VALOX™ RESIN DR51

REGION EUROPE

DESCRIPTION

15% GR polyester, excellent mechanical, thermal and electrical performance. Non-flame retardant. Spotlights, appliance housings, handles, connectors

TYPICAL PROPERTY VALUES

Revision 20220111

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL			
Tensile Stress, yld, Type I, 5 mm/min	90	MPa	ASTM D638
Tensile Stress, brk, Type I, 5 mm/min	93	MPa	ASTM D638
Tensile Strain, yld, Type I, 5 mm/min	3	%	ASTM D638
Tensile Strain, brk, Type I, 5 mm/min	5	%	ASTM D638
Tensile Modulus, 5 mm/min	5900	MPa	ASTM D638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	140	MPa	ASTM D790
Flexural Stress, brk, 1.3 mm/min, 50 mm span	144	MPa	ASTM D790
Flexural Modulus, 1.3 mm/min, 50 mm span	4800	MPa	ASTM D790
Hardness, Rockwell R	118	-	ASTM D785
Taber Abrasion, CS-17, 1 kg	16	mg/1000cy	SABIC method
Tensile Stress, yield, 5 mm/min	95	MPa	ISO 527
Tensile Stress, break, 5 mm/min	100	MPa	ISO 527
Tensile Strain, yield, 5 mm/min	3	%	ISO 527
Tensile Strain, break, 5 mm/min	3	%	ISO 527
Tensile Modulus, 1 mm/min	6000	MPa	ISO 527
Flexural Stress, yield, 2 mm/min	150	MPa	ISO 178
Flexural Stress, break, 2 mm/min	155	MPa	ISO 178
Flexural Strain, break, 2 mm/min	5	%	ISO 178
Flexural Modulus, 2 mm/min	5100	MPa	ISO 178
Ball Indentation Hardness, H358/30	100	MPa	ISO 2039-1
Hardness, Rockwell R	120	-	ISO 2039-2
IMPACT			
Charpy Impact, unnotched, 23°C	30	kJ/m²	ISO 179/2C
Charpy Impact, unnotched, -30°C	27	kJ/m²	ISO 179/2C
Izod Impact, unnotched, 23°C	330	J/m	ASTM D4812
Izod Impact, unnotched, -30°C	330	J/m	ASTM D4812
Izod Impact, notched, 23°C	40	J/m	ASTM D256
Izod Impact, notched, 0°C	40	J/m	ASTM D256
Izod Impact, notched, -30°C	40	J/m	ASTM D256
Izod Impact, unnotched 80*10*4 +23°C	30	kJ/m²	ISO 180/1U
Izod Impact, unnotched 80*10*4 -30°C	30	kJ/m²	ISO 180/1U
Izod Impact, notched 80*10*4 +23°C	4	kJ/m²	ISO 180/1A
Izod Impact, notched 80*10*4 0°C	4	kJ/m²	ISO 180/1A
Izod Impact, notched 80*10*4 -20°C	4	kJ/m²	ISO 180/1A
Izod Impact, notched 80*10*4 -30°C	4	kJ/m²	ISO 180/1A

