SAINT-GOBAIN

TALK TO THE EXPERTS

Saint-Gobain Glass and Technical Glass Specifications

SAINT-GOBAIN GLASS

Project: The Island Quarter, Nottingham
Product: COOL-LITE® SKN 154 II

GAIN PRACTICAL, TECHNICAL ADVICE

At Saint-Gobain Glass, our Technical Specification Team provide comprehensive specialist advice, tailored to individual projects across the glass construction industry.

We collaborate closely with our clients to seamlessly integrate our expertise throughout the entire lifecycle of glass, from manufacturing to distribution and recycling.

Benefit from our technical knowledge on a spectrum of topics, including updates on industry regulations and precise mechanical calculations, all designed to enhance your glass specification projects.

Additionally, benefit from our suite of digital tools designed to enrich your specifications, including Calumen® and our Acoustic Calculator. Experience the advantage of partnering with Saint-Gobain Glass for unparalleled guidance and support.

SERVICES PROVIDED BY THE TEAM

The correct choice of glass for a particular application requires the consideration of several different characteristics, we provide Mechanical and Thermal Stress Risk Analysis calculations to verify compliance of the glass design and ensure this is ‘fit for purpose’ for the project whilst being compliant to all current guidance and standards

- Thermal Stress Calculations
- Barrier, Wind and Maintenance

FURTHER CALCULATIONS PROVIDED INCLUDE:

- Visible Light Transmission and Reflection
- Solar Transmission and Absorption
- Thermal Safety Calculations
- Acoustic Reports
- Code and or Safety Advice
- Colour and Appearance

* We work with Vetrotech to provide glass support for fire ratings

Additional factors such as flatness, durability, and ease of cleaning should also be taken into account.

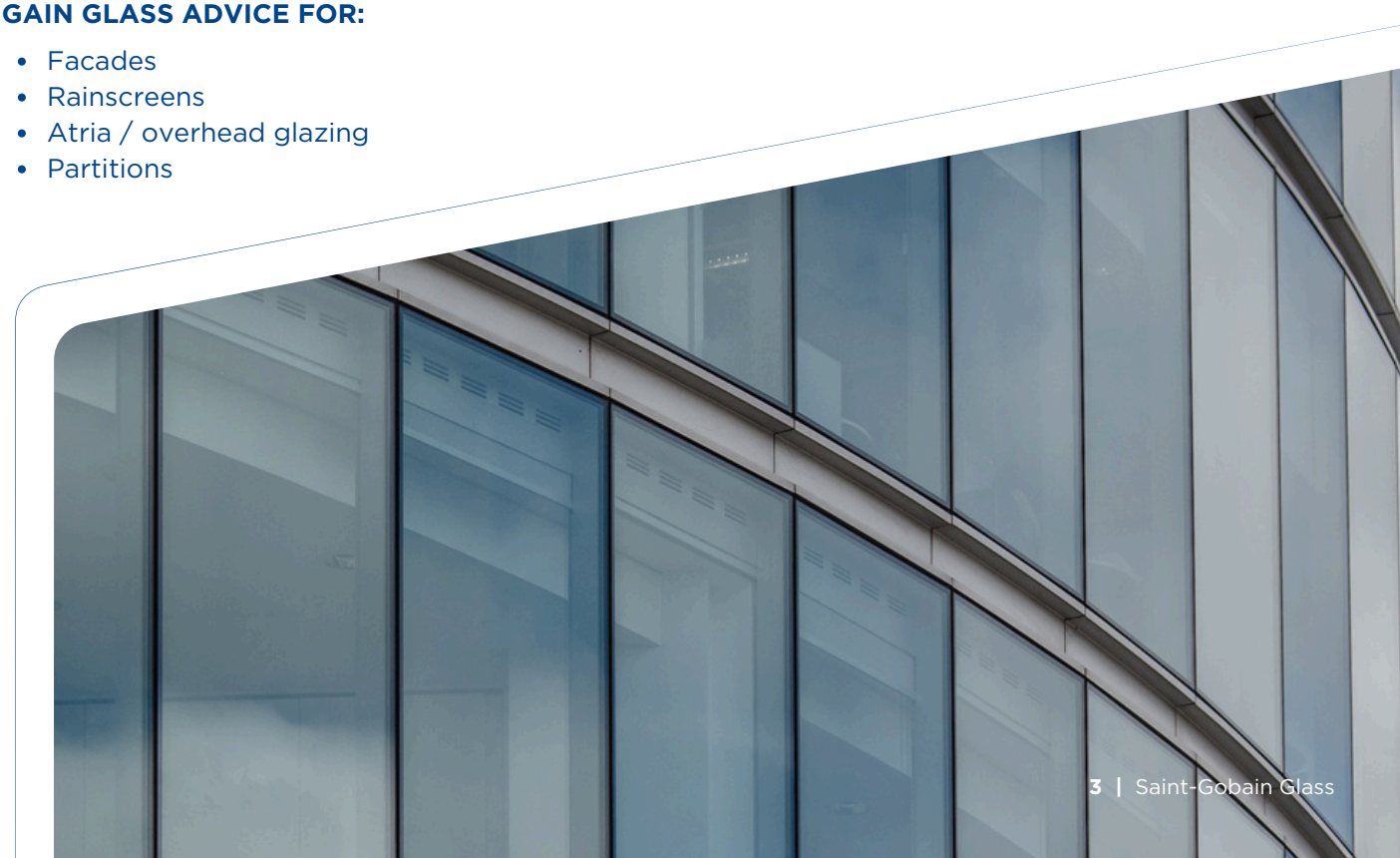
At Saint-Gobain Glass, our commitment is to provide comprehensive guidance from the initial concept stage through design development, the tender process, through to installation, ensuring that you receive the highest quality advice and support at every step of the way.

