AP_BOAVISTA_S_EN_4.0

SUSTAINABLE WINDOWS

BOAVISTA

FIBRE GLASS WINDOWS

BOAVISTA has installed more than **1500 windows** in **125 projects** since 2017, helping to **reduce more than 505 tons of CO2**, responsible to global warming, **273 tons of SO2**, responsible for acidification of air and rain; and **11,8 tons of C2H4**, which are harmful substances that can interfere with human health and damage ecosystems.

The goal is to, by 2026, have produced and installed over **71 500 square meters of windows**, and therefore **avoid over 8500 tons of CO_2, 4600 tons of SO_2 and 200 tons of C_2H_4,** making way to a more sustainable construction.

*When compared with aluminium Windows.
Saadatian, S., Freire, F., Simões, N., "Embodied impacts of window systems: a comparative assessment of framing and glazing alternatives". Journal of Building Engineering

Climate change is not theoretical!
It is happening right now

"The construction sector is responsible for 40% of global CO_2 emissions"

(Martinez Rocamora et al, Environmental Carbon Footprints, (2018), Industrial Case Studies)

"95% of world population is breathing dangerously polluted air" (...)

"One in six deaths is caused by air pollution"

(Das and Horton, "Pollution Health and the planet: time for Decisive Action", The Lancet, 2017)

Global warming has led to weather related events that affected 2.3 billion people and killed 157 000 people around the world, just between 1995 and 2015.

(United Nations Office for Disaster Risk Reduction, "The human cost of weather related disasters 1995-2015", Geneva, 2015)

But the potential is still much greater. With buildings accounting for 40% of our **energy consumption and over a third of our CO_2 emissions**, there's much more we can still do.[...] And it is not only about energy and CO_2 emissions; it's also about living standard, air pollution, health, jobs in the local economy, investment, growth of our economy and smartening our cities by making better use of our buildings. [...] **This is a challenge, but also an opportunity to move forward.**"

Maroš Šefčovič, Vice President of European Comission 6th July 2017

We need to invest in solutions and technology that contribute to a dramatic decrease of human's ecological footprint in everything that we do.
Starting by the places where we live, or where we work.

But sustainability is not only a matter of energy efficiency. It is also a durability issue!

In the most aggressive environments we need buildings that last.

Acid rain is responsible for severe environmental destruction across the world and occurs most commonly in the North Eastern United States, Eastern Europe and increasingly in parts of China and India.

The Earth has 620.000kms of coastal lines and 2/3 of the word's population lives under 100km from the coast Windows made from other materials have durability issues, aggravated when exposed to aggressive environments:

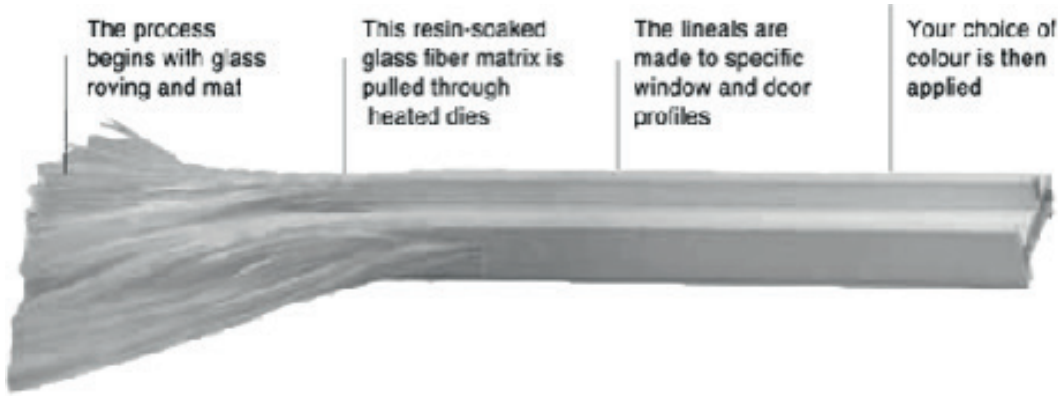
- Corrosion (near the sea/aggressive environments)
- Big Expansion / Contraction rates and very different from the glass they use
- Need of reinforcements of different materials and affect building materials, corroding its surface

Boavista Windows is the first European window systems brand focused on producing **sustainable fibreglass windows** with high durability and great design.

