

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, we recommend, 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® 70G50HSLA BK039B is a 50% glass fiber reinforced, heat stabilised polyamide 66 resin for injection moulding. It has excellent flow characteristics.

Product information

Resin Identification	PA66-GF50		ISO 1043
Part Marking Code	>PA66-GF50<		ISO 11469
ISO designation	ISO 16396-PA66	,GF50,M1CGHR,S10-160	
Rheological properties	dry/cond.		
Viscosity number	105 ^[1] /*	cm ³ /g	ISO 307, 1628
Moulding shrinkage, parallel	0.3/-	%	ISO 294-4, 2577
Moulding shrinkage, normal	0.8/-	%	ISO 294-4, 2577
[1]: 96% sulfuric acid			
Typical mechanical properties	dry/cond.		
Tensile modulus	17000/13000	MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	240/170	MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	2.4/3.5	%	ISO 527-1/-2
Flexural modulus	16000/12000	MPa	ISO 178
Flexural strength	400/280	MPa	ISO 178
Flexural stress at 3.5%	-/270	MPa	ISO 178
Compressive strength	215/-	MPa	ISO 604
Tensile creep modulus, 1h	*/10000	MPa	ISO 899-1
Tensile creep modulus, 1000h	*/8000	MPa	ISO 899-1
Charpy impact strength, 23°C	90/95	kJ/m²	ISO 179/1eU
Charpy impact strength, -30°C	90/90	kJ/m ²	ISO 179/1eU
Charpy notched impact strength, 23°C	15/20	kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -30°C	15/14	kJ/m ²	ISO 179/1eA
Puncture energy, 23°C	10/-	J	ISO 6603-2
Ball indentation hardness, H 961/30	300/-	MPa	ISO 2039-1
Poisson's ratio	0.33/0.33		

Printed: 2025-03-25 Page: 1 of 20

Revised: 2024-12-10 Source: Celanese Materials Database



NYLON RESIN

Thermal properties	dry/cond.		
Melting temperature, 10°C/min	262/*	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	65/20	°C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	255/*	°C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	261/*	°C	ISO 75-1/-2
Vicat softening temperature, 50 °C/h 50N	255/*	°C	ISO 306
Coeff. of linear therm. expansion, parallel, -40-23°C	13/*	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion	9/*	E-6/K	ISO 11359-1/-2
(CLTE), parallel	37	L-0/1X	130 11339-1/-2
CLTE, Parallel, 23-55°C(73-130°F)	19/-	E-6/K	ASTM E 831
	19/*	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, parallel, 55-160°C			
Coeff. of linear therm. expansion, normal, -40-23 °C	42/*	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	72/*	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, 55-160°C	114/*	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, Normal,23-55°C	61/-	E-6/K	ASTM E 831
(73-130°F)			
Thermal conductivity, flow	0.46	W/(m K)	ISO 22007-2
Thermal conductivity of melt	0.31	W/(m K)	ISO 22007-2
Specific heat capacity of melt	1870	J/(kg K)	ISO 22007-4
RTI, electrical, 0.75mm	120	°ĊŰ	UL 746B
RTI, electrical, 1.5mm	120	°C	UL 746B
RTI, electrical, 3.0mm	120	°C	UL 746B
RTI, impact, 0.75mm	115	°C	UL 746B
RTI, impact, 1.5mm	125	°C	UL 746B
RTI, impact, 3.0mm	130	°C	UL 746B
RTI, strength, 0.75mm	115	°C	UL 746B
RTI, strength, 1.5mm	125/*	°C	UL 746B
RTI, strength, 3.0mm	130	°C	UL 746B
rrri, suchgui, o.oniin	130	O	GE 740B
Flammability	dry/cond.		
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 ^[2] /*		UL 94
Burning Behav. at thickness h	HB/*	class	IEC 60695-11-10
Thickness tested	0.83/*	mm	IEC 60695-11-10
UL recognition	yes/*		UL 94
Oxygen index	24/*	%	ISO 4589-1/-2
FMVSS Class	SE		ISO 3795 (FMVSS 302)
[2]: UL yellow card (f1)			,
Electrical properties	dry/cond.		
Volume resistivity	1E13/-	Ohm.m	IEC 62631-3-1
Surface resistivity	*/4E14	Ohm	IEC 62631-3-1
•	30/-	kV/mm	IEC 62631-3-2 IEC 60243-1
Electric strength	500/-	r\ V /	IEC 60243-1 IEC 60112
Comparative tracking index	500/-		IEC 60112

