Zytel® 70G30HSL NC010

NYLON RESIN

Common features of Zytel® nylon resin include mechanical and physical properties such as high mechanical strength, excellent balance of stiffness and toughness, good high temperature performance, good electrical and flammability properties, good abrasion and chemical resistance. In addition, Zytel® nylon resins are available in different modified and reinforced grades to create a wide range of products with tailored properties for specific processes and end-uses. Zytel® nylon resin, including most flame retardant grades, offer the ability to be coloured.

The good melt stability of Zytel® nylon 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 (-31kJ/g of base polymer) in appropriately equipped installations. For disposal, local regulations have to be observed.

Zytel® nylon resin typically is used in demanding applications in the automotive, furniture, domestic appliances, sporting goods and construction industry.

Zytel® 70G30HSL NC010 is a 30% glass reinforced, heat stabilized nylon 66 resin for injection molding.

Product information

Resin Identification	PA66-GF30	ISO 1043
Part Marking Code	>PA66-GF30<	ISO 11469
ISO designation	ISO 16396-PA66,GF30,M1GHNRT2,S14-100	

Rheological properties

	dry/cond.		
Viscosity number	153/*	cm³/g	ISO 307, 1157, 1628
Molding shrinkage, parallel	0.3/-	%	ISO 294-4, 2577
Molding shrinkage, normal	1.1/-	%	ISO 294-4, 2577

Typical mechanical properties

	dry/cond.		
Tensile Modulus	10000/7000	MPa	ISO 527-1/-2
Stress at break	200/130	MPa	ISO 527-1/-2
Strain at break	3.4/5	%	ISO 527-1/-2
Flexural Modulus	9000/6300	MPa	ISO 178
Flexural Strength	280/200	MPa	ISO 178
Tensile creep modulus, 1h	*/6800	MPa	ISO 899-1
Tensile creep modulus, 1000h	*/5100	MPa	ISO 899-1
Charpy impact strength, 73°F	80/93	kJ/m²	ISO 179/1eU
Charpy impact strength, -22°F	70/73	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 73°F	12/15	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -22°F	10/10	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -40°F	10/-	kJ/m²	ISO 179/1eA
Izod notched impact strength, 73°F	13/17	kJ/m²	ISO 180/1A
Izod notched impact strength, -22°F	12/10	kJ/m²	ISO 180/1A
Izod impact strength, 73°F	70/-	kJ/m²	ISO 180/1U
Izod impact strength, -22°F	60/-	kJ/m²	ISO 180/1U

Zytel® 70G30HSL NC010

NYLON RESIN

Hardness, Rockwell, M-scale	104 / 88	-	ISO 2039-2
Hardness, Rockwell, R-scale	124 / 117	-	ISO 2039-2
Ball indentation hardness, H 961/30	270 / 187	MPa	ISO 2039-1
Poisson's ratio	0.34 / 0.35	-	
Multiaxial Impact, Total Energy, 4.5m/s, 2mm	5 / -	J	ISO 6603-2

Thermal properties

	dry/cond.		
Melting temperature, 18°F/min	263 / *	°C	ISO 11357-1/-3
Glass transition temperature, 18°F/min	75 / 20	°C	ISO 11357-1/-2
Temp. of deflection under load, 260 psi	248 / *	°C	ISO 75-1/-2
Temp. of deflection under load, 65 psi	261 / *	°C	ISO 75-1/-2
Coeff. of linear therm. expansion, parallel	22 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	107 / *	E-6/K	ISO 11359-1/-2
RTI, electrical, 30mil	140	°C	UL 746B
RTI, electrical, 60mil	140	°C	UL 746B
RTI, electrical, 120mil	140	°C	UL 746B
RTI, impact, 30mil	125	°C	UL 746B
RTI, impact, 60mil	125	°C	UL 746B
RTI, impact, 120mil	125	°C	UL 746B
RTI, strength, 30mil	140	°C	UL 746B
RTI, strength, 60mil	140 / *	°C	UL 746B
RTI, strength, 120mil	140	°C	UL 746B