We were born in Porto, more than 10 years ago and we are proudly portuguese!

what is fibreglass?

fibreglass | what is it?

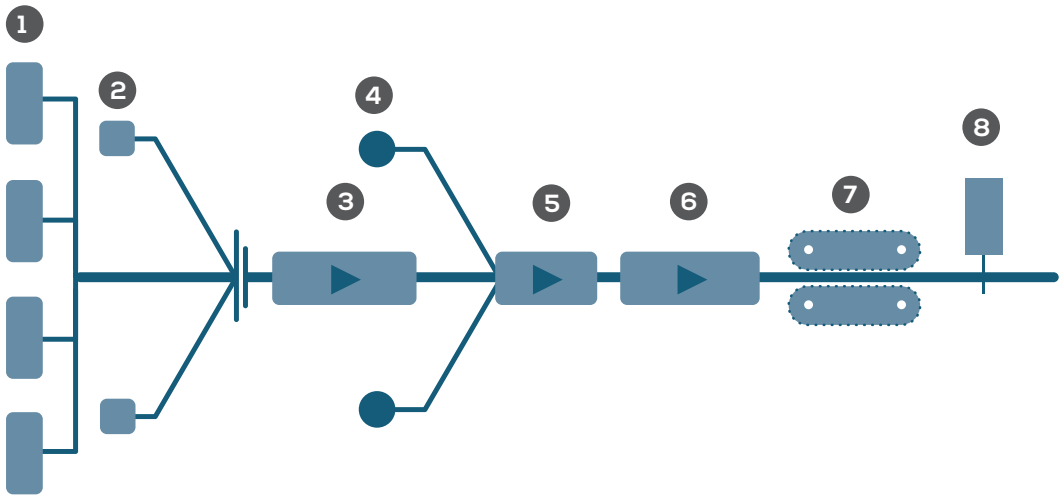


Fibreglass, the common name for GRP (Glass Reinforced Polymers), is a composite material that combines the best properties of each of its individual components.

Well known for its versatility, fibreglass presents a wide application range, from boats to wind turbines.

In the construction industry, fibreglass is used widely when the situation demands a stable, durable and resistant material.

fibreglass | pultrusion



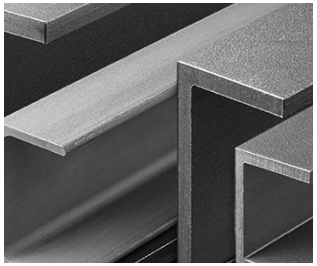
1 Unidirectional Glass
2 Continuous strand mat
3 Resin bath
4 Surfacing Veil
5 Performer
6 Heated die
7 Pulling device
8 Cut off saw

The profiles used by BOAVISTA for its windows and doors are made using pultrusion.

This technology is a fully automated and continuous process that produces profiles with constant cross section.

It is also highly efficient for it only consumes 0,07 kW to produce a linear meter of profile (approx. 1kg).

