Crastin® LW9030FR NC010

THERMOPLASTIC POLYESTER RESIN

Common features of 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® LW9030FR NC010 is a 30% glass fiber reinforced, flame retardant polybutylene terephthalate blend for injection molding. It has improved surface aesthetics, excellent dimensional stability and low warpage characteristics.

Product information

Resin Identification	(PBT+ASA)-GF30 FR(17)	ISO 1043
Part Marking Code	>(PBT+ASA)-GF30 FR(17)<	ISO 11469
Infrared spectrum	available	

Rheological properties

Melt mass-flow rate	14	g/10min	ISO 1133
Melt mass-flow rate, Temperature	482	°F	
Melt mass-flow rate, Load	11	lb	
Intrinsic viscosity	0.93		ISO 307, 1628
Molding shrinkage, parallel	0.3	%	ISO 294-4, 2577
Molding shrinkage, normal	0.8	%	ISO 294-4, 2577
Postmolding shrinkage, normal, 48h at 80°C	0.25	%	ISO 294-4
Postmolding shrinkage, parallel, 48h at 80°C	0.1	%	ISO 294-4

Typical mechanical properties

Tensile modulus	1.52E6	psi	ISO 527-1/-2
Tensile stress at break, 5mm/min	18100	psi	ISO 527-1/-2
Tensile strain at break, 5mm/min	1.8	%	ISO 527-1/-2
Flexural strength	25400	psi	ISO 178
Tensile creep modulus, 1h	1.38E6	psi	ISO 899-1
Tensile creep modulus, 1000h	1.07E6	psi	ISO 899-1
Charpy impact strength, 23°C	19	ftlb/in²	ISO 179/1eU
Charpy impact strength, -30°C	19	ftlb/in²	ISO 179/1eU
Charpy notched impact strength, 23°C	3.81	ftlb/in²	ISO 179/1eA
Charpy notched impact strength, -30°C	3.81	ftlb/in²	ISO 179/1eA
Izod notched impact strength, 23°C	3.33	ftlb/in²	ISO 180/1A
Izod notched impact strength, -30°C	3.33	ftlb/in²	ISO 180/1A
Izod impact strength, 23°C	16.6	ftlb/in²	ISO 180/1U
Izod impact strength, -30°C	16.6	ftlb/in²	ISO 180/1U

Crastin® LW9030FR NC010

THERMOPLASTIC POLYESTER RESIN

Thermal properties

Melting temperature, 10°C/min	435	°F	ISO 11357-1/-3
Glass transition temperature, 10°C/min	248	°F	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	374	°F	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	428	°F	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	302	°F	ISO 306
Coefficient of linear thermal expansion (CLTE), parallel	0.14	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	0.444	E-4/°F	ISO 11359-1/-2
Thermal conductivity of melt	0.26	W/(m K)	ISO 22007-2
Specific heat capacity of melt	1850	J/(kg K)	ISO 22007-4
RTI, electrical, 0.75mm	284	°F	UL 746B
RTI, electrical, 1.5mm	284	°F	UL 746B
RTI, electrical, 3.0mm	284	°F	UL 746B
RTI, electrical, 6mm	284	°F	UL 746B
RTI, impact, 0.75mm	257	°F	UL 746B
RTI, impact, 1.5mm	257	°F	UL 746B
RTI, impact, 3.0mm	266	°F	UL 746B
RTI, impact, 6mm	266	°F	UL 746B
RTI, strength, 0.75mm	266	°F	UL 746B
RTI, strength, 1.5mm	266	°F	UL 746B
RTI, strength, 3.0mm	284	°F	UL 746B
RTI, strength, 6mm	284	°F	UL 746B

