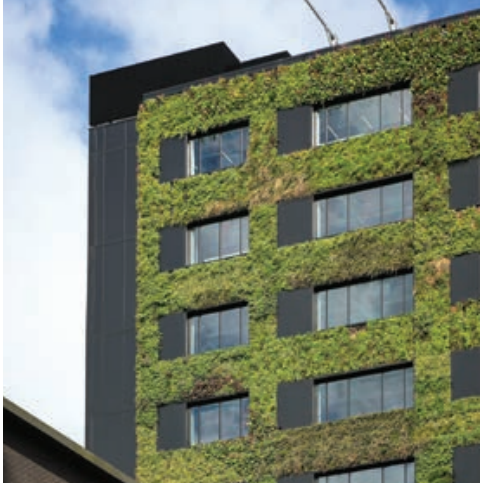
SAINT-GOBAIN

GLASS FOREVER

GLASS FOR FAÇADES

Sustainability, quality and performance

SAINT-GOBAIN GLASS



HIGH-PERFORMANCE FLAT GLASS FOR FAÇADES

Saint-Gobain Glass is part of the 360 year old Saint-Gobain Group; a global leader in the development of innovative, building materials.

An expert in the design and manufacture of glass for glazing and façade solutions, the sustainable production of high-performance glass is at the heart of the business.

The exterior of a building fulfils many functions. It protects the interior from the elements and can project a powerful image to the outside world; one of beauty, stature, and sustainability, based on the structure and performance of the façade.

Saint-Gobain's high-performance glass features in some of the world's most iconic buildings, including the UN building in Geneva, the Broad Museum in Los Angeles and Tower Bridge in London.

Visit www.saint-gobain-glass.co.uk for more information.

CONTENTS

SUSTAINABILITY FIRST

On 23 September 2019, during the United Nations Summit on Climate Change, we pledged that the entirety of the Saint-Gobain global group would undertake a transition towards achieving net-zero carbon emissions by the year 2050.

Saint-Gobain Glass has made a solid commitment to recycle and remanufacture flat glass, into new high-performance glass, to create buildings that deliver on sustainability, performance and safety.

The business is partnering with companies involved in all areas of construction to lead the glass industry in the development of a robust, circular economy for flat glass.

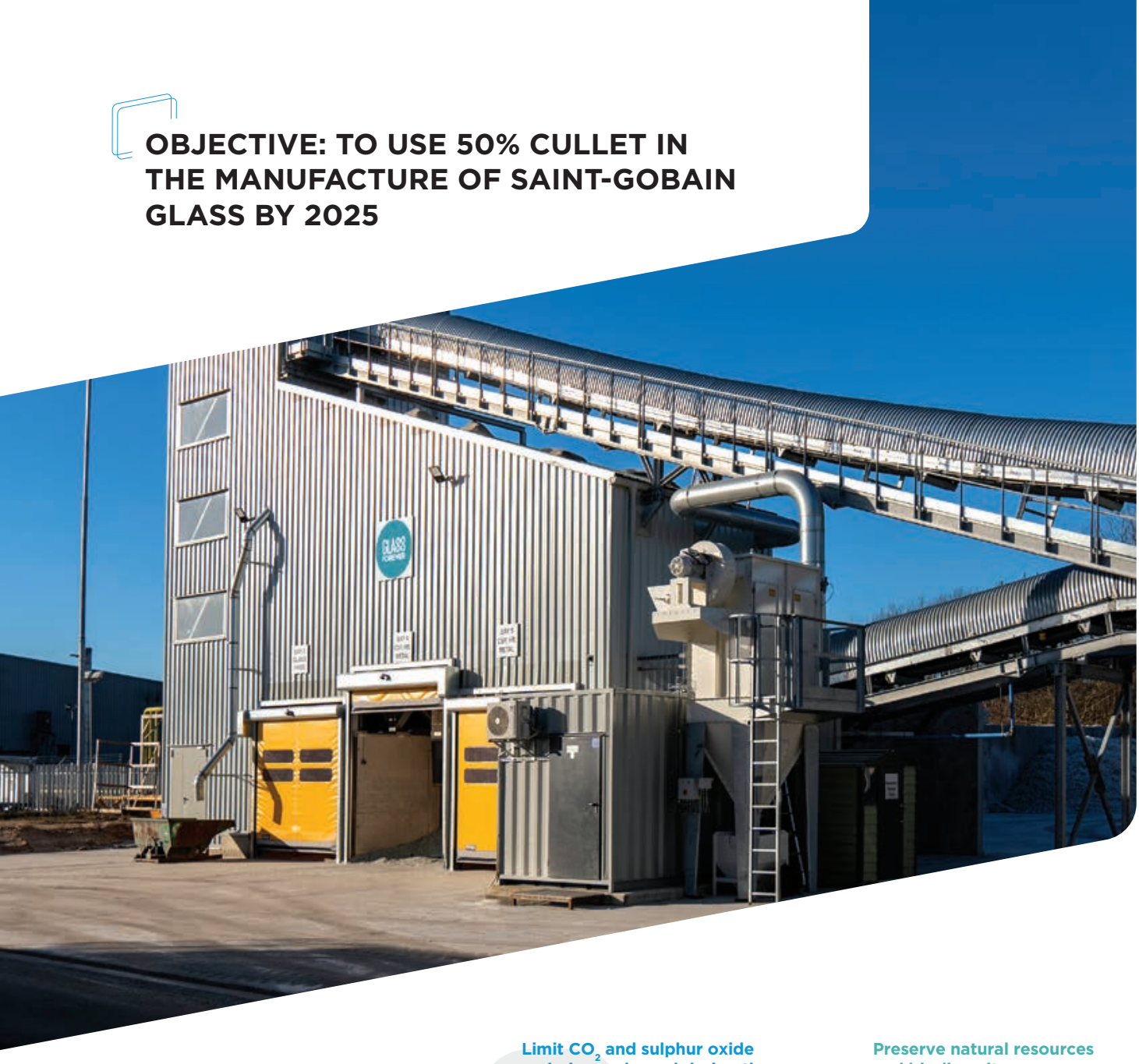
A COMMITMENT TO A CIRCULAR ECONOMY FOR FLAT GLASS

Saint-Gobain Glass is an industry leader in the responsible reclamation and remanufacture of post-consumer glass. Crucially, our proactive Glass Forever cullet return programme, includes the recovery of 'post-consumer' glass from old windows, which had typically been set to landfill.

