

## Valox\* Resin 412

Americas: COMMERCIAL

20% GR, increased mechanical performance vs unreinforced. Non-flame retardant. For spotlights, appliance housings and handles.

### Property

TYPICAL PROPERTIES <sup>(1)</sup>			
	Value	Unit	Standard
<b>MECHANICAL</b>			
Tensile Stress, brk, Type I, 5 mm/min	99	MPa	ASTM D 638
Flexural Stress, brk, 1.3 mm/min, 50 mm span	155	MPa	ASTM D 790
Flexural Modulus, 1.3 mm/min, 50 mm span	5170	MPa	ASTM D 790
Hardness, Rockwell R	119	-	ASTM D 785
<b>IMPACT</b>			
Izod Impact, unnotched, 23°C	694	J/m	ASTM D 4812
Izod Impact, notched, 23°C	69	J/m	ASTM D 256
<b>THERMAL</b>			
HDT, 0.45 MPa, 6.4 mm, unannealed	211	°C	ASTM D 648
HDT, 1.82 MPa, 6.4 mm, unannealed	201	°C	ASTM D 648
CTE, -40°C to 40°C, flow	3.42E-05	1/°C	ASTM E 831
CTE, 60°C to 138°C, flow	3.42E-05	1/°C	ASTM E 831
Relative Temp Index, Elec	130	°C	UL 746B
Relative Temp Index, Mech w/impact	130	°C	UL 746B
Relative Temp Index, Mech w/o impact	140	°C	UL 746B
<b>PHYSICAL</b>			
Specific Gravity	1.45	-	ASTM D 792
Specific Volume	0.68	cm <sup>3</sup> /g	ASTM D 792
Water Absorption, 24 hours	0.06	%	ASTM D 570
Mold Shrinkage, flow, 1.5-3.2 mm	0.4 - 0.6	%	SABIC Method
Mold Shrinkage, flow, 3.2-4.6 mm	0.6 - 0.8	%	SABIC Method
Mold Shrinkage, xflow, 1.5-3.2 mm	0.5 - 0.8	%	SABIC Method
Mold Shrinkage, xflow, 3.2-4.6 mm	0.8 - 1.1	%	SABIC Method
<b>ELECTRICAL</b>			
Volume Resistivity	>1.7E+16	Ohm-cm	ASTM D 257
Dielectric Strength, in air, 3.2 mm	18.3	kV/mm	ASTM D 149
Dielectric Strength, in oil, 1.6 mm	22.4	kV/mm	ASTM D 149
Relative Permittivity, 100 Hz	3.5	-	ASTM D 150
Relative Permittivity, 1 MHz	3.5	-	ASTM D 150
Dissipation Factor, 100 Hz	0.001	-	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}	2	PLC Code	UL 746A
<b>FLAME CHARACTERISTICS</b>			
UL Recognized, 94HB Flame Class Rating (3)	0.83	mm	UL 94

Source GMD, last updated:12/29/1999

### Processing

Parameter	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

Source GMD, last updated:12/29/1999

THESE PROPERTY VALUES ARE NOT INTENDED FOR SPECIFICATION PURPOSES.

PLEASE CHECK WITH YOUR [\(LOCAL SALES OFFICE\)](#) FOR AVAILABILITY IN YOUR REGION

(1) Typical values only. Variations within normal tolerances are possible for various colors. All values are measured after at least 48 hours storage at 23°C/50% relative humidity. All properties, except the melt volume and melt flow rates, are measured on injection molded samples. All samples tested under ISO test standards are prepared according to ISO 294.

(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.

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