Flammability

Burning Behav. at 1.5mm nom. thickn.	V-0	class	IEC 60695-11-10
Thickness tested	0.0591	in	IEC 60695-11-10
UL recognition	yes		UL 94
Burning Behav. at thickness h	V-0	class	IEC 60695-11-10
Thickness tested	0.0295	in	IEC 60695-11-10
UL recognition	yes		UL 94
Burning Behav. 5V at thickness h	5VA	class	IEC 60695-11-20
Thickness tested	0.1181	in	IEC 60695-11-20
UL recognition	yes		UL 94
Oxygen index	27	%	ISO 4589-1/-2
Glow Wire Flammability Index, 0.4mm	1760	°F	IEC 60695-2-12
Glow Wire Flammability Index, 0.75mm	1760	°F	IEC 60695-2-12
Glow Wire Flammability Index, 1.0mm	1760	°F	IEC 60695-2-12
Glow Wire Flammability Index, 1.5mm	1760	°F	IEC 60695-2-12
Glow Wire Flammability Index, 2.0mm	1760	°F	IEC 60695-2-12
Glow Wire Flammability Index, 3.0mm	1760	°F	IEC 60695-2-12
Glow Wire Ignition Temperature, 0.75mm	1430	°F	IEC 60695-2-13
Glow Wire Ignition Temperature, 0.4mm	1430	°F	IEC 60695-2-12
Glow Wire Ignition Temperature, 1.0mm	1470	°F	IEC 60695-2-13
Glow Wire Ignition Temperature, 1.5mm	1470	°F	IEC 60695-2-13
Glow Wire Ignition Temperature, 2.0mm	1470	°F	IEC 60695-2-13
Glow Wire Ignition Temperature, 3.0mm	1610	°F	IEC 60695-2-13
Glow Wire Temperature, No Flame, 1mm	1380	°F	IEC 60335-1

Crastin® LW9030FR NC010

THERMOPLASTIC POLYESTER RESIN

Glow Wire Temperature, No Flame, 2mm	1430	°F	IEC 60335-1
Glow Wire Temperature, No Flame, 3mm	1560	°F	IEC 60335-1
FMVSS Class	DNI		ISO 3795 (FMVSS 302)

Electrical properties

Relative permittivity, 100Hz	3.9		IEC 62631-2-1
Relative permittivity, 1MHz	3.6		IEC 62631-2-1
Dissipation factor, 100Hz	25.5	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	150	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	711	kV/in	IEC 60243-1
Comparative tracking index	400		IEC 60112
Electric Strength, Short Time, 1mm	711	V/mil	IEC 60243-1
Electric Strength, Short Time, 2mm	508	V/mil	IEC 60243-1

Physical/Other properties

Humidity absorption, 2mm	0.21	%	Sim. to ISO 62
Water absorption, 2mm	0.72	%	Sim. to ISO 62
Density	0.0567	lb/in^3	ISO 1183
Density of melt	88.6	lb/ft^3	

Injection

Drying Recommended	yes	
Drying Temperature	248	°F
Drying Time, Dehumidified Dryer	2 - 4	h
Processing Moisture Content	≤0.04	%
Melt Temperature Optimum	482	°F
Min. melt temperature	464	°F
Max. melt temperature	500	°F
Mold Temperature Optimum	176	°F
Min. mold temperature	140	°F
Max. mold temperature	266	°F
Hold pressure range	≥8700	psi
Hold pressure time	0.0762	s/mil
Hold Pressure Time (h is the max. wall thickness of the part in mm)	h^2+2	s
Back pressure	as low as possible	psi
Ejection temperature	338	°F