Flammability

	dry/cond.		
Burning Behav. at 60mil nom. thickn.	HB / *	class	IEC 60695-11-10
Thickness tested	1.5 / *[1]	mm	IEC 60695-11-10
UL recognition	yes / *	-	UL 94
Burning Behav. at thickness h	HB / *	class	IEC 60695-11-10
Thickness tested	0.4 / *	mm	IEC 60695-11-10
Oxygen index	24 / *	%	ISO 4589-1/-2
Glow Wire Flammability Index, 40mil	700 / -	°C	IEC 60695-2-12
Glow Wire Flammability Index, 80mil	750 / -	°C	IEC 60695-2-12
Glow Wire Flammability Index, 120mil	800 / -	°C	IEC 60695-2-12
Glow Wire Ignition Temperature, 40mil	725 / -	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 80mil	725 / -	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 120mil	775 / -	°C	IEC 60695-2-13
Glow Wire Temperature, No Flame, 120mil	750 / -	°C	IEC 60335-1
FMVSS Class	B	-	ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	20	mm/min	ISO 3795 (FMVSS 302)

[1]: and also 0.75mm

Zytel® 70G30HSL NC010

NYLON RESIN

Electrical properties

	dry/cond.		
Relative permittivity, 100Hz	4.4/10.8	-	IEC 62631-2-1
Relative permittivity, 1MHz	4.1/4.6	-	IEC 62631-2-1
Dissipation factor, 100Hz	70/4600	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	150/650	E-4	IEC 62631-2-1
Volume resistivity	>1E13/1E9	Ohm.m	IEC 62631-3-1
Surface resistivity	*/1E13	Ohm	IEC 62631-3-2
Electric strength	38/32	kV/mm	IEC 60243-1
Comparative tracking index	400/-	-	IEC 60112

Other properties

	dry/cond.		
Humidity absorption, 80mil	1.9/*	%	Sim. to ISO 62
Water absorption, 80mil	6/*	%	Sim. to ISO 62
Density	1370/-	kg/m³	ISO 1183
Water Absorption, Immersion 24h	1.3/*	%	Sim. to ISO 62

VDA Properties

	dry/cond.		
Emission of organic compounds	6	µgC/g	VDA 277
Odor test	4.5	class	VDA 270
Fogging, F-value (refraction)	95/*	%	ISO 6452
Fogging, G-value (condensate)	0.3/*	mg	ISO 6452

