VALOX™ Resin 420HP
Americas: COMMERCIAL

30% Glass filled PBT resin, FDA Food Contact compliant in limited colors. Effective March 2008 this grade will no longer be supported with biocompatibility information. Alternative grade VALOX HX420HP.

TYPICAL PROPERTIES[1]	TYPICAL VALUE	Unit	Standard
MECHANICAL			
Tensile Stress, yld, Type I, 5 mm/min	1220	kgf/cm²	ASTM D 638
Tensile Stress, brk, Type I, 5 mm/min	1220	kgf/cm²	ASTM D 638
Tensile Strain, yld, Type I, 5 mm/min	3	%	ASTM D 638
Tensile Strain, brk, Type I, 5 mm/min	3	%	ASTM D 638
Tensile Modulus, 5 mm/min	94800	kgf/cm²	ASTM D 638
Flexural Stress, brk, 1.3 mm/min, 50 mm span	1920	kgf/cm²	ASTM D 790
Flexural Modulus, 1.3 mm/min, 50 mm span	77300	kgf/cm²	ASTM D 790
Hardness, Rockwell R	118	-	ASTM D 785
Tensile Stress, yield, 5 mm/min	125	MPa	ISO 527
Tensile Stress, break, 5 mm/min	125	MPa	ISO 527
Tensile Strain, yield, 5 mm/min	2	%	ISO 527
Tensile Strain, break, 5 mm/min	2	%	ISO 527
Tensile Modulus, 1 mm/min	9300	MPa	ISO 527
Flexural Stress, yield, 2 mm/min	195	MPa	ISO 178
Flexural Modulus, 2 mm/min	8500	MPa	ISO 178
IMPACT			
Izod Impact, unnotched, 23°C	81	cm-kgf/cm	ASTM D 4812
Izod Impact, notched, 23°C	8	cm-kgf/cm	ASTM D 256
Izod Impact, notched, -30°C	8	cm-kgf/cm	ASTM D 256
Instrumented Impact Total Energy, 23°C	81	cm-kgf	ASTM D 3763
Izod Impact, unnotched 80*10*4 +23°C	45	kJ/m²	ISO 180/1U
Izod Impact, unnotched 80*10*4 -30°C	45	kJ/m²	ISO 180/1U

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(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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IMPACT			
Izod Impact, notched 80*10*4 +23°C	8	kJ/m²	ISO 180/1A
Izod Impact, notched 80*10*4 -30°C	7	kJ/m²	ISO 180/1A
Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm	5	kJ/m²	ISO 179/1eA
Charpy -30°C, V-notch Edgew 80*10*4 sp=62mm	5	kJ/m²	ISO 179/1eA
Charpy 23°C, Unnotch Edgew 80*10*4 sp=62mm	45	kJ/m²	ISO 179/1eU
Charpy -30°C, Unnotch Edgew 80*10*4 sp=62mm	45	kJ/m²	ISO 179/1eU
THERMAL			
Vicat Softening Temp, Rate B/50	215	°C	ASTM D 1525
HDT, 0.45 MPa, 3.2 mm, unannealed	220	°C	ASTM D 648
HDT, 1.82 MPa, 3.2mm, unannealed	203	°C	ASTM D 648
HDT, 0.45 MPa, 6.4 mm, unannealed	215	°C	ASTM D 648
CTE, -40°C to 40°C, flow	2.52E-05	1/°C	ASTM E 831
CTE, -40°C to 40°C, xflow	1.2E-04	1/°C	ASTM E 831
CTE, -40°C to 40°C, flow	2.52E-05	1/°C	ISO 11359-2
CTE, -40°C to 40°C, xflow	1.2E-04	1/°C	ISO 11359-2
Vicat Softening Temp, Rate A/50	223	°C	ISO 306
Vicat Softening Temp, Rate B/50	215	°C	ISO 306
Vicat Softening Temp, Rate B/120	215	°C	ISO 306
HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm	217	°C	ISO 75/Bf
HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm	204	°C	ISO 75/Af
PHYSICAL			
Specific Gravity	1.53	-	ASTM D 792
Specific Volume	0.65	cm³/g	ASTM D 792
Filler Content	30	%	ASTM D 229
Water Absorption, 24 hours	0.06	%	ASTM D 570

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TYPICAL PROPERTIES[1]	TYPICAL VALUE	Unit	Standard
PHYSICAL			
Mold Shrinkage on Tensile Bar, flow (2) (5)	0.3 - 0.7	%	SABIC Method
Mold Shrinkage, flow, 3.2 mm (5)	0.3 - 0.8	%	SABIC Method
Mold Shrinkage, flow, 1.5-3.2 mm (5)	0.3 - 0.5	%	SABIC Method
Mold Shrinkage, flow, 3.2-4.6 mm (5)	0.5 - 0.8	%	SABIC Method
Mold Shrinkage on Tensile Bar, xflow (2) (5)	0.5 - 1	%	SABIC Method
Mold Shrinkage, xflow, 3.2 mm (5)	0.5 - 1	%	SABIC Method
Mold Shrinkage, xflow, 1.5-3.2 mm (5)	0.4 - 0.6	%	SABIC Method
Mold Shrinkage, xflow, 3.2-4.6 mm (5)	0.6 - 0.9	%	SABIC Method
Melt Flow Rate, 250°C/2.16 kgf	17	g/10 min	ASTM D 1238
Density	1.53	g/cm³	ISO 1183
Water Absorption, (23°C/sat)	0.26	%	ISO 62
Moisture Absorption (23°C / 50% RH)	0.08	%	ISO 62
Melt Volume Rate, MVR at 250°C/2.16 kg	13	cm³/10 min	ISO 1133
ELECTRICAL			
Volume Resistivity	>3.2E+16	Ohm-cm	ASTM D 257
Dielectric Strength, in air, 3.2 mm	18.7	kV/mm	ASTM D 149
Dielectric Strength, in oil, 1.6 mm	24.8	kV/mm	ASTM D 149
Relative Permittivity, 100 Hz	3.8	-	ASTM D 150
Relative Permittivity, 1 MHz	3.7	-	ASTM D 150
Dissipation Factor, 100 Hz	0.002	-	ASTM D 150
Dissipation Factor, 1 MHz	0.02	-	ASTM D 150

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PROCESSING PARAMETERS	TYPICAL VALUE	Unit
Injection Molding		
Drying Temperature	120	°C
Drying Time	3 - 4	hrs
Drying Time (Cumulative)	12	hrs
Maximum Moisture Content	0.02	%
Melt Temperature	250 - 265	°C
Nozzle Temperature	245 - 260	°C
Front - Zone 3 Temperature	250 - 265	°C
Middle - Zone 2 Temperature	245 - 260	°C
Rear - Zone 1 Temperature	240 - 255	°C
Mold Temperature	65 - 90	°C
Back Pressure	0.3 - 0.7	MPa
Screw Speed	50 - 80	rpm
Shot to Cylinder Size	40 - 80	%
Vent Depth	0.025 - 0.038	mm

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