In the face of the climate emergency, it is imperative to challenge existing business models to secure a more sustainable future for all inhabitants of our planet.

The Glass Forever programme sees our teams closely collaborate with our customers to ensure that, whenever possible, both pre-consumer and post-consumer glass is recycled; contributing to the production of high-performance flat glass with minimal impact to quality. A circular economy for flat glass is possible as it is infinitely recyclable.

OBJECTIVE: TO USE 50% CULLET IN THE MANUFACTURE OF SAINT-GOBAIN GLASS BY 2025



Limit CO_2 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.

GLASS FOREVER PROJECTS

MORRISROE, MINERVA HOUSE, LONDON

Morrisroe, a leading specialist in demolition and enabling works in the UK, has worked with Saint-Gobain Glass to integrate a successful, glass recovery model into their workflow, when working on the Minerva House project, located next to the River Thames; contributing to better remanufacturing practices and positively, impacting the circular economy for flat glass.

Paul Moody, Operations Director at Morrisroe, highlighted the significance of the joint project, "Minerva House was chosen as the first collaboration because it provided the right amount of glass and challenges around recovery. Situated along the River Thames, the site presented logistical challenges, offering an opportunity for both teams to experiment, develop and implement learnings that can be extrapolated, and replicated in future joint projects with confidence."

KPH DECONSTRUCTION SERVICES PROJECTS

KpH Deconstruction Services has returned in excess of 500 tonnes of cullet to Saint-Gobain Glass, over a number of projects, to be remanufactured into new, high-performance, flat glass.

Lyndsey West, Director of Operations at KpH, shared her view on the rapid, advancements of their Glass Forever partnership with Saint-Gobain, “Our teams are fully committed to Glass Forever and with each project, our knowledge and approach continues to expand. At KpH we approach challenges by asking, ‘How can we tackle this?’. The word 'can't' doesn't cross our minds. The collaborative approach with Saint-Gobain Glass has helped find solutions that will lead to ongoing, continuous improvement.”

FAÇADE PROJECTS

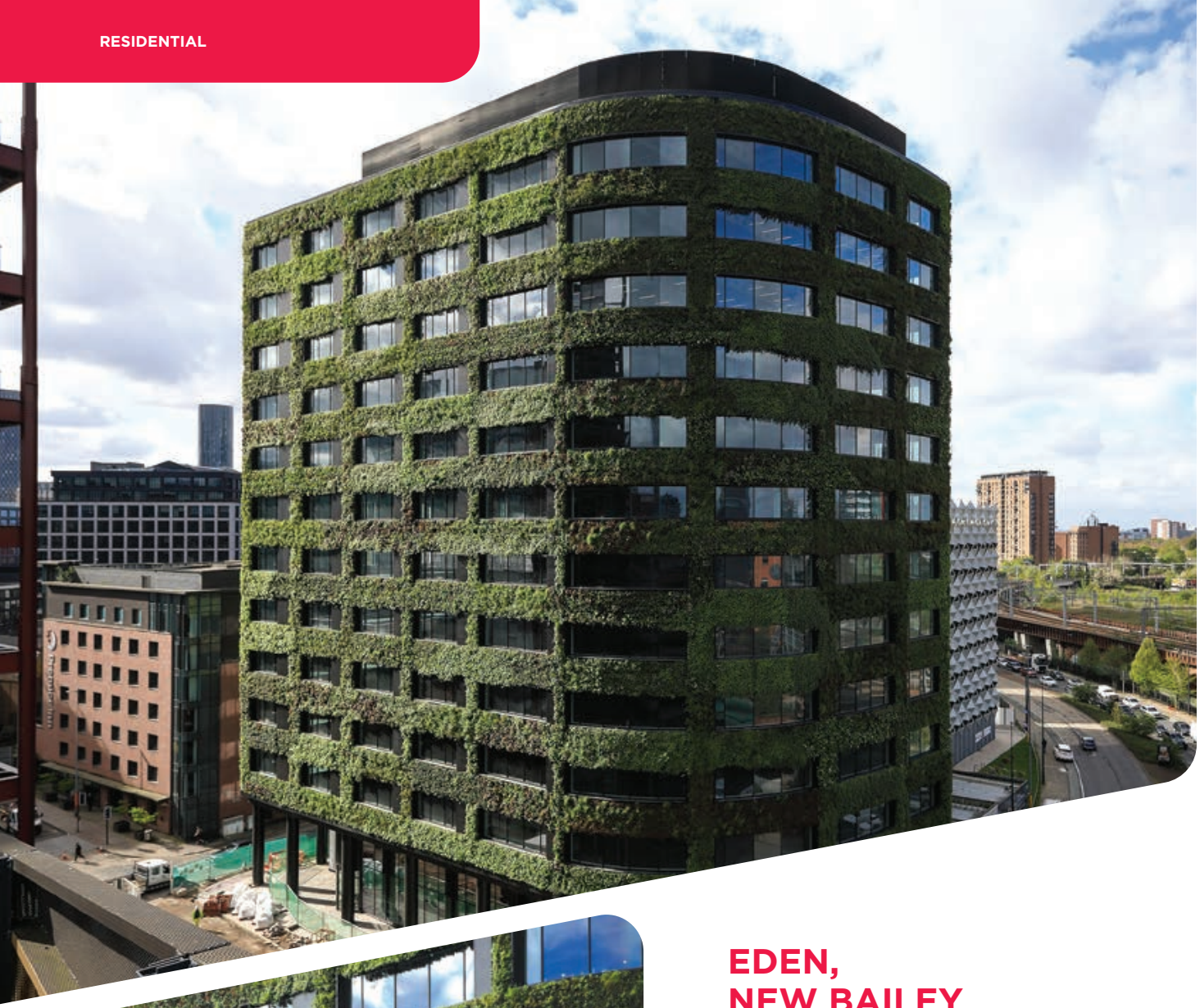
VIADUX, MANCHESTER

Saint-Gobain Glass COOL-LITE® SKN 183 (II)

Viadux is a brand new, 40-storey, residential tower, in the heart of Manchester, that houses luxury, 1 and 2 bedroom apartments.