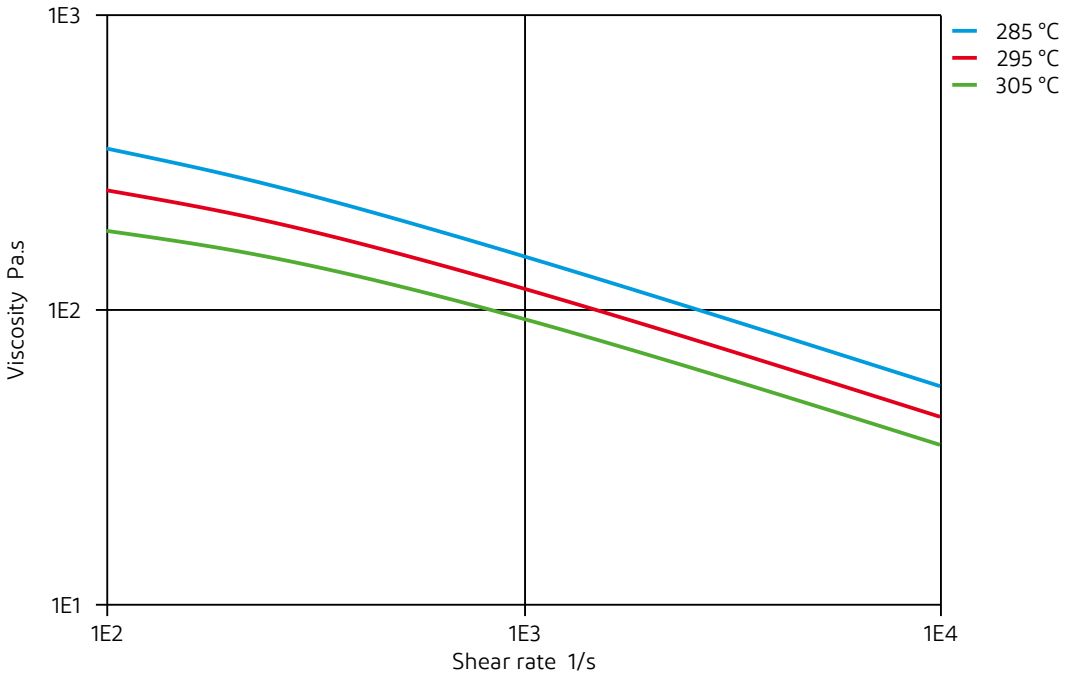
Injection

Drying Recommended	yes	
Drying Temperature	80	°C
Drying Time, Dehumidified Dryer	2 - 4	h
Processing Moisture Content	≤0.2	%
Melt Temperature Optimum	295	°C
Min. melt temperature	285	°C
Max. melt temperature	305	°C
Max. screw tangential speed	0.2	m/s
Mold Temperature Optimum	100	°C
Min. mold temperature	70	°C
Max. mold temperature	120	°C
Hold pressure range	50 - 100	MPa
Hold pressure time	3	s/mm
Ejection temperature	210	°C

