Glass Property Summary

PROPERTY	TEST METHOD	UNIT	E-GLASS	ADVANTEX® E-CR GLASS	OCV™ H-GLASS	OCV™ R-GLASS	OCV™ S-GLASS	OCV™ AR-GLASS
FIBER AND BULK GLASS PROPERTIES								
Density	ASTM C693	g/cm^3	2.55-2.58	2.62	2.61	2.55	2.45	2.68
Refractive Index (bulk annealed)	ASTM C1648	-	1.547-1.562	1.565	1.566	1.54	1.522	1,562
Conductivity	ASTM C177	watts/m•K	1.0-1.3	1.22	/	/	1.34	/
Pristine Fiber Tensile Strength	ASTM D2101	MPa	3450-3790	3750	4130	4510	4955	3700
Specific Pristine Strength	Calculation	x 10^5 m	1.36-1.50	1.46	1.58	1.83	2.06	1.38
Young's Modulus		GPa	69-72	81	87.5	87	88	77
Specific Modulus	Calculation	x 10^6 m	2.73-2.85	3.15	3.33	3.48	3.67	2.85
Elongation at Break		%	4.8	4.9	4.9	5.35	5.5	/
THERMAL PROPERTIES								
Coefficient of Thermal Expansion, 23-300 °C	ASTM D696	x 10^{-6} cm/cm•°C	5.4	6	5.3	4.1	3.4	/
Specific Heat @ 23 °C	ASTM C832	kJ/kg•K	0.807	0.79	/	0.75	0.810	/
FIBER TENSILE STRENGTH VS. TEMPERATURE								
Pristine Fiber Tensile Strength, -196 °C	ASTM D2101	MPa	5310	5935	/	7220	7826	/
Pristine Fiber Tensile Strength, 22 °C	ASTM D2101	MPa	3450-3790	3751	4130	4478	5047	/
FIBER WEIGHT LOSS @ 96 °C, 24 HOURS, 17 µM FIBER								
10% HCl		%	31.7	7.9	7.6	6.2	1.5	/
1.5 10% H_2SO_4		%	32.0	6.9	6.5	5.1	1.2	/

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FIBER WEIGHT LOSS @ 96 °C, 24 HOURS, 17 µM FIBER								
1 N Nitric		%	23.5	7.2	6.7	5.2	1.4	/
NaOH pH=12.88		%	5.4	3.2	12.6	/	19.3	/
FIBER WEIGHT LOSS @ 50°C, 1000 HOURS, 19 µM FIBER								
2M HCl	EN 175	%	/	/	/	/	/	< 1
2M NaOH	EN 175	%	/	/	/	/	/	< 0.2
IMPREGNATED STRAND PROPERTIES								
Tensile Strength	ASTM D2343	MPa	2000-2500	2200-2600	2400 -2900	3050-3400	3410-3830	/
	EN 9163	MPa	/	/	/	/	/	2160
Tensile Modulus	ASTM D2343	GPa	78-80	81	90	90	91.3	/
	EN 9163	GPa	/	/	/	/	/	74
Toughness	ASTM D2343	MPa	37	56	/	69	Sep-82	/
UNIDIRECTIONAL COMPOSITE PROPERTIES[1,2]								
Tensile Strength	ISO 527-5	MPa	1120	1200	1260	1560	1550	940
Tensile Modulus	ISO 527-5	GPa	46	48	52.5	51.6	53	41
Poisson's Ratio	ASTM D638	-	0.29	0.33	0.33	0.32	0.27	/
Fiber Volume Fraction	ASTM D2734	%	60	60	60	60	60	50

1. Hexion MGS RIM 135 epoxy resin + RIMH 137 hardener
2. In AR-Glass, Derakane vinyl ester resin has been used