

## Technical Data

### Product Description

DENYL HT 4510 PPA resin 45% glass fiber reinforced for injection moulding

Generic PPA - Glass Fiber

This data represents typical values that have been calculated from all products classified as: Generic PPA - Glass Fiber

This information is provided for comparative purposes only.

### General

#### DENYL HT 4510

#### Generic PPA - Glass Fiber

Manufacturer / Supplier	<ul style="list-style-type: none"> <li>Vamp Tech</li> </ul>	<ul style="list-style-type: none"> <li>Generic</li> </ul>
Generic Symbol	<ul style="list-style-type: none"> <li>PPA</li> </ul>	<ul style="list-style-type: none"> <li>PPA</li> </ul>
Material Status	<ul style="list-style-type: none"> <li>Commercial: Active</li> </ul>	<ul style="list-style-type: none"> <li>Commercial: Active</li> </ul>
Availability	<ul style="list-style-type: none"> <li>Africa &amp; Middle East</li> <li>Asia Pacific</li> <li>Europe</li> <li>Latin America</li> <li>North America</li> </ul>	<ul style="list-style-type: none"> <li>Africa &amp; Middle East</li> <li>Asia Pacific</li> <li>Europe</li> <li>Latin America</li> <li>North America</li> </ul>
Filler / Reinforcement	<ul style="list-style-type: none"> <li>Glass Fiber, 40% Filler by Weight</li> </ul>	<ul style="list-style-type: none"> <li>Glass Fiber</li> </ul>
Processing Method	<ul style="list-style-type: none"> <li>Injection Molding</li> </ul>	--
Also Available In	--	<ul style="list-style-type: none"> <li>Asia Pacific</li> <li>Europe</li> <li>Latin America</li> <li>North America</li> </ul>

Physical	DENYL HT 4510	Generic PPA - Glass Fiber	Unit	Test Method
Density / Specific Gravity	--	1.32 to 1.69	g/cm <sup>3</sup>	ASTM D792
	1.57	1.41 to 1.66	g/cm <sup>3</sup>	ISO 1183
Spiral Flow	--	5.39 to 40.0	cm	
Molding Shrinkage				
Flow	0.20	0.13 to 0.62	%	ASTM D955
Across Flow	0.50	0.39 to 1.3	%	ASTM D955
	--	0.19 to 0.82	%	ISO 294-4
Water Absorption				
24 hr	--	0.12 to 0.30	%	ASTM D570
24 hr, 23°C	0.30	--	%	ASTM D570
24 hr, 23°C	--	0.094 to 0.40	%	ISO 62
Saturation, 23°C	--	2.9 to 5.2	%	ISO 62
Equilibrium	--	0.25 to 0.30	%	ASTM D570
Equilibrium, 23°C, 50% RH	--	0.20 to 2.0	%	ISO 62
Viscosity Number	--	86.0 to 120	cm <sup>3</sup> /g	ISO 307

Mechanical	DENYL HT 4510	Generic PPA - Glass Fiber	Unit	Test Method
Tensile Modulus				
	--	5140 to 19600	MPa	ASTM D638
	16000	3720 to 19200	MPa	ISO 527-1