The building's façade is glazed with Saint-Gobain Glass COOL-LITE® SKN 183 (II), to ensure high light levels and low overheating, whilst providing a stunning, aesthetic.

Project value:	£130 million
Client/Developer:	Salboy
Architect:	SimpsonHaugh
Main contractor:	Domis Construction
Façade:	FK Group
Glass processor:	Press Glass



EDEN, NEW BAILEY

Saint-Gobain Glass STADIP® Silence COOL-LITE® XTREME 61/29

Eden is a pioneering, office development, set in Manchester's New Bailey district. From its inception, sustainability and net-zero carbon principles have been at the heart of its design; meeting the rigorous standards set by the UK Green Building Council for operational carbon neutrality.

The office block is on track for a BREEAM® Outstanding rating and a WiredScore of Platinum.

Project value:	£5 million
Client/Developer:	Muse, Legal & General and Homes England
Architect:	Make Architects
Main contractor:	Bowmer & Kirkland
Façade:	Quest Solutions
Glass processor:	Euroview

THE BLACK & WHITE BUILDING

Saint-Gobain Glass COOL-LITE® SKN 183 (II)

A multi-award-winning building with a fully engineered, timber frame, enveloped with a glazed, curtain wall that provides ample natural light and reduced risk of solar heat gain, as it features Saint-Gobain Glass COOL-LITE® SKN 183 (II).

This low carbon building has been optimised so that every component is designed to be as efficient as possible.

Project value:	£20 million
Client/Developer:	The Office Group
Architect:	Waugh Thistleton
Main contractor:	Parkaray
Façade:	Eckersley O'Callaghan, Pacegrade
Glass processor:	Euroview

THE SPINE, LIVERPOOL

Saint-Gobain Glass COOL-LITE® XTREME 50/22 II

The Spine features a unique glazed façade, made using Saint-Gobain Glass COOL-LITE® XTREME with a complex, digitally printed, design, on the outer pane. It provides some of the best views of the city centre and waterfront, whilst minimising overheating in sunny weather, and providing thermal insulation on colder days.

Project value:	£35 million
Client/Developer:	Knowledge Quarter, Liverpool
Architect:	AHR
Main contractor:	Morgan Sindall
Façade:	FK Group
Glass processor:	Tvitec

THE SPARK, NEWCASTLE

Saint-Gobain Glass COOL-LITE® SKN 144 II

Part of the Newcastle Helix, a sustainable, urban, regeneration project, The Spark has a fully glazed façade with curtain walling that features Saint-Gobain Glass COOL-LITE® SKN 144 II, and red, aluminium cladding; both building materials that are 100% recyclable which helps the building attain the highest sustainability credentials.

Project value:	£28 million
Client/Developer:	Legal & General
Architect:	Ryder Architects
Main contractor:	Sir Robert McAlpine
Façade:	Charles Henshaw
Glass processor:	Press Glass

NEW VICTORIA, MANCHESTER

Saint-Gobain Glass COOL-LITE® SKN 183 II

New Victoria is a residential development that provides 520 new homes, in two distinctive towers.

Saint-Gobain Glass is used in the residential, buildings large, glazed façade. By minimising the reliance on heating and air conditioning systems, COOL-LITE® SKN 183 II helps to improve energy efficiency and reduce operational costs.

Project value:	£115 million
Client/Developer:	Muse with PIC, alongside Manchester City Council, Homes England & Network Rail.
Architect:	Sheppard Robson
Main contractor:	Vinci Construction
Façade:	FK Group
Glass processor:	Eckelt Glass

CARNEGIE SCHOOL OF SPORT, LEEDS

Saint-Gobain Glass COOL-LITE® SKN 176 II

The building provides a base for undergraduate, postgraduate and research programmes, as well as a training hub for elite athletes.

Saint-Gobain Glass COOL-LITE® SKN 176 II has been used in the glazed façade to maximise daylight within the internal spaces, functioning as a passive sustainable design feature.

Project value:	£45 million
Client/Developer:	Leeds Beckett University
Architect:	Sheppard Robson
Main contractor:	Galliford Try
Façade:	Glassolutions
Glass processor:	Dual Seal

ZURICH HQ, SWINDON

Saint-Gobain Glass STADIP® COOL-LITE® SKN 176

A new, state-of-the-art, office block that provides a flexible, working environment for employees. The building has been designed to rank amongst the top 10% of commercial buildings for sustainability in the UK.

The glazed, façade features Saint-Gobain Glass COOL-LITE® SKN 176, to achieve high, light transmission with reduced, demand on heating and cooling sytems.

Project value:	£37 million
Client/Developer:	Zurich and Swindon Borough Council
Architect:	Alec French Architects
Main contractor:	Skanska
Façade:	APIC UK
Glass processor:	Dual Seal

ISLAND, MANCHESTER

Saint-Gobain STADIP® COOL-LITE® SKN 176

Island is 10-storeys or 100,000 square feet of net zero CO_2 workspace, in the heart of Manchester. It provides a home for forward-thinking, businesses who care about people, place and planet.

The building features Saint-Gobain Glass COOL-LITE® SKN 176 to ensure the building is flooded with natural light whilst achieving the highest rate of energy efficiency.