Printed: 2025-03-25 Page: 2 of 20

Revised: 2024-12-10 Source: Celanese Materials Database



NYLON RESIN

Ph	/sical/Other	oroperties	dry/cond.
----	--------------	------------	-----------

Humidity absorption, 2mm	1.2/*	%	Sim. to ISO 62
Water absorption, 2mm	4.2/*	%	Sim. to ISO 62
Water absorption, Immersion 24h	0.8 ^[3] /*	%	Sim. to ISO 62
Density	1570/-	kg/m³	ISO 1183
Density of melt	1400	kg/m³	

[3]: 2mm wall thickness

VDA Properties dry/cond.

Emission of organic compounds	6.5	μgC/g	VDA 277
Odour	3	class	VDA 270
Fogging, G-value (condensate)	0.4/*	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
Screw tangential speed	≤0.2	m/s
Mold Temperature Optimum	95	°C
Min. mould temperature	70	°C
Max. mould temperature	120	°C
Hold pressure range	50 - 100	MPa
Hold pressure time	3	s/mm
Ejection temperature	220	°C

Characteristics

Processing Injection Moulding

Delivery form Pellets

Additives Release agent

Special characteristics Heat stabilised or stable to heat

Automotive

OEM STANDARD ADDITIONAL INFORMATION
BMW GS93016-PA66-GF50 (Heat Aging Resistant)

General Motors GMW3038P-PA66-GF50H Black
General Motors GMW3038P-PA66-GF50J Black

Mercedes-Benz DBL5403.33 PA66 GF50 Mercedes-Benz DBL5409.35 PA66 GF50

NIO NIO-SM.51.003

Printed: 2025-03-25 Page: 3 of 20

Revised: 2024-12-10 Source: Celanese Materials Database



Renault-Nissan AS25-a, No Spec, Special Part Approval, See

Your CE Account Manager.

Renault-Nissan EP11b, No Spec, Special Part Approval, See

Your CE Account Manager.

Renault-Nissan UB01b, No Spec, Special Part Approval, See

Your CE Account Manager.

Renault-Nissan UB04b, No Spec, Special Part Approval, See

Your CE Account Manager.

Renault-Nissan UB14, No Spec, Special Part Approval, See

Your CE Account Manager.

Renault-Nissan UB20a, No Spec, Special Part Approval, See

Your CE Account Manager.

Renault-Nissan UB20c, No Spec, Special Part Approval, See

Your CE Account Manager.

Renault-Nissan UB20d, No Spec, Special Part Approval, See

Your CE Account Manager.

