NORYL™ RESIN HNA033

REGION ASIA

DESCRIPTION

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.

TYPICAL PROPERTY VALUES

Revision 20190925

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL			
Tensile Stress, yld, Type I, 50 mm/min	71	MPa	ASTM D 638
Tensile Stress, brk, Type I, 50 mm/min	57	MPa	ASTM D 638
Tensile Strain, yld, Type I, 50 mm/min	5.3	%	ASTM D 638
Tensile Strain, brk, Type I, 50 mm/min	30	%	ASTM D 638
Tensile Modulus, 5 mm/min	2310	MPa	ASTM D 638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	100	MPa	ASTM D 790
Flexural Modulus, 1.3 mm/min, 50 mm span	2460	MPa	ASTM D 790
Tensile Stress, yield, 50 mm/min	68	MPa	ISO 527
Tensile Stress, break, 50 mm/min	55	MPa	ISO 527
Tensile Strain, yield, 50 mm/min	5.2	%	ISO 527
Tensile Strain, break, 50 mm/min	14.8	%	ISO 527
Tensile Modulus, 1 mm/min	2600	MPa	ISO 527
Flexural Stress, yield, 2 mm/min	107	MPa	ISO 178
Flexural Modulus, 2 mm/min	2590	MPa	ISO 178
IMPACT			
Izod Impact, notched, 23°C	192	J/m	ASTM D 256
Izod Impact, notched, -30°C	144	J/m	ASTM D 256
Instrumented Impact Total Energy, 23°C	47	J	ASTM D 3763
Izod Impact, notched 80*10*4 +23°C	16	kJ/m²	ISO 180/1A
Izod Impact, notched 80*10*4 -30°C	10	kJ/m²	ISO 180/1A
Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm	15	kJ/m²	ISO 179/1eA
THERMAL			
Vicat Softening Temp, Rate B/50	161	°C	ASTM D 1525
HDT, 1.82 MPa, 3.2mm, unannealed	140	°C	ASTM D 648
CTE, -40°C to 40°C, flow	7.09E-05	1/°C	ASTM E 831
CTE, -40°C to 40°C, xflow	6.87E-05	1/°C	ASTM E 831
CTE, -40°C to 40°C, flow	7.09E-05	1/°C	ISO 11359-2
CTE, -40°C to 40°C, xflow	6.87E-05	1/°C	ISO 11359-2
Vicat Softening Temp, Rate B/50	160	°C	ISO 306
Vicat Softening Temp, Rate B/120	162	°C	ISO 306
HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm	141	°C	ISO 75/Af
PHYSICAL			

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Specific Gravity	1.08	-	ASTM D 792
Mold Shrinkage, flow, 3.2 mm	0.7 – 0.9	%	SABIC method
Melt Flow Rate, 300°C/5.0 kgf	8.3	g/10 min	ASTM D 1238
Density	1.08	g/cm³	ISO 1183
Water Absorption, (23°C/sat)	0.15	%	ISO 62
Moisture Absorption (23°C / 50% RH)	0.05	%	ISO 62
Melt Volume Rate, MVR at 300°C/5.0 kg	8	cm³/10 min	ISO 1133
INJECTION MOLDING			
Drying Temperature	105 – 110	°C	
Drying Time	3 – 4	hrs	
Drying Time (Cumulative)	8	hrs	
Maximum Moisture Content	0.02	%	
Melt Temperature	280 – 310	°C	
Nozzle Temperature	280 – 310	°C	
Front - Zone 3 Temperature	270 – 310	°C	
Middle - Zone 2 Temperature	260 – 305	°C	
Rear - Zone 1 Temperature	250 – 300	°C	
Mold Temperature	75 – 105	°C	
Back Pressure	0.3 – 0.7	MPa	
Screw Speed	20 – 100	rpm	
Shot to Cylinder Size	30 – 70	%	

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