

SAINT GOBAIN

drives low-carbon glass transformation

For 360 years, Saint-Gobain has built a global foundation of materials expertise supported by eight cross-business R&D centres, over 1,100 manufacturing sites

and an industrial presence that spans 80 countries and 161,000 employees. This worldwide footprint enables the Group to influence the construction sector at scale and advance a deep, measur-

able transformation toward sustainability. Saint-Gobain's approach to sustainable construction is grounded in the

full life cycle of a building. The company emphasises that buildings must enhance people's health and wellbe-

Saint-Gobain's sustainable construction solutions include high-recycled-content materials, solar control glass and systems designed to reduce resource consumption and carbon impact.

A CONCRETE COMMITMENT IN TERMS OF SUSTAINABILITY



In reshaping the future of façades with the world's first low-carbon glass, SAINT-GOBAIN is reducing embodied carbon through high recycled content and renewable electricity while preserving aesthetics and performance. The company's industrial scale, sustainability pillars and real-world projects position it as a catalyst for low-carbon construction worldwide.

ing while reducing environmental impact, all while delivering strong economic value and long-term reliability. These objectives are interdependent: aesthetics, durability, productivity and cost of ownership are inseparable from responsible resource use, energy performance and indoor comfort.

EMBODIED CARBON IMPERATIVES

Within this framework, the company identifies several

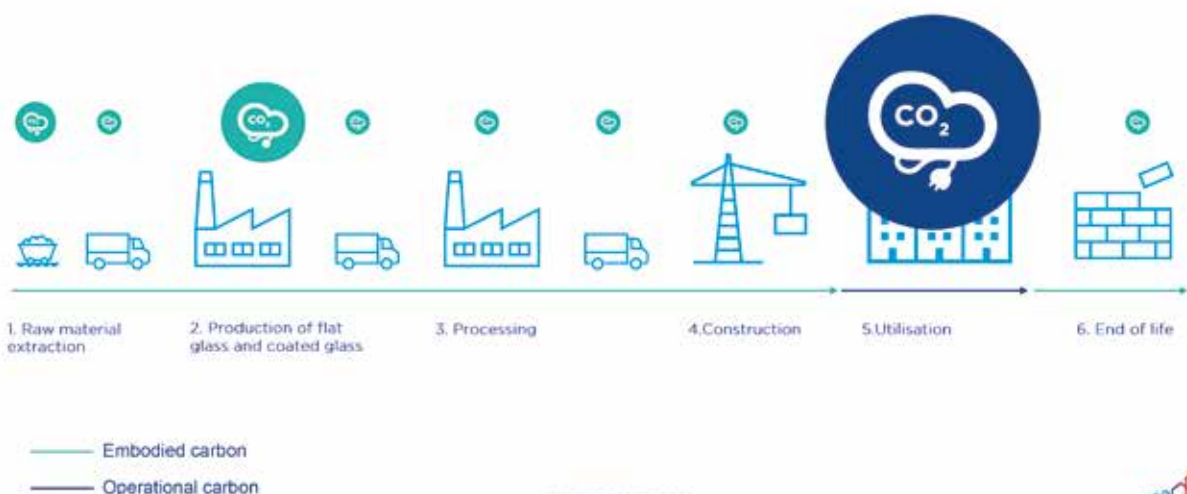
essential drivers. On jobsites, safety and the reduction of exposure to hazardous substances support healthier working conditions. Indoors, better air quality, superior acoustics and elevated thermal and visual comfort shape environments that contribute positively to occupants' wellbeing. In parallel, energy efficiency, increased reliance on renewable sources and the active reduction of embodied carbon define a path toward climate-

aligned construction. Furthermore, responsible resource management - including reduced freshwater consumption, minimised waste and the preservation of non-renewable materials - underpins a transition to more circular and resilient building systems. The urgency of addressing embodied carbon is central to Saint-Gobain's glass strategy. By 2050, as opera-

tional emissions decline, as much as half of the emissions associated with new buildings could arise from embodied carbon alone. Façades play a significant role: in 2022, Saint-Gobain Glass and Arup conducted a study demonstrating that glass represents between 24 and 60 percent of façade-level embodied carbon, amounting to roughly 4

Carbon emissions across the building life cycle show the growing importance of embodied carbon as operational emissions decline.

CARBON EMISSIONS DURING THE ENTIRE BUILDING LIFE CYCLE





to 12 percent of a building's total. As regulators and developers increasingly set embodied-carbon thresholds, the need for lower-impact materials becomes both inevitable and immediate.

A LOW-CARBON FLOAT GLASS BREAKTHROUGH

Saint-Gobain's mission in response is clear: to drastically reduce the carbon footprint of glass while maintaining the same quality, performance and aesthetics as the company's reference clear float glass,

PLANICLEAR®.

Crucially, this reduction must be achieved at an industrial scale to ensure meaningful change across global supply chains. The breakthrough enabling this shift lies in two pillars: high-recycled content and renewable electricity. Saint-Gobain's low-carbon glass integrates 64 percent recycled content – a significant proportion enabled by high-quality cullet – and is produced using renewable electricity throughout the process. The impact of cullet is particularly powerful.

