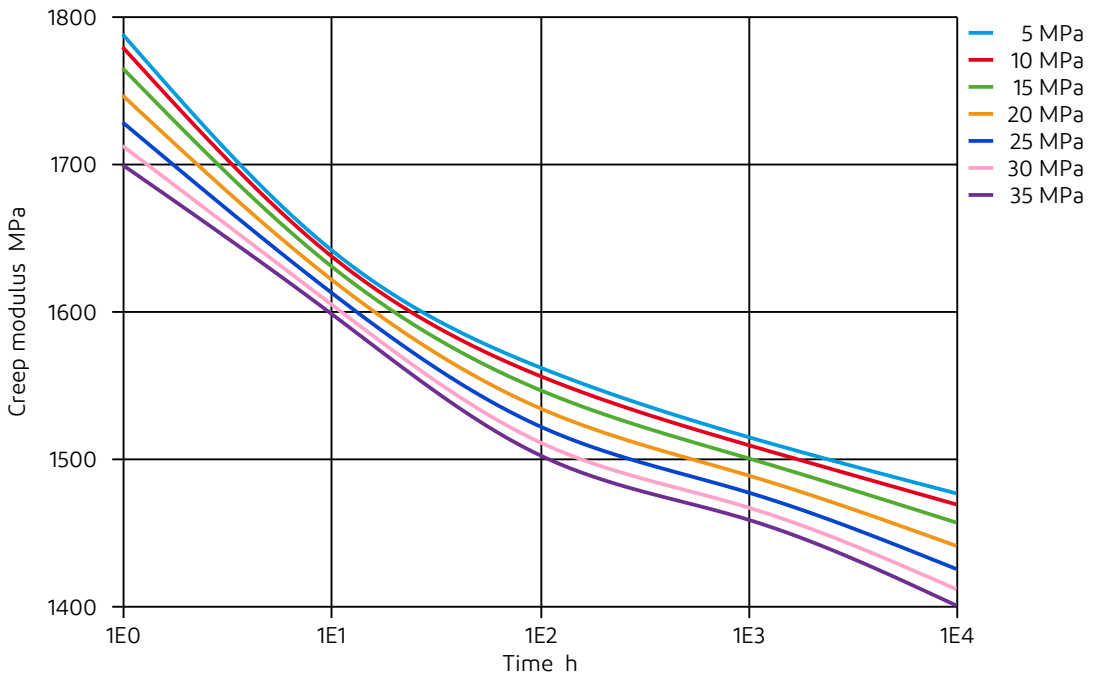
Stress-strain (isochronous) 120°C



Crastin® LW9030 NC010

THERMOPLASTIC POLYESTER RESIN

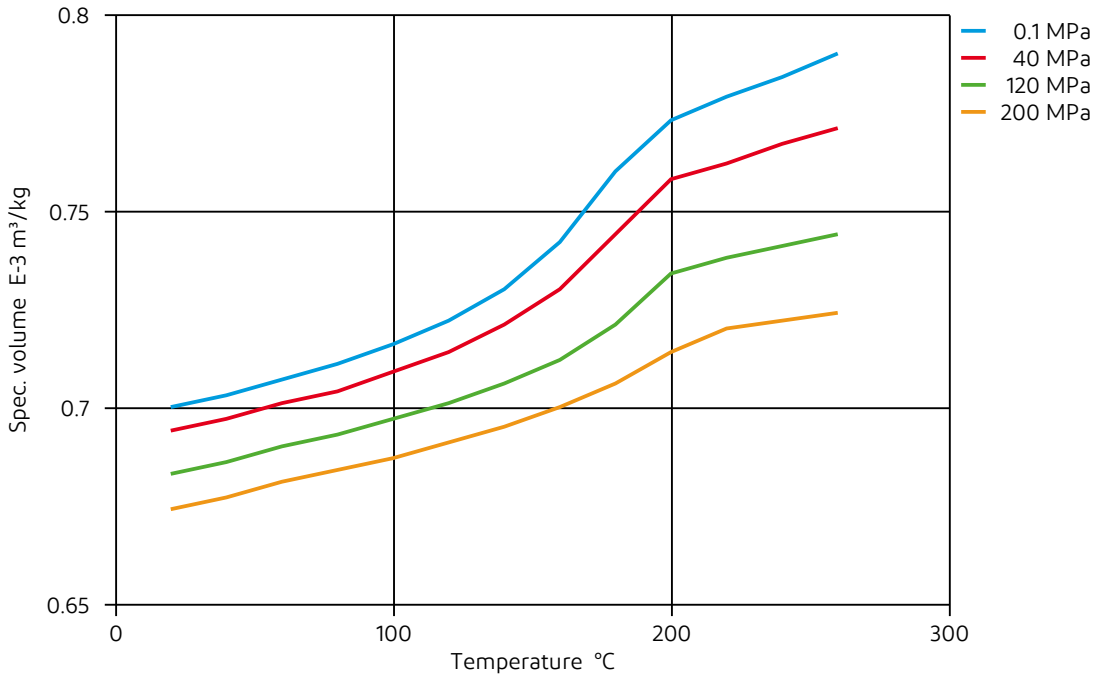
Creep modulus-time 120°C



Crastin® LW9030 NC010

THERMOPLASTIC POLYESTER RESIN

Specific volume-temperature (pvT)



Crastin® LW9030 NC010

THERMOPLASTIC POLYESTER RESIN

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

Crastin® LW9030 NC010

THERMOPLASTIC POLYESTER RESIN

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).