We provide extensive technical specification support, encompassing a range of services to ensure the success of your project. From guidance on specialist subcontractors to attending design meetings and analysing subcontractor submissions, we are committed to identifying and addressing any issues that may arise.

Our offering extends to hosting technical CPD seminars focused on glass, alongside the delivery of provisional calculations and finite element analysis, and conducting detailed assessments of your specifications and drawings. With our comprehensive assistance, you can trust that your project will benefit from expert insight and meticulous attention to detail at every stage.

GAIN GLASS ADVICE FOR:

- Facades
- Rainscreens
- Atria / overhead glazing
- Partitions



CPD ACCREDITATION SUPPORT

We can provide a RIBA approved Continued Professional Development (CPD) session, helping you to navigate complex glass design challenges with confidence. Covering essential topics such as material selection, performance analysis, and regulatory compliance. We strive to cover the most relevant topics crucial for designing with glass, but we can tailor the content to suit specific knowledge requirements.

SAMPLE TOPICS COVERED

NBS - Specification documents (Glass codes and where to find them).

Terms and Definitions used in the glazing industry (and where they come from).

- U Values
- G Values
- Light Transmissions
- UV Protection
- Reflectance Levels

Glass Thickness

- How to determine
- Critical Areas
- Standards and Safety Test for Glass
- Barriers
- Falling from Height
- Design Loads
- Containment Loads
- Manifestation

Chemistry and Structure of Glass

- Glass Strength (Covering all types of glass)
- Toughened Glass Process (Pro and Cons Analysis)
- Heat Strengthened Glass Process.
- Laminated Glass Process

Thermal and Solar Control using Glass (definitions and how glass combats these challenges)

- How Thermal and Solar Control Coatings work
- Selectivity of Coatings
- Alternative Coatings available

Acoustics (General overview)