Zytel® 70G30HSL NC010

NYLON RESIN

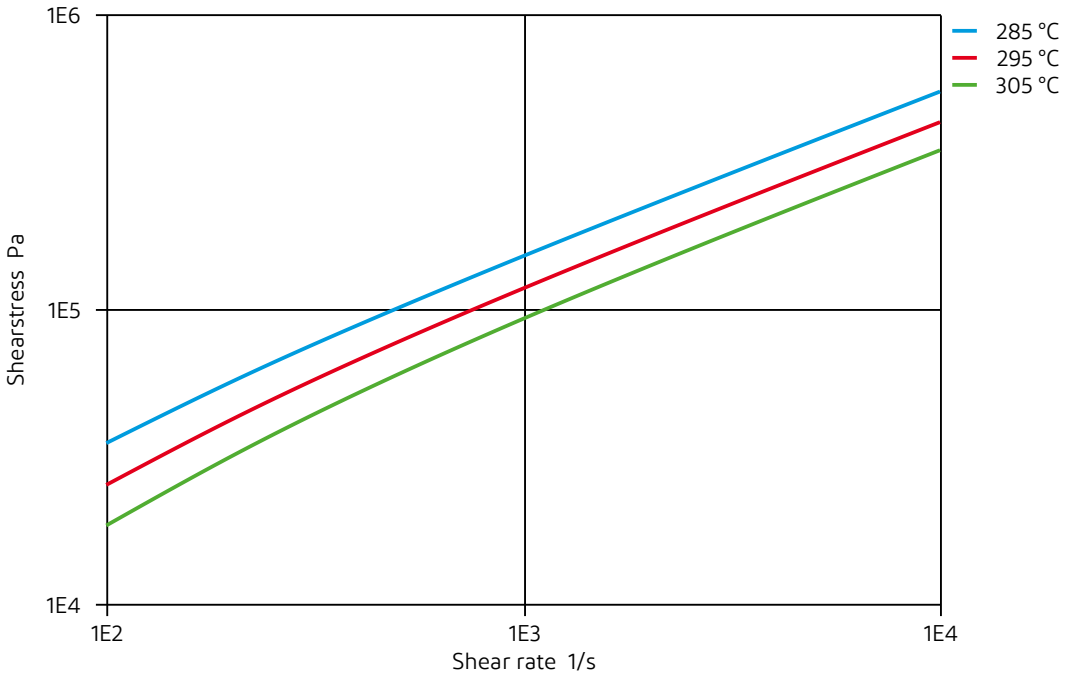
Viscosity-shear rate



Zytel® 70G30HSL NC010

NYLON RESIN

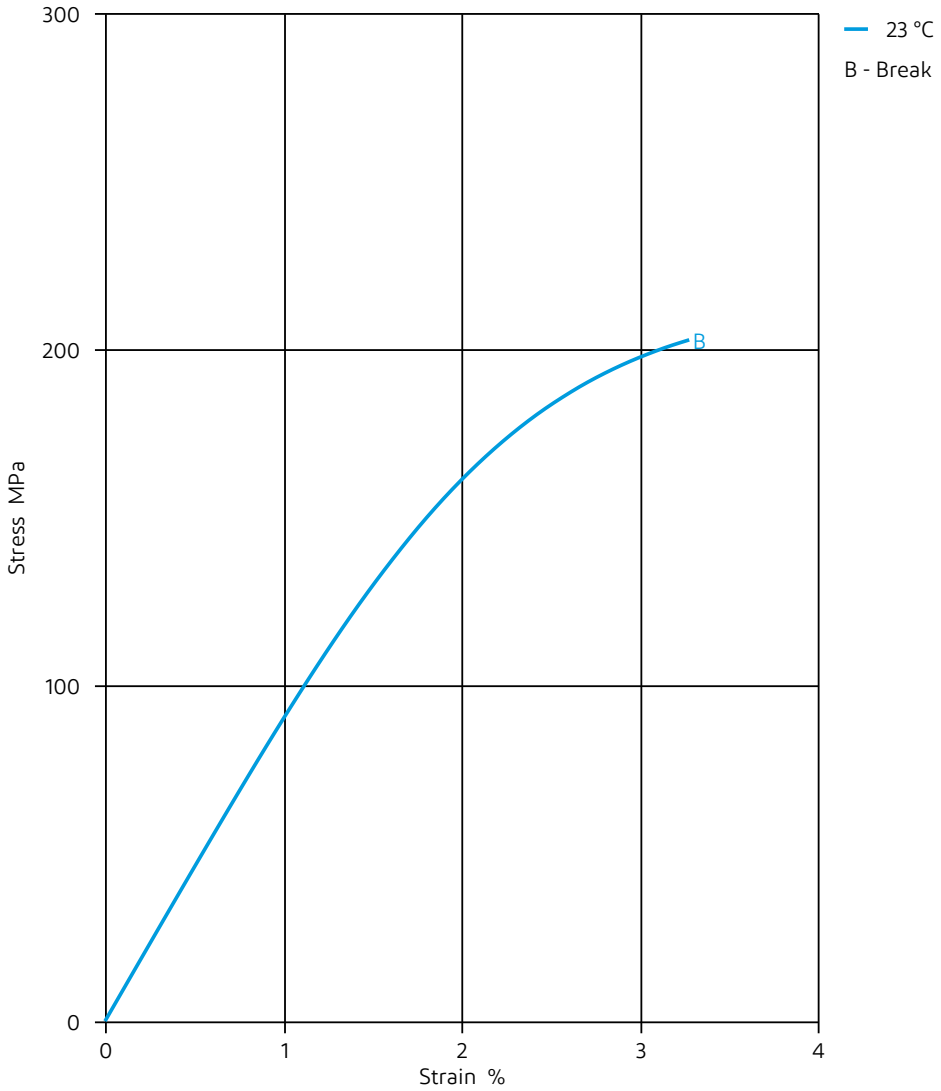
Shearstress-shear rate



Zytel® 70G30HSL NC010

NYLON RESIN

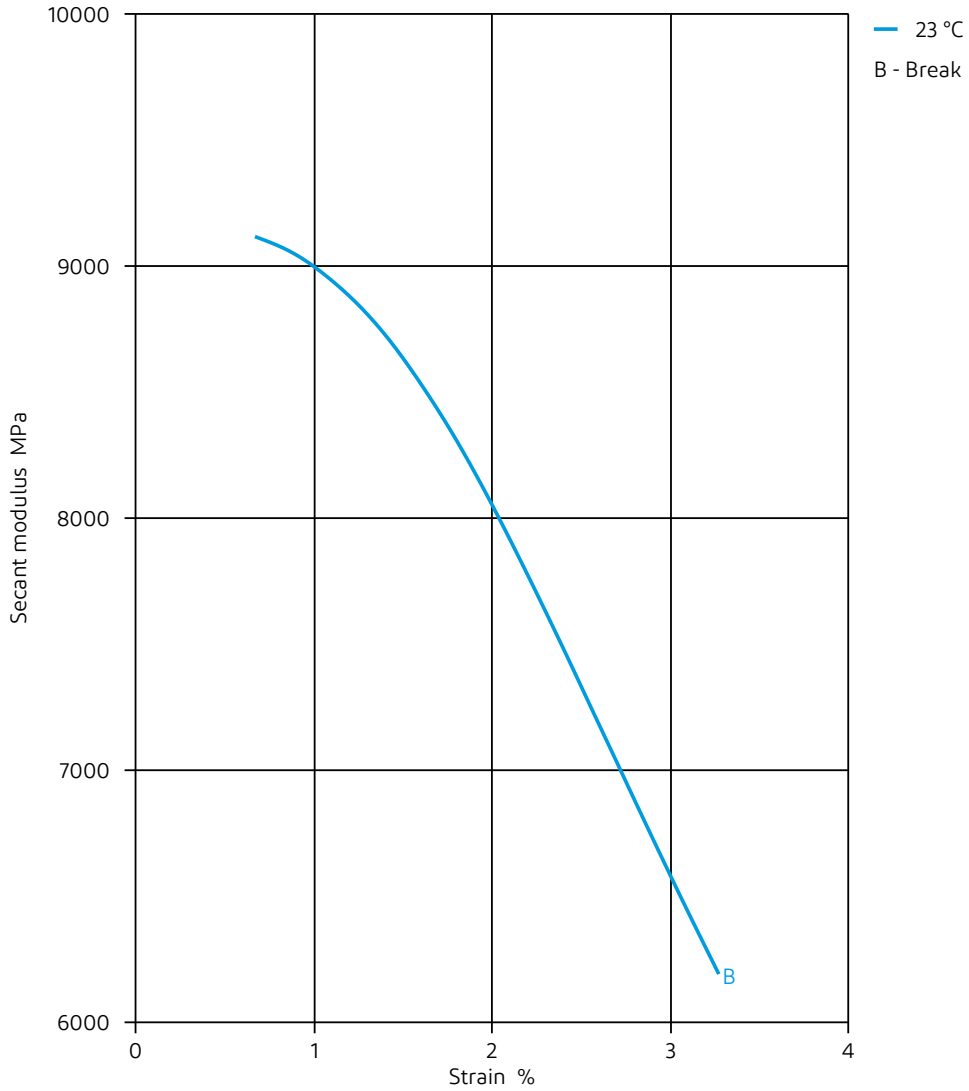
Stress-strain (dry)