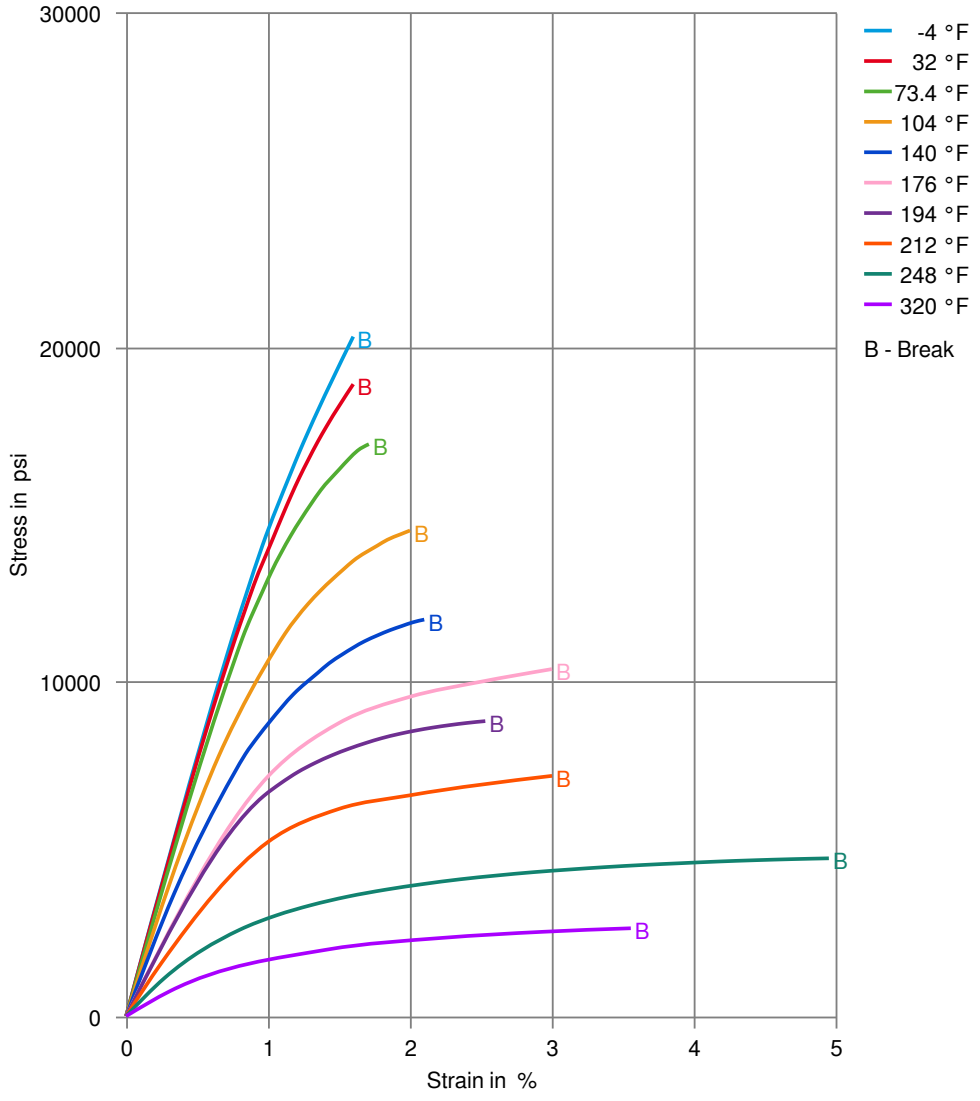
Characteristics

Processing	Injection Molding
Additives	Release agent, Flame retardant
Special characteristics	Flame retardant, Low Warpage