- What is noise
- How Glass can be used as a barrier to sound

Visual Issues from using glass in buildings

- Issues which can arise
- Standards for visual inspections

Project: The Black and White Building, Shoreditch
Product: COOL-LITE® SKN 183 II

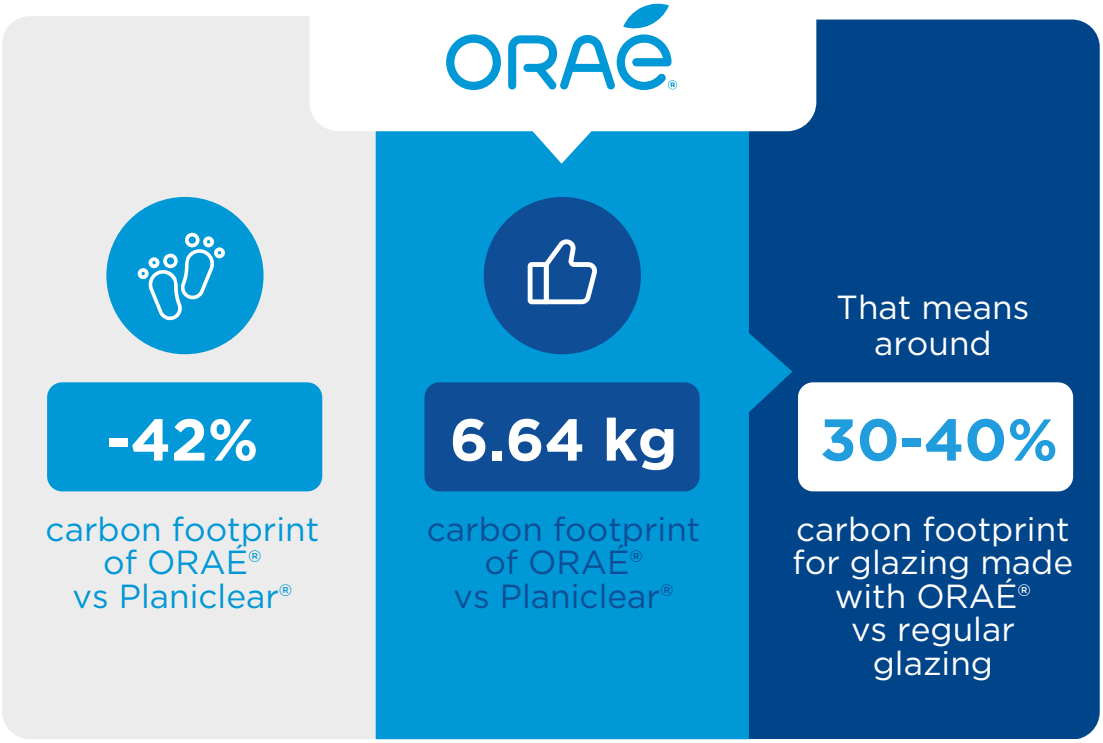
THE WORLD'S FIRST LOW-CARBON GLASS

As the world's first EPD-verified low-carbon glass, ORAÉ® has been developed with a sustainability first perspective, reducing carbon emissions and helping to advance the circular economy without compromising on aesthetics or technical standards.

Achieving a remarkably low carbon footprint of 6.64 kg of CO2 eq./m2 for a 4mm glass, ORAE® owes its low-carbon credentials to a robust combination of factors. Notably, it incorporates an impressive 64% recycled content alongside the utilisation of renewable electricity sources.

WHAT YOU NEED TO KNOW

- COOL-LITE® XTREME ORAÉ® is available in standard sizes and thicknesses (4, 6, 8 and 10mm).
- The COOL-LITE® XTREME ORAÉ® can be assembled in double or triple glazing.
- COOL-LITE® XTREME ORAÉ® delivers the same high performance and quality as COOL-LITE® XTREME PLANICLEAR® but with a lower carbon footprint. Other coating options are also available.
- Has Environmental Product Declaration (EPD) verification.



