

DuPont™ Sorona® 3301 NC010

RENEWABLY SOURCED™ THERMOPLASTIC POLYMER

Product Information

DuPont™ Sorona® EP thermoplastic polymers contain between 20% and 37% renewably sourced material (by weight) derived from corn. The new material exhibits performance and molding characteristics similar to high-performance PBT (polybutylene terephthalate).

In addition to good strength and stiffness, early tests indicate improved surface appearance, lower warpage, and good dimensional stability, making it very attractive in a range of uses for automotive parts and components, electrical and electronics systems as well as industrial and consumer products.

Sorona® EP thermoplastic polymer starts with the same basic polymer chemistry as Sorona® polymer used for fibers but through proprietary formulation technology, further enhancements are added to create high-performance resins suitable for engineering plastics applications.

Sorona® 3301 NC010 is an unreinforced polytrimethylene terephthalate resin containing 35% renewably sourced ingredients by weight with superior surface appearance in ambient temperature conditions.

General information	Value	Unit	Test Standard
Resin Identification	PTT	-	ISO 1043
Part Marking Code	>PTT<	-	ISO 11469
Rheological properties	Value	Unit	Test Standard
Moulding shrinkage, parallel	1.3	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.4	%	ISO 294-4, 2577
Mechanical properties	Value	Unit	Test Standard
Tensile Modulus	2400	MPa	ISO 527-1/-2
Yield stress	60	MPa	ISO 527-1/-2
Yield strain	5.5	%	ISO 527-1/-2
Nominal strain at break	15	%	ISO 527-1/-2
Strain at Break, 23°C, 50mm/min	15	%	ISO 527-1/-2
Flexural Modulus	2400	MPa	ISO 178
Tensile creep modulus			ISO 899-1
1h	2300	MPa	
1000h	1500	MPa	
Charpy notched impact strength, 23°C	4	kJ/m²	ISO 179/1eA
Izod notched impact strength, 23°C	4.5	kJ/m²	ISO 180/1A
Thermal properties	Value	Unit	Test Standard
Melting temperature, 10°C/min	228	°C	ISO 11357-1/-3
Temp. of deflection under load			ISO 75-1/-2
1.8 MPa	60	°C	
0.45 MPa	125	°C	
Thermal conductivity of melt	0.2	W/(m K)	-
Spec. heat capacity of melt	2100	J/(kg K)	-
RTI, electrical			UL 746B
0.75mm	50	°C	
1.5mm	50	°C	
3mm	50	°C	
RTI, impact			UL 746B
0.75mm	50	°C	
1.5mm	50	°C	
3mm	50	°C	
RTI, strength			UL 746B
0.75mm	50	°C	
1.5mm	50	°C	
3mm	50	°C	
Flammability	Value	Unit	Test Standard
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

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Burning Behav. at thickness h	HB	class	IEC 60695-11-10
Thickness tested	0.75	mm	IEC 60695-11-10
UL recognition	yes	-	UL 94
Glow Wire Flammability Index			IEC 60695-2-1/2
0.75mm	750	°C	
1.5mm	750	°C	
3mm	650	°C	
Glow Wire Ignition Temperature			IEC 60695-2-1/3
0.75mm	775	°C	
1.5mm	675	°C	
3mm	675	°C	
Flammability, 3.0mm	HB	-	IEC 60695-11-10
Electrical properties	Value	Unit	Test Standard
Comparative tracking index	575	-	IEC 60112
Other properties	Value	Unit	Test Standard
Density	1320	kg/m³	ISO 1183
Density of melt	1120	kg/m³	-
Injection	Value	Unit	Test Standard
Drying Recommended	yes	-	-
Drying Temperature	120	°C	-
Drying Time, Dehumidified Dryer	2 - 4	h	-
Processing Moisture Content	≤0.02	%	-
Melt Temperature Optimum	260	°C	-
Min. melt temperature	250	°C	-
Max. melt temperature	270	°C	-
Mold Temperature Optimum	100	°C	-
Min. mould temperature	80	°C	-
Max. mould temperature	110	°C	-
Back pressure	As low as possible		-
Ejection temperature	170	°C	-
Characteristics			
Processing	• Injection Moulding		
Delivery form	• Pellets		
Additives	• Release agent		

