



Basalt / Glass Comparisons

<u>Mechanical Properties</u>	<u>Standard</u>	<u>Test Specimen</u>	<u>G11-CR Glass</u>	<u>Lamitex Basalt</u>
			<u>Epoxy Tube</u>	<u>EB11-CR</u>
Flexural Strength	ISO 178	id>100 mm	350 MPa	573 MPa
Flexural Strength @ 180°C			230 MPa	356 MPa
Compressive Strength, Axial	ISO 604		250 MPa	309 MPa

Comparative Properties of Filament Reinforcements *

<u>Properties</u>	<u>SI Units</u>	<u>Basalt</u>	<u>Fiberglass</u>	<u>Silica</u>
		<u>Filaments</u>	<u>Fiberglass</u>	<u>Filament</u>
Thermal				
Maximum application temperature	(°C)	650°	600°	1100°
Sustained operating temperature	(°C)	600°	480°	1000°
Minimum operating temperature	(°C)	-260°	-60°	-170°
Thermal conductivity	(W/m K)	0.031-0.038	0.034-0.04	0.035-0.04
Melting temperature	(°C)	1450°	1120°	1550°
Vitrification conductivity	(°C)	1050°	600°	1300°-1670°
Glow loss	(%)	1.91	0.32	1.75
Thermal expansion coefficient	(ppm/ °C)	8.0°	5.4°	0.05°
Physical/Mechanical				
Density	(g/cm3)	2.75	2.6	2.15
Filament diameter	(microns)	9 to 13	9 to 13	9 to 15
Tensile strength	(M Pa)	4,840	3,450	4,750
Compression	(psi)	550,000	440,000	510,000
Elastic modulus	(G Pa)	89	77	66
Linear expansion coefficient	(x10 /K)	5.5	5	0.5
Elongation at break	(%)	3.15	4.7	1.2
Absorbtion of humidity (65%RAH)	(%)	<0.1	<0.1	<0.1
Stability at tension (20 C°)	(%)	100	100	100
Stability at tension (200 C°)	(%)	95	92	94
Stability at tension (400 C°)	(%)	82	52	80

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Composite Tubes • Bearings • Molded Shapes • Rotary Vanes • Fabricated Parts • Vulcanized Fibre • High Temp Insulation



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Composites for Today's Challenges

Comparative Properties of Filament Reinforcements*

<u>Properties</u>	<u>SI Units</u>	<u>Basalt Filaments</u>	<u>Fiberglass</u>	<u>Silica Filament</u>
<u>Electrical</u>				
Specific volume resistance	(ohm.m)	1*10×12	1*10×11	1*10×11
Loss angle tangent frequency	(1 MHz)	0.005	0.0047	0.0049
Relative dielectric permiability	(1 MHz)	2.2	2.3	2.3

Chemical Resistance

% weight loss after 3 hrs boiling in:

H ₂ O	(%)	0.2	0.7	0.1
2n NaOH (Sodium Hydroxide)	(%)	5.0	6.0	5.0
2n HCl (Hydrochloric acid)	(%)	2.2	38.9	15.7

Price Comparison

Ten Reasons to Use Lamitex Basalt Composites

1. Basalt has higher mechanical strengths than traditional fiberglass substrates.
2. Balsalt is non-respirable, inert and safe to fabricate in manufacturing environments.
3. Basalt has an 18% higher elastic modulus than glass filaments.
4. Basalt is unaffected by UV.
5. Basalt is an excellent thermal insulation properties.
6. Basalt will not harbor bacterial or microbial growth.
7. Basalt has higher impact resistance properties than carbon fiber composites.
8. Basalt has ten times better electrical insulation properties than fiberglass.
9. Basalt has very good to excellent resistance to aggressive liquids, acids and alkalizes.
10. Basalt high pressure thermoset laminates are made in sheets and convolute would tubes up to 48" diameter.

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