



Thermal comfort



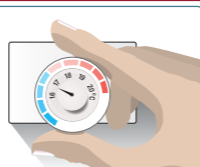
KNOWLEDGE IS PROFIT

www.glassolutions.co.uk/knowledge

Consumer benefits

Keeping your house warmer, reducing your energy bills

- Save up to 22% on your heating bills.
- No cold spots and reduced internal condensation on the glass.
- A and A+ Window Energy Ratings (WERs).



Environment

- All Planitherm energy saving glass has 20% recycled content.
- Only UK glass processor to be able to demonstrate the full environmental impact of its core range of products - through Life Cycle Assessments (LCAs).
- Access Glassolutions' Environmental Product Declarations (EPDs) online now.

BREEAM Use Planitherm to gain up to 40 CREDITS



Why Glassolutions?

20+ YEARS

20+ years as the premier Planitherm glass specialists

11 MILLION

We handle and process more Planitherm than anyone else - 1.1 million m² in 2013

Nationwide coverage
With 19 branches in England, Scotland and Wales we're never far away

AS SEEN ON TV

National consumer awareness of Planitherm thanks to 'Pam & Fern' campaign

SAINT-GOBAIN

Glassolutions is part of the world's leading industrial companies with sales of more than €4 billion.

Terminology

U-value
The rate of heat loss of a building component. It is expressed as Watts per square metre, per degree Kelvin, W/m²K.

Uw
The rate of heat loss through the 'whole window'. It takes account of all elements forming the window, glass, spacer/bar/edge seal and the window frame.

Ug
The rate of heat loss through a single pane of glass or an Insulating Glass Unit (IGU). It is also known as the 'centre pane U-value', and takes no account of the spacer bar or edge seal (if it is an IGU) or the window frame.

g-value
The % of total solar radiant heat energy entering the room through the glass.

Emissivity
Emissivity is the ability of a surface to absorb and emit energy in the form of radiation. Low-emissivity (Low-E) coatings greatly reduce heat loss through glass.

SAP
The Standard Assessment Procedure (SAP) developed by the BRE is the methodology used by the Government to assess and compare the energy and environmental performance of dwellings.

Soft coating
Planitherm products are sometimes referred to as 'soft' or 'selective' coatings which simply refers to the fact that the coating is applied using a Magnetron coater.

WERs/DERs
Window and Door Energy ratings allow consumers to compare the energy efficiency of products using a simple labeling system.

IGU
Insulating glass unit.

DGU
Double glazed unit.

TGU
Triple glazed unit.

Product range

Solutions for every sector

New build dwellings



Planitherm Total-Compliance solution
Planitherm One Optimised energy balance between U-value and G-value to give better SAP rating.

Refurbishment dwellings



Planitherm Total-Compliance solution and optimised for WERs (Window Energy Rating). **Planitherm One** When setting on optimum U-value performance.

Conservatories



Planitherm Total-Compliance solution when no dividing wall. **Planitherm 45** Optimised for lower U-values (Winter comfort) and Solar Reflection (Summer comfort).

New build non-dwellings



Planitherm Ultra N Entry level commercial solution providing good thermal control. **Planitherm 45** Optimised for lower U-values (Winter comfort) and Solar Reflection (Summer comfort).

Refurbishment non-dwellings



Planitherm Ultra N Entry level commercial solution providing good thermal control. **Planitherm 45** Optimised for lower U-values (Winter comfort) and Solar Reflection (Summer comfort).

Triple glazing

Where is it ideal for:

- Needing the lowest U-value
- Meeting Passivhaus standard

There are some key things to consider when thinking about triple glazing - read more in our guide to the facts:



Legislation and standards

Minimum performance summary

England	Scotland	Wales
Approved Document L	Approved Document L	Approved Document L
Domestic Newbuild L1A 2.0 W/m ² K Refurbishment L1B 1.4-1.8 W/m ² K	Domestic Newbuild 1.6 W/m ² K Refurbishment 1.4-1.8 W/m ² K	Domestic Newbuild 1.6 W/m ² K Refurbishment 1.4-1.8 W/m ² K
Commercial Newbuild L2A 2.2 W/m ² K Refurbishment L2B 1.4-1.8 W/m ² K	Commercial Newbuild 2.0 W/m ² K Refurbishment 1.4-1.8 W/m ² K	Commercial Newbuild 2.0 W/m ² K Refurbishment 1.4-1.8 W/m ² K

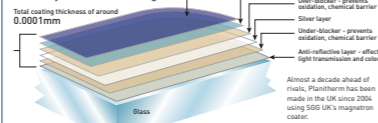
What is the impact of the latest standards?

