

BREEAM[®] with Saint-Gobain Glass

*For a
sustainable
habitat*

"One Angle Lane", London, BREEAM Excellent
Glass CONTRASTVIEW by GLASSOLUTIONS Eckelt Glas, Austria



October 2012
Based on an office assessed with "BREEAM Europe Commercial 2009" specifications

Editorial



The building trade is one of our economy's key sectors and all the stakeholders involved have strongly acted to improve the energy efficiency of new and renovating buildings.

Saint-Gobain Glass's innovation capabilities ensure that we become a reference for Sustainable Habitat, based on three levels of excellence:

1. Energy Efficiency by minimising the building energy requirement;
2. Comfort for the occupants through winter, summer and acoustic comfort, natural day lighting and indoor air quality;
3. Environmental friendliness by administering Life Cycle Assessments of our products, and by minimizing all our environmental impacts

In this context, Saint-Gobain Glass supports BREEAM, the environmental certification for buildings. In these next pages, let's discover together how great an asset our glass can be for this certification.

Houchan Shoeibi
General Manager of Saint-Gobain Glass

SAINT-GOBAIN GLASS IN SHORT

As Europe's number one glassmaker and world leader in coated glass, Saint-Gobain Glass guarantees to supply its customers with quality glass products. Under a single brand, Saint-Gobain Glass manufactures clear and extra-clear, colored, coated, laminated, patterned, mirrored and lacquered flat glass.

An international manufacturing network

More than
10 000 employees.

Locations in over
30 countries.

€2.5 billion in
turnover in 2011.

**36 flat glass
manufacturing facilities**
("floats") and over 15 magnetron
lines ("coaters").



The BREEAM® Certification

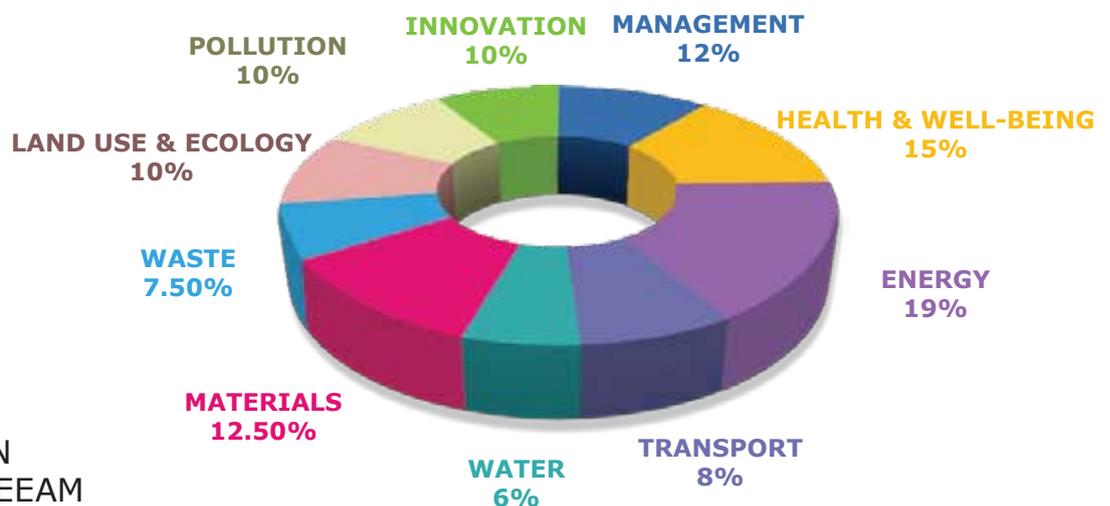
What is BREEAM®?

BREEAM (Building Research Establishment’s Environmental Assessment Method) is an environmental certification scheme for buildings created in the UK in 1990. In terms of the number of buildings certified, BREEAM is the biggest certification scheme in the world, with 200,000 buildings certified and over one million registered. BREEAM’s certification schemes vary according to the country, type of building (office building, retail...) and type of construction (new, refurbishment...). This brochure is based on “BREEAM Europe Commercial 2009”, the scheme for a new office building.

Ten categories for a sustainable building

Credits are awarded in ten categories based on the performance of the building assessed. These credits are then aggregated to produce a single overall score on a scale of Pass, Good, Very Good, Excellent and Outstanding.

CATEGORIES	CREDITS AVAILABLE	WEIGHTING	SAINT-GOBAIN GLASS PRODUCTS IMPACT
Management	11	12%	No
Health & Well-being	14	15%	Yes
Energy	24	19%	Yes
Transport	9	8%	No
Water	9	6%	No
Materials	13	12.50%	Yes
Waste	7	7.50%	Yes
Land Use & Ecology	10	10%	No
Pollution	12	10%	No
Innovation	10	10%	Yes
TOTAL	119	110%	



DISTRIBUTION OF THE 10 BREEAM CATEGORIES

BREEAM® rating

BREEAM® rating

A BREEAM project can achieve 109 credits; Innovation provides opportunities for up to 10 bonus credits. But the minimum percentage to be BREEAM certified is 30% (equivalent to 33 credits). Higher levels of compliance are possible, leading to different rankings, as shown in the table below.

