

ELECTRIC VEHICLE BATTERY MODULES

NORYL™ NHP6011 AND NHP6012 RESIN SOLUTIONS

High modulus, thin wall glass-filled V-0 solutions

SABIC introduces two new grades of NORYL resin – NHP6011 and NHP6012 – developed to help address certain new requirements for electric vehicle battery modules and housings.

The NORYL resin portfolio for electric vehicles can be used for battery-related applications, combining the inherent benefits of polyphenylene ether (PPE) resin (good electrical properties, excellent hydrolytic stability, long-term dimensional stability, low specific gravity and acid resistance) with the impact resistance, flow, and processability of high impact polystyrene (HIPS).

With non-halogenated flame-retardants, these grades achieve robust, thin-wall UL V-0 rating along with the stiffness and impact resistance to enable the design of lighter, thinner and more crash resistant battery modules.



Key Trends: EV battery modules

- Robust V-0 flame resistance to meet safety standards
- Light weight, to help increase range
- Higher energy density
- Thinner wall design / part consolidation
- Long-term durability and dimensional stability

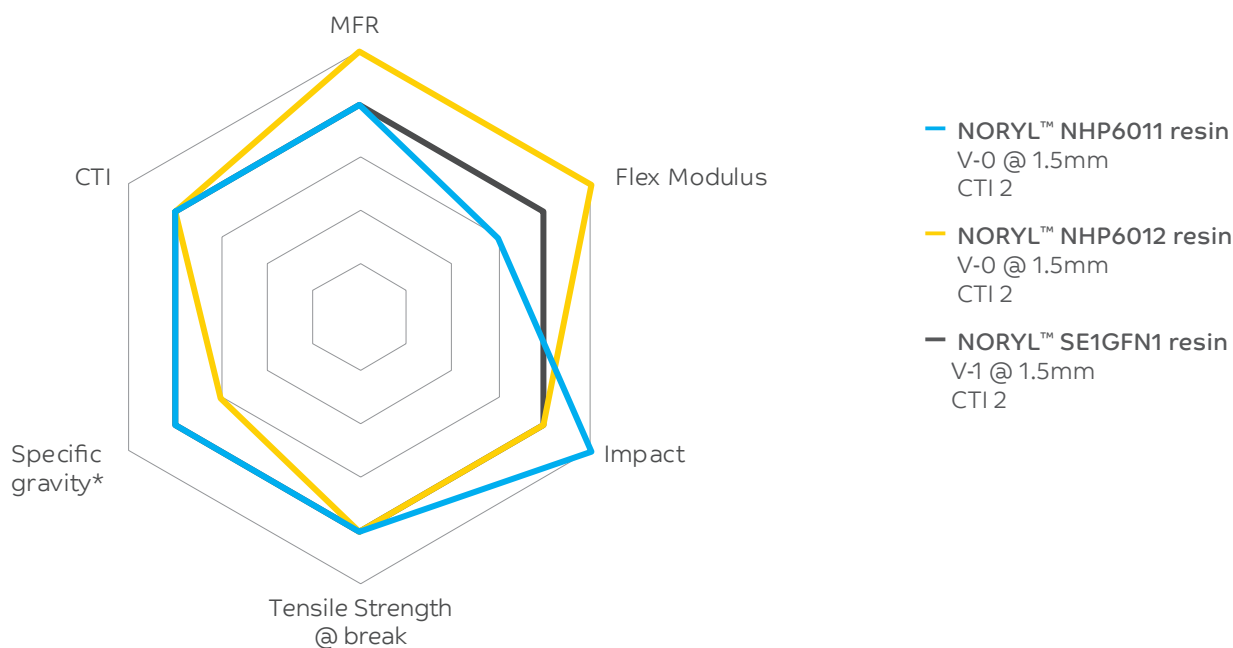
Typical Industry Requirements

- Flame retardancy: UL 94 V-0 rated
- Glass fiber reinforced: high stiffness and low CTE
- Low specific gravity
- Low warpage
- Dielectric properties: CTI 2
- Chemical resistance to Li-Ion electrolytes
- Good creep resistance under constant load

Target Applications

- Battery module cell frames / retainers
- Battery pack top covers





* Specific gravity: lower score represents higher specific gravity

NORYL Resin Grades:			SE1GFN1 (APAC)	NHP6012	NHP6011
			GF 10%	GF 10%	GF 8%
Property	Norm	Unit			
MVR 280°C/ 10Kg	ASTM D1238	cc/10min	16	25	16
HDT 1.8MPa, 3.2mm	ASTM D648	° C	133	130	135
INI, 5.5J, RT	ASTM D256	KJ/m ²	7	7	13
Tensile stress @break	ASTM D638	MPa	85	86	75
Flexural Modulus	ASTM D790	MPa	3920	4100	3200
UL V@ 1.5mm 23C/48hrs	UL-94	15 bars	V-1	V-0	V-0
Specific gravity	ASTM D792	g/cm ²	1.16	1.19	1.16
CTI	ASTM D3638	PLC	2	2	2

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