fibreglass | examples of use



Structural Profiles

Decks

Bridge, Kolding Denmark

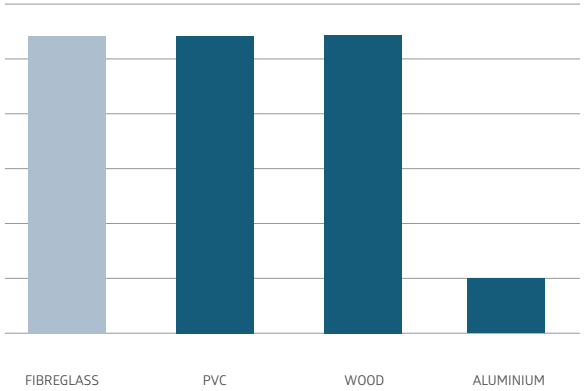
Water Treatment Center

Wind tower blade

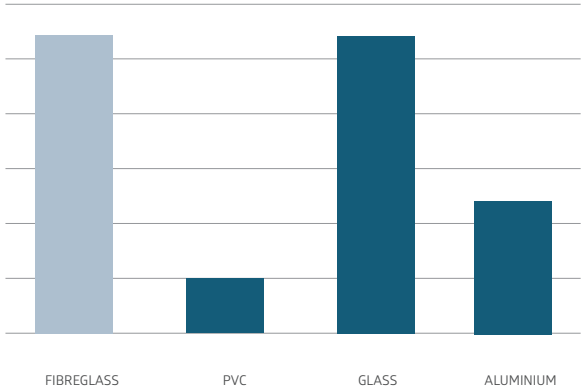
Racing vessels

fibreglass | pultruded profiles

Thermal Resistance

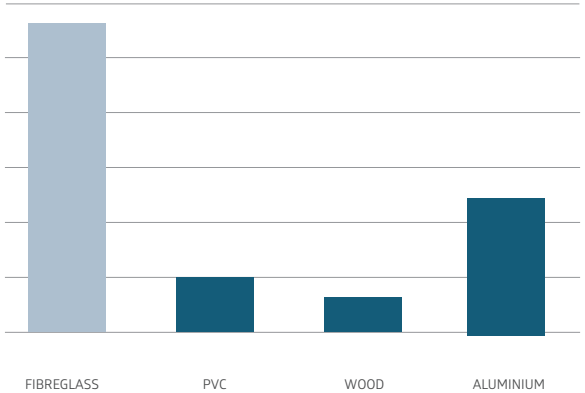


Dimensional Stability

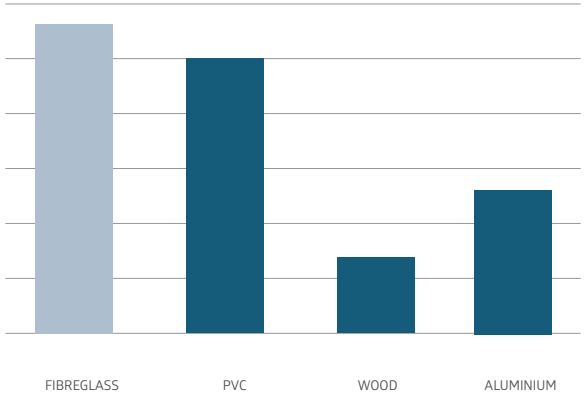


- low thermal conductivity
- low electric and acoustic conductivity
- high dimensional stability very similar to glass
- not fragile at low temperatures

Resistance/ Weight Ratio



Resistance to Corrosion/ Rot



- excellent resistance/ weight ratio
- excellent resistance to rot
- excellent resistance to corrosion
- excellent mechanical properties

Climate action noun /ˈklaɪmət ækʃn/

The act of doing something to reduce or stop climate change and prevent serious permanent damage to the environment.

In Oxford Learner's Dictionary

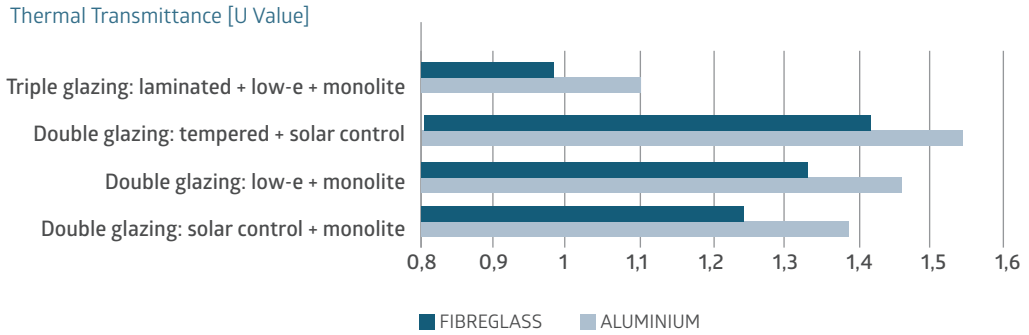
Sustainability noun /səˌsteɪnəˈbɪləti/

1. the use of natural products and energy in a way that does not harm the environment
2. the ability to continue or be continued for a long time