Zytel® 70G30HSL NC010

NYLON RESIN

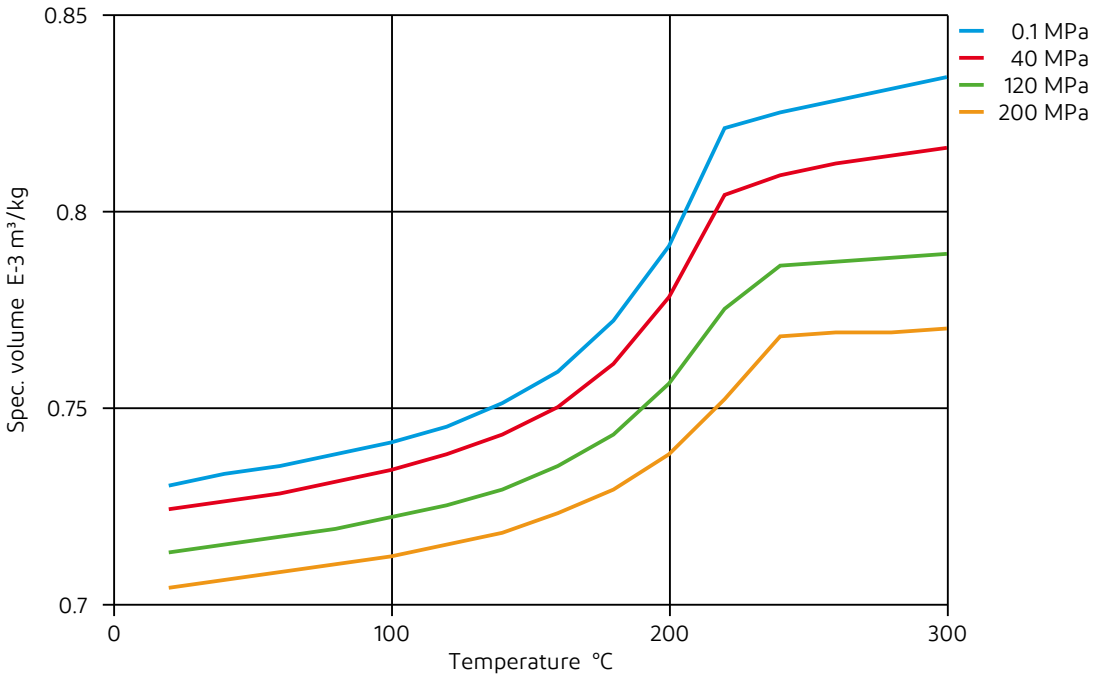
Secant modulus-strain (dry)



Zytel® 70G30HSL NC010

NYLON RESIN

Specific volume-temperature (pvT)



Zytel® 70G30HSL NC010

NYLON 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

Zytel® 70G30HSL NC010

NYLON 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
- ✘ Coolant Glysantin G48, 1:1 in water, 125°C
- ✔ Urea solution (32.5% 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).