PRODUCT PERFORMANCE

ORAÉ® offers the same performance and quality to PLANICLEAR®, but with a significantly reduced carbon footprint.

As verified by its Environmental Product Declaration (EPD), ORAÉ® benefits from a 6.64 kg CO2 eq./m2 carbon footprint for a 4mm substrate. This represents an impressive 42% reduction when compared to PLANICLEAR®.

	Light Transmission (LT) [1] *[%]*	Solar Factor (g-value) [1] *[%]*	Outside Reflection (LRe) [1] *[%]*	Inside Reflection (LRI) [1] *[%]*	Carbon Footprint (GWP) A1 - A3 [2] *[kg CO_2 eq/m_2]*	Carbon Footprint (GWP) A to C [3] *[kg CO_2 eq/m_2]*	Carbon Reduction vs PLANICLEAR® [3] *[%]*
ORAÉ® 4mm	91	88	8	8	5.88	6.64	-42%
PLANICLEAR® 4mm	91	88	8	8	10.90	11.50	

1 According to EN410
2 Global Warming Potential (GWP) A1-A3 Stages (Cradle to Gate); detailed environmental data are documented in the available Product Lifecycle (PLC) and Environmental Product Declarations (EPD) of PLANICLEAR®
3 EPD's are verified by an external third party. Global Warming Potential (GWP) A-C Stages (Cradle to Grave); detailed environmental data are documented in the available Environmental Product Declarations (EPD) of PLANICLEAR® EPD can be verified by an external third party.

APPLICATIONS

ORAÉ® is versatile by design and suitable for both new construction and renovation projects, across both residential or non-residential sectors. It serves as a direct replacement for standard clear glass of equivalent thickness, regardless of the application:

- Building envelope: Ideal for use in insulating glazing for windows, facade elements, or glass roofs.
- Other external or internal applications (e.g., balustrades, doors, partitions): Available upon request to meet your specific project needs.

AESTHETICS

ORAÉ® delivers the same visual appeal and properties as our well-established PLANICLEAR® glass.

RANGE

ORAÉ® is offered as monolithic clear float glass, available in thicknesses of 3, 4, 6, 8, and 10 mm.

It can be incorporated into safety glass solutions such as STADIP® or STADIP SILENCE® for enhanced safety or reinforced acoustic insulation.

Additionally, it seamlessly integrates with our highly selective solar control product families, including COOL-LITE® XTREME

PRODUCT PERFORMANCE

Designed specifically for integration into the glazed sections of architectural facades such as curtain walls, double skin facades, and skylights, COOL-LITE® ORAÉ® has been optimally designed to meet the increasingly stringent sustainability standards within the construction sector, providing uncompromising performance, both technically and aesthetically.

COOL-LITE® ORAÉ® achieves a successful balance between both embodied and operational carbon levels:

- The glass substrate ORAÉ®, boasts a low carbon footprint validated by an Environmental Product Declaration (EPD).
- The exceptional energy efficiency provided by the COOL-LITE® XTREME and COOL-LITE® SKN coatings. These coatings significantly mitigate carbon emissions associated with energy consumption during building operation. Their superior capabilities in daylight management, solar control, and thermal insulation contribute to substantial reductions in energy usage.

Based on its verified Environmental Product Declaration (EPD), coated ORAÉ® demonstrates an impressively low carbon footprint of just 10.71 kg CO2 eq./m2 (for a 6mm substrate). This figure represents a substantial 43% reduction compared to our European standard product coated PLANICLEAR®.

When integrated into an insulated glazing unit, this reduction typically ranges between 30% to 40%.