Stellantis B62 0300 / 61/U4/AD1/W1/O1/AB1/E2/215M-

218E/13/C1B MS.50017/CPN-4967

VW Group VW 50127 PA66-10 VW Group VW 50133 PA66-8-A

Stellantis - Chrysler

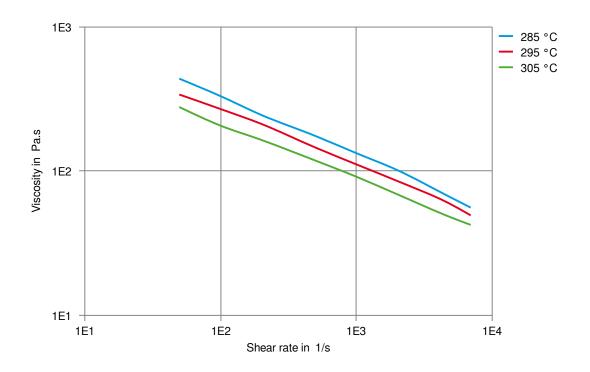
CPN4967, 01994_15_00032

Rlack

Printed: 2025-03-25 Page: 4 of 20



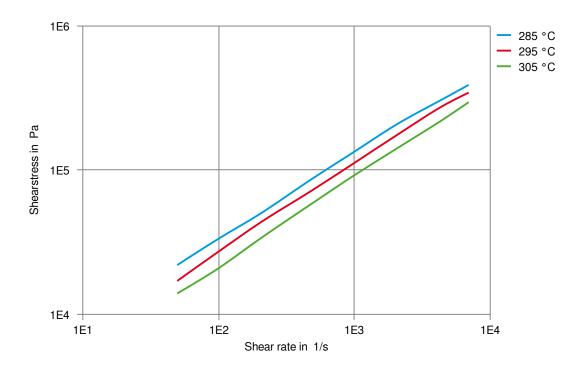
Viscosity-shear rate



Printed: 2025-03-25 Page: 5 of 20



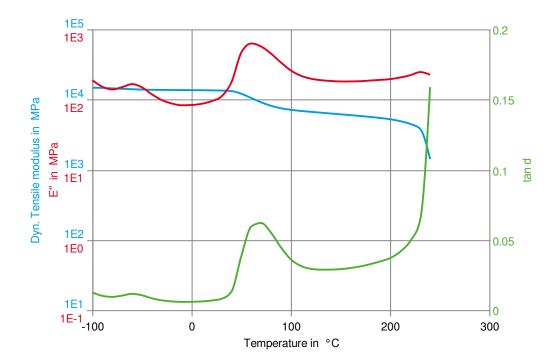
Shearstress-shear rate



Printed: 2025-03-25 Page: 6 of 20



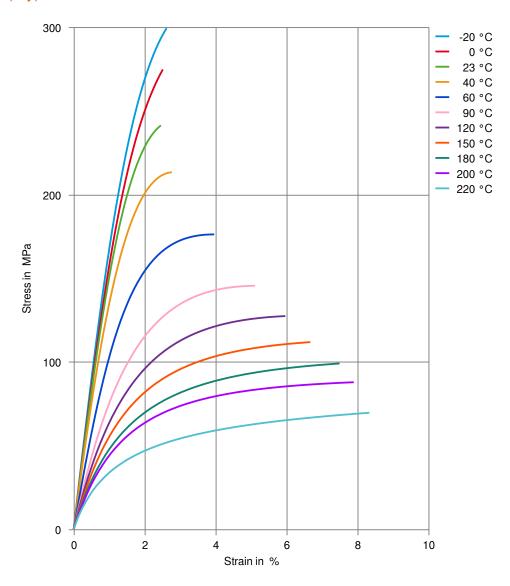
Dynamic Tensile modulus-temperature (dry)



Printed: 2025-03-25 Page: 7 of 20



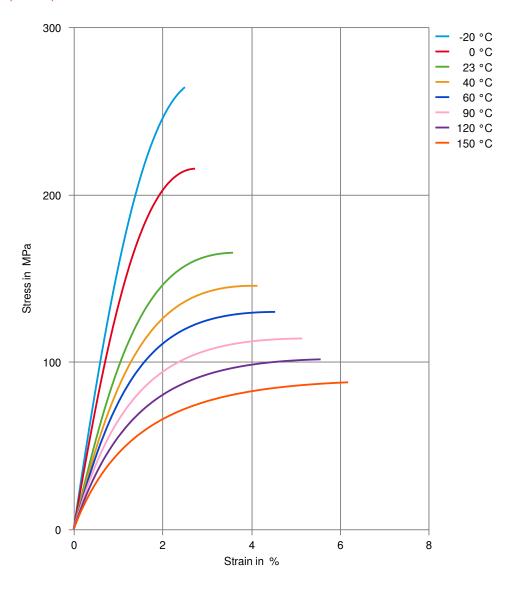
Stress-strain (dry)