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Izod Impact, notched 80*10*4 -40°C	4	kJ/m²	ISO 180/1A
Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm	5	kJ/m²	ISO 179/1eA
Charpy Impact, notched, 23°C	4	kJ/m²	ISO 179/2C
Charpy -30°C, V-notch Edgew 80*10*4 sp=62mm	4	kJ/m²	ISO 179/1eA
Charpy Impact, notched, -30°C	4	kJ/m²	ISO 179/2C
Charpy 23°C, Unnotch Edgew 80*10*4 sp=62mm	30	kJ/m²	ISO 179/1eU
Charpy -30°C, Unnotch Edgew 80*10*4 sp=62mm	30	kJ/m²	ISO 179/1eU
THERMAL			
Vicat Softening Temp, Rate A/50	220	°C	ASTM D1525
Vicat Softening Temp, Rate B/50	210	°C	ASTM D1525
HDT, 1.82 MPa, 3.2mm, annealed	193	°C	ASTM D648
HDT, 0.45 MPa, 6.4 mm, unannealed	210	°C	ASTM D648
HDT, 1.82 MPa, 6.4 mm, unannealed	190	°C	ASTM D648
CTE, -40°C to 40°C, flow	2.16E-05	1/°C	ASTM E831
CTE, -40°C to 40°C, xflow	9.58E-05	1/°C	ASTM E831
CTE, 60°C to 138°C, flow	2.16E-05	1/°C	ASTM E831
Thermal Conductivity	0.19	W/m-°C	ISO 8302
CTE, -40°C to 40°C, flow	3.35E-05	1/°C	ISO 11359-2
CTE, -40°C to 40°C, xflow	7.06E-05	1/°C	ISO 11359-2
CTE, 23°C to 80°C, flow	3.5E-05	1/°C	ISO 11359-2
CTE, 23°C to 80°C, xflow	9.5E-05	1/°C	ISO 11359-2
CTE, 23°C to 150°C, flow	3.4E-05	1/°C	ISO 11359-2
CTE, 23°C to 150°C, xflow	1.83E-04	1/°C	ISO 11359-2
Ball Pressure Test, 125°C +/- 2°C	PASSES	-	IEC 60695-10-2
Vicat Softening Temp, Rate A/50	220	°C	ISO 306
Vicat Softening Temp, Rate B/50	210	°C	ISO 306
Vicat Softening Temp, Rate B/120	205	°C	ISO 306
HDT/Be, 0.45MPa Edgew 120*10*4 sp=100mm	210	°C	ISO 75/Be
HDT/Ae, 1.8 MPa Edgew 120*10*4 sp=100mm	175	°C	ISO 75/Ae
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
PHYSICAL			
Specific Gravity	1.41	-	ASTM D792
Specific Volume	0.71	cm³/g	ASTM D792
Water Absorption, (23°C/24hrs)	0.07	%	ASTM D570
Mold Shrinkage on Tensile Bar, flow	0.5 – 0.8	%	SABIC method
Mold Shrinkage, flow, 1.5-3.2 mm	0.4 – 0.6	%	SABIC method
Mold Shrinkage, flow, 3.2-4.6 mm	0.6 – 0.9	%	SABIC method
Mold Shrinkage on Tensile Bar, xflow	0.6 – 0.9	%	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
Melt Flow Rate, 265°C/5.0 kgf	80	g/10 min	ASTM D1238
Density	1.41	g/cm³	ISO 1183
Water Absorption, (23°C/saturated)	0.2	%	ISO 62-1
Moisture Absorption (23°C / 50% RH)	0.07	%	ISO 62

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PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Melt Flow Rate, 250°C/2.16 kg	18	g/10 min	ISO 1133
Melt Volume Rate, MVR at 250°C/2.16 kg	15	cm³/10 min	ISO 1133
Melt Volume Rate, MVR at 250°C/5.0 kg	43	cm³/10 min	ISO 1133
Melt Volume Rate, MVR at 265°C/5.0 kg	65	cm³/10 min	ISO 1133
Melt Viscosity, 260°C, 1500 sec-1	170	Pa-s	ISO 11443
ELECTRICAL			
Volume Resistivity	>1.E+15	Ω.cm	ASTM D257
Dielectric Strength, in air, 3.2 mm	19.6	kV/mm	ASTM D149
Dielectric Strength, in oil, 1.6 mm	23.2	kV/mm	ASTM D149
Relative Permittivity, 100 Hz	3.6	-	ASTM D150
Relative Permittivity, 1 MHz	3.4	-	ASTM D150
Dissipation Factor, 100 Hz	0.002	-	ASTM D150
Dissipation Factor, 1 MHz	0.02	-	ASTM D150
Arc Resistance, Tungsten {PLC}	5	PLC Code	ASTM D495
Hot Wire Ignition {PLC}	3	PLC Code	UL 746A
High Voltage Arc Track Rate {PLC}	1	PLC Code	UL 746A
High Ampere Arc Ign, surface {PLC}	1	PLC Code	UL 746A
Comparative Tracking Index (UL) {PLC}	2	PLC Code	UL 746A
Volume Resistivity	>1.E+15	Ω.cm	IEC 60093
Surface Resistivity, ROA	>1.E+15	Ω	IEC 60093
Dielectric Strength, in oil, 0.8 mm	26	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	18	kV/mm	IEC 60243-1
Relative Permittivity, 1 MHz	2.9	-	IEC 60250
Dissipation Factor, 50/60 Hz	0.001	-	IEC 60250
Dissipation Factor, 1 MHz	0.015	-	IEC 60250
Comparative Tracking Index	300	V	IEC 60112
Relative Permittivity, 50/60 Hz	3	-	IEC 60250
FLAME CHARACTERISTICS			
UL Yellow Card Link	E45329-236617	-	-
UL Recognized, 94HB Flame Class Rating	0.75	mm	UL 94
UL Recognized, 94HB Flame Class Rating 2nd value	6	mm	UL 94
Glow Wire Flammability Index 750°C, passes at	1	mm	IEC 60695-2-12
INJECTION MOLDING			
Drying Temperature	110 – 120	°C	
Drying Time	2 – 4	Hrs	
Maximum Moisture Content	0.02	%	
Melt Temperature	250 – 270	°C	
Nozzle Temperature	240 – 260	°C	
Front - Zone 3 Temperature	245 – 265	°C	
Middle - Zone 2 Temperature	240 – 255	°C	
Rear - Zone 1 Temperature	230 – 245	°C	
Hopper Temperature	40 – 60	°C	
Mold Temperature	40 – 100	°C	

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