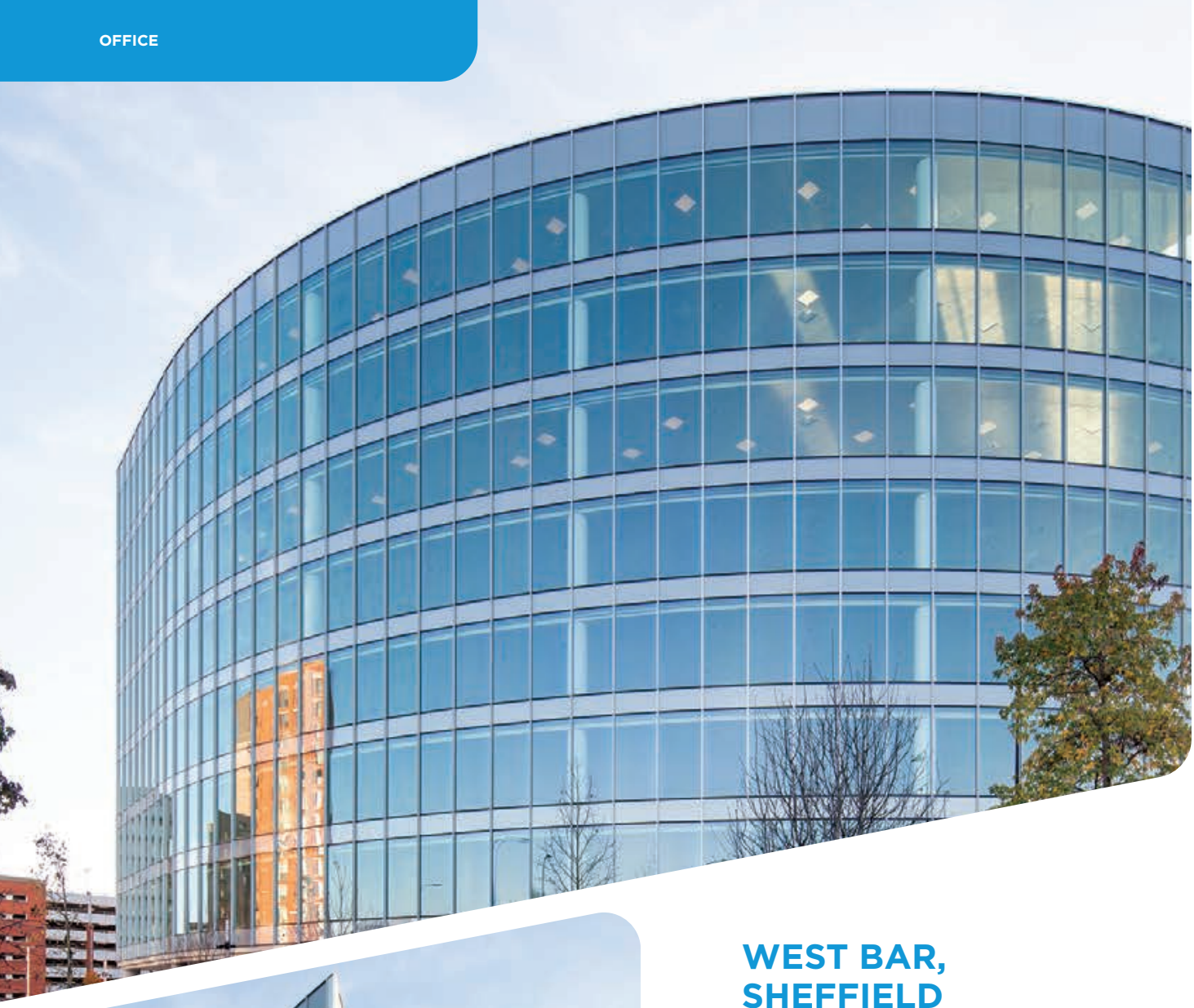
Project value:	£66 million
Client/Developer:	HBD and the Greater Manchester Pension Fund
Architect:	Cartwright Pickard
Main contractor:	Bowmer + Kirkland
Façade:	Acorn Aluminium
Glass processor:	System 3

11 & 12 WELLINGTON PLACE, LEEDS

Saint-Gobain Glass COOL-LITE® XTREME 70/33 II TGU

Achieving a NABERS Designed Reviewed Target Rating of 5 Stars, EPC A, Fitwel Two Star and BREEAM® Outstanding, it is one of the UK's most sustainable office developments. The buildings provide 21,273m² of office space across two bronze-coloured structures connected by a glazed link at level 4 and above.

Project value:	£55 million
Client/Developer:	MEPC
Architect:	tp bennett
Main contractor:	Wates
Façade:	Dane Architectural
Glass processor:	Press Glass



WEST BAR, SHEFFIELD

Saint-Gobain Glass COOL-LITE® SKN 183

West Bar is a regeneration scheme in the centre of Sheffield which provides one million sqft of commercial space alongside new apartments, a multi-storey car par and mixed-use spaces. The aim of West Bar is to provide a new, commercial home with high quality, sustainable, office space.

The fully glazed façade feature Saint-Gobain Glass COOL-LITE® SKN 183 II to ensure the building delivers high levels of natural light whilst maintaining a comfortable interior.

Project value:	£300 million
Client/Developer:	Urbo and Legal & General
Architect:	5plus
Main contractor:	Bowmer + Kirkland
Façade:	MB Glass
Glass processor:	System 3

1 THE ISLAND QUARTER, NOTTINGHAM

Saint-Gobain Glass COOL-LITE® SKN 154 II

The renovated building has already become an iconic, canal-side destination. Set over three storeys, there is a drinks and dining venue on the lower floor with a more formal restaurant above.

Saint-Gobain Glass COOL-LITE® SKN 154 II has been used in the building to create a beautiful façade that delivers high levels of natural light, solar control and thermal efficiency.

Project value:	£9 million
Client/Developer:	The Conygar Investment Company
Architect:	Jestico + Whiles
Main contractor:	Sir Robert McAlpine
Façade:	Norman & Underwood
Glass processor:	System 3

11 STATION STREET, NOTTINGHAM

Saint-Gobain Glass COOL-LITE® SKN 165 II

11 Station Street is a Grade A, state-of-the-art, sustainable, office accommodation, located in the heart of Nottingham City Council's designated 'Southside Redevelopment Zone.'

The building achieves BREEAM® excellent through a range of sustainable measures, including the use of Saint-Gobain's COOL-LITE®, solar control glass that helps to improve the energy effiency of the building.