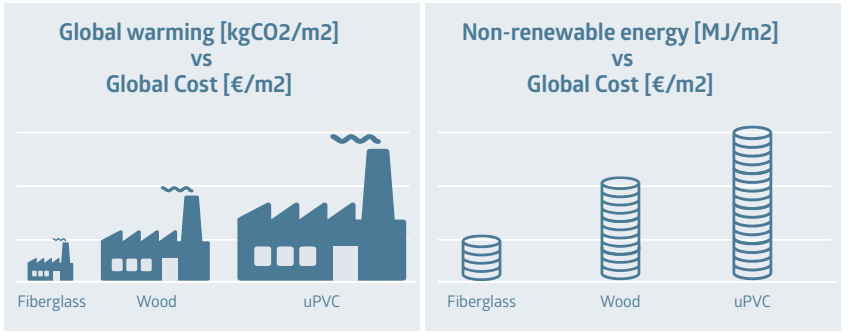
In Oxford Learner's Dictionary

ON SUSTAINABILITY

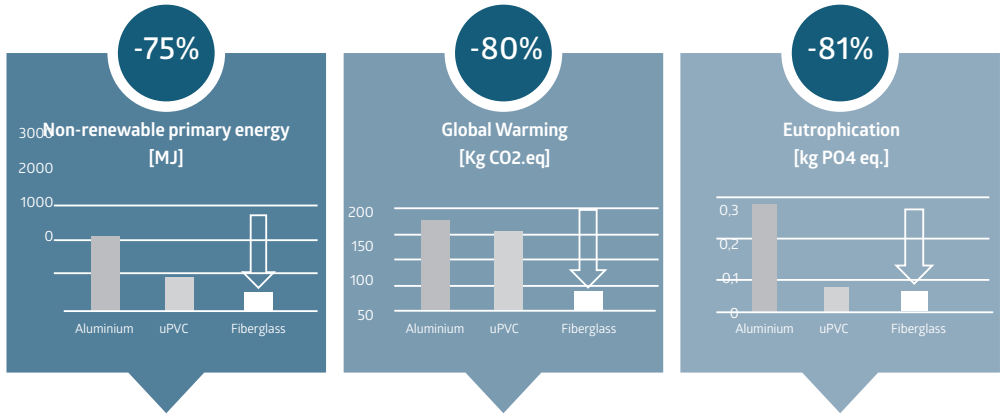
Great Performance



Lowest Global cost [€/m2] vs Global Warming [kg CO2 emissions]



Low Emissions

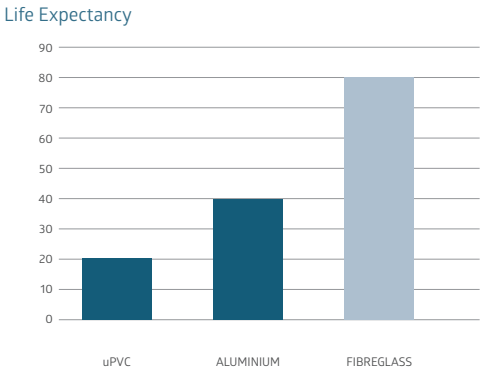


Non Renewable primary energy
Evaluate the use of non-renewable resources

Global warming
Determines the contribution for global warming by a certain green-house gas to CO^2

Eutrophication
measures the impact of high level of macro-nutrients in the environment caused by emission of nutrients into air, water and soil

High Durability



Source Broeckx-Smith, S., Suh, S., [2019]

References: Broeckx-Smith, S., Suh, S. Comparative Life Cycle Energy and Greenhouse Gas Emission Performance of Window Frame Materials. Goleta, CA, USA: (2019). VitalMetrics (IERS LLC.).; Saadatian, S., Freire, F., Simões, N., "Embodied impacts of window systems: a comparative assessment of framing and glazing alternatives" (2021) Journal of Building Engineering"; Saadatian, S., Simões, N., Freire, F., "Integrated environmental, energy and cost life-cycle analysis of Windows: optimal selection of components", (2021), Building and Environment; Salazar, James, Sowlati, Taraneh, (2008)"A review of life-cycle assessment of windows", (2008)Forest Products Journal;

Boavista is deeply commited with R&D and we were the **first in the world to develop a minimalist window manufactured in fibrelgass.**

We bring you TRUE MINIMALISM

True minimalism is not only aesthetic. **It is all about product design and philosophy and the way we manage and consume the available resources**.
True minimalism is about leavin**g the smallest footprint on Earth** as possible and working continuously towards making it a better place.