RATING	% SCORE
Unclassified	< 30%
Pass	≥ 30%
Good	≥ 45%
Very good	≥ 55%
Excellent	≥ 70%
Outstanding	≥ 85%

Contents of the brochure

BREEAM does not certify a specific product, but using Saint-Gobain Glass high performance products can help your future project **earn up to 40 credits**.

CATEGORIES	CRITERIA WHERE SAINT-GOBAIN GLASS BRINGS VALUE	CREDITS AVAILABLE	PAGES
Health & Well-being	Hea 1 - Daylighting	1 credit	06
	Hea 2 - View Out	1 credit	07
	Hea 3 - Glare Control	1 credit	08
	Hea 9 - Volatile Organic Compounds	1 credit	09
	Hea 10 - Thermal comfort	2 credits	10
	Hea 13 - Acoustic Performance	1 credit	11
Energy	Ene 1 - Energy Efficiency	15 credits	12
Materials	Mat 1 - Materials Specification	4 credits	16
	Mat 5 - Responsible sourcing of materials	3 credits	18
Waste	Wst 2 - Recycled aggregates	1 credit	20
Innovation		10 credits	22
		40 credits	



SAINT-GOBAIN GLASS UK GLASS MANUFACTURING FACILITY (FLOAT)

Daylighting (Hea 1)

Aim

To give building users sufficient access to daylight.

Requirements

This criterion is based on two main points:

1. The provision of daylight has been designed in accordance with national best practice daylighting guides.
2. At least 80% of the net leasable office floor area is adequately daylit.

"Adequately daylit" is defined according to daylight luminance (200 lux for 2650 hours per year on average) or an average daylight factor, depending on the latitude of the building.

A uniformity ratio of at least 0.4 or a minimum point daylight factor also has to be achieved.

LATITUDE (°)	AVERAGE DAYLIGHT FACTOR	MINIMUM POINT DAYLIGHT FACTOR (SPACES WITH NO GLAZED ROOF)
≤ 40	1.5	0.60
40-45	1.7	0.68
45-50	1.7	0.68
50-55	1.5	0.80
55-60	2.1	0.84
≥60	2.2	0.88

Saint-Gobain Glass contribution

Glass by nature is the right material to connect indoor and outdoor spaces. With its broad range of energy-efficient coated glass products, branded under SGG PLANITHERM and SGG COOL-LITE, providing a wide variety of visible light transmittance (from less than 10% to 83%) while limiting energy transfer through the glass, Saint-Gobain Glass can help maximize the natural light entering the building.

Through the color neutrality of certain products in the range (a high Ra, color rendering index), Saint-Gobain Glass avoids any distortion in the light spectra, meaning the colors appears exactly as they are.

A blue sky remains a blue sky...

Used in doors and partitions, glass is also a very important material inside buildings. It maximizes light input, reaching those offices furthest away from the outer wall, and corridors, too, benefit from the same input, a key aspect for user comfort.

Products	
SGG PLANITHERM® series	SGG COOL-LITE® XTREME series
SGG PLANISTAR® SUN	SGG ANTELIO®
SGG COOL-LITE® ST series	SGG REFLECTASOL®
SGG COOL-LITE® ET series	SGG DIAMANT®
SGG COOL-LITE® K / KT series	SGG VISION-LITE®
SGG COOL-LITE® SKN series	SGG STADIP® PROTECT

Documentation available

- For any technical data concerning our glass, please consult our websites.



View Out (Hea 2)

Aim

To offer occupants the possibility to refocus their eyes from close work and enjoy an external view, thus reducing the risk of eyestrain and breaking the monotony of the indoor environment.

Requirements

Large working spaces and desks have to be within 7 m distance of a wall with a window or permanent opening providing an adequate view out, where the window/opening is $\geq 20\%$ of the total inside wall area.

Saint-Gobain Glass contribution

A window is by nature made of transparent glass. There are glazing solutions to suit everybody, varying in terms of light transmission, color, neutrality, degree of reflection, etc... Whatever the preference, glass offers a great way to view the world outside.

Products

SGG PLANITHERM® series
SGG PLANISTAR® SUN
SGG COOL-LITE® ST series
SGG COOL-LITE® ET series
SGG COOL-LITE® K / KT series
SGG COOL-LITE® SKN series
SGG COOL-LITE® XTREME series
SGG ANTELIO®
SGG REFLECTASOL®
SGG DIAMANT®
SGG VISION-LITE®



Glare Control (Hea 3)

Aim

To reduce problems associated with glare in occupied areas through the provision of adequate controls.

Requirements

To obtain this credit, the building has to be equipped with an occupant-controlled shading system on all windows, glazed doors and rooflights in all relevant building areas.

Saint-Gobain Glass contribution

Saint-Gobain Glass offers the fully-integrated system including a movable blind incorporated inside the cavity of an insulated glass unit, like sGG CLIMAPLUS SCREEN and the DLS ECKLITE systems.

