



GLASS  
FOREVER

# GLASS AND THE BUILT ENVIRONMENT

*Raising Sustainability Standards in  
the Flat Glass Industry*

# CLOSED-LOOP REMANUFACTURING OF BUILDING GLASS



**Climate  
Emergency**

+



**High Energy  
Costs**

+



**Need for Energy  
Security**

=



**Higher-Performance  
Windows and Doors**

**Glass is infinitely recyclable. End-of-life glass can be collected, reprocessed, and remanufactured into new high-performance glass as part of refurbishment and redevelopment projects, for both residential and non-residential buildings, without impacting quality or performance of the new product.**

Saint-Gobain Glass is leading the industry by pioneering a 'closed-loop' scheme to help the UK glazing and window industry move towards a position where glass recycling is the norm.

We call our closed-loop cullet recovery and remanufacturing programme 'Glass Forever'.



**We have led the industry in the recovery and remanufacturing of post-industrial glass cullet for many years. We now also recover 'post-consumer' glass from old windows and facades which traditionally has been discarded into landfill.**

Our Glass Forever programme has enabled us to use up to 40% of cullet in the manufacture of our new glass. We aim to grow this to 50% by 2025.



We have developed a range of unique patented glass crushing machines that can be simply fed with end-of-life double-glazed insulated glass units (IGUs), complete with the spacer bar and seals, and outputs high quality, contaminant-free cullet (crushed glass), bagged ready for collection.

Being able to do this in one process is a breakthrough, meaning that IGUs do not have to be manually separated, a process which is labour intensive and prohibitively expensive.

At the same time, we also implemented a process for collecting the bags of cullet and developed a new cullet recovery and processing infrastructure at our Eggborough manufacturing plant.

<p><b>ONE</b> TONNE OF CRUSHED GLASS</p> <p><b>=</b></p> <p>SAVES 1.2 TONNES OF VIRGIN RAW MATERIALS</p>	<p><b>ONE</b> TONNE OF CRUSHED GLASS</p> <p><b>=</b></p> <p>SAVES ENOUGH ENERGY TO POWER AN AVERAGE HOME FOR SIX MONTHS</p>	<p><b>ONE</b> TONNE OF CRUSHED GLASS</p> <p><b>=</b></p> <p>PREVENTS 700KG OF CO<sub>2</sub> GOING INTO ATMOSPHERE (Scope 1, 2 &amp; 3)</p>
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# THE PROCESS



Working with industry partners (e.g., deconstruction specialists, new window and façade installers), post-consumer IGUs or single sheets of flat glass are recovered from the building.



Once transported to collection and processing partners, our automated glass-crushing machines are used to process the post-consumer glass into cullet.



Old spacer bars are separated and packed separately for recycling.

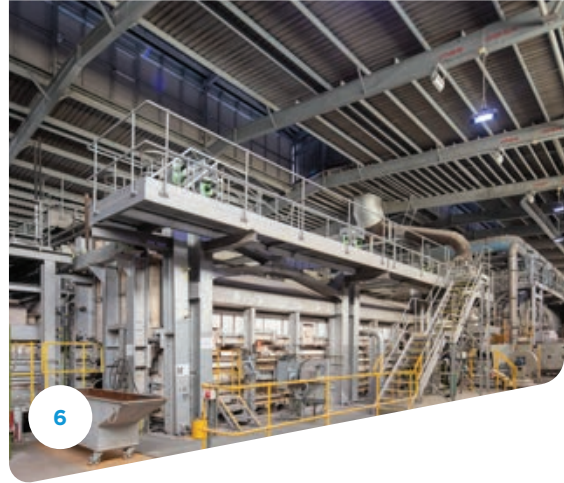


The cullet is transported back to our factory at Eggborough, Yorkshire.

# THE PROCESS



The cullet is treated in our cullet processing facility to remove any contaminations.



The cullet is then blended with other raw material and remanufactured into new high-performance flat glass.

## LAMINATED GLASS

Like 'monolithic' glass, we can remanufacture laminated glass. It is processed and introduced into the furnace without impacting the quality of the new glass or increasing emissions.



## THE WORLD'S FIRST FULLY MOBILE POST-CONSUMER GLASS CRUSHING MACHINE

We have developed a range of patented glass-crushing machines. They enable the process to be volume-scaled in a safe way, whilst also preventing contamination of the cullet. The latest innovation is a mobile glass-crushing machine housed in a recycled shipping container to enable deployment to major deconstruction sites.



## GET IN TOUCH

To contact us about your project or for any further information, please email us at the following address and we will reply within 24 hours.