BAVISTA
FIBRE GLASS WINDOWS

This is INFINITO

We are the first fibreglass minimalist window system.

Performance Test

Requirements	Test Results
Thermal Transmittance [Uw]	Up to 1,18 W/m².°K Glass = 0,9 W/m².°K
Acoustic Insulation [Rw]	Up to 44dB (-2; -6) Glass = 48dB (-2;-7)
Air permeability	4
Water Tightness	8A
Wind Load Resistance	C3

It was created for you **to enjoy every inch of your environment, with the highest level of comfort, performance and durability!**

It is the only window system that joins a true minimalist design in all senses: almost invisible frame, low impact on the environment and extreme durability, combined with an outstanding thermal and acoustic performance. **Infinnito is made of advanced composite materials, without metal to ensure its high performing characteristics**.


BAVISTA
FIBRE GLASS
Extreme durability
Minimal by Design
Minimal ecological footprint
Thinking of the future generations
Almost invisible frame

BOAVISTA
FIBRE GLASS WINDOWS

Boavista is not only infinnito.

We have a complete range
of Fibreglass Window systems

Boavista Systems

- BWTT 60 – Tilt & Turn
- BWSL 45 – Sliding
- BWSLD 45 – Sliding
- BWD60 Door
- BWDS 35 – Double Sash
- BWS 35 – Sash

Premium Systems

- BWO60 – Casement
- Vintage Series

Boavista Windows tilt & turn 60 mm sash width

BWTT 60 tilt & turn

- Most versatile window system with multiple configurations and operating modes;
- Compatible with other BOAVISTA series;
- Standard hidden hinge system: perfect aesthetic and optimum functionality

Performance Test

Requirements	Test Method	Test Results
Thermal Transmittance [Uw]	ISO 12567-1 2010	From 0,74 W/m² oK
Acoustic Insulation [Rw]	ISO 10140-1 2010 ISO 10140-2 2010 ISO 10140-4 2010 NP EN ISO 717-1 2009	39dB (-2;-4)
Air Tightness	EN 1026 2000 EN 12207 1999	4
Water Tightness	EN 1027 2000 EN 12208 1999	8A
Wind Load Resistance	EN 12211 200 EN 12210 1999 EN 12210 1999/AC 2002	C5

Boavista Windows Sliding Drainage 45 mm sash width

BWSLD 45 Sliding

- Based on a modular system that allows multiple configurations;
- Standard sashes up to 250 kg (ex: 2,2 x 2,85 m);
- Low frame compatible to flush installations;
- Versatile lock upgradable to multi-point locking;

Performance Test

Requirements	Test Method	Test Results
Thermal Transmittance [Uw]	ISO 12567-1 2010	From 1,09 W/m² oK
Acoustic Insulation [Rw]	ISO 10140-1 2010 ISO 10140-2 2010 ISO 10140-4 2010 NP EN ISO 717-1 2009	26dB (-1; -2)
Air Tightness	EN 1026 2000; EN 12207 1999	3
Water Tightness	EN 1027 2000 EN 12208 1999	7A
Wind Load Resistance	EN 12211 200 EN 12210 1999 EN 12210 1999/AC 2002	C4

Boavista Windows Double Sash 35 mm sash width

BWDS 35 Double Sash Window

- Both panels slide;
- The bottom panel can be used as a balustrade;
- Great minimal looks

Performance Test

Requirements	Test Method	Test Results
Thermal Transmittance [Uw]	ISO 10077-1:2006 ISO 10077-2:2006	From 1,23 W/m² oK
Acoustic Insulation [Rw]	NP EN 14351-1:2006 + 1:2011	29dB (-1; -2)
Air Tightness	EN 1026 2000; EN 12207 1999	3
Water Tightness	EN 1027 2000 EN 12208 1999	8A
Wind Load Resistance	EN 12211 200 EN 12210 1999 EN 12210 1999/AC 2002	C2

