NORYL GTX* Resin GTX678

Americas: COMMERCIAL

NORYL GTX678 resin is a high performance blend of PPE/PA that exhibits an excellent balance on non-halogenated flame retardance, conductivity, ductility, and high-heat resistance. This grade can be electro-statically painted or powder coated without the need for a conductive primer.

TYPICAL PROPERTIES [1]	TYPICAL VALUE	UNIT	STANDARD
MECHANICAL			
Tensile Stress, yld, Type I, 50 mm/min	58	MPa	ASTM D 638
Tensile Stress, brk, Type I, 50 mm/min	52	MPa	ASTM D 638
Tensile Strain, yld, Type I, 50 mm/min	7	%	ASTM D 638
Tensile Strain, brk, Type I, 50 mm/min	12	%	ASTM D 638
Tensile Modulus, 5 mm/min	2900	MPa	ASTM D 638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	95	MPa	ASTM D 790
Flexural Modulus, 1.3 mm/min, 50 mm span	2600	MPa	ASTM D 790
Tensile Stress, yield, 50 mm/min	58	MPa	ISO 527
Tensile Stress, break, 50 mm/min	52	MPa	ISO 527
Tensile Strain, yield, 50 mm/min	7	%	ISO 527
Tensile Strain, break, 50 mm/min	12	%	ISO 527
Tensile Modulus, 1 mm/min	2900	MPa	ISO 527
Flexural Stress, yield, 2 mm/min	95	MPa	ISO 178
Flexural Modulus, 2 mm/min	2600	MPa	ISO 178
IMPACT			
Izod Impact, notched, 23°C	100	J/m	ASTM D 256
Izod Impact, notched, -30°C	70	J/m	ASTM D 256
Instrumented Impact Total Energy, 23°C	60	J	ASTM D 3763
Izod Impact, notched 80*10*4 +23°C	10	kJ/m²	ISO 180/1A
Izod Impact, notched 80*10*4 -30°C	7	kJ/m²	ISO 180/1A
Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm	12	kJ/m²	ISO 179/1eA
THERMAL			
Vicat Softening Temp, Rate B/50	198	°C	ASTM D 1525
HDT, 0.45 MPa, 3.2 mm, unannealed	195	°C	ASTM D 648
CTE, -40°C to 40°C, flow	7.8E-05	1/°C	ASTM E 831
CTE, -40°C to 40°C, xflow	8.E-05	1/°C	ASTM E 831
Specific Heat	1.4	J/g-°C	ASTM C 351

1) Typical values only. Variations within normal tolerances are possible for various colours.All values are measured at least after 48 hours storage at 230C/50% relative humidity.
All properties, except the melt volume rate are measured on injection moulded samples.
All samples are prepared according to ISO 294.

2) Only typical data for material selection purpose.Not to be used for part or tool design.
3) This rating is not intended to reflect hazards presented by this or any other material under actual fire conditions.
4) Own measurement according to UL.
5) Measurements made from laboratory test coupon. Actual shrinkage may vary outside of range due to differences in processing conditions, equipment, part geometry and tool design. It is recommended that mold shrinkage studies be performed with surrogate or legacy tooling prior to cutting tools for new molded article.
6) Needs hard coat to consistently pass 60 sec Vertical Burn.

Source, GMD, Last Update:06/29/2006

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THERMAL			
Thermal Conductivity	0.2	W/m-°C	ASTM C 177
CTE, 23°C to 60°C, flow	8.3E-05	1/°C	ISO 11359-2
CTE, 23°C to 60°C, xflow	8.5E-05	1/°C	ISO 11359-2
Ball Pressure Test, 125°C +/- 2°C	PASS	-	IEC 60695-10-2
Vicat Softening Temp, Rate B/50	197	°C	ISO 306
Vicat Softening Temp, Rate B/120	195	°C	ISO 306
HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm	191	°C	ISO 75/Bf
PHYSICAL			
Specific Gravity	1.12	-	ASTM D 792
Mold Shrinkage, flow, 3.2 mm (5)	1.3 - 1.5	%	SABIC Method
Melt Flow Rate, 300°C/5.0 kgf	7.8	g/10 min	ASTM D 1238
Density	1.12	g/cm³	ISO 1183
Water Absorption, (23°C/sat)	4	%	ISO 62
Moisture Absorption (23°C / 50% RH)	0.5	%	ISO 62
Melt Volume Rate, MVR at 300°C/5.0 kg	7	cm³/10 min	ISO 1133
ELECTRICAL			
Volume Resistivity	4.E+03	Ohm-cm	ASTM D 257
FLAME CHARACTERISTICS			
UL Compliant, 94V-1 Flame Class Rating (3)(4)	1.5	mm	UL 94 by SABIC-IP
UL Compliant, 94V-0 Flame Class Rating (3)(4)	2	mm	UL 94 by SABIC-IP
UL Compliant, 94-5VA Rating (3)(4)	2	mm	UL 94 by SABIC-IP
UL Compliant, 94-5VB Rating (3)(4)	2	mm	UL 94 by SABIC-IP
Glow Wire Flammability Index 960°C, passes at	2	mm	IEC 60695-2-12
Glow Wire Ignitability Temperature, 1.0 mm	800	°C	IEC 60695-2-13

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PROCESSING PARAMETERS	TYPICAL VALUE	UNIT
Injection Molding		
Drying Temperature	95 - 105	°C
Drying Time	3 - 4	hrs
Drying Time (Cumulative)	8	hrs
Maximum Moisture Content	0.07	%
Minimum Moisture Content	0.02	%
Melt Temperature	275 - 300	°C
Nozzle Temperature	275 - 300	°C
Front - Zone 3 Temperature	270 - 300	°C
Middle - Zone 2 Temperature	265 - 300	°C
Rear - Zone 1 Temperature	260 - 300	°C
Mold Temperature	65 - 95	°C
Back Pressure	0.3 - 1.4	MPa
Screw Speed	20 - 100	rpm
Shot to Cylinder Size	30 - 50	%
Vent Depth	0.013 - 0.038	mm
Profile Extrusion		
Drying Temperature	105 - 110	°C
Drying Time	8	hrs
Drying Time (Cumulative)	24	hrs
Maximum Moisture Content	0.03	%
Melt Temperature	245 - 260	°C
Barrel - Zone 1 Temperature	245 - 260	°C
Barrel - Zone 2 Temperature	245 - 260	°C
Barrel - Zone 3 Temperature	245 - 260	°C
Barrel - Zone 4 Temperature	245 - 260	°C
Adapter Temperature	245 - 260	°C
Die Temperature	245 - 260	°C
Calibrator Temperature	35 - 75	°C

• Polystyrene and acrylic regrind are effective purging Materials. Use temperature range appropriate for particular purging resin.

• Regrind must also be dried. Maximum 25% regrind.

• Dry at recommended temperatures and times for optimum performance. Overdrying can cause loss of physical properties and/or create appearance defects. Do not exceed recommended basic drying time and temperature above or:

- 4-8 hrs at 95°C (200°F), 10 hrs max
- 6-12 hrs at 80°C (175°F), 16 hrs max
- 8-16 hrs at 65°C (150°F), 24 hrs max

• AVOID air circulating tray ovens. Moisture levels in heated ambient air can exceed moisture level in the resin itself, causing moisture ABSORPTION not drying.

• Avoid melt temperature in excess of 300°C (575°F) and residence times over 6-8 minutes (may affect properties and/or appearance).

• Nozzle temperature control to assist in elimination of drool premature freeze-off.

• Shot sizes in excess of 50% barrel capacity can lead to difficulties in providing a consistent, homogenous plastic melt.

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