Saint-Gobain's affiliate SAGE presents SageGlass, which is electronically tintable glass that improves building energy performance, enhances the way people experience daylight in buildings by controlling glare and enables more sustainable design and construction by replacing mechanical shades. (more information on www.sageglass.com)



SageGlass® – Chabot College, San Francisco, USA

Volatile Organic Compounds (Hea 9)

Aim

To acknowledge and foster a healthier environment indoor through the specification of interior finishes and fittings with low VOC (volatile organic compounds) emissions.

Requirements

This credit will be awarded if the following two conditions have been met:

- All decorative paints & varnishes have been tested and their VOC maximum content complies with the limit values of the Decorative Paint Directive 2004/42/CE (between 30 and 850 g/l depending on the paint & varnish).
- At least five of the seven product categories listed (wood panels / timber structures / wood flooring / resilient, textile & laminated floor coverings / suspended ceiling tiles / flooring adhesives / wall-coverings) meet the relevant standards for VOC emissions.

Saint-Gobain Glass contribution

As we spend almost 90% of our time indoors, interior air quality and VOC content are key issues.

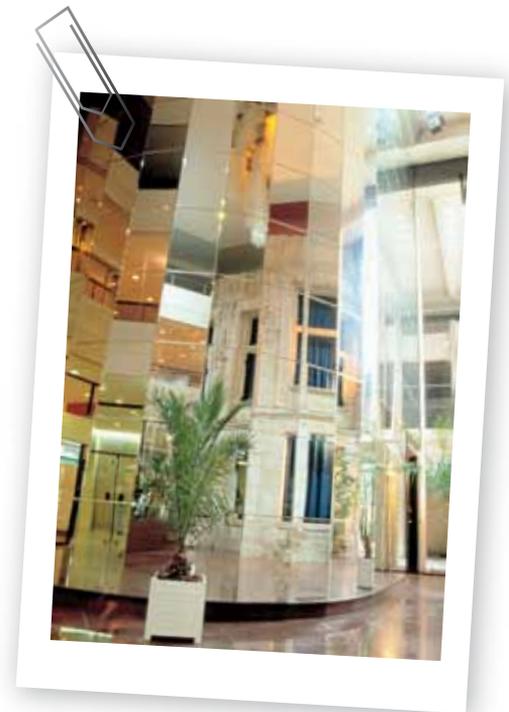
Glass and glazing are not included in the aforementioned seven categories considered by BREEAM, **as glass (clear, extra-clear, body tinted, patterned, tempered...) is by nature an inert material that releases no VOCs.**

Considered as decorative add-ons, post-construction, mirrors and lacquered glass are not considered in the BREEAM specifications either.

However, both may play an important role in the building's design when it comes to providing space and light.

Conscious of the stakes, Saint-Gobain Glass has developed sGG MIRALITE REVOLUTION, a new mirror with a very low VOC content ($\leq 10 \mu\text{g}/\text{m}^3$ of air).

Following the new French regulation on VOC & construction products (introduced April 19, 2011), **both sGG MIRALITE® REVOLUTION mirror and sGG PLANILAQUE EVOLUTION lacquered glass rank highest, scoring an A+.**



	Measurement after 28 days (following ISO 16 000 by Eurofins)	
	Total VOC	Formaldehyde
sGG MIRALITE® REVOLUTION	$\leq 10 \mu\text{g}/\text{m}^3$	$< 10 \mu\text{g}/\text{m}^3$
sGG PLANILAQUE® EVOLUTION	$\leq 10 \mu\text{g}/\text{m}^3$	$< 10 \mu\text{g}/\text{m}^3$
Score A+ (Decree of 2011)	$< 1000 \mu\text{g}/\text{m}^3$	$< 10 \mu\text{g}/\text{m}^3$



Documentation available

- The VOC test reports per product.

Thermal Comfort (Hea 10)

Aim

To use design tools to ensure that appropriate thermal comfort levels are achieved.

Requirements

One credit can be gained when the assessment of the building's thermal comfort, in both winter and summer comfort, complies with recommended comfort criteria. These assessment and recommendation are based on international standards (EN ISO 7730:2005).

To obtain a second credit, thermal modeling has to be carried out in accordance with the same standard and such an analysis used at the building design stage to optimize thermal comfort (building shape and orientation, interior layout, effect of trees...).

Saint-Gobain Glass contribution

The use of high-performance glazing can contribute to thermal comfort in both winter and summer, through efficient insulation and solar control, and by eliminating the cold areas around windows.

In winter, the cold stays outside and the heat inside, which reduces heating requirements. The high-performance insulation properties of Saint-Gobain's glass, such as SGG PLANITHERM (Ug coefficient down to 1.0 W/m².K for a double-glazed unit and to 0.5 W/m².K for a triple glazed unit), limits heat loss while the greater transparency to solar radiation (high solar factor up to 71%) increases solar energy gains.

In summer, the solar gains are reduced thanks to solar control and shading systems, which contains overheating and the need for air conditioning. Saint-Gobain Glass provides a range of coated glass, like SGG COOL-LITE well-suited for the design of building envelopes.

