



**VALOX™ Resin K3501**  
**Americas: COMMERCIAL**

Unfilled PBT, Hydrolytically Stable, Heat Stabilized, Impact Modified. A hydrolytically stable grade designed for improved performance under heat/humidity environments. Targeted at automotive underhood applications requiring USCAR-2 Class III humidity/heat performance.

TYPICAL PROPERTIES <sup>1</sup>	TYPICAL VALUE	Unit	Standard
<b>MECHANICAL</b>			
Tensile Stress, yld, Type I, 50 mm/min	500	kgf/cm <sup>2</sup>	ASTM D 638
Tensile Stress, brk, Type I, 50 mm/min	240	kgf/cm <sup>2</sup>	ASTM D 638
Tensile Strain, yld, Type I, 50 mm/min	3.5	%	ASTM D 638
Tensile Strain, brk, Type I, 50 mm/min	51	%	ASTM D 638
Tensile Modulus, 50 mm/min	24700	kgf/cm <sup>2</sup>	ASTM D 638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	720	kgf/cm <sup>2</sup>	ASTM D 790
Flexural Modulus, 1.3 mm/min, 50 mm span	21200	kgf/cm <sup>2</sup>	ASTM D 790
Tensile Stress, yield, 50 mm/min	50	MPa	ISO 527
Tensile Stress, break, 50 mm/min	73	MPa	ISO 527
Tensile Strain, yield, 50 mm/min	3.2	%	ISO 527
Tensile Strain, break, 50 mm/min	37	%	ISO 527
Tensile Modulus, 1 mm/min	2020	MPa	ISO 527
Flexural Stress, yield, 2 mm/min	73	MPa	ISO 178
Flexural Modulus, 2 mm/min	2020	MPa	ISO 178
<b>IMPACT</b>			
Izod Impact, unnotched, -30°C	NB	cm-kgf/cm	ASTM D 4812
Izod Impact, notched, 23°C	9	cm-kgf/cm	ASTM D 256
Izod Impact, notched, 0°C	8	cm-kgf/cm	ASTM D 256
Izod Impact, notched, -20°C	7	cm-kgf/cm	ASTM D 256
Instrumented Impact Total Energy, 23°C	489	cm-kgf	ASTM D 3763
Instrumented Impact Total Energy, -40°C	611	cm-kgf	ASTM D 3763
Izod Impact, unnotched 80°10*4 -30°C	NB	KJ/m <sup>2</sup>	ISO 180/1U

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(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 <sup>1</sup>	TYPICAL VALUE	Unit	Standard
<b>IMPACT</b>			
Izod Impact, notched 80*10*4 +23°C	8	kJ/m <sup>2</sup>	ISO 180/1A
Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm	10	kJ/m <sup>2</sup>	ISO 179/1eA
<b>THERMAL</b>			
HDT, 0.45 MPa, 3.2 mm, unannealed	127	°C	ASTM D 648
HDT, 1.82 MPa, 3.2mm, unannealed	46	°C	ASTM D 648
CTE, -40°C to 40°C, flow	9.1E-05	1/°C	ISO 11359-2
CTE, -40°C to 40°C, xflow	9.7E-05	1/°C	ISO 11359-2
Ball Pressure Test, 75°C +/- 2°C	NA	-	IEC 60695-10-2
Vicat Softening Temp, Rate B/50	170	°C	ISO 306
Vicat Softening Temp, Rate B/120	170	°C	ISO 306
HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm	46	°C	ISO 75/Af
<b>PHYSICAL</b>			
Mold Shrinkage, flow, 3.2 mm (5)	1.7 - 2.6	%	SABIC Method
Mold Shrinkage, xflow, 3.2 mm (5)	1.7 - 2.6	%	SABIC Method
Density	1.28	g/cm <sup>3</sup>	ISO 1183
Water Absorption, (23°C/sat)	0.34	%	ISO 62
Moisture Absorption (23°C / 50% RH)	0.08	%	ISO 62
Melt Volume Rate, MVR at 250°C/2.16 kg	26	cm <sup>3</sup> /10 min	ISO 1133
<b>AFTER 40 CYCLES, SIMILAR TO USCAR-2, CLASS III</b>			
Tensile Stress, brk, Type I, 50 mm/min	370	kgf/cm <sup>2</sup>	ASTM D 638
Tensile Strain, brk, Type I, 50 mm/min	12	%	ASTM D 638
Flexural Modulus, 1.3 mm/min, 50 mm span	24000	kgf/cm <sup>2</sup>	ASTM D 790
Instrumented Impact, Total Energy, 23°C	590	cm-kgf	ASTM D 3763
<b>PROPERTIES AFTER 1008 HOURS AT 125°C</b>			
Tensile Stress, yld, Type I, 50 mm/min	550	kgf/cm <sup>2</sup>	ASTM D 638
Tensile Strain, yld, Type I, 50 mm/min	4	%	ASTM D 638
Tensile Strain, brk, Type I, 50 mm/min	25	%	ASTM D 638

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(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 <sup>1</sup>	TYPICAL VALUE	Unit	Standard
<b>PROPERTIES AFTER 1008 HOURS AT 125°C</b>			
Flexural Modulus, 1.3 mm/min, 50 mm span	23700	kgf/cm <sup>2</sup>	ASTM D 790
Instrumented Impact, Total Energy, 23°C	620	cm-kgf	ASTM D 3763

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PROCESSING PARAMETERS	TYPICAL VALUE	Unit
<b>Injection Molding</b>		
Drying Temperature	60 - 75	°C
Drying Time	4 - 5	hrs
Drying Time (Cumulative)	8	hrs
Maximum Moisture Content	0.05	%
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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