Printed: 2025-03-25 Page: 8 of 20



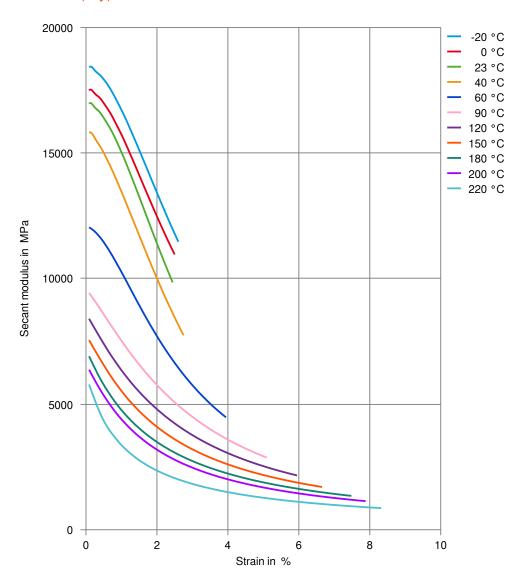
Stress-strain (cond.)



Printed: 2025-03-25 Page: 9 of 20



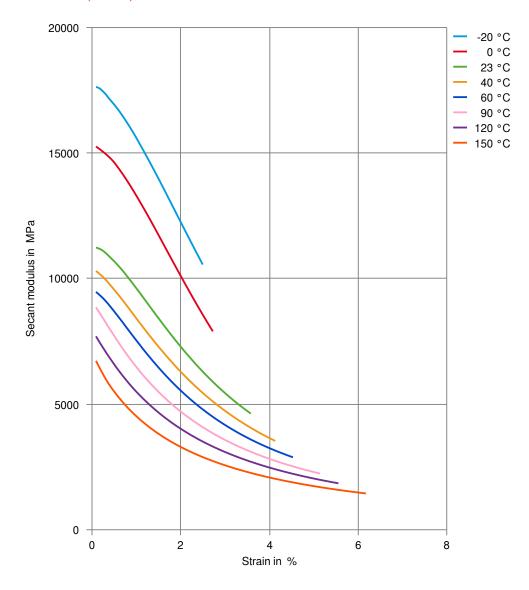
Secant modulus-strain (dry)



Printed: 2025-03-25 Page: 10 of 20



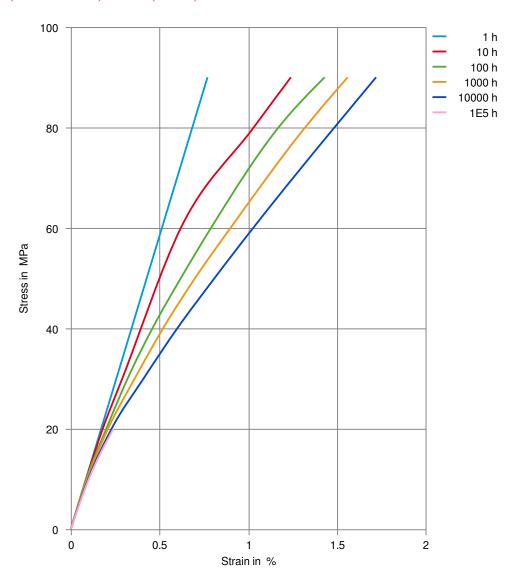
Secant modulus-strain (cond.)



