DuPont™ Sorona® 3015G 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® 3015G NC010 is a 15% glass reinforced PTT resin containing 31% renewably sourced ingredients by weight (37% based on polymer only) with good strength, stiffness and low warpage and superior surface appearance in ambient temperature conditions.

General information	Value	Unit	Test Standard
Resin Identification	PTT-GF15	-	ISO 1043
Part Marking Code	>PTT-GF15<	-	ISO 11469
Rheological properties	**Value**	**Unit**	**Test Standard**
Melt volume-flow rate	13	cm^3/10min	ISO 1133
Temperature	250	°C	ISO 1133
Load	2.16	kg	ISO 1133
Moulding shrinkage, parallel	0.2	%	ISO 294-4, 2577
Moulding shrinkage, normal	0.7	%	ISO 294-4, 2577
Mechanical properties	**Value**	**Unit**	**Test Standard**
Tensile Modulus	6500	MPa	ISO 527-1/-2
Stress at break	125	MPa	ISO 527-1/-2
Strain at break	3	%	ISO 527-1/-2
Flexural Modulus	5800	MPa	ISO 178
Flexural Strength	190	MPa	ISO 178
Poisson's ratio	0.35	-	ISO 527-1/-2
Charpy impact strength			ISO 179/1eU
23°C	30	kJ/m^2	
-30°C	30	kJ/m^2	
Charpy notched impact strength			ISO 179/1eA
23°C	5.5	kJ/m^2	
-30°C	6	kJ/m^2	
Thermal properties	**Value**	**Unit**	**Test Standard**
Melting temperature, 10°C/min	227	°C	ISO 11357-1/-3
Temp. of deflection under load			ISO 75-1/-2
1.8 MPa	200	°C	
0.45 MPa	223	°C	
Coeff. of linear therm. expansion, parallel	15	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion			ISO 11359-1/-2
normal	89	E-6/K	
Normal, -40-23°C	74	E-6/K	
Normal, 55-160°C	132	E-6/K	
Parallel, -40-23°C	34	E-6/K	
Parallel, 55-160°C	22	E-6/K	
RTI, electrical			UL 746B
0.75mm	50	°C	
1.5mm	50	°C	
3mm	50	°C	

To find out more, visit DuPont Performance Polymers or contact nearest DuPont location.

North America
Tel: +1 302 999-4592
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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
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
Oxygen index	19	%	ISO 4589-1/-2
Glow Wire Flammability Index			IEC 60695-2-1/2
0.75mm	700	°C	
1.5mm	650	°C	
3mm	700	°C	
Glow Wire Ignition Temperature			IEC 60695-2-1/3
0.75mm	725	°C	
1.5mm	675	°C	
3mm	725	°C	
Flammability, 3.0mm	HB	-	IEC 60695-11-10
FMVSS Class	B	-	ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	39	mm/min	ISO 3795 (FMVSS 302)
Electrical properties	**Value**	**Unit**	**Test Standard**
Relative permittivity			IEC 60250
100Hz	3.9	-	
1MHz	3.7	-	
Dissipation factor, 100Hz	15	E-4	IEC 60250
Volume resistivity	>1E13	Ohm*m	IEC 60093
Surface resistivity	1E14	Ohm	IEC 60093
Electric strength	36	kV/mm	IEC 60243-1
Comparative tracking index	250	-	IEC 60112
Electric Strength, Short Time			IEC 60243-1
1mm	36	kV/mm	
2mm	27	kV/mm	
Other properties	**Value**	**Unit**	**Test Standard**
Density	1400	kg/m³	ISO 1183
Density of melt	1250	kg/m³	-
Water Absorption, Immersion 24h	0.08	%	Sim. to ISO 62
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	175	°C	-

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Characteristics			
Processing	• Injection Moulding		
Delivery form	• Pellets		
Additives	• Release agent		
Regional Availability	• North America • Europe	• Asia Pacific • South and Central America	• Near East/Africa • Global