Project value:	£12 million
Client/Developer:	Bildurn Properties
Architect:	Frank Ellis Architects
Main contractor:	Bowmer & Kirkland
Façade:	Acorn Aluminium
Glass processor:	Dual Seal

HEARTSPACE, SHEFFIELD

Saint-Gobain Glass COOL-LITE® XTREME 50/22 II

The undulating, glazed roof is made using over 900 panels, covering an area of 2,500 square meters. The glazing features Saint-Gobain Glass COOL-LITE® XTREME 50/22 II, an extremely, high performance, glass, that combines solar control with functionality, and elegance; vital to achieve such a challenging, roof glazing project.

Project value:	£30 million
Client/Developer:	University of Sheffield
Architect:	Bond Bryan
Main contractor:	Tilbury Douglas
Façade:	Waagner Biro
Glass processor:	Eckelt

MAJESTIC, LEEDS

Saint-Gobain Glass COOL-LITE® SKN 176 II & SKN 154 II

The refurbishment of Majestic, Leeds, has paid homage to the history of the building by re-interpreting the space, and using materials that complement the existing building.

Saint-Gobain Glass COOL-LITE® SKN 154 II has been used in the large, glazed façade to deliver high levels of natural light into the building whilst ensuring thermal efficiency.

Project value:	£2 million
Client/Developer:	Rushbond
Architect:	DLA Architecture
Main contractor:	Sir Robert McAlpine
Façade:	Hadrian Architectural
Glass processor:	Carey Glass

Images © Elite Aluminium Systems

CULHAM SCIENCE PARK, OXFORDSHIRE

Saint-Gobain Glass COOL-LITE® SKN 175 II

Culham Science Park is a four-storey office building with a specialist R&D hall, focused on the development of the UK's world-recognised fusion technology.

The glass and aluminium façade delivers enhanced, thermal performance; making the building energy efficient whilst maintain high levels of natural light.

Project value:	£27 million
Client/Developer:	UK Atomic Energy Authority
Architect:	AL_A Architects
Main contractor:	Kier
Façade:	Elite Aluminium Systems
Glass processor:	Dual Seal

ONE CITY PARK, BRADFORD

Saint-Gobain Glass COOL-LITE® XTREME 70/33 II

One City Park demonstrates environmental leadership through sustainable features, such as high-efficiency glazing, solar panels and low carbon heating.

The building's large, glazed façade features Saint-Gobain Glass COOL-LITE® XTREME 70/33 II, a highly selective, solar control coating that combines solar and thermal performance with stunning aesthetics.

Project value:	£35 million
Client/Developer:	Muse and City of Bradford Metropolitan Dist. Council
Architect:	Sheppard Robson
Main contractor:	Caddick Construction
Façade:	Arup and CCL Façades
Glass processor:	Press Glass

4 ANGEL SQUARE, MANCHESTER

Saint-Gobain Glass COOL-LITE® XTREME 70/33 II, 50/22 II and SKN 183 II

4 Angel Square is a net zero, contemporary office building, located in the heart of NOMA, a mixed-use neighbourhood in central Manchester.

The fully glazed façade features a combination of Saint-Gobain COOL-LITE® XTREME and SKN, to help achieve the highest, sustainability targets.

Project value:	£105 million
Client/Developer:	MEPC
Architect:	SimpsonHaugh
Main contractor:	Bowmer + Kirkland
Façade:	Topside
Glass processor:	Press Glass

SPECIALIST SOLUTIONS

SPANDREL GLAZING

Spandrel glass or non-vision glass is used on buildings to conceal essential components from view, such as floor levels, columns, ventilation systems, wiring and pipes. Used mainly for curtain walling and structural glazing, spandrel glass is a common component of building design. It is typically located below the vision glass on each floor of the building. Spandrel glass is often necessary to achieve the vision of the architect or designer to create a consistent, fully glazed, building façade. It can be complementary or contrasting in colour and texture, made using various technologies and finishes. Saint-Gobain Glass can provide support to architects, specifiers and glass processors, looking to match or contrast spandrel and vision glass within a façade.

Enamelled Glass

The main component of a spandrel is the opaque, coloured glass that is produced by enamelling one side of the glass. The glass is fired at very high temperatures to fuse the enamel and glass, giving the finished product a robust, uniform finish. Heating the glass to high temperatures tempers the glass, which will help avoid thermal stress breakages following installation.

Matching

The matching of spandrels can be a subjective process, as it can be influenced by changing viewing conditions and the opinion of the person observing the glass. Due to this variation, it is difficult to guarantee a perfect match between spandrel and vision glass.

PROJECT:
West Bar, Sheffield

MUSEUM SPECIFICATIONS

Museums and galleries are designed to protect artefacts and works of art from damage, and so place emphasis on the performance of materials to limit the damaging effects of natural and artificial light. Saint-Gobain Glass works with partners throughout the specification, fabrication, and installation stages of glazing to help develop bespoke specifications, formed using our range of high-performance, solar control glass.