Finally, an occupant working close to a window may feel a certain discomfort due to direct sunlight or coldness emanating from the window. Saint-Gobain's glass eliminates this so-called **"cold wall" phenomenon**: even in winter, the difference in temperature between room atmosphere (20° C) and the inner surface of the glass (17°C) remains low and rarely exceeds 3°C. Such a difference practically goes unnoticed, thus improving the feeling of comfort.



Products

SGG PLANITHERM® series
 SGG PLANISTAR® SUN
 SGG COOL-LITE® ET series
 SGG COOL-LITE® K / KT series
 SGG COOL-LITE® SKN series
 SGG COOL-LITE® XTREME series

Acoustic Performance (Hea 13)

Aim

To ensure the building's acoustic performance meets the appropriate standards.

Requirements

The indoor ambient noise levels (external noise transmitted via the façade + interior noise, for instance from mechanical ventilation systems) must comply with the following (measured when the areas are unoccupied):

- ≤ 40 dB in single occupancy offices,
- between 40 and 50dB in multiple occupancy offices,
- ≤ 40 dB general spaces (staffrooms, restrooms),
- ≤ 35 dB in spaces designed for public speaking e.g. seminar/lecture rooms,
- ≤ 50 dB in informal café/canteen areas.

Saint-Gobain Glass contribution

Traffic, work, loud music ... all these noises affect the daily quality of life. The noise level of a downtown location surrounded by traffic is around 80dB. High-performance acoustic glazing can bring a lot of comfort by reducing this exterior noise by up to 50dB (Rw).

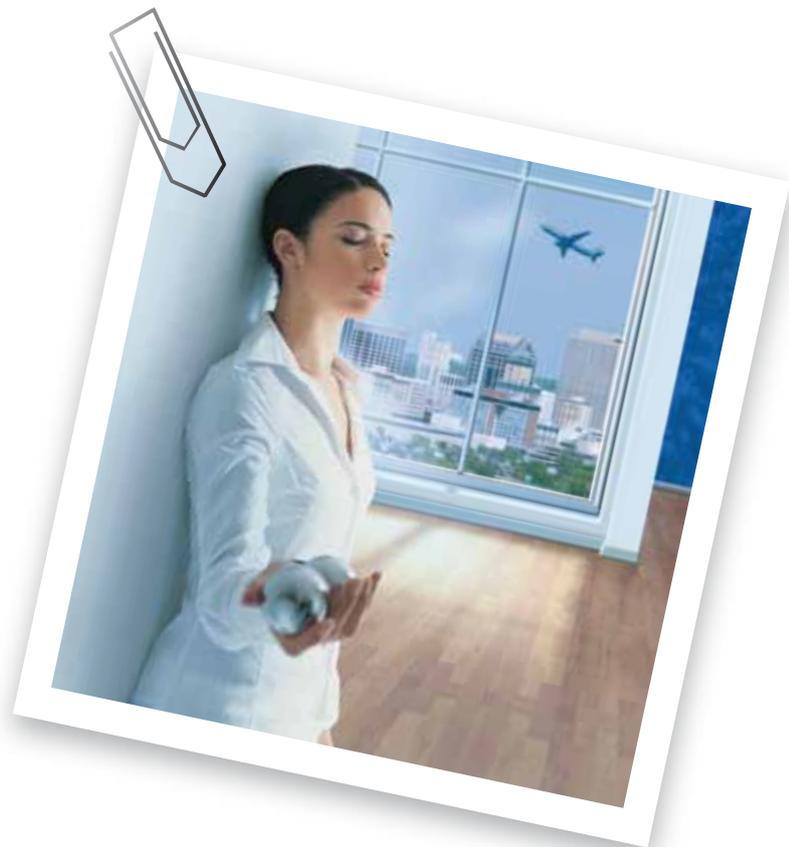
Acoustic Saint-Gobain's glass plays a vital role in protecting a room's soundscape. The choice of glazing naturally depends on the noise level outside the building (airport, small town ...).

The acoustic glazing unit is made either:

- of two panes of glass having a different thickness;
- or, a single pane and a special laminated glass (SGG STADIP SILENCE) made of two sheets of glass bonded together with a plastic sheet (PVB Silence), specially designed to enhance sound insulation.

The glazing solution then has to be integrated into a good quality, airtight frame as noise will use any air passage to spread.

Phone conversations, a noisy colleague, the photocopier... are also disturbing noises. Glass partitions made of SGG STADIP SILENCE can be an interesting solution to reduce noise pollution without blocking natural daylight.



Products

SGG STADIP® SILENCE series, with all configurations and thicknesses

Energy Efficiency (Ene 1)

Aim

To acknowledge and foster buildings which are designed to minimize the energy-in-use consumed.