	Carbon footprint (GWP) A1 - A3[2] *[kg CO_2eq/m_2]*	**Carbon footprint (GWP) A to C3**[3] *[kg CO_2eq/m_2]*	**Carbon reduction vs. PLANICLEAR®**[3] *[%]*
COATED ORAÉ® 6mm	91	88	8
COATED PLANICLEAR® 6mm	91	88	8

	Carbon footprint (GWP)[2, 4] *[kg CO_2eq/m_2]*	**Carbon reduction vs. PLANICLEAR®**[2, 4] *[%]*
Standard build up double glazing unit 6/16/4mm One pane coated 90% Argon		
COATED ORAÉ® (face #2 or #3)	24	-39%
TEMPERED COATED ORAÉ® (face #2 or #3)	28	-36%
Standard build up triple glazing unit 6/12/4/12/4mm Two panes coated 90% Argon		
COATED ORAÉ® (2 panes coated)	36	-38%
TEMPERED COATED ORAÉ® + COATED ORAÉ®	39	-35%

[2] Global Warming Potential (GWP A1-A3 Stages) values with PLANICLEAR® and ORAÉ® are calculations made with Calumen® for each composition of insulated glazing unit (IGU) on the basis of the standard EN 15804+A2. Detailed environmental data are documented in the available Environmental Product Declarations (EPD) of PLANICLEAR® and ORAÉ®. Only complete EPD can be verified by an external third party.

[4] All panes of the IGU with the same substrate; first pane respectively annealed or tempered (II) with the same glass compositions; counter panes always annealed.

Project: SAS Frösundavik Office Building, Sweden
Product: ORAE®

Saint-Gobain Glass mobile post-consumer glass crushing machine.

Limit CO2 and sulphur oxide emissions released during the production process.
Using one tonne of cullet in place of one tonne of raw materials can reduce scope 1, 2 and 3 CO_2 emissions by

700kg

Preserve natural resources and biodiversity.
For every one tonne of cullet used, we can save up to

1200kg

of virgin raw materials, this includes sand, soda ash and limestone.

Better glass quality with the production of optimised batches.

Increased competitiveness by meeting the market demand for recycled products.

30% **less energy is required** in the furnace when melting cullet than raw materials.

Less requirement for raw materials.
Due to the demand and scarcity of raw materials, the price of these raw materials is likely to rise.

RECYCLING WITH GLASS FOREVER

TRANSFORMING GLASS RECYCLING

Glass is a highly versatile material that has remarkable remanufacturing capabilities. Despite its infinite recyclability, the extent of its potential as a remanufactured product is often overlooked. At Saint-Gobain Glass, we've been leading an industry change, pioneering a closed-loop approach to glass manufacturing.

OUR CLOSED LOOP APPROACH

Working closely with our customers, we actively divert waste glass from landfills, remanufacturing this waste, known as cullet, into new glass at our specialised facility in Eggborough. Our ambitious goal is to achieve carbon neutrality by 2050, with 50% of all glass manufactured at Eggborough produced using cullet from our Glass Forever Recycling Programme by 2030.

Post-consumer double-glazed units are typically sent to landfills or destined for use in low-grade applications such as road aggregate. Saint-Gobain Glass re-manufacture this waste cullet into new glass at our Eggborough plant.