PROJECT:
Whitworth Gallery, Manchester

CURVED GLAZING

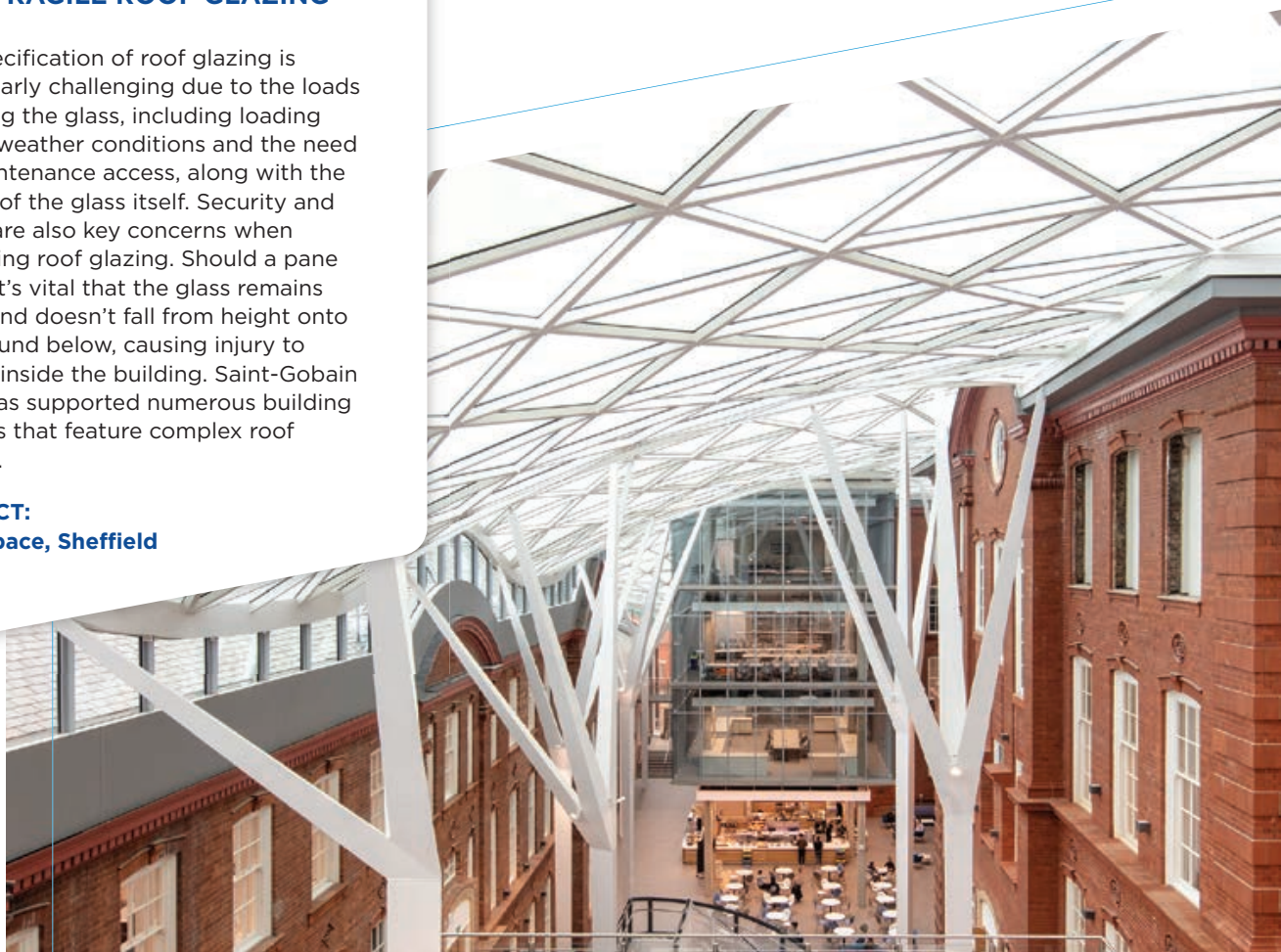
Curved glass is very often used in architecture to give a building an organic look, using the curves to emulate nature and to provide a premium finish to a building. Curved glass can be used as part of a building façade or as interior features including staircases, balustrades and glazed atriums. The use of curved glass does not mean a loss of performance. Saint-Gobain's range of high-performance glass can be transformed to create curved structures that deliver on safety, security and performance.

PROJECT:
Island, Manchester

NON-FRAGILE ROOF GLAZING

The specification of roof glazing is particularly challenging due to the loads affecting the glass, including loading due to weather conditions and the need for maintenance access, along with the weight of the glass itself. Security and safety are also key concerns when specifying roof glazing. Should a pane break, it's vital that the glass remains intact and doesn't fall from height onto the ground below, causing injury to people inside the building. Saint-Gobain Glass has supported numerous building projects that feature complex roof glazing.

PROJECT:
Heartspace, Sheffield



OVERLENGTH GLAZING

The use of large panes of glass creates awe-inspiring spaces. Producing and installing overlength glass panels from 6 to 18 metres in length is possible. Working in large scale using glass delivers on aesthetics, functionality and sustainability when considering the performance of glass, and the infinitely, recyclable nature of glass.

Saint-Gobain's overlength glass technology makes just about anything possible, including:

- Pre-cuts and edge processing with an arrissed, cut or polished edge
- Drilled holes in glass
- Curved glass
- Toughened glass and heat-soak tested glass
- Laminated safety glass
- Fall-proof glazing
- Glass with bespoke laminated colours or decorative foils
- Glass with ceramic or digital print
- Glass with full surface enamelling.

PROJECT:
RTC, Sheffield

INTERIOR SOLUTIONS

Saint-Gobain Glass designs and manufactures a range of beautiful, patterned glass, for use in glazing and interior spaces.

PROJECT:
Lush, Liverpool

TECHNICAL SUPPORT

Calumen®
Saint-Gobain Glass'
Glazing Configurator

PRACTICAL AND LEGALLY COMPLIANT, TECHNICAL ADVICE

At Saint-Gobain Glass, our Technical Specification Team can provide comprehensive, specialist advice, tailored to an individual construction project. We collaborate with our clients throughout the entire lifecycle of flat glass, from manufacturing, distribution and installation, to end-of-life glass recovery and remanufacture.

You can benefit from our technical knowledge on flat glass topics, including industry regulations and precise mechanical calculations.

Access our suite of digital tools, designed to enhance your specifications, including Calumen®, Saint-Gobain's digital, glazing simulator that calculates the light, energy and thermal performance of glazing.

Calumen has recently been updated to provide you with a greater range of acoustic data and the carbon footprint of Saint-Gobain Glass products. You can also access product EPDs and contact the Saint-Gobain team for more information and guidance.

SERVICES PROVIDED BY THE TEAM

The correct choice of flat glass must consider several characteristics. Saint-Gobain Glass can provide mechanical calculations and thermal stress analysis, to verify the compliance of a glazing design; helping to ensure that glazing is fit-for-purpose and meets current standards, and regulations. Other factors such as durability, flatness and ease of cleaning should also be considered at the design stage.

