

Advantex® glass technology



If you are looking for high product performance with the lowest environmental impact, then look no further than the breakthrough Advantex® glass technology. With its High Mechanical Properties, Corrosion Resistance and Clean Manufacturing Technology, Advantex® is the ideal reinforcement for the composites parts in the wind energy industry, like blades, nacelles covers, drive shafts, ...

the recognised benchmark in the fibreglass industry for the wind energy market

High Mechanical Properties

The solution for durable blades, Advantex® glass offers:

- Up to 9% higher tensile strength and up to 5% higher E-modulus vs. traditional E-Glass
- Optimised sizings for excellent processing and enhanced fatigue performance
- Superior corrosion resistance

3B Advantex® rovings for Wind

- SE1500 for epoxy resin systems
- SE1200 for polyester/vinylester/epoxy (multi-compatible) resin systems

Advantex® Glass properties

Property	Test Method	Unit	Advantex® Glass	E-Glass
Density	ASTM D1505	gr/cm ³	2.62	2.55-2.62
Thermal linear expansion 0°-300°	ASTM D696	10 ⁻⁶ °K ⁻¹	6	5.4
Softening point	ASTM C338	°C	916	830-860

Tensile (R=0,1) fatigue of Epoxy UD laminates



Roving & laminate properties

Property	Test Method	Unit	Advantex® Glass
Fibre Tensile Strength*	ASTM 2343-08	MPa	2200-2600
Fibre Tensile Modulus*	ASTM 2343-08	GPa	81-83
UD Laminate tensile strength**	ISO 527-5	MPa	1250-1500
UD Laminate tensile modulus**	ISO 527-5	GPa	48-52
UD Laminate compressive strength**	ISO 14126	MPa	1247
UD Laminate compressive modulus**	ISO 14126	GPa	53
UD interlaminar shear strength**	ISO 14130	MPa	60-70
Laminate tensile strength***	ISO 527-5	MPa	900-1000
Laminate tensile modulus***	ISO 527-5	GPa	39-40
Interlaminar shear strength***	ISO 14130	MPa	42-46

* These values are representative of 17 micron - 2400 tex fibre, impregnated with epoxy resin.

** These values are representative of epoxy unidirectional laminates with a glass weight fraction of 78-79%.

*** These values are representative of epoxy laminates based on UD1150g/m² fabrics with a glass weight fraction of 73-74%.

discover your fibreglass world

Corrosion resistance

The solution for offshore blades

Designed to withstand a wide range of aggressive environments, Advantex® is a boron-free E-CR glass with significant corrosion resistance. Advantex® glass is an E-CR glass in accordance with ASTM D578 and ISO 2078.

Tensile stress corrosion of Advantex® vs. E-Glass pultruded rods (Isophthalic UP resin). Load extrapolation to reach 50 years lifetime.

Environment	Glass Reinforcement	% of initial static strength for 50 years lifetime	Max Stress (MPa) to reach 50 years lifetime	Delta Advantex® vs E-Glass
Air	Advantex®	45.8%	490	0% ↻
	E-Glass	44.6%	501	
D.I. Water	Advantex®	39.9%	427	129% ↻
	E-Glass	16.6%	187	
5% Salt Water	Advantex®	42.4%	454	33% ↻
	E-Glass	30.3%	341	

Initial Tensile strength of pultruded rod: 1100 MPa, Avg Glass weight fraction: 75%

The table above summarises the stress corrosion test of pultruded rods made with the same isophthalic polyester resin: one set reinforced with E-Glass and the other with Advantex® glass.

Advantex® is a registered trademark of Owens Corning used under license

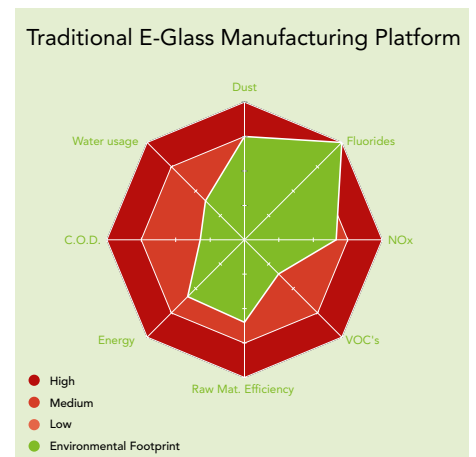
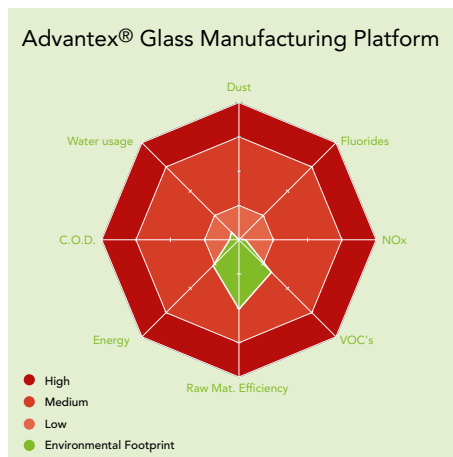
Clean Manufacturing Technology

The solution for a greener, cleaner environment

If you compare the environmental footprint of Advantex® glass with E-Glass, you can clearly see the substantial benefits achieved by implementing Advantex® glass composition and technology in our manufacturing processes. **The benefits to you?**

Switching from traditional E-Glass to Advantex® boron-free glass means more value for you, the customer, and less impact on the environment.

- Removing boron from the glass composition stops dust particulates being created. These are associated with the partial volatilization when exposed to high temperatures
- The removal of added fluorides from the composition also reduces dust particulates
- The implementation of modern melting technology means a substantial reduction in greenhouse gas emissions reductions such as NO_x
- Increased energy efficiency reduces CO₂ emissions



Customer Service Office
 Ildefonse Vandammestraat 5-7
 B-1560 Hoeilaart, Belgium
 phone +32 2 402 2000 fax +32 2 402 2002
 general info: 3B.info@3b-fibreglass.com

This data is offered solely as a guide in the selection of a reinforcement. The information contained in this publication is based on actual laboratory data and field test experience. We believe this information to be reliable, but do not guarantee its applicability to the user's process or assume any liability arising out of its use or performance. The user,

by accepting the products described herein, agrees to be responsible for thoroughly testing any application to determine its suitability before committing to production. It is important for the user to determine the properties of its own commercial compounds when using this or any other reinforcement.

BECAUSE OF NUMEROUS FACTORS AFFECTING RESULTS, WE MAKE NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. STATEMENTS IN THIS DATA SHEET SHALL NOT BE CONSTRUED AS REPRESENTATIONS OR WARRANTIES OR AS INSTRUMENTS TO INFRINGE ANY PATENT OR VIOLATE ANY LAW, SAFETY CODE OR INSURANCE REGULATION.