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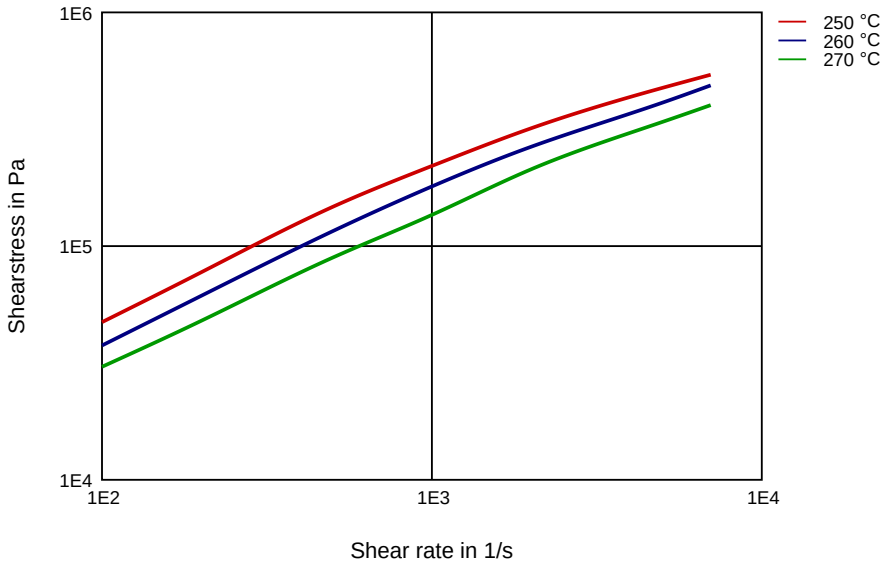
Diagrams

Shearstress-shear rate



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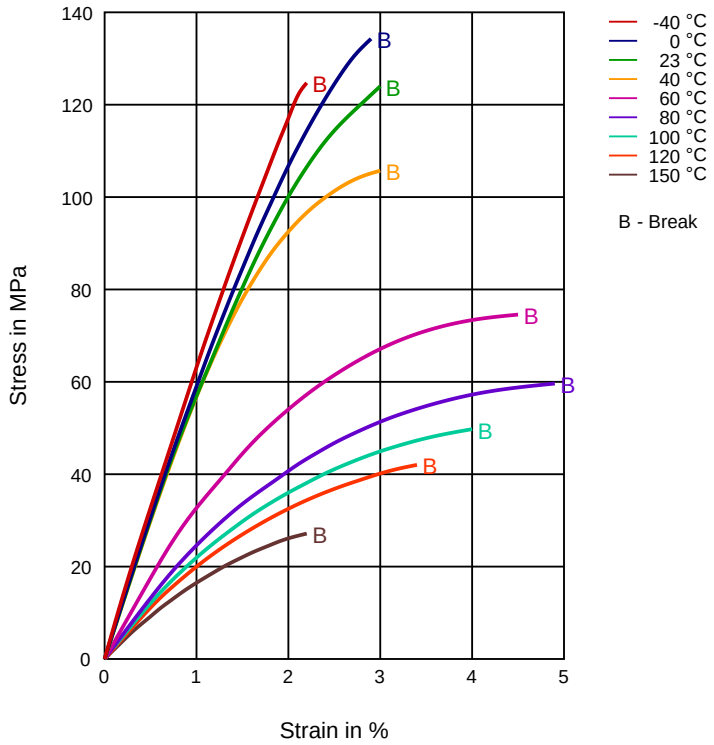
Stress-strain