Training and CPDs

Saint-Gobain Glass offers a range of training, CPDs and technical seminars.
Visit www.saint-gobain-glass.co.uk or contact a member of the team for more information.

RICHARD HICKSON
Senior Technical Specification Manager
T. +44 (0) 7710 358 712
E. richard.hickson@saint-gobain.com

KEITH FERGUSON
Technical Specification Manager
Scotland & Ireland
T. +44 (0) 7917 058 193
E. keith.ferguson@saint-gobain.com

DAVE HUBBARD
Technical Specification Manager
Southern England
T. +44 (0) 7711 958 683
E. dave.hubbard@saint-gobain.com

GARETH ALLEN
Technical Support & Training Manager
T. +44 (0) 7917 214 105
E. gareth.allen@saint-gobain.com

JAMES O'DONOGHUE
Technical Specification Manager
Southern England
T. +44 (0) 7731 814917
E. james.o'donoghue@saint-gobain.com

PERFORMANCE MEETS SUSTAINABILITY

THE WORLD'S FIRST LOW-CARBON GLASS WITH VERIFIED EPD

ORAÉ® has been developed as a sustainability first solution. The aim, to reduce carbon emissions and help advance the circular economy, without compromising on aesthetics or technical standards.

LOW CARBON FOOTPRINT

ORAE® achieves a remarkably low carbon footprint of 6.64kg of CO_2 eq/m² for a 4mm glass. It owes it's sustainability credentials to a combination of factors, as it incorporates an impressive 64% recycled content and is manufactured using renewable electricity sources.

WHAT YOU NEED TO KNOW

- COOL-LITE® XTREME ORAÉ® is available in standard sizes and thicknesses (4, 6, 8 and 10mm).
- COOL-LITE® XTREME ORAÉ® can be assembled into double or triple glazed units.
- COOL-LITE® XTREME ORAÉ® delivers the same high performance and quality as COOL-LITE® XTREME PLANICLEAR® but with a lower carbon footprint.
- COOL-LITE® XTREME ORAÉ® is fully EPD verified.

COOL-LITE EXTREME ORAÉ

ORAÉ®- lower carbon glass combined with our highest performance solar control coatings.

- Significantly reduces the carbon footprint of glass façades.
- Manufactured with a high recycled glass content (around 70% of cullet).
- Has an estimated carbon footprint of only 6.64kg CO_2 eq/m² (for a 4mm substrate).
- No compromise on technical or aesthetic performance.

Standard build-up double glazing unit (DGU) 6/16/4 mm – coating on Face 2, 90% Argon.	Ug-Value[1]	Light Transmission (TL)[2]	Solar Factor (g-Value)[2]	Selectivity (LT/g)	Outside Reflection (LRe)[2]	Inside Reflection (LRi)[2]	Carbon Footprint (GWP)[3,5]	Carbon Reduction vs. PLANICLEAR®[3,4]
	W/m²K	(%)	(%)	(%)	(%)	(%)	(kg CO_2 eq/m²)	(%)
COOL-LITE® XTREME 70/73 ORAÉ	1.0	70	33	2.12	11	13	24	-40%
COOL-LITE® XTREME 61/29 ORAÉ	1.0	61	29	2.10	11	14	24	-40%
COOL-LITE® XTREME 50/22 II ORAÉ	1.0	47	21	2.24	16	18	24	-36%

[1] according to EN673 [2] according to EN410
[3] Global Warming Potential (GWP) A1-A3 Stages: The GWP values with ORAÉ®, are estimations based on our Life Cycle Assessment model. Data were collected during the 4 ORAÉ® campaigns made in 2022. The detailed environmental data is documented through third party-verified environmental product declarations – EPDs – which are available at *www.calumen.com*.
[4] Global Warming Potential (GWP A1-A3 Stages) values with PLANICLEAR® are calculations made with Calumen regarding the composition computed based on the standard EN 15804+A2. Estimations based on the Life Cycle Analysis (LCA) of our products. Only complete Environmental Product Declaration (EPD) can be verified by an external third party. GWP calculations of any glazing configuration with PLANICLEAR® can already be made on *www.calumen.com*.
[5] All panes of the DGU with the same substrate; first pane respectively annealed or tempered (II) with the same glass compositions; counter panes always annealed.

PRODUCT PERFORMANCES

COOL-LITE® SOLAR CONTROL PRODUCTS

Sealed Unit Configuration (6-16-4)		Visible Light		Energy Factors		Solar Factor	U-Value	Normal Internal Emissivity (Single Outer Pane)	Selectivity
Outer Pane (Coating on Face 2)	Inner Pane	Total Light Transmission %	External Reflection %	Direct Transmission %	External Reflection %	g-Value	Argon (90%) W/m²K		
COOL-LITE® XTREME 70/33 II	PLANICLEAR®	70	11	31	36	0.33	1.0	0.01	2.12
COOL-LITE® XTREME 61/29 II	PLANICLEAR®	61	11	27	32	0.29	1.0	0.01	2.10
COOL-LITE® XTREME 50/22 II	PLANICLEAR®	47	16	19	35	0.21	1.0	0.01	2.24
COOL-LITE® SKN 183 II	PLANICLEAR®	75	12	38	34	0.40	1.0	0.01	1.88
COOL-LITE® SKN 176 II	PLANICLEAR®	70	13	35	32	0.37	1.0	0.01	1.89
COOL-LITE® SKN 175 II	PLANICLEAR®	70	14	33	37	0.35	1.0	0.01	2.00
COOL-LITE® SKN 165 II	PLANICLEAR®	61	16	32	34	0.34	1.0	0.01	1.79
COOL-LITE® SKN 154 II	PLANICLEAR®	52	18	26	30	0.28	1.0	0.01	1.86
COOL-LITE® SKN 144 II	PLANICLEAR®	42	20	20	31	0.23	1.1	0.03	1.83

All the above hold CE marked performance accreditation for the products in their annealed and tempered state.