Crastin® LW9030FR NC010

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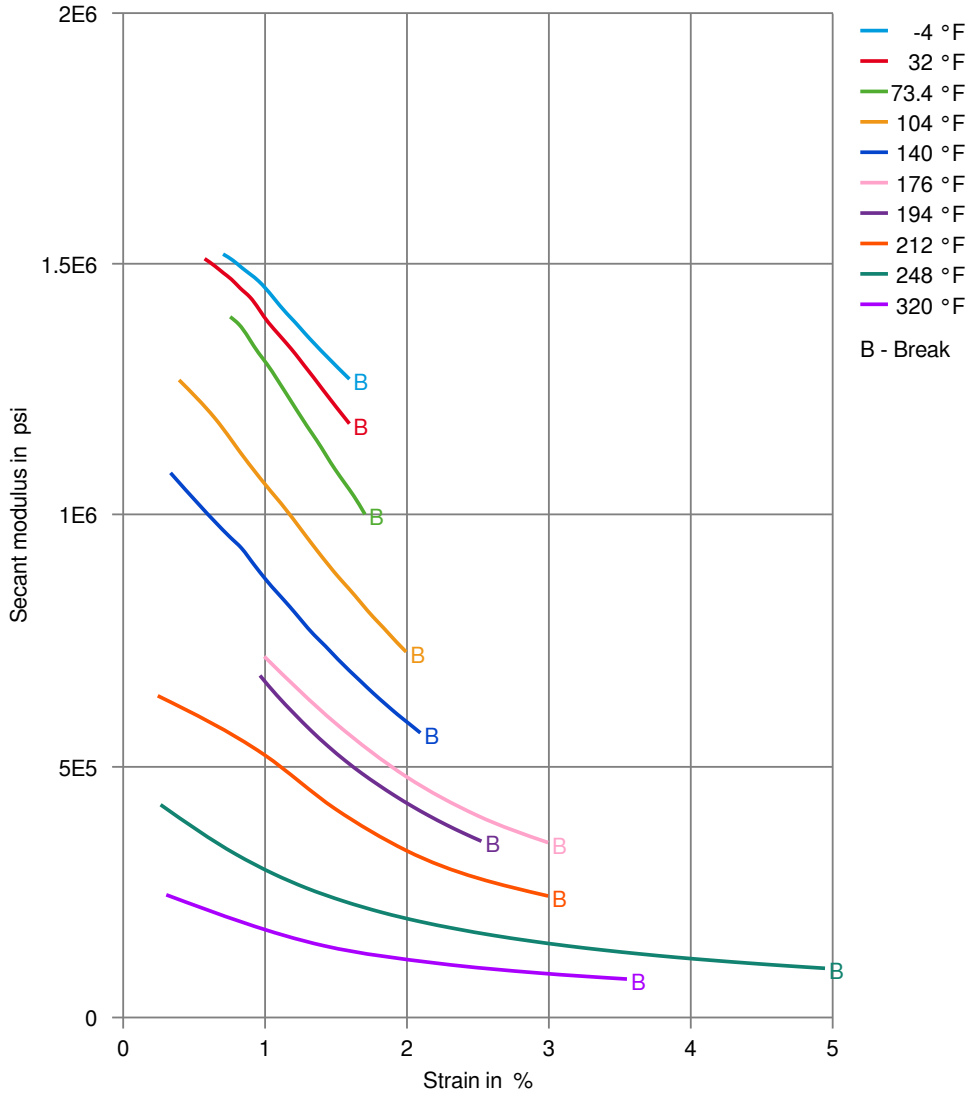
Stress-strain