Requirements

The percentage of improvement between the "Current Standards Building Energy Performance Index" and the assessed "Building Energy Performance Index" is used to allocate the number of credits.

$$\text{Percentage of improvement} = \frac{\text{current standard} - \text{building performance}}{\text{current standard}} \times 100$$

The credit allocation is illustrated in the table below:

Credits	% of improvement
1	1%
2	3%
3	5%
4	7%
5	11%
6	15%
7	19%
8	25%

Credits	% of improvement
9	31%
10	37%
11	45%
12	55%
13	70%
14	85%
15	100%

A Saint-Gobain residential example: the Multi-Comfort house in France

The Saint-Gobain Multi-Comfort house was built in 2011 in Beaucouzé, a town near Angers. At that time, the 2005 thermal regulation was in force, imposing a primary energy ceiling of around 80kWh/m² for a new house. The house in Beaucouzé has an energy consumption of only 30kWh/m². Scoring this performance according BREEAM criteria will lead to:

$$\text{Percentage of improvement} = \frac{80-30}{30} \times 100 = 63\% = 12 \text{ credits}$$

Saint-Gobain Glass contribution

Over the past years, Saint-Gobain Glass, a leader in coating innovation, has launched some of the most advanced energy-efficient coated glass for façades, skylights and windows installed in all types of residential and commercial buildings. These coated glass products offer a broad spectrum of performance, in terms of thermal insulation, visible light transmittance and solar factor.

For heating dominant climate, Low-e coatings will reduce heat losses (Ug value) but need to keep a high solar factor to allow sun's heat to come in.

For cooling dominant climate, solar control coatings will reduce heat from outside to come inside, but need to reduce solar factor to let the sunlight in, while keeping out most of the heat.



To find out the best glazing, it is important to take into consideration some key parameters like: location, orientation, living space, size of the windows etc... Saint-Gobain Glass has developed a tool to select the best glazing in the residential sector, depending on those criteria: the **sgg Glass Compass**.

The sgg PLANITHERM series comprises a variety of low-E coatings each with very high visible light transmission. Currently the best-selling low-E glass in Europe and Asia, sgg PLANITHERM offers a comprehensive product range:

- sgg PLANITHERM ONE, the first low-E coating with a 1% emissivity,
- sgg PLANITHERM TOTAL+, the first coating with high performance Low-E coating and a high solar factor. The best energy balance coated glass according to the UK Window Energy Rating System,
- sgg PLANITHERM LUX, the first coating to enable the same, or even slightly higher, solar heat gain in triple glazing as a classic low-E double-glazed unit,
- sgg PLANISTAR SUN, the "4 seasons comfort" low-E coating for mixed climates.

The sgg COOL-LITE series comprises a range of solar control coatings with a very wide variety of energy performance - solar factor, U-value, visible light transmittance - and aesthetics:

- sgg COOL-LITE XTREME, the latest generation of such selective coatings, provides an extremely high Light-to-Solar Gain ratio (selectivity), of more than 2;
- sgg COOL-LITE SKN or KNT which blocks more energy than visible light,
- sgg COOL-LITE KT, high-performance selective solar control glass.
- sgg COOL-LITE ST, solar control coatings coming in a wide range of colors and performances.

Most of the sgg COOL-LITE products are available on clear, green and blue substrates, with some available on sgg DIAMANT low iron extra clear glass.