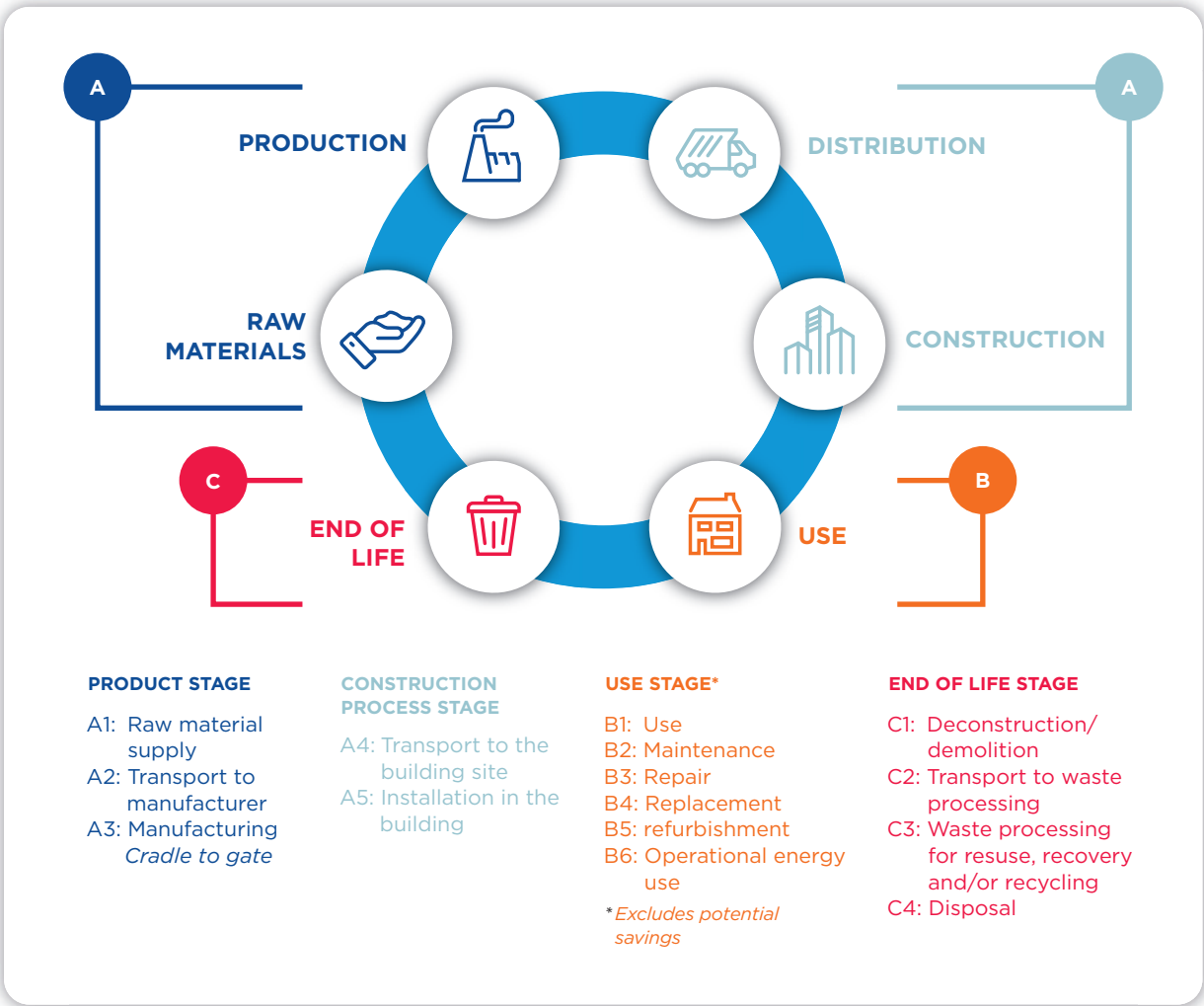
[GlassForever@Saint-Gobain.com](mailto:GlassForever@Saint-Gobain.com)

**LIFECYCLE ASSESSMENTS AND ENVIRONMENTAL PRODUCT DECLARATIONS**

**Lifecycle Assessments (LCAs) and Environmental Product Declarations (EPDs) help to identify and specify construction materials with low environmental impact (including embodied carbon) over the full life cycle of the building.**

The LCA is a method used to assess the environmental impacts associated with a product, process, or activity throughout its entire life cycle. It involves analysing and quantifying the inputs, outputs, and potential environmental impacts at each stage, from raw material extraction and production to use and disposal.