Every tonne used avoids 700 kilograms of CO₂ emissions across Scopes 1, 2 and 3, preserves 1.2 tonnes of raw materials including 850 kilograms of sand and requires 30 percent less melting energy than a batch made from virgin materials. These combined benefits establish cullet as a cornerstone of circularity and carbon reduction. This approach materialises in ORAÉ®, the world's first low-carbon glass manufactured by Saint-Gobain. The product achieves a 42 percent reduction in carbon footprint compared with PLANICLEAR® for 4-millimetre thickness,

corresponding to 6.64 kg CO₂eq/m². When integrated into glazing – whether coated, double or triple assemblies – ORAÉ® reduces the overall carbon footprint by roughly 30 to 40 percent, even when transport is included.

This represents a substantial and verifiable improvement at both product and system levels.

FROM INDUSTRIAL SCALE TO REAL-WORLD IMPACT

Crucially, ORAÉ® achieves these reductions without altering the characteristics architects and fabricators depend on. Its

Each tonne of cullet avoids 700 kg of CO₂ emissions, preserves 1.2 tonnes of raw materials including 850 kg of sand and reduces melting energy by 30 percent.

CULLET BENEFITS

The use of cullet in new glass production contributes positively to our sustainability goals.

Each ton of cullet used allows us to reduce the CO₂ emissions of our glass by 700 kg (including Scope 1, 2, and 3 emissions), preserves 1.2 tons of raw materials (including sand), and reduces the energy required to melt the glass cullet by 30% compared to melting raw materials).

1 ton of cullet
=
700* kg of avoided CO₂ emissions
*Scope 1, 2, 3

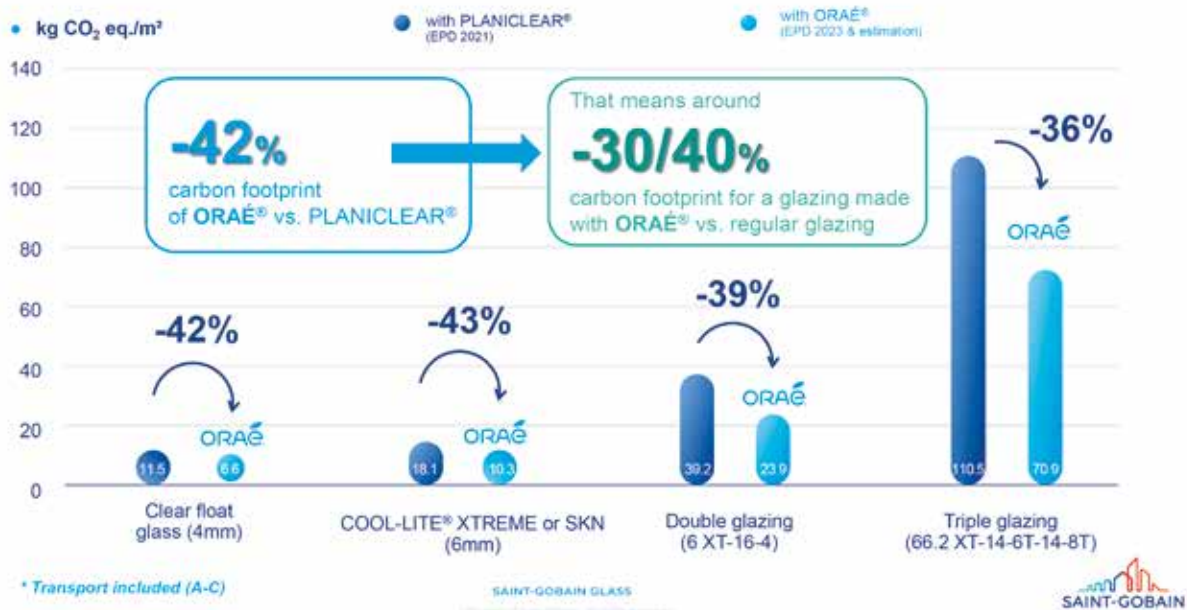
1 ton of cullet
=
1,2 ton of preserved raw materials*
*including 850 kg of sand

SAINT-GOBAIN GLASS

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CARBON FOOTPRINT ESTIMATIONS



Compared with conventional float glass, ORAÉ® reduces carbon footprint by 42 percent at product level and by approximately 30-40 percent when integrated into glazing systems.

aesthetics, performance and lifetime align with the standards of conventional float glass, allowing low-carbon alternatives to be adopted without compromise. The glass is already produced in seven plants worldwide to serve a broad range of markets. For façades, it is available through coated solutions such as COOL-LITE® XTREME and SKN; for windows, it is offered within the PLANITHERM® INFINITY range. To date, more than 35,000 tonnes of ORAÉ® have

been manufactured, avoiding 17,500 tonnes of CO₂ emissions compared with the same quantity of regular PLANICLEAR®. Major projects across Europe have already begun to integrate ORAÉ®, including developments in Paris, Caen, Gothenburg, Malakoff and multiple sites in Italy. Their adoption demonstrates not only feasibility but momentum: as embodied-carbon requirements tighten, low-carbon glass is shifting from an innovation to a necessity. By

supplying a material solution that aligns with evolving environmental imperatives while preserving performance, Saint-Gobain positions itself as a driving force in the transition to more sustainable façades. In redefining the carbon profile of glass without altering its qualities, Saint-Gobain is contributing to a fundamental realignment of construction practices. ORAÉ® stands as both a technological milestone and a practical enabler, helping the industry move decisively toward buildings that are better for people,

better for the planet and better for long-term performance. The future of low-carbon construction will depend on materials that balance circularity, quality and scale - and Saint-Gobain's innovation is already laying that groundwork.



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