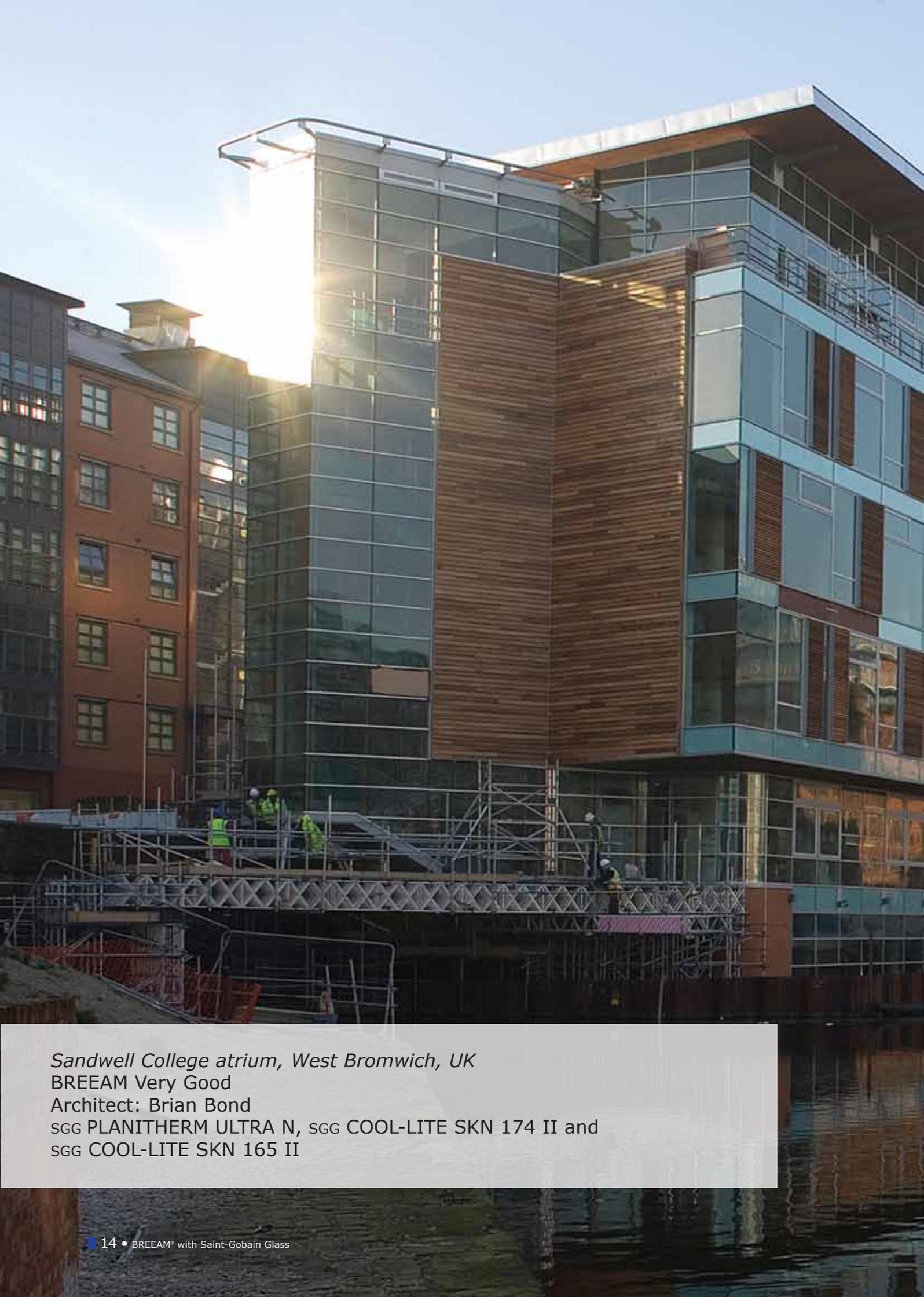
Products

- sgg PLANITHERM® series
- sgg PLANISTAR® SUN
- sgg COOL-LITE® ST series
- sgg COOL-LITE® ET series
- sgg COOL-LITE® K / KT series
- sgg COOL-LITE® SKN series
- sgg COOL-LITE® XTREME series
- sgg ANTELIO®
- sgg REFLECTASOL®

Documentation available

- The sgg Glass Compass, for residential application, to choose the most appropriate glazing (<http://glass-compass.com/>).





Sandwell College atrium, West Bromwich, UK

BREEAM Very Good

Architect: Brian Bond

SGG PLANITHERM ULTRA N, SGG COOL-LITE SKN 174 II and

SGG COOL-LITE SKN 165 II



Materials Specification (Mat 1)

Aim

To acknowledge and foster the use of construction materials with a low environmental footprint throughout the building's whole life cycle.

Requirements

There are two ways of calculating this criterion.

1. Option 1: the BREEAM Green Guide assessment tool

The BREEAM Green Guide provides designers and specifiers with advice on how to make the best environmental choices when selecting construction materials and components. In the Green Guide, building materials and components are assessed in terms of their environmental footprint over their complete life cycle - from 'cradle to grave', within comparable specifications. This assessment provides a rating: from A+, the lowest overall environmental impact, to E being the worst performance overall.

Points are awarded for each applicable element (external walls, windows, roof...) depending on the Green Guide rating:

RATING	A+	A	B	C	D	E
POINTS	3	2	1	0,5	0,25	0

Finally, a calculator translates the total points earned for the building into credits:

POINTS	2	5	8	10
CREDITS	1	2	3	4

What about glass?

The rating for a window goes from A+ to E, depending on the frame (hardwood windows rank highest).

Such a methodology makes no distinction between the glass manufacturer and their environmental policy.



2. Option 2: other material assessment tools

To obtain the credits, two approaches have to be implemented:

- One credit by using an **Embodied CO₂ or Embodied Energy or Carbon Footprinting tool** to evaluate a range of material options for the building, and the evidence that this evaluation has positively influenced the design;
- 1 to 3 more credits by using a **Life Cycle Assessment (LCA)** tool to evaluate at the building level a range of material options (for the building elements: external walls, windows, roof...), and the evidence that this assessment has positively influenced the design. The more elements are studied and improved with the LCA methodology, the more credits are earned.