Printed: 2025-03-25 Page: 11 of 20



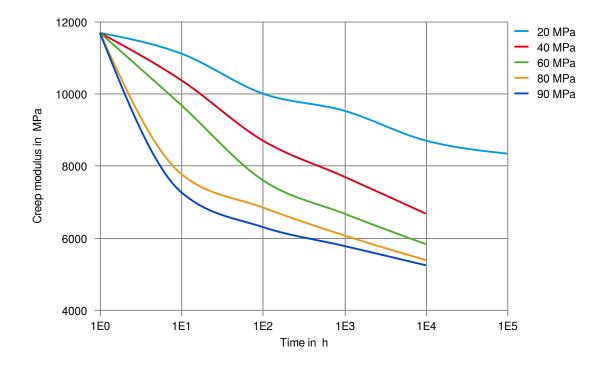
Stress-strain (isochronous) 23°C (cond.)



Printed: 2025-03-25 Page: 12 of 20



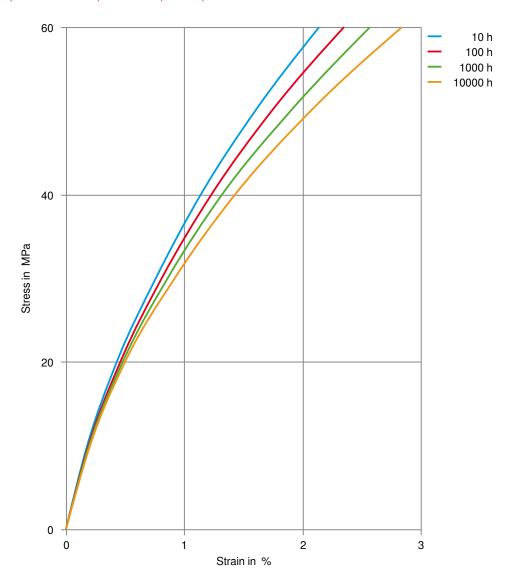
Creep modulus-time 23°C (cond.)



Printed: 2025-03-25 Page: 13 of 20



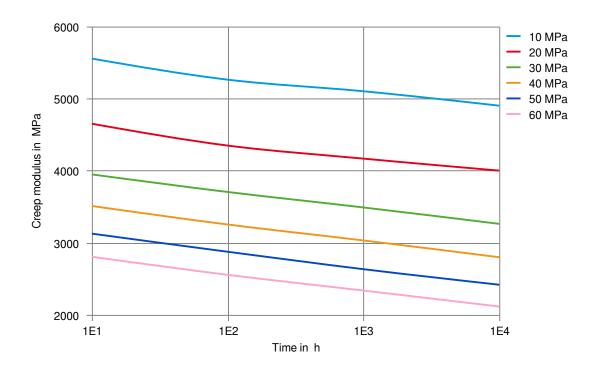
Stress-strain (isochronous) 140°C (cond.)



Printed: 2025-03-25 Page: 14 of 20



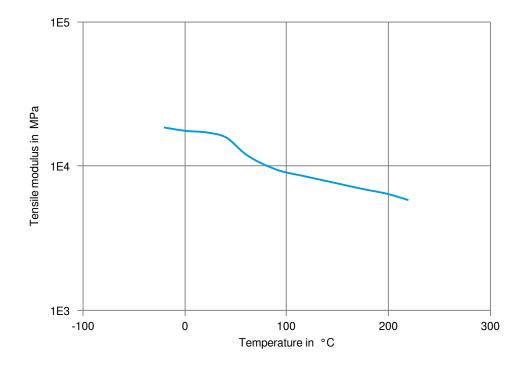
Creep modulus-time 140°C (cond.)