2013/14 ≈ 2010

Key dates
Approved Document L (England) came into force 1st April 2014
Section 6 (Scotland) came into force October 2013
Approved Document L (Wales) came into force 31st July 2014
Next review: 2016/17
*Numbers in application

Technology

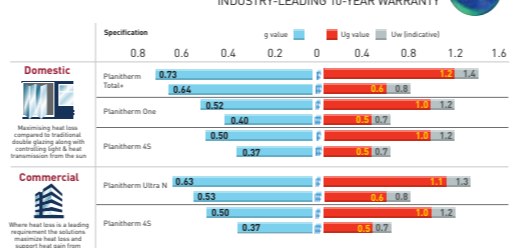
Anatomy of a low-E coating



Sealed unit performance

Double and triple glazing

INDUSTRY-LEADING 10-YEAR WARRANTY



GLASSOLUTIONS
SAINT-GOBAIN
Your glass. Our world.



Consumer benefits

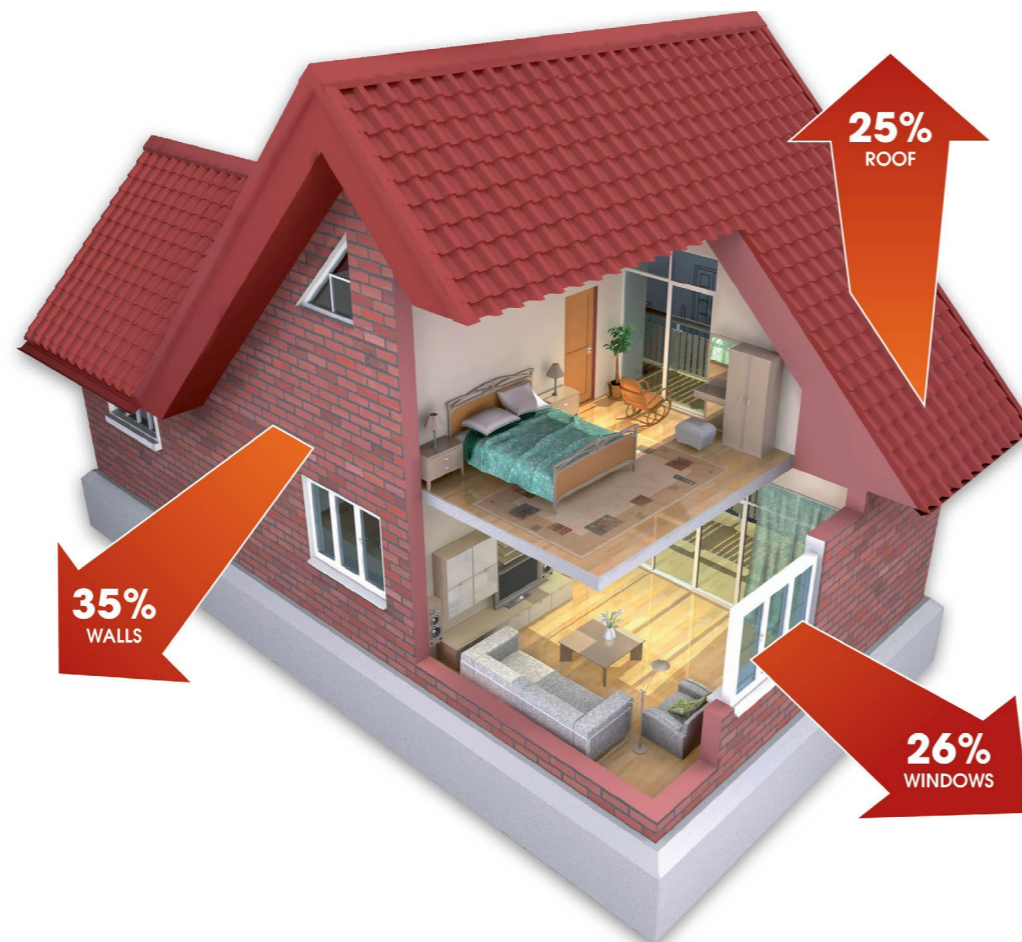


Key messages

- 26% of all domestic heat loss is through the windows.
- Less reliance on heating your environment means saving energy and therefore reduced energy bills - 22% on average.
- Planitherm contributes to a more stable room temperatures which contributes to a greater feeling of wellbeing.
- Planitherm limits cold spots and internal condensation on the glazing therefore maximising room usage.