Sealed Unit Configuration (8.8SS*-16-6)		Visible Light		Energy Factors		Solar Factor	U-Value	BS EN 356 Secure by Design	BS EN 12600 Impact Safety	Acoustic Rw (C;Ctr)
Outer Pane (Coating on Face 2)	Inner Pane	Total Light Transmission %	External Reflection %	Direct Transmission %	External Reflection %	g-Value	Argon (90%) W/m²K			
STADIP® SILENCE COOL-LITE® XTREME 70/33	PLANICLEAR®	69	11	29	31	0.31	1.0	P2A	1(B)1	42 (-2;-7)
STADIP® SILENCE COOL-LITE® SKN 176	PLANICLEAR®	69	13	33	31	0.35	1.0	P2A	1(B)1	42 (-2;-7)
STADIP® SILENCE COOL-LITE® SKN 165	PLANICLEAR®	60	16	30	31	0.32	1.0	P2A	1(B)1	42 (-2;-7)

Please note that all the of the above configurations should be subject to a thermal safety check before specification.

- **COOL-LITE® XTREME** is a range of extremely selective solar control glass for the commercial market. The low solar factor and high light transmission, make it the ideal product for architects and specifiers looking to achieve the best selectivity.
- **COOL-LITE® SKN** is a range of solar control glass, designed to balance high performance solar control, with high light transmittance and neutral aesthetics; creating light and comfortable buildings.
- **STADIP® & STADIP® SILENCE (SS)** are laminated glass products that provide additional security, safety, UV, and acoustic benefits.
- **PLANICLEAR®** All coatings on this substrate as standard.
- **AVAILABILITY** - Please consult one of our Technical Specification Managers for more information and availability.

PRODUCT PERFORMANCES

Calumen®
Saint-Gobain Glass'
Glazing Configurator

STADIP® & STADIP® SILENCE LAMINATED PRODUCTS

Configuration of Unit	1/1 Octave Band Centre Frequency Attenuation (dB)							
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	Rw(C;Ctr)
6(16Argon)6	27	21	20	30	39	35	44	33(-1;-5)
8(16Argon)6	30	23	23	34	40	37	48	36(-2;-5)
10(16Argon)6	33	23	26	36	41	43	55	39(-2;-6)
6(16Argon)6.8SS (33.2)	30	23	25	36	46	49	56	39(-2;-6)
6(16Argon)8.8SS (44.2)	29	25	28	39	49	48	52	42(-2;-7)
6(16Argon)10.8SS (55.2)	31	25	29	40	50	46	53	42(-2;-6)
6(16Argon)10.8 (55.2)	32	27	29	38	44	44	54	41(-1;-5)
8(16Argon)10.8SS (55.2)	32	27	32	42	48	48	53	44(-2;-6)
8(16Argon)10.8 (55.2)	31	28	31	40	42	42	55	41(-1;-4)
10(16Argon)12.8SS (66.2)	29	30	33	43	45	47	57	44(-1;-4)
10(16Argon)12.8 (66.2)	24	26	32	39	38	43	56	40(-1;-4)
10(20Air)12.8SS (66.2)	-	29	36	43	44	46	59	45(-1;-5)
10(24Air)14.8SS (86.2)	27	33	37	44	45	44	54	45(-1;-3)
12.8A (66.2)(16Argon)8.8SS (44.2)	31	30	35	46	54	55	63	48(-2;-6)
10.8A (64.2)(24Air)14.8SS (86.2)	28	36	42	48	52	53	60	51(-1;-4)

- **STADIP®** is a laminated product that provides additional security, safety and UV benefits over and above annealed, heat strengthened or thermally toughened glass.
- **STADIP® SILENCE SS** is a laminated product that provides all the benefits of **STADIP®** with additional acoustic performance.

*SS denotes the use of **STADIP® SILENCE** acoustic laminate interlayer.
All acoustic performances are tested and certified in acoustic test reports, and can be requested from Saint Gobain Glass.

PLANITHERM® LOW-E PRODUCTS

Sealed Unit Configuration (6-16-6)		Visible Light		Energy Factors			Solar Factor	Shading Coefficient	U-Value
Outer Pane (Coating on Face 2)	Inner Pane	Total Light Transmission %	External Reflection %	Direct Transmission %	External Reflection %	Absorption %	g-Value	SC	Argon (90%) W/m²K
PLANITHERM® ONE T	PLANICLEAR®	66	25	41	38	20	0.44	0.51	1.0
PLANITHERM® ULTRA N II	PLANICLEAR®	79	12	55	26	18	0.59	0.67	1.1

Sealed Unit Configuration (6-16-6.8SS)		Visible Light		Energy Factors			Solar Factor	Shading Coefficient	U-Value
Outer Pane (Coating on Face 2)	Inner Pane	Total Light Transmission %	External Reflection %	Direct Transmission %	External Reflection %	Absorption %	g-Value	SC	Argon (90%) W/m²K
PLANITHERM® ONE T	STADIP® SILENCE	65	25	39	38	22	0.44	0.50	1.0
PLANITHERM® ULTRA N II	STADIP® SILENCE	79	12	52	26	25	0.58	0.67	1.1

- **PLANITHERM®** is a range of low-emissivity (low-E) glass coatings.
- **PLANITHERM® ONE T** is a high-performing low-E glass developed for specifications where thermal insulation is required, with a centre pane U-Value of 1.0W/m²k when used in an IGU with a 16mm 90% argon cavity.
- **PLANITHERM® ULTRA N** is a high-performance low-E glass developed for specifications where a high level of thermal insulation is required, with a centre pane U-Value of 1.1W/m²k when used in an IGU with a 16mm 90% argon cavity.
- **PLANICLEAR®** All coatings on this substrate as standard.

MAKING THE WORLD A BETTER HOME

SAINT-GOBAIN GLASS
Weeland Road
Eggborough
East Riding of Yorkshire
DN14 0FD UK
saint-gobain-glass.co.uk

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The term 'high-performance glass' refers to Saint-Gobain's range of coated, flat glass that achieves a very low emissivity value. For more information view the 'High-Performance Glass' brochure that can be found on the Saint-Gobain Glass UK website.