

Valox* Resin 420
Americas: COMMERCIAL

30% GR, excellent strength, stiffness and dimensional stability. High heat resistance. Appliance handles, spotlights, electric motors, connectors.

TYPICAL PROPERTIES ¹	TYPICAL VALUE	Unit	Standard
MECHANICAL			
Tensile Stress, yld, Type I, 5 mm/min	1220	kgf/cm ²	ASTM D 638
Tensile Stress, brk, Type I, 5 mm/min	1220	kgf/cm ²	ASTM D 638
Tensile Strain, yld, Type I, 5 mm/min	2.7	%	ASTM D 638
Tensile Strain, brk, Type I, 5 mm/min	2.7	%	ASTM D 638
Tensile Modulus, 5 mm/min	94800	kgf/cm ²	ASTM D 638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	1980	kgf/cm ²	ASTM D 790
Flexural Stress, brk, 1.3 mm/min, 50 mm span	1930	kgf/cm ²	ASTM D 790
Flexural Modulus, 1.3 mm/min, 50 mm span	77300	kgf/cm ²	ASTM D 790
Hardness, Rockwell R	118	-	ASTM D 785
Taber Abrasion, CS-17, 1 kg	19	mg/1000cy	ASTM D 1044
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
Hardness, H358/30	122	MPa	ISO 2039-1
Hardness, Rockwell R	118	-	ISO 2039-2
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

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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.

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IMPACT			
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/m ²	ISO 180/1U
Izod Impact, unnotched 80*10*4 -30°C	45	kJ/m ²	ISO 180/1U
Izod Impact, notched 80*10*4 +23°C	8	kJ/m ²	ISO 180/1A
Izod Impact, notched 80*10*4 -30°C	7	kJ/m ²	ISO 180/1A
Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm	5	kJ/m ²	ISO 179/1eA
Charpy -30°C, V-notch Edgew 80*10*4 sp=62mm	5	kJ/m ²	ISO 179/1eA
Charpy 23°C, Unnotch Edgew 80*10*4 sp=62mm	45	kJ/m ²	ISO 179/1eU
Charpy -30°C, Unnotch Edgew 80*10*4 sp=62mm	45	kJ/m ²	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
HDT, 1.82 MPa, 6.4 mm, unannealed	207	°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, 60°C to 138°C, flow	2.52E-05	1/°C	ASTM E 831
Thermal Conductivity	0.19	W/m-°C	ISO 8302
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
Ball Pressure Test, 125°C +/- 2°C	PASSES	-	IEC 60695-10-2
Vicat Softening Temp, Rate A/50	223	°C	ISO 306

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THERMAL			
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
Relative Temp Index, Elec	140	°C	UL 746B
Relative Temp Index, Mech w/impact	140	°C	UL 746B
Relative Temp Index, Mech w/o impact	140	°C	UL 746B
PHYSICAL			
Specific Gravity	1.53	-	ASTM D 792
Specific Volume	0.66	cm ³ /g	ASTM D 792
Density	1.53	g/cm ³	ASTM D 792
Filler Content	30	%	ASTM D 229
Water Absorption, 24 hours	0.09	%	ASTM D 570
Mold Shrinkage on Tensile Bar, flow (2)	0.3 - 0.7	%	SABIC Method
Mold Shrinkage, flow, 3.2 mm	0.3 - 0.8	%	SABIC Method
Mold Shrinkage, flow, 1.5-3.2 mm	0.3 - 0.5	%	SABIC Method
Mold Shrinkage, flow, 3.2-4.6 mm	0.5 - 0.8	%	SABIC Method
Mold Shrinkage on Tensile Bar, xflow (2)	0.5 - 1	%	SABIC Method
Mold Shrinkage, xflow, 3.2 mm	0.5 - 1	%	SABIC Method
Mold Shrinkage, xflow, 1.5-3.2 mm	0.4 - 0.6	%	SABIC Method
Mold Shrinkage, xflow, 3.2-4.6 mm	0.6 - 0.9	%	SABIC Method
Moisture Absorption (23°C / 50% RH)	0.08	%	ISO 62
Melt Flow Rate, 250°C/2.16 kg	17	g/10 min	ISO 1133
Melt Volume Rate, MVR at 250°C/2.16 kg	13	cm ³ /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

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ELECTRICAL			
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
Arc Resistance, Tungsten (PLC)	5	PLC Code	ASTM D 495
High Voltage Arc Track Rate (PLC)	1	PLC Code	UL 746A
Comparative Tracking Index (UL) (PLC)	0	PLC Code	UL 746A
Volume Resistivity	>1.E+15	Ohm-cm	IEC 60093
Surface Resistivity, ROA	>1.E+15	Ohm	IEC 60093
Dielectric Strength, shorttime, 1.0mm	19	kV/mm	IEC 60243-1
Dielectric Strength, in oil, 0.8 mm	28	kV/mm	IEC 60243-1
Dielectric Strength, in oil, 1.6 mm	24	kV/mm	IEC 60243-1
Dielectric Strength, in oil, 3.2 mm	16	kV/mm	IEC 60243-1
Relative Permittivity, 1 MHz	3.1	-	IEC 60250
Dissipation Factor, 50/60 Hz	0.001	-	IEC 60250
Dissipation Factor, 100 Hz	0.001	-	IEC 60250
Dissipation Factor, 1 MHz	0.01	-	IEC 60250
Comparative Tracking Index	300	V	IEC 60112
Relative Permittivity, 50/60 Hz	3.1	-	IEC 60250
FLAME CHARACTERISTICS			
UL Recognized, 94HB Flame Class Rating (3)	0.84	mm	UL 94
Oxygen Index (LOI)	19	%	ASTM D 2863
Glow Wire Flammability Index 750°C, passes at	1	mm	IEC 60695-2-12

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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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