SOLUTIONS FOR AUTOMOTIVE RAIL EXTENSIONS

NORYL GTX™ RESIN

Rail extensions play a crucial role in energy absorption of frontal & rear crashes.

NORYL™ and NORYL GTX™ resins can offer unique solutions to the Automotive industry.

NORYL™ resin is an amorphous blend of polyphenylene ether (PPE) and high impact polystyrene (HIPS). This blend combines the inherent benefits of PPE (robust FR, heat resistance, excellent long-term dimensional stability, low creep, good impact resistance) with the benefits of HIPS (processability and flow).

NORYL GTX™ resin is a semi-crystalline alloy of poly-phenylene ether (PPE) and polyamide (PA). This alloy combines the inherent benefits of PPE (robust FR, heat resistance, excellent long-term dimensional stability, low creep, good impact resistance) with the benefits of PA (chemical and impact resistance and flow).

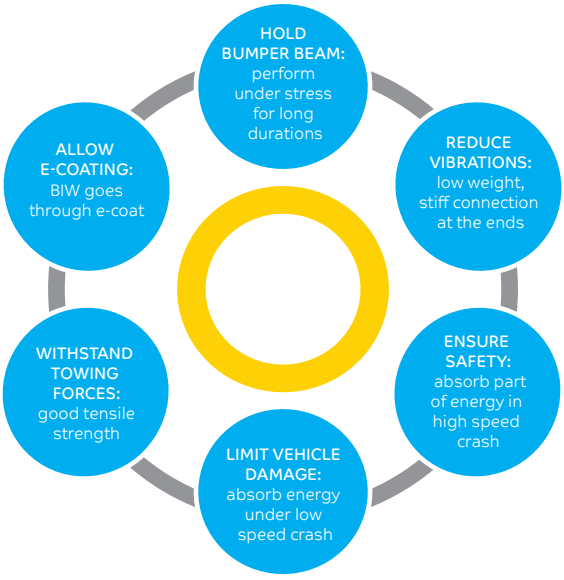
The result is a chemically resistant material with the stiffness, impact resistance and heat performance required for e-coat and on-line painting. The low density of unfilled NORYL GTX resin can provide part-weight savings of up to 25% over glass or mineral filled resins.

Additionally, NORYL GTX resin may provide sustainability benefits due to its light weight and may be considered for exterior body panels, in-and-on-line painted parts, and EV battery protection.

POTENTIAL BENEFITS OF NORYL GTX™ RESIN

- Weight reduction up to 60% vs. steel
- Ease of assembly
- Enhanced front crash performance vs steel
- Ability to consolidate multiple rail extension to address IIHS and EURONCAP requirements for SORB and MPDB impacts

MAJOR FUNCTIONS OF RAIL EXTENSIONS



VALUE PROPOSITION

- Stiffness, impact + heat performance required for on-line painting
- Class A surface
- Low warpage + long-term dimensional stability
- Low water absorption
- Excellent chemical resistance
- Low density: can provide part-weight savings of up to 25% vs glass or mineral filled resins

KEY PROPERTIES	NORYL GTX964W RESIN
MECHANICAL	
Tensile Strain, brk, Type I, 50 mm/min (ASTM D 638)	56%
Tensile Stress, break, 50 mm/min (ISO 527)	45 MPa
Tensile Stress, yld, Type I, 50 mm/min (ASTM D 638)	44 MPa
Flexural Modulus, 2.6 mm/min, 100 mm span (ASTM D 790)	1830 MPa
IMPACT	
Instrumented Impact Total Energy, 23°C (ASTM D 3763)	41 J
Izod Impact, notched, 23°C (ASTM D 256)	528 J/m
Izod Impact, notched 80*10*4 -30°C (ISO 180/1A)	20 kJ/m^2
THERMAL	
Vicat Softening Temp, Rate B/120 (ISO 306)	180 °C
HDT, 0.45 MPa, 6.4 mm, unannealed (ASTM D 648)	185 °C
PHYSICAL	
Water Absorption, 50% RH, equilib (ASTM D 570)	1.19%
Specific Gravity (ASTM D 792)	1.08 -
Melt Volume Rate, MVR at 280°C/2.16 kg (ISO 1133)	7 cm^3/10 min

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