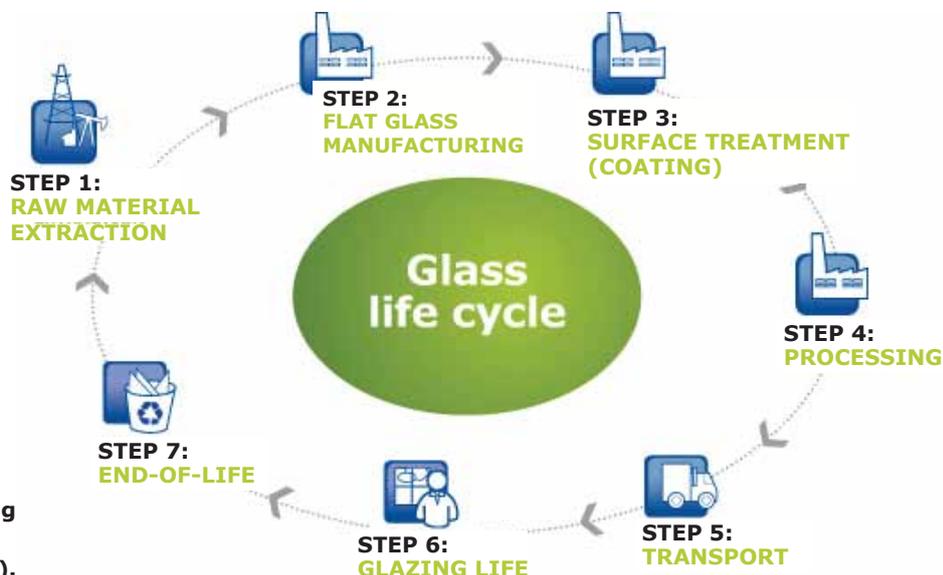
Saint-Gobain Glass contribution

Saint-Gobain Glass has implemented a stringent environmental program to analyze and improve the environmental footprint of its products at every stage in their life cycle. Saint-Gobain Glass is the **first glass manufacturer in the world to have implemented a complete Life Cycle Assessment of its products** in compliance with international standards (ISO 14025, 14040 & 14044) and verified by an independent third party.

These detailed assessments deliver diagnostics and enable Saint-Gobain Glass to develop an action plan as illustrated below:

1. **ASSESS** the environmental footprint of products;
2. **IMPROVE** it by reducing our impacts (energy, water, raw materials consumption, CO₂ emissions...) and working on recycling our cullet;
3. **ECO-INNOVATE** future products by minimizing environmental impacts from as early as design stage;
4. **ASSESS** again...

The results of the product Life Cycle Assessments (contained in the Environmental Product Declaration – EPD) are indispensable in evaluating the whole building’s environmental footprint (option 2 of MAT 1 criterion).



Documentation available

- Our Environmental Product Declarations, verified by an independent third party

Environmental Product Declarations
Saint-Gobain Glass Products
SGG PLANILUX® / SGG PLANITHERM® / SGG BIOCLEAN® II / SGG COOL-LITE®
SGG STADIP® PROTECT ou SILENCE
SGG MIRALITE® REVOLUTION
SGG DECORGLASS® et MASTERGLASS®
SGG PLANILAQUE® EVOLUTION
SGG ANTELIO®
SGG PLANILUX® tempered
SGG DIAMANT® tempered
Processed Products
SGG CLIMAPLUS®
SGG CLIMAPLUS® PROTECT
SGG CLIMAPLUS® SOLAR CONTROL
SGG CLIMAPLUS® 4S
SGG CLIMAPLUS® BIOCLEAN
SGG CLIMATOP®
SGG SERALIT®/SGG EMALIT®



<http://epd.saint-gobain-glass.com/>

Responsible Sourcing (Mat 5)

Aim

To acknowledge and foster the specification of responsibly sourced materials for key building elements.

Requirements

The calculation of this criterion is based on the level of sourcing "responsibility". Four levels are indicated by BREEAM:

RESPONSIBLE SOURCING TIER	SPECIFICATIONS FOR GLASS MANUFACTURERS
1	An Excellent or Very Good rating, according to BREEAM standard BES 6001 on responsible sourcing
2	A Good or Pass rating, according to BREEAM standard BES6001 on responsible sourcing
3	A certified Environmental Management System for the key process (glass production) AND the supply chain (sand extraction and soda ash production / extraction)
4	A certified Environmental Management System for the key process only (glass production)

Using a BREEAM excel sheet, the credits are granted where there is evidence to show that 80% of the materials (brick, glass, concrete ...) including all building elements (structural frame, roof, external walls ...) are responsibly sourced.

Saint-Gobain Glass contribution

TIER 4: 100% OF SAINT-GOBAIN GLASS FLOATS ARE CERTIFIED

All Saint-Gobain Glass floats are certified ISO 14 001, which is an Environmental Management System. The only exception is the float in Egypt which came on stream in 2010 and is currently being certified.

TIER 3: SAINT-GOBAIN GLASS RESPONSIBLE SOURCING POLICY

All internal Saint-Gobain Glass quarries are certified ISO 14001 like, for example, Saint-Gobain Samin (sand) in France. Many Saint-Gobain Glass raw material suppliers are certified ISO 14001. It is Saint-Gobain Glass policy to encourage the sourcing of raw materials extracted or made in sites certified ISO 14001 (or the equivalent).

Documentation available

- The ISO 14 001 certification of our floats.
- The ISO 14 001 certification of our sand and soda ash suppliers, when they are certified.



Saint-Gobain SAMIN
Sand quarry / France
ISO 14001 certified

Recycled Aggregates (Wst 2)

Aim

To acknowledge and foster the use of recycled and secondary aggregates in construction, thereby reducing the demand for virgin material.