Printed: 2025-03-25 Page: 15 of 20



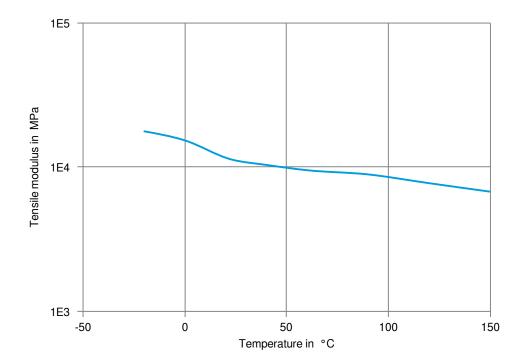
Tensile modulus-temperature (dry)



Printed: 2025-03-25 Page: 16 of 20



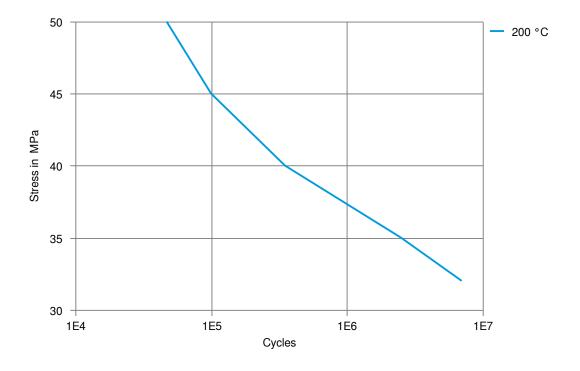
Tensile modulus-temperature (cond.)



Printed: 2025-03-25 Page: 17 of 20



Tensile Fatigue, 10Hz, R=0.1 @ 2mm (dry)



Printed: 2025-03-25 Page: 18 of 20



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
- X Hydrochloric Acid (36% by mass), 23°C
- X Nitric Acid (40% by mass), 23°C
- X Sulfuric Acid (38% by mass), 23°C
- X Sulfuric Acid (5% by mass), 23°C
- X Chromic Acid solution (40% by mass), 23°C

Bases

- X 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
- ✓ Motor oil OS206 304 Ref.Eng.Oil, ISP, 135°C
- ✓ Hydraulic oil Pentosin CHF 202, 125°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
- ✓ Diesel EN 590, 100°C

Printed: 2025-03-25 Page: 19 of 20



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
- X Zinc Chloride solution (50% by mass), 23°C

Other

- ✓ Ethyl Acetate, 23°C
- X Hydrogen peroxide, 23°C
- ✓ DOT No. 4 Brake fluid, 130°C
- ✓ DOT No. 4 Brake fluid, 120°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

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).

Printed: 2025-03-25 Page: 20 of 20

Revised: 2024-12-10 Source: Celanese Materials Database

NOTICE TO USERS: Values shown are based on testing of laboratory test specimens and represent data that fall within the standard range of properties for natural material. These values alone do not represent a sufficient basis for any part design and are not intended for use in establishing maximum, minimum, or ranges of values for specification purposes. Colourants or other additives may cause significant variations in data values. Properties of moulded parts can be influenced by a wide variety of factors including, but not limited to, material selection, additives, part design conditions and environmental exposure. Other than those products expressly identified as medical grade (including by MT® product designation or otherwise), Celanese's products are not intended for use in medical or dental implants. Regardless of any such product designation, any determination of the suitability of a particular material and part design for any use contemplated by the users and the manner of such use is the sole responsibility of the users, who must assure themselves that the material as subsequently processed meets the needs of their particular product or use. To the best of our knowledge, the information contained in this publication is accurate; however, we do not assume any liability whatsoever for the accuracy and completeness of such information. The information contained in this publication should not be construed as a promise or guarantee of specific properties of our products. It is the sole responsibility of the users to investigate whether any existing patents are infringed by the use of the materials mentioned in this publication, we neither suggest nor guarantee that such hazards are the only ones that exist. We recommend that persons intending to rely on any recommendation or to use any equipment, processing technique or material mentioned in this publication should satisfy themselves that they can meet all applicable safety and health standards. We strongly recommend that users seek and adhere to the manufac

© 2025 Celanese or its affiliates. All rights reserved. Celanese®, registered C-ball design and all other trademarks identified herein with ®, TM, SM, unless otherwise noted, are trademarks of Celanese or its affiliates. Fortron is a registered trademark of Fortron Industries LLC. KEPITAL is a registered trademark of Korea Engineering Plastics Company, Ltd.