Crastin® LW9030FR NC010

THERMOPLASTIC POLYESTER RESIN

Secant modulus-strain

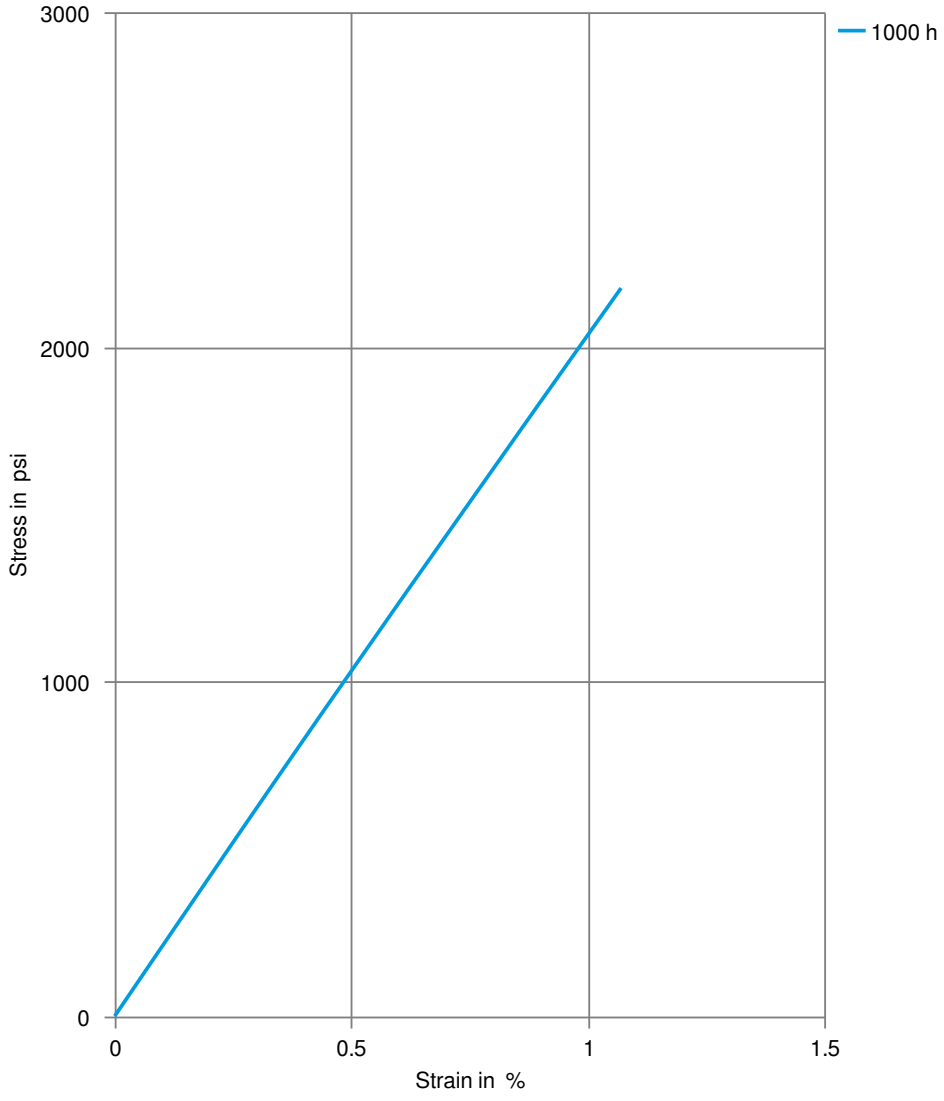


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Crastin® LW9030FR NC010

THERMOPLASTIC POLYESTER RESIN

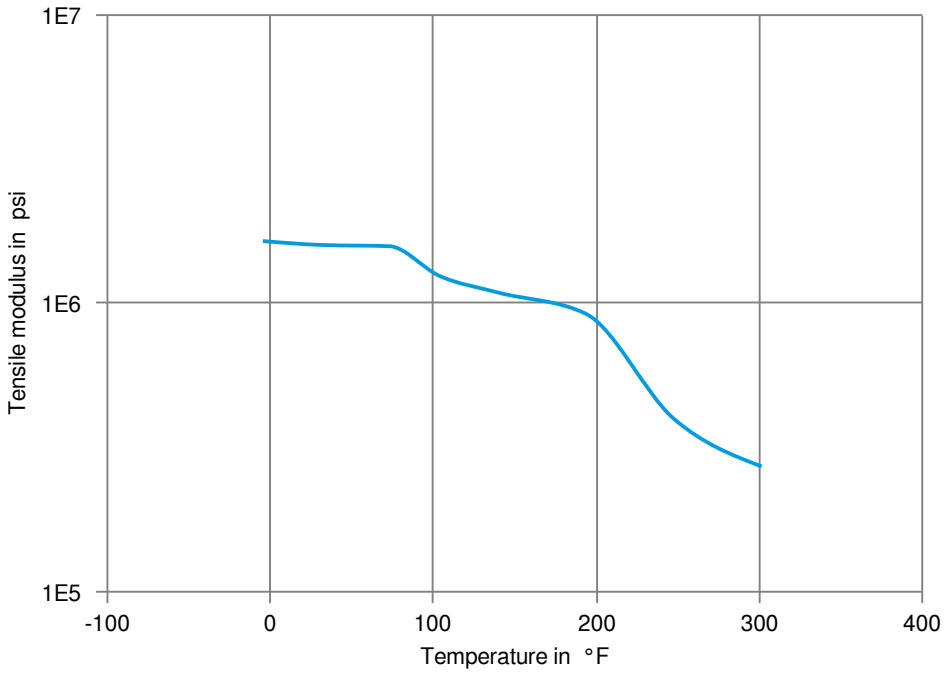
Stress-strain (isochronous) 248 °F



Crastin® LW9030FR NC010

THERMOPLASTIC POLYESTER RESIN

Tensile modulus-temperature



Crastin® LW9030FR NC010

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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

Salt solutions

- ✔ Sodium Chloride solution (10% by mass), 23°C
- ✔ Sodium Hypochlorite solution (10% by mass), 23°C

Crastin® LW9030FR NC010

THERMOPLASTIC POLYESTER RESIN

- ✔ 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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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. Colorants or other additives may cause significant variations in data values. Properties of molded parts can be influenced by a wide variety of factors including, but not limited to, material selection, additives, part design, processing 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. Moreover, there is a need to reduce human exposure to many materials to the lowest practical limits in view of possible adverse effects. To the extent that any hazards may have been 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 manufacturer's current instructions for handling each material they use, and entrust the handling of such material to adequately trained personnel only. Please call the telephone numbers listed for additional technical information. Call Customer Services for the appropriate Materials Safety Data Sheets (MSDS) before attempting to process our products.
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