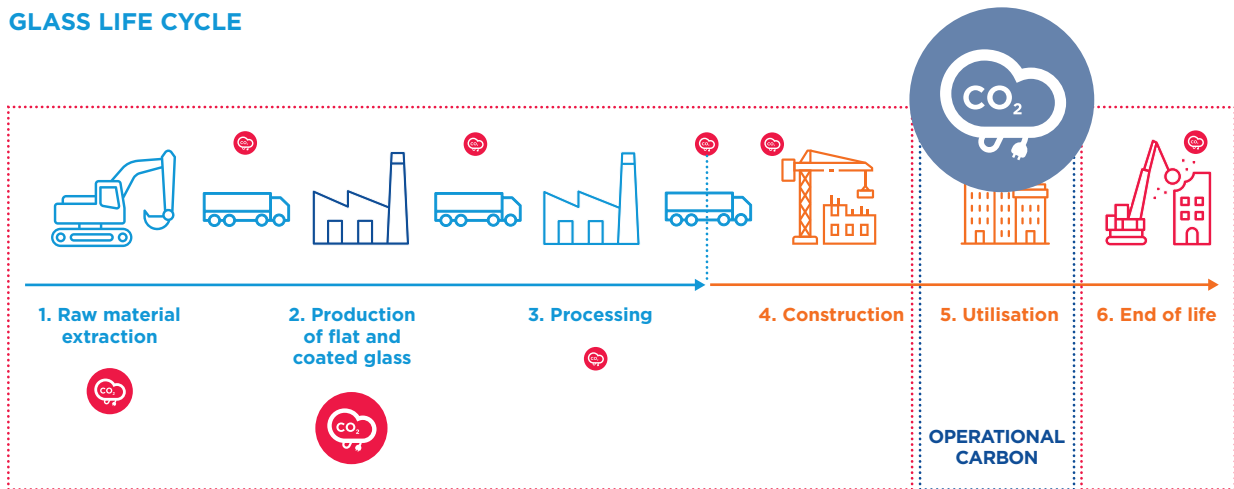
**THE FULL LIFE CYCLE IN OUR LCA: FROM CRADLE TO GRAVE**



An LCA takes into account various environmental categories such as energy consumption, greenhouse gas emissions, water usage, waste generation, and resource depletion. By considering the entire life cycle,

an LCA provides a comprehensive understanding of the environmental implications of a particular system and helps in identifying opportunities for improvement and making informed decisions towards more sustainable practices.

## CARBON EMISSIONS DURING THE ENTIRE BUILDING GLASS LIFE CYCLE



### EMBODED CARBON

An EPD is a standardised document that provides verified information about the environmental impact of a product over its entire life cycle. It presents data on various environmental aspects such as carbon footprint, energy consumption, water usage, and emissions to air, water, and soil.

EPDs are based on international standards and guidelines, and help specifiers make informed decisions by comparing the environmental performance of different products.

We publish EPDs on all main product ranges. Our EPDs are being updated regularly as improvements are made to our sustainability credentials and our Net-Zero plans are implemented.



**SAINT-GOBAIN  
EPD PORTAL**

<https://www.saint-gobain-glass.com/EPD-verified>





## MODEL SPECIFICATIONS: SAINT-GOBAIN PROPOSED GLASS SPECIFICATIONS

### PROPOSED GLASS SPECIFICATION



**Saint-Gobain Glass has delivered hundreds of complex and unique projects across the construction industry, working in partnership with architects, contractors and clients to deliver stunning glazing solutions.**

We partner some of the UK's leading architectural practices to help interpret their visions for buildings into practical, beautiful and award-winning reality.

### YOUR GLAZING PARTNER



During the glazing specification process there are numerous considerations from safety and sustainability to quality, performance, lead times and budget. Our technical experts can work with you to develop specification documents based on the particular requirements of a building project.

Our specification process is fully traceable and supported by a legal framework, to help limit risk and ensure compliance.

### VISIT OUR TECH HUB

The Saint-Gobain Glass technical team can help with the specification and processing of flat glass for building applications. Get in touch or find details online.

<https://techhub.uk.saint-gobain-building-glass.com>





# Calumen<sup>®</sup>.com



Calumen is a digital simulation program 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.



### TECH HUB

The Saint-Gobain Tech Hub provides product information, project case studies, a technical library and other tools and resources to help you design and specify.



### ACOUSTIC CALCULATOR

The acoustic calculator allows you to search by performance requirements and glazing parameters to find solutions for your projects.



### BIM OBJECTS

We can provide Building Information Modelling (BIM) objects to be used in your Revit and ArchiCAD software. Two BIM objects are available: one for the windows and the other for the curtain wall to help with thermal insulating and solar control glass solutions.



### SAMPLES

We can provide glass samples - simply complete an online form at:

<https://techhub.uk.saint-gobain-building-glass.com/order-a-sample>







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