GRP Material Properties

Generic polyester GRP data for early-stage appraisal and technical reference.

MECHANICAL DATA

This data sheet presents the generic mechanical, physical and electrical material values carried in the original source document. Use it alongside the relevant product data sheet, load table and project-specific design review.

TENSILE STRENGTH
33,000 psi
LW coupon value

WATER ABSORPTION
0.6 % Max
D570 polyester value

DIELECTRIC STRENGTH
40 KV/in
LW electrical value

Mechanical data

Coupon and full-section values. ASTM test references and units are retained from the original data source.

Property	ASTM Test	Units	Polyester
Tensile Strength (LW)	D638	psi	33,000
Tensile Strength (CW)	D638	psi	7,500
Tensile Modulus (LW)	D638	10^6 psi	2.5
Tensile Modulus (CW)	D638	10^6 psi	0.8
Compressive Strength (LW)	D695	psi	33,000
Compressive Strength (CW)	D695	psi	16,500
Compressive Modulus (LW)	D695	10^6 psi	3.0
Compressive Modulus (CW)	D695	10^6 psi	1.0
Flexural Strength (LW)	D790	psi	33,000
Flexural Strength (CW)	D790	psi	11,000
Flexural Modulus (LW)	D790	10^6 psi	1.6
Flexural Modulus (CW)	D790	10^6 psi	0.8
Modulus of Elasticity	Full Section 2	10^6 psi	2.8-3.2
- Channels	Full Section 2	10^6 psi	2.8
- Square & Rectangular Tubes	Full Section 2	10^6 psi	3.2
Shear Modulus	Full Section 2	10^6 psi	0.42
Interlaminar Shear (LW)	D2344	psi	4,500
Shear Strength by Punch (PF)	D732	psi	5,500
Notched Izod Impact (LW)	D256	ft-lb/in	28
Notched Izod Impact (CW)	D256	ft-lb/in	4.0
Maximum Bearing Strength (LW)	D953	psi	30,000
Maximum Bearing Strength (CW)	D953	psi	18,000
Poisson's Ratio (LW)	D3039	in/in	0.35
Poisson's Ratio (CW)	D3039	in/in	0.15
In-plane Shear (LW)	Modified D2344 4	psi	7,000

READING THE TABLE

The original data distinguishes between coupon values and full-section values. Directional abbreviations and test references are retained exactly as provided. Confirm project-specific structural design requirements before selection or manufacture.

Physical data

Material properties that can inform environmental and service-condition discussions.

Property	ASTM Test	Units	Polyester
Barcol Hardness 1	D2583	-	45
Water Absorption	D570	% Max	0.6
Density	D792	lb/in^3	0.060-0.070
Specific Gravity	D792	-	1.66-1.93
Coefficient of Thermal Expansion (LW)	D696	10^-6 in/in/F	4.4
Thermal Conductivity (PF)	C177	BTU-in/ft^2/hr/F	4.0

Electrical data

Generic insulation and dielectric data provided in the source document.

Property	ASTM Test	Units	Polyester
Arc Resistance (LW)	D495	seconds	120
Dielectric Strength (LW)	D149	KV/in	40
Dielectric Strength (PF)	D149	volts/mil	200
Dielectric Constant (PF)	D150 @ 60Hz	-	5.2

Important selection note

These values are generic material references rather than a substitute for product-specific calculations or compatibility assessment. A GRP component must be checked against its actual profile geometry, span, connection detail, resin system, loading, operating temperature and service environment.

1. Define the duty

Confirm loading, span, support condition and intended use.

2. Verify the system

Confirm resin, profile and environmental suitability.

3. Obtain confirmation

Request a project-specific review from Vital GRP.

Need project-specific information?

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