Consumer benefits



Feel the benefit

26% of all domestic heat loss is through windows, so one of the easiest ways to improve your insulation is to upgrade to the right glass. The Planitherm product family sits at the very heart of the Glassolutions insulating glass product range.

We have all felt the impact of rising energy costs on our household and business finances. The predictions for the future are that energy costs will continue to rise.

The most effective way for homeowners to save money on their heating bills is to improve the insulation properties of the building fabric. Insulation effectively helps maintain your desired indoor temperature for longer.

Consumer benefits



Save energy - save money

Planitherm glass contributes to more stable indoor temperatures, which enables a lower overall temperature to be selected on the thermostat – there is therefore less reliance on heating to overcome sudden cold spells.

The lower the level of heating you need and the fewer bursts of heating you need, the less energy you consume and the more money you save. The right glazing specification will save you energy and money.

Every home is different, but PLANITHERM can save up to 22% on your heating bills.**

** 22% savings are typical but each home will vary. Example is for a semi-detached, 3 bedroom UK home saving £179 per annum for an A rated window (source Glass & Glazing Federation and Energy Saving Trust) with an annual gas bill of £800 (source: Department of Energy and Climate Change). To calculate the projected savings for your home use the calculator below.

Consumer benefits



Comfort

The right glazing specification will also help reduce or eliminate internal condensation and temperature peaks and troughs. Here's how:

- Planitherm prevents the inside face of the glass feeling cold, which in turn prevents the feeling of coldness near windows meaning you can use the maximum room space available.
- This contributes to a better more comfortable overall living environment..

Consumer benefits



Thermal comfort plus much more

Of course, thermal comfort is just one benefit that consumers seek. Glassolutions products have multi-functionality built into them.

With one change in specification Glassolutions can simply upgrade a standard thermally insulating unit into a multifunctional sealed unit which also:

- protects soft-furnishings from the fading effect of UV rays
- improves acoustic performance
- has the safety and security benefits of laminated glass built-in

Consumer benefits

Is this right for you?

Energy Saving

- Do you consider your glazing choice as an important means of saving energy in your property?
- Have you noticed that the area around your glazing sometimes feels colder than the rest of your room and you perhaps avoid using that space?
- Do you spend more time in your property in the colder seasons?
- Is it important to you that your property is kept warm in the colder seasons?
- Would you like to maximise the energy savings from your glazing?
- In Winter do you want to benefit from the retention of 'free heat' built up in your property during the day?

- Is it important for you to be able to compare the energy performance of different windows before buying?
- Are you looking to sell your property any time soon? Would you like to reduce the risk of 'poorly insulating glazing' being a factor in the buyer's decision-making process?

Multi-functionality

- Have you ever upgraded the glass in your windows/ conservatory?
- Do you feel your glazing is actually working for you (in thermal insulation, solar control, sound control, safety and security, low-maintenance)?
- Do you feel your glazing offers you good value for money?

Environment



Key messages

- Glassolutions leads the industry on the environmental and sustainability agenda.
- Planitherm products have more recycled content than any other UK-made glass.
- LCAs and EPDs are growing in importance and influence in the UK construction industry.
- Glassolutions is the only company in the UK to have Life Cycle Assessments (LCAs) on a core range of products and customers can access Environmental Product Declarations (EPDs) through the Glassolutions **website**.



Environment



The real responsibility

How our products and activities impact the environment is very important to us.