BWO 60 Outward Opening Window

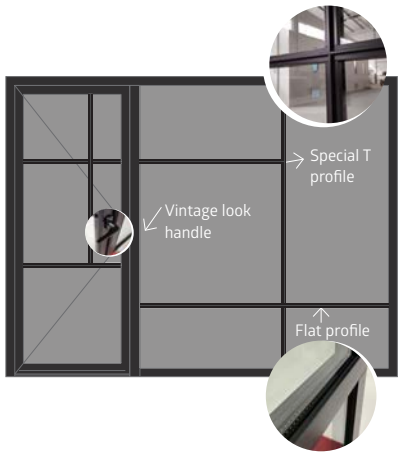
- With slim frame, for a minimal look;
- Outward side hung opening or top hung projecting window

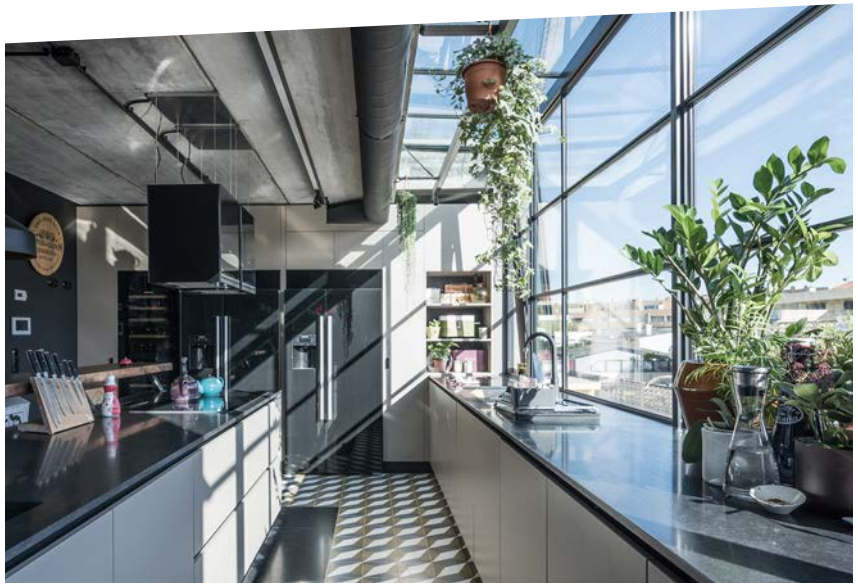
Performance Test

Requirements	Test Results
Thermal Transmittance [Uw]	From 1,19 W/m2 oK
Acoustic Insulation [Rw]	37 dB (-1;-4)
Air Tightness	4
Water Tightness	6A
Wind Load Resistance	C4

Vintage Series

- Vintage look with modern performance;
- Fibreglass reinforced profiles provide;
- Great durability even in harsh conditions





Performance Test

Requirements	Test Results
Thermal Transmittance [Uw]	From 0,74 W/m2 oK
Acoustic Insulation [Rw]	39dB (-2; -4)
Air Tightness	4
Water Tightness	8A
Wind Load Resistance	C5

Certificação	Tipo	Âmbito	Sistemas	Status
Marcação CE	Produto	Certificação de produto de acordo com normas europeias	Gama completa	Concluída
Certificação RC2	Produto	Resistência à Intrusão	BWTT60	Concluída
Sustainable Value ISO 14024	Produto	Sustentabilidade do produto	Gama completa	Concluída
Certificação RC2	Produto	Resistência à Intrusão	Sistemas BWSL45	Em curso
LEED certification	Produto	Sustentabilidade- origem dos materiais, % materiais reciclados	Gama completa	Disponível perante solicitação
PAS 24	Produto	Resistência à Intrusão segundo normas Britânicas	BW060	Em curso
Declaração Ambiental de Produto	Produto	Ambiental	Gama completa	Concluída
ISSO 9001, 14001, 45001	Empresa	Sistema de Gestão Integrada em Qualidade, Segurança e Ambiente	N/A	Concluída
Carbono Zero	Empresa	Cálculo e compensação de emissões de carbono	N/A	Concluída (revista anualmente)

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Rua Santa Apolónia 274, Armazém M
4410 - 022 Serzedo - V. N. Gaia
tel/fax +351 222 080 777
hello@boavistawindows.com