



NORYL™ Resin FNH2160
Americas: COMMERCIAL

Non brominated non chlorinated flame retarded NORYL resin for structural foam applications. 80C HDT. All values at 20% weight reduction.

TYPICAL PROPERTIES ¹	TYPICAL VALUE	Unit	Standard
MECHANICAL			
FOAM - MECHANICAL 6.4 mm Wt Reduction	20	%	-
Tensile Stress, yield, 6.35 mm	360	kgf/cm ²	ASTM D 638
Tensile Stress, break, 6.35 mm	340	kgf/cm ²	ASTM D 638
Tensile Strain, break, 6.35 mm	12	%	ASTM D 638
Flexural Stress, yield, 6.4 mm	710	kgf/cm ²	ASTM D 790
Flexural Modulus, 6.4 mm	22900	kgf/cm ²	ASTM D 790
IMPACT			
FOAM - IMPACT 6.4 mm Wt Reduction	20	%	-
Izod Impact, unnotched, 23°C, 6.4mm	36	cm-kgf/cm	ASTM D 4812
Instrumented Impact Energy @ peak, 23°C	295	cm-kgf	ASTM D 3763
THERMAL			
FOAM - THERMAL 6.4mm Wt Reduction	20	%	-
HDT, 0.45 MPa, 6.4 mm, unannealed	93	°C	ASTM D 648
HDT, 1.82 MPa, 6.4 mm, unannealed	82	°C	ASTM D 648
Relative Temp Index, Elec	65	°C	UL 746B
Relative Temp Index, Mech w/impact	65	°C	UL 746B
Relative Temp Index, Mech w/o impact	65	°C	UL 746B
PHYSICAL			
FOAM - PHYSICAL 6.4mm Wt Reduction	20	%	-
Specific Gravity	1.12	-	ASTM D 792
Specific Gravity, foam molded	0.88	-	ASTM D 792
Water Absorption, 24 hours	0.07	%	ASTM D 570
Mold Shrinkage, flow, 6.4 mm (5)	0.5 - 0.8	%	SABIC Method
Melt Volume Rate, MVR at 280°C/5.0 kg	36	cm ³ /10 min	ISO 1133

(1) Typical values only. Variations within normal tolerances are possible for various colors. All values are measured after at least 48 hours storage at 23°C/50% relative humidity. All properties, except the melt volume and melt flow rates, are measured on injection molded samples. All samples tested under ISO test standards are prepared according to ISO 294.

(2) Only typical data for selection purposes. 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) Internal measurements according to UL standards.

(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 updated:

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TYPICAL PROPERTIES ¹	TYPICAL VALUE	Unit	Standard
FLAME CHARACTERISTICS			
FOAM - Flame Class Minimum Density	0.85	g/cm ³	-
UL Recognized, 94V-1 Flame Class Rating (3)	3	mm	UL 94
UL Recognized, 94V-0 Flame Class Rating (3)	6	mm	UL 94
UL Recognized, 94-5VA Rating (3)	3.9	mm	UL 94

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PROCESSING PARAMETERS	TYPICAL VALUE	Unit
Structural Foam Molding		
Blowing Agent, Physical System	Nitrogen Gas	-
Concentration Range (Blowing Agent)	1 - 3	%
Recommended Concentration (Blowing Agent)	2	%
Drying Temperature (Resin)	70 - 80	°C
Drying Time (Resin)	2 - 4	hrs
Drying Time (Resin, Cumulative)	8	hrs
Melt Temperature	270 - 310	°C
Nozzle Temperature	270 - 305	°C
Front Temperature	270 - 305	°C
Middle Temperature	270 - 305	°C
Rear Temperature	230 - 260	°C
Mold Temperature	25 - 55	°C

• Drying is not required/recommended.

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