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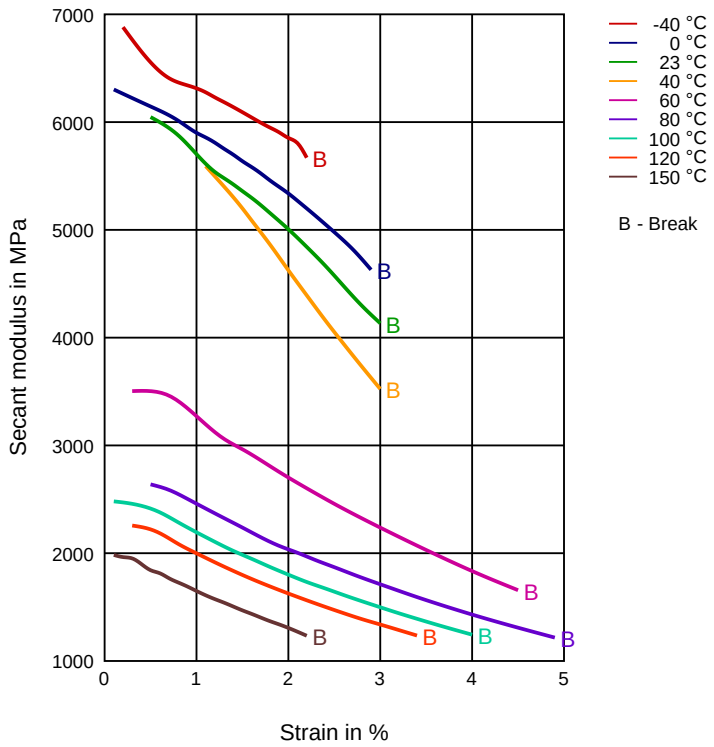
Secant modulus-strain



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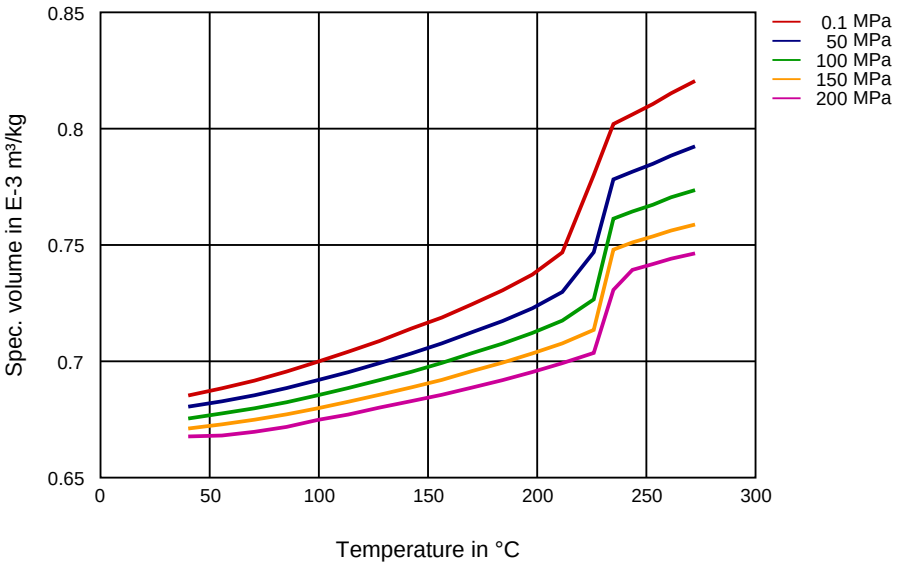
Specific volume-temperature (pvT)



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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.

The information set forth herein is furnished free of charge and is based on technical data that DuPont believes to be reliable and falls within the normal range of properties. It is intended for use by persons having technical skill, at their own discretion and risk. This data should not be used to establish specification limits nor used alone as the basis of design. Handling precaution information is given with the understanding that those using it will satisfy themselves that their particular conditions of use present no health or safety hazards. Since conditions of product use and disposal are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information. As with any product, evaluation under end-use conditions prior to specification is essential. Nothing herein is to be taken as a

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license to operate or a recommendation to infringe on patents. Caution: Do not use in medical applications involving permanent implantation in the human body. For other medical applications, discuss with your DuPont customer representative and read Medical Caution H-50103-5.

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