Mechanical	DENYL HT 4510	Generic PPA - Glass Fiber	Unit	Test Method
<b>Tensile Strength</b>				
Yield	--	82.7 to 270	MPa	ASTM D638
Yield	--	111 to 252	MPa	ISO 527-2
Break	--	163 to 251	MPa	ASTM D638
Break	220	59.7 to 287	MPa	ISO 527-2
--	--	88.5 to 260	MPa	ASTM D638
--	--	147 to 253	MPa	ISO 527-2
<b>Tensile Elongation</b>				
Yield	--	1.5 to 2.6	%	ASTM D638
Break	--	1.7 to 3.0	%	ASTM D638
Break	1.9	1.5 to 6.0	%	ISO 527-2
<b>Flexural Modulus</b>				
--	--	5340 to 17600	MPa	ASTM D790
--	--	9.40 to 12600	MPa	ISO 178
<b>Flexural Strength</b>				
--	--	135 to 363	MPa	ASTM D790
--	--	79.1 to 429	MPa	ISO 178
Yield	--	150 to 363	MPa	ASTM D790
Break	--	246 to 340	MPa	ASTM D790
<b>Compressive Strength</b>				
Shear Strength	--	143 to 191	MPa	ASTM D695
Poisson's Ratio	--	87.1 to 108	MPa	ASTM D732
Coefficient of Friction	--	0.33 to 0.41		ASTM E132
	--	0.17 to 0.57		ASTM D1894
Impact	DENYL HT 4510	Generic PPA - Glass Fiber	Unit	Test Method
<b>Charpy Notched Impact Strength</b>				
Charpy Unnotched Impact Strength	--	6.6 to 15	kJ/m <sup>2</sup>	ISO 179
Charpy Unnotched Impact Strength	--	34 to 90	kJ/m <sup>2</sup>	ISO 179
<b>Notched Izod Impact</b>				
--	--	26 to 120	J/m	ASTM D256
--	--	4.9 to 14	kJ/m <sup>2</sup>	ISO 180
--	9.0	--	kJ/m <sup>2</sup>	ISO 180/A
<b>Unnotched Izod Impact</b>				
--	--	200 to 1000	J/m	ASTM D4812
--	60	23 to 68	kJ/m <sup>2</sup>	ISO 180
<b>Instrumented Dart Impact</b>				
--	--	1.76 to 6.06	J	ASTM D3763
--	--	1.00 to 3.03	J	ISO 6603-2
Hardness	DENYL HT 4510	Generic PPA - Glass Fiber	Unit	Test Method
<b>Rockwell Hardness</b>				
--	--	120 to 125		ASTM D785
--	--	120 to 124		ISO 2039-2
Thermal	DENYL HT 4510	Generic PPA - Glass Fiber	Unit	Test Method
<b>Deflection Temperature Under Load</b>				
0.45 MPa, Unannealed	--	276 to 290	°C	ASTM D648
0.45 MPa, Unannealed	--	276 to 335	°C	ISO 75-2/B
0.45 MPa, Annealed	--	297 to 320	°C	ASTM D648
1.8 MPa, Unannealed	285	243 to 292	°C	ASTM D648
1.8 MPa, Unannealed	--	257 to 309	°C	ISO 75-2/A
1.8 MPa, Annealed	--	284 to 300	°C	ASTM D648
8.0 MPa, Unannealed	--	122 to 237	°C	ISO 75-2/C



Thermal	DENYL HT 4510	Generic PPA - Glass Fiber	Unit	Test Method
Continuous Use Temperature	150	--	°C	
--	--	139 to 186	°C	ASTM D794
Glass Transition Temperature	--	89.9 to 160	°C	ISO 11357-2
Vicat Softening Temperature	--	280	°C	ASTM D1525
--	--	259 to 312	°C	ISO 306
Melting Temperature	--	310 to 320	°C	
--	--	298 to 325	°C	ISO 11357-3
--	--	302 to 310	°C	ASTM D3418
--	--	310	°C	ISO 3146
CLTE				
Flow	--	2.6E-5 to 3.3E-5	cm/cm/°C	ASTM D696
Flow	--	7.0E-6 to 3.1E-5	cm/cm/°C	ASTM E831
Flow	--	5.2E-6 to 6.0E-5	cm/cm/°C	ISO 11359-2
Transverse	--	3.0E-5 to 4.0E-5	cm/cm/°C	ASTM D696
Transverse	--	2.8E-5 to 1.5E-4	cm/cm/°C	ASTM E831
Transverse	--	1.1E-5 to 3.2E-4	cm/cm/°C	ISO 11359-2
RTI Elec	--	139 to 142	°C	UL 746B
RTI Imp	--	63.5 to 131	°C	UL 746B
RTI Str	--	118 to 142	°C	UL 746B
Electrical	DENYL HT 4510	Generic PPA - Glass Fiber	Unit	Test Method
Surface Resistivity				
--	--	5.1E+2 to 2.5E+15	ohms	ASTM D257
--	--	1.0E+12 to 2.5E+14	ohms	IEC 60093
Volume Resistivity				
--	--	1.0E+4 to 1.3E+16	ohms·cm	ASTM D257
--	--	7.5E+13 to 1.0E+15	ohms·cm	IEC 60093
--	--	1.0E+13 to 1.2E+13	ohms·m	IEC 62631-3-1
Dielectric Strength				
--	--	16 to 30	kV/mm	ASTM D149
--	--	26 to 44	kV/mm	IEC 60243-1
Dielectric Constant				
--	--	3.53 to 5.53		ASTM D150
--	--	3.59 to 4.60		IEC 60250
--	--	3.95		IEC 62631-2-1
Dissipation Factor				
--	--	4.0E-3 to 0.017		ASTM D150
--	--	1.0E-5 to 3.8E-4		IEC 60250
--	--	4.8E-3 to 0.028		IEC 62631-2-1
Comparative Tracking Index (CTI)	--	550 to 600	V	UL 746A
Comparative Tracking Index	--	550 to 613	V	IEC 60112
Flammability	DENYL HT 4510	Generic PPA - Glass Fiber	Unit	Test Method
Burning Rate	--	27 to 100	mm/min	ISO 3795
Glow Wire Flammability Index	--	953 to 960	°C	IEC 60695-2-12
Glow Wire Ignition Temperature	--	700 to 856	°C	IEC 60695-2-13
Oxygen Index	--	23 to 43	%	ISO 4589-2



