

**Product Texts**

NORYL™ HNA033 resin is a non-reinforced blend of polyphenylene ether (PPE) + high impact polystyrene (HIPS). This injection moldable grade is heat stabilized and impact modified and was designed to withstand high heat autoclave sterilization <350 cycles. In addition, this grade is US FDA and European Food Contact approved, biocompatible (ISO10993 or USP Class VI), RoHS compliant, and it is subject to SABIC's Healthcare management of change and formulation lock. NORYL HNA033 resin may be an excellent candidate for applications requiring multiple sterilization cycles such as disposable dental xray mouth guards and surgical stapler components.

Processing/Physical Characteristics	Value	Unit	Test Standard
<b>ISO Data</b>			
Melt volume-flow rate, MVR	8	cm <sup>3</sup> /10min	ISO 1133
Temperature	300	°C	-
Load	5	kg	-

<b>ASTM Data</b>			
Melt Flow Index, MFI	8.3	g/10min	ASTM D 1238
Temperature	300	°C	-
Load	5	kg	-

Mechanical properties	Value	Unit	Test Standard
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<b>ISO Data</b>			
Tensile Modulus	2600	MPa	ISO 527
Yield stress	68	MPa	ISO 527
Yield strain	5.2	%	ISO 527
Stress at break	55	MPa	ISO 527
Strain at break	14.8	%	ISO 527
Flexural modulus	2590	MPa	ISO 178
Charpy notched impact strength, +23°C	15	kJ/m <sup>2</sup>	ISO 179/1eA
Izod notched impact strength, +23°C, 4mm	16	kJ/m <sup>2</sup>	ISO 180/1A
Izod notched impact strength, -30°C, 4mm	10	kJ/m <sup>2</sup>	ISO 180/1A

<b>ASTM Data</b>			
Tensile Modulus	2310	MPa	ASTM D 638
Tensile Strength at Yield	71	MPa	ASTM D 638
Tensile Strength at Break	57	MPa	ASTM D 638
Elongation at Yield	5.3	%	ASTM D 638
Elongation at Break	30	%	ASTM D 638
Flexural Modulus	2460	MPa	ASTM D 790
Izod Impact notched, 1/8 in	192	J/m	ASTM D 256
Izod Impact notched, Low-Temperature	144	J/m	ASTM D 256
Temperature	-30	°C	-

Thermal properties	Value	Unit	Test Standard
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<b>ISO Data</b>			
Temp. of deflection under load, 1.80 MPa	141	°C	ISO 75-1/-2
Vicat softening temperature, B	160	°C	ISO 306
Vicat softening temperature, 120°C/h 50N	162	°C	ISO 306

<b>ASTM Data</b>			
DTUL @ 264 psi	140	°C	ASTM D 648
Vicat Temperature	161	°C	ASTM D 1525

Other properties	Value	Unit	Test Standard
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Water absorption	0.15	%	Sim. to ISO 62
Humidity absorption	0.05	%	Sim. to ISO 62
Density	1080	kg/m <sup>3</sup>	ISO 1183
Density	1080	kg/m <sup>3</sup>	ASTM D 792

Processing Recommendation Injection Molding	Value	Unit	Test Standard
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Pre-drying - Temperature	105 - 110	°C	-
Pre-drying - Time	3 - 4	h	-
Processing humidity	≤0.02	%	-
Melt temperature	280 - 310	°C	-

**NORYL™ Resin HNA033 - Europe**

(PPE+PS)

Saudi Basic Industries Corporation (SABIC)

Mold temperature	<b>75 - 105</b>	°C	-
Zone 1	<b>250 - 300</b>	°C	-
Zone 2	<b>260 - 305</b>	°C	-
Zone 3	<b>270 - 310</b>	°C	-
Screw speed	<b>20 - 100</b>	rpm	-
Back pressure	<b>0.3 - 0.7</b>	MPa	-

**Characteristics****Processing**

Injection Molding

**Special Characteristics**

High impact or impact modified

**Certifications**Food contact, Food approval FDA 21 CFR, US Pharmacopeia  
Class VI Approved, RoHS compliant**Applications**

Medical

**Regional Availability**

Europe