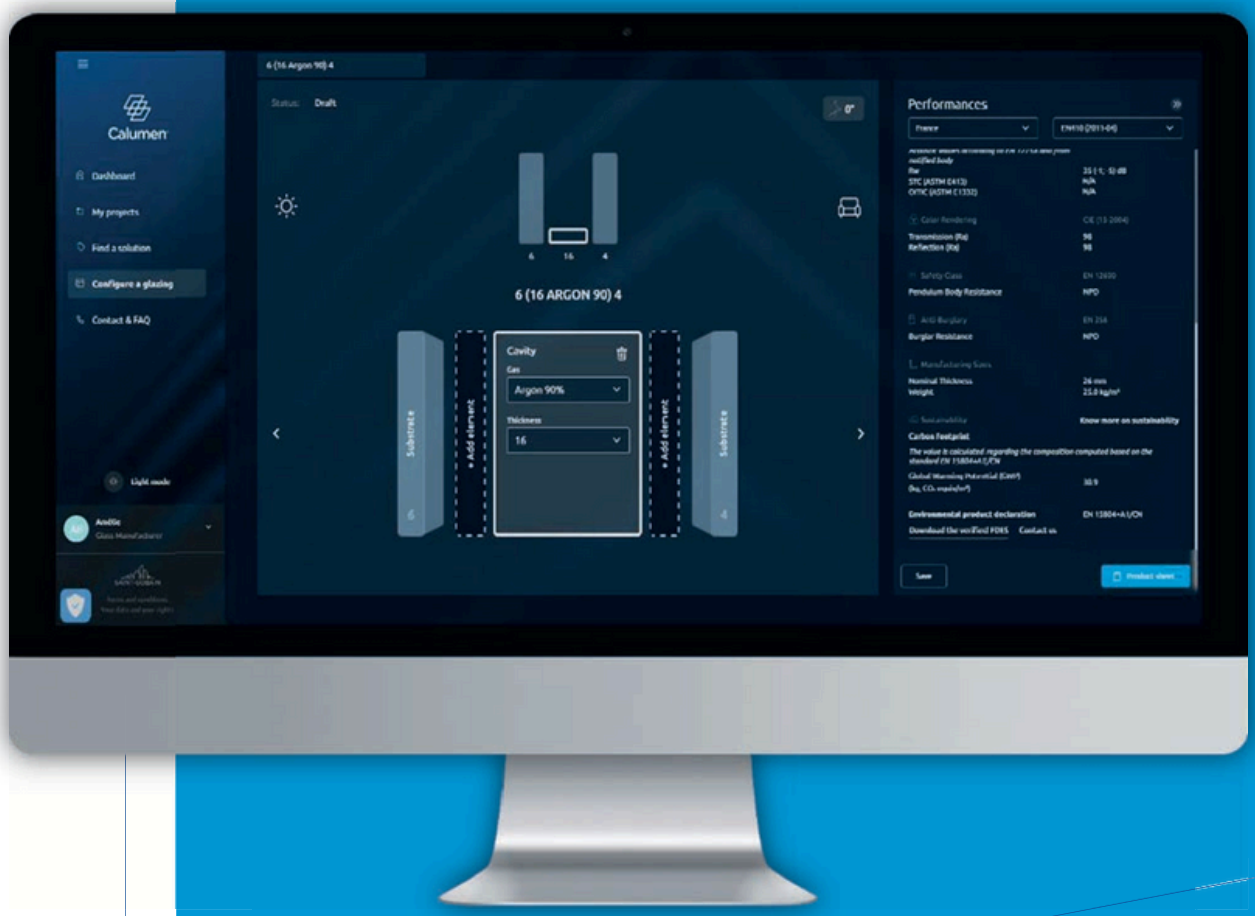
WHY GLASS FOREVER MATTERS

In the face of the climate emergency, rising energy costs, and depletion of natural resources used in glass manufacturing, it's crucial that we re-evaluate our production processes. As an industry, we must be more responsible and sustainable in our operations which is why, at Saint-Gobain Glass, we have proudly developed Glass Forever.

Cutting-edge technology and environmentally conscious practices come together to transform the cullet into new glass at our Eggborough facility, reducing the environmental impact of glass production. This contributes to a circular economy, where materials are reused, minimising waste, and conserving vital resources.

Project: Glass Wharf, Bristol
Product: COOL-LITE® SKN 176 II

Calumen®.com



Calumen is a digital simulation programme that calculates the light, energy and thermal performances of glazing. The program is designed to calculate the performance of any single glass or combination of glass types and thickness. Each of the surfaces can be coated with a thin coating providing the glazing with specific characteristics (enhanced thermal insulation, solar control, self-cleaning function, etc.).

Calumen also shows the embodied carbon of glass products and glazing combinations.

Calculation reports can be easily outputted to compare performance of alternative configurations and send on electronically, if required.

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