Requirements

The amount of recycled and secondary aggregate must be over 25% (by weight or volume) of the total aggregates of the building. Such aggregates can be either:

- a. Obtained on site.
- b. Obtained from waste processing site(s) within a 30km radius of the site or from a greater distance but transported by rail or water to the construction site.
- c. Secondary aggregates obtained from a non-construction post-consumer or post-industrial by-product source.

Saint-Gobain Glass contribution

To date, as no glass disassembly and reuse supply chain exists, categories a) or b) cannot be fulfilled. Regarding the criterion c), the possible origins of cullet in the glass sector need to be defined more precisely:

- "Internal" cullet: broken glass coming from glass manufacturing, reintroduced into the original process.
- "Pre-customer" cullet: broken glass coming from processing, before implementing the finished product.
- "Post-consumer" cullet: broken glass coming from the end-of-life stage (renovation or demolition), after collection, sorting and treatment (less than 1% in Saint-Gobain's glass).



On average 30% of the total weight of a sheet of glass made by Saint-Gobain Glass comes from recycled internal cullet and "pre-customer" cullet.

More than 1 500 000 tons of cullet are melted each year in our 36 furnaces. This enables:

- A reduction of 1 800 000 tons of raw materials (natural resources) consumed,
- A reduction of at least 375 000 tons of CO₂ emitted, which results in a high limitation of the greenhouse effect caused by greenhouse gas emissions (since cullet can be melted using less energy).

At European level, only 5% of end-of-life glass is now recycled in Europe ("post-consumer" recycling), and mostly as a road embank or to produce glass wool or bottles.

Documentation available

- The declaration certifying that 30% of Saint-Gobain's glass is made with cullet (internal and pre-consumer).



Sandwell College atrium, West Bromwich, UK

BREEAM Very Good

Architect: Brian Bond

SGG PLANITHERM ULTRA N, SGG COOL-LITE SKN 174 II and
SGG COOL-LITE SKN 165 II

Exemplary performance criteria for existing BREEAM® issue

Aim

To provide additional recognition for a procurement strategy, design feature, management process or technological development that innovates in the field of sustainability, above and beyond the level that is currently recognized and rewarded within standard BREEAM issues.

Requirements

The maximum number of Innovation credits that can be awarded for one building assessed is 10.

A building can achieve an Innovation credit by meeting exemplary performance criteria for an existing BREEAM issue:



CRITERIA	INNOVATION CREDIT	REQUIREMENTS
Hea 1 - Daylighting	1 credit	<ul style="list-style-type: none"> Requirements in terms of day lighting factor and uniformity ratio, that go above the requirements for the standards credits
Hea 9 - Volatile Organic Compounds	1 credit	<ul style="list-style-type: none"> Measure and respect the standards for the 7 categories of products listed
Ene 1 - Energy Efficiency	2 credits	<ul style="list-style-type: none"> All 15 standard credits must have been achieved; 1 innovation credit for a carbon neutral building; 2 innovation credits for a true zero carbon building (where CO₂ emissions from all energy consumed AND process related energy consumption is zero or better)
Mat 1 - Materials Specification	1 credit	<ul style="list-style-type: none"> The Life Cycle Assessment for the building was used to influence the choice of ALL building elements
Mat 5 - Responsible sourcing of materials	3 credits	<ul style="list-style-type: none"> Not 80%, but 95% of the materials are responsibly sourced

Saint-Gobain Glass contribution

Innovation is at the heart of Saint-Gobain Glass's strategy. During the last 5 years, Saint-Gobain Glass created:

- The first coated glass which allows an Ug value from 1.0w/m²K in double glazed unit (SGG PLANITHERM ONE);
- SGG COOL-LITEXtreme, the first triple-silver-layers coated glass with a selectivity of 2.2;
- The first multi-functional glass, with a self-cleaning property AND a low emissivity (glass with SGG BIOCLEAR II & SGG PLANITHERM ULTRA N II coatings);
- SGG MIRALITEREVOLUTION, the first eco-innovated product from Saint-Gobain Glass, with no added lead, and a very low VOC content.

These are only a few examples of Saint-Gobain Glass' capacity of innovation...

Lancaster University Sports Centre, UK

BREEAM Excellent

S&P Architects

SGG COOL-LITE SKN 154 II, SGG COOL-LITE SKN 154 & SGG COOL-LITE Design



Discover how Saint-Gobain's glass is an asset for other green building certifications:

- LEED with Saint-Gobain Glass
- HQE with Saint-Gobain Glass (in French)
- DGNB with Saint-Gobain Glass (in German)

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Disclaimer

This brochure only provides an indication on the possible credits which our glass products could yield in relation to a BREEAM rating system. It is intended as a guide in the choice of appropriate glazing in relation to the BREEAM credit rating system and has no binding value. The BREEAM credit rating of a project is influenced by a variety of factors, such as the type of building, configuration of all the other elements of the building in addition to the glass, final configuration of the glazing itself, etc... The final rating is subject to the performance of a BREEAM assessment as per the BREEAM methods and procedures available on their site. It is the user's responsibility to choose the appropriate building environmental assessments methods destined to ensure that the building meets regulatory requirements at national, local or regional level.