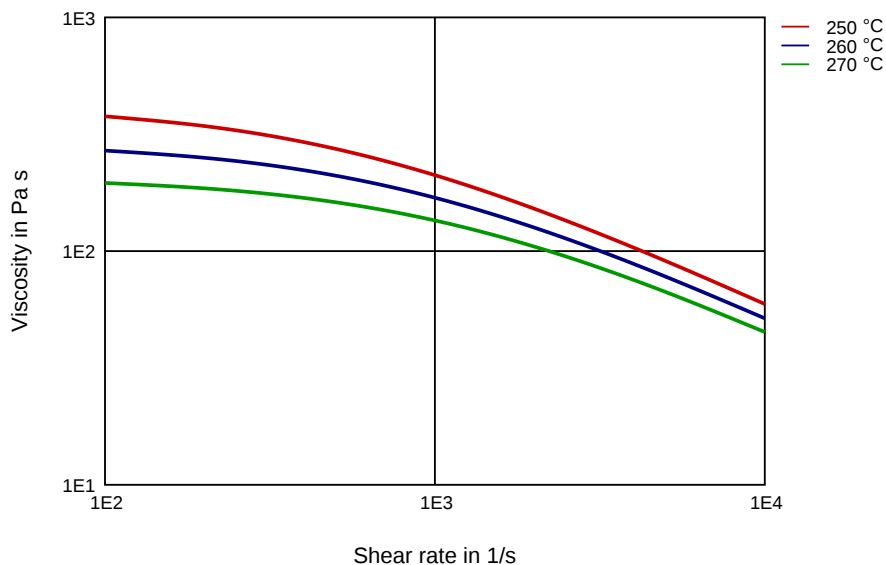


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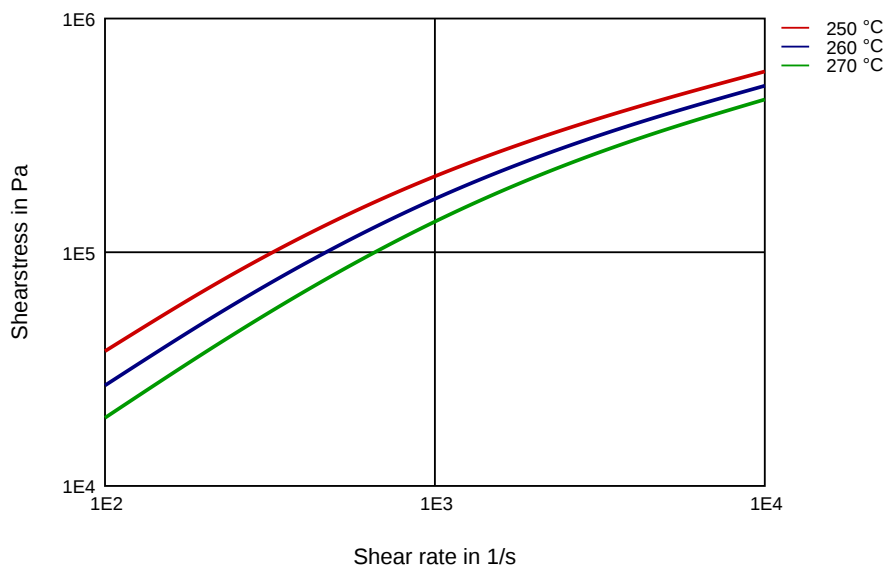
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Diagrams

Viscosity-shear rate



Shearstress-shear rate



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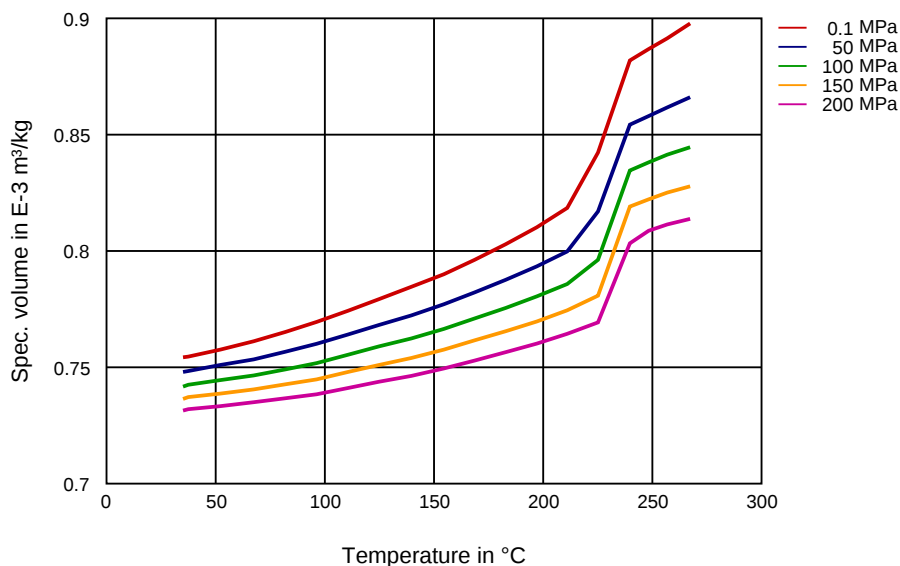
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Specific volume-temperature (pvT)



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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)
- ✗ Motor oil OS206 304 Ref.Eng.Oil, ISP (135°C)
- ✗ Automatic hypoid-gear oil Shell Donax TX (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)

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- ✗ 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)

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)

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).

Contact DuPont for Material Safety Data Sheet, general guides and/or additional information about ventilation, handling, purging, drying, etc. ISO Mechanical properties measured at 4mm (Hytrel® measured at 2 mm), IEC Electrical properties measured at 2mm, all ASTM properties measured at 3.2mm, and test temperatures are 23°C unless otherwise stated.

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