

## Noryl\* Resin V090

## Europe-Africa-Middle East: COMMERCIAL

NORYL V090 is an unfilled, flame retardant material with a Vicat B/120 of 95 °C according ISO 306. NORYL V090 is V0 at 2.0 mm and V1 at 1.6 mm according UL94 and halogen free according VDE/DIN 472 part 815.

### Property

TYPICAL PROPERTIES <sup>(1)</sup>			
MECHANICAL	Value	Unit	Standard
Tensile Stress, yield, 50 mm/min	45	MPa	ISO 527
Tensile Stress, break, 50 mm/min	40	MPa	ISO 527
Tensile Strain, yield, 50 mm/min	3	%	ISO 527
Tensile Strain, break, 50 mm/min	20	%	ISO 527
Tensile Modulus, 1 mm/min	2300	MPa	ISO 527
Flexural Stress, yield, 2 mm/min	65	MPa	ISO 178
Flexural Modulus, 2 mm/min	2100	MPa	ISO 178
Hardness, H358/30	100	MPa	ISO 2039-1
IMPACT	Value	Unit	Standard
Izod Impact, notched 80*10*4 +23°C	7	kJ/m <sup>2</sup>	ISO 180/1A
Izod Impact, notched 80*10*4 -30°C	5	kJ/m <sup>2</sup>	ISO 180/1A
Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm	7	kJ/m <sup>2</sup>	ISO 179/1eA
Charpy -30°C, V-notch Edgew 80*10*4 sp=62mm	5	kJ/m <sup>2</sup>	ISO 179/1eA
THERMAL	Value	Unit	Standard
Thermal Conductivity	0.27	W/m·°C	ISO 8302
CTE, 23°C to 80°C, flow	7.E-05	1/°C	ISO 11359-2
CTE, 23°C to 80°C, xflow	9.E-05	1/°C	ISO 11359-2
Ball Pressure Test, 75°C +/- 2°C	PASSES	-	IEC 60695-10-2
Ball Pressure Test, approximate maximum	85	°C	IEC 60695-10-2
Vicat Softening Temp, Rate A/50	100	°C	ISO 306
Vicat Softening Temp, Rate B/50	90	°C	ISO 306
Vicat Softening Temp, Rate B/120	90	°C	ISO 306
HDT/Be, 0.45MPa Edgew 120*10*4 sp=100mm	75	°C	ISO 75/Be
HDT/Ae, 1.8 MPa Edgew 120*10*4 sp=100mm	70	°C	ISO 75/Ae
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	Value	Unit	Standard
Mold Shrinkage on Tensile Bar, flow (2)	0.5 - 0.7	%	SABIC Method
Density	1.1	g/cm <sup>3</sup>	ISO 1183
Water Absorption, (23°C/sat)	0.18	%	ISO 62
Moisture Absorption (23°C / 50% RH)	0.06	%	ISO 62
Melt Volume Rate, MVR at 280°C/1.2 kg	10	cm <sup>3</sup> /10 min	ISO 1133
Melt Volume Rate, MVR at 280°C/2.16 kg	18	cm <sup>3</sup> /10 min	ISO 1133
ELECTRICAL	Value	Unit	Standard
Volume Resistivity	1.E+15	Ohm-cm	IEC 60093
Surface Resistivity, ROA	>1.E+15	Ohm	IEC 60093
Dielectric Strength, in oil, 0.8 mm	33	kV/mm	IEC 60243-1

Dielectric Strength, in oil, 1.6 mm	26	kV/mm	IEC 60243-1
Dielectric Strength, in oil, 3.2 mm	16	kV/mm	IEC 60243-1
Relative Permittivity, 50/60 Hz	2.8	-	IEC 60250
Relative Permittivity, 1 MHz	2.7	-	IEC 60250
Dissipation Factor, 50/60 Hz	0.015	-	IEC 60250
Dissipation Factor, 1 MHz	0.005	-	IEC 60250
Comparative Tracking Index	225	V	IEC 60112
<b>FLAME CHARACTERISTICS</b>		<b>Value</b>	<b>Unit</b>
UL Recognized, 94V-1 Flame Class Rating (3)	1.5	mm	UL 94
UL Recognized, 94V-0 Flame Class Rating (3)	2	mm	UL 94
UL Recognized, 94-5VA Rating (3)	2.5	mm	UL 94
Glow Wire Flammability Index 960°C, passes at	3.2	mm	IEC 60695-2-12
Oxygen Index (LOI)	32	%	ISO 4589

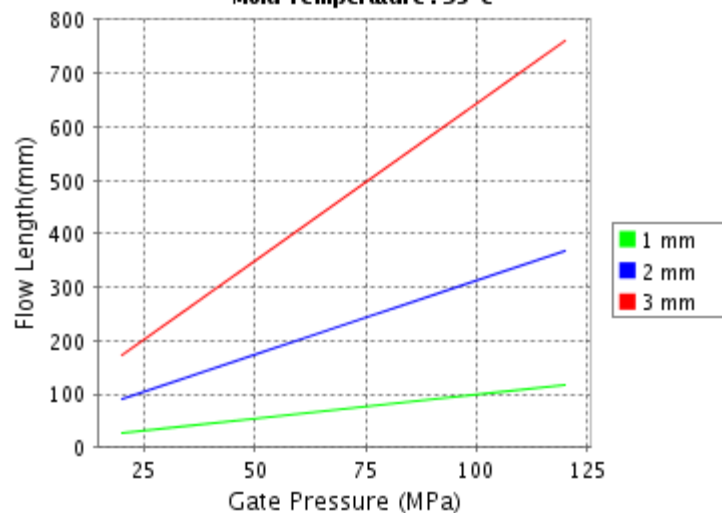
Source GMD, last updated:04/12/1994

### Processing

Parameter	Value	Unit
<b>Injection Molding</b>		
Drying Temperature	70 - 80	°C
Drying Time	2 - 3	hrs
Melt Temperature	270 - 290	°C
Nozzle Temperature	250 - 270	°C
Front - Zone 3 Temperature	270 - 290	°C
Middle - Zone 2 Temperature	250 - 270	°C
Rear - Zone 1 Temperature	230 - 250	°C
Hopper Temperature	60 - 80	°C
Mold Temperature	60 - 80	°C

Source GMD, last updated:04/12/1994

**CALCULATED FLOW LENGTH INDICATION**  
**Moldflow® Radial Flow Analysis**  
**LNP Staramide DBG014**  
**Melt Temperature : 270°C**  
**Mold Temperature : 95°C**



**Note: Technical support is recommended if Gate Pressure is greater than 80 MPa. Contact your local representative.**

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PLEASE CHECK WITH YOUR [\(LOCAL SALES OFFICE\)](#) FOR AVAILABILITY IN YOUR REGION

(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.

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