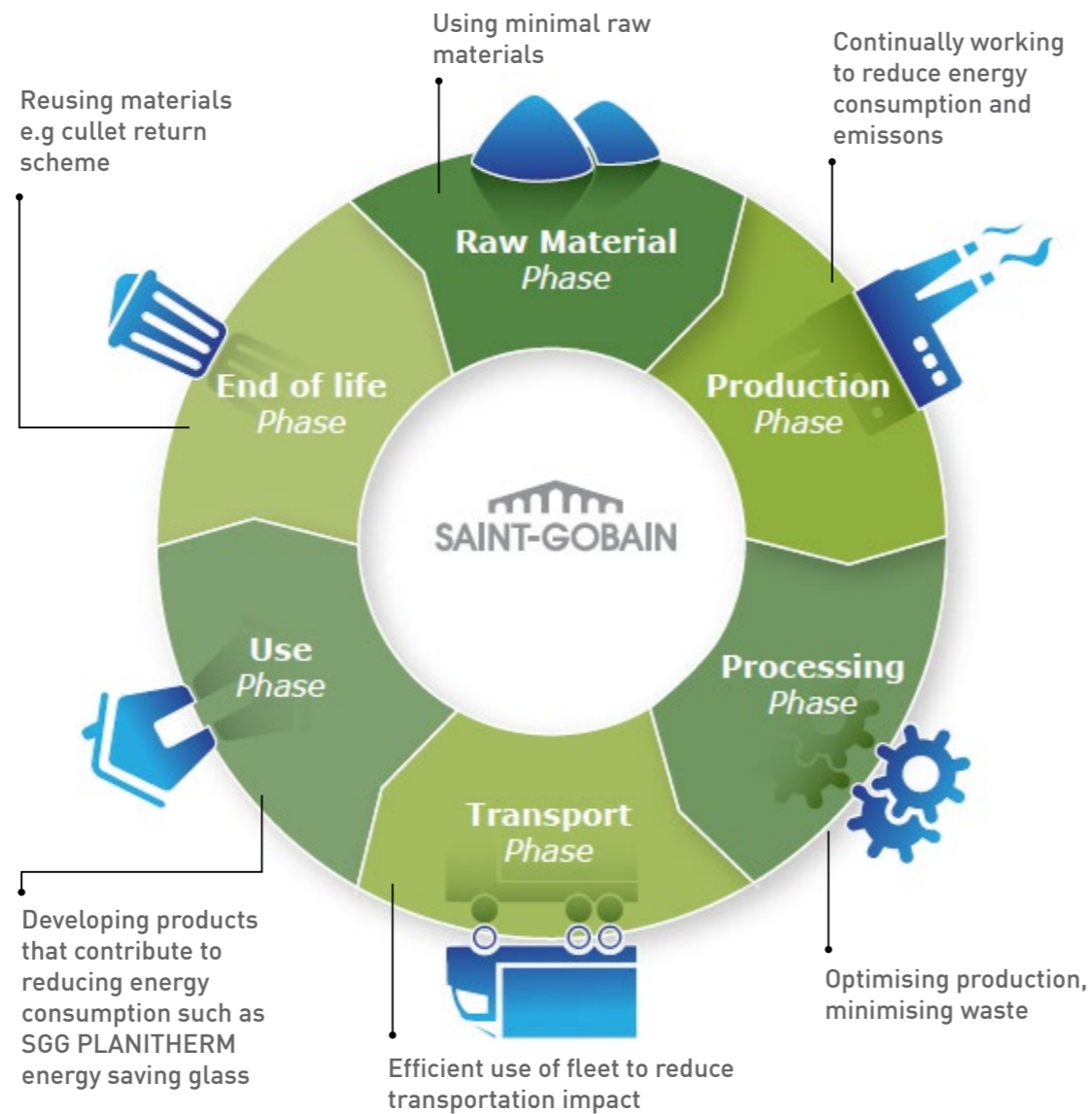
The headline fact in terms of the environment is this: using Planitherm products configured in the right way with the guidance of Glassolutions will help lower the CO2 emissions of homes and public/commercial buildings.

Glassolutions can demonstrate that it is staying ahead of minimum legislative requirements – and that gives customers an important advantage.

Glassolutions is the only glass processor in the UK to have performed Life Cycle Assessment (LCA) analysis across a core range of products. So when Glassolutions says its products save 128 times more energy than was required to make them, it can be said with confidence because it is a proven, tested fact.

Glassolutions has achieved the internationally accepted standard ISO 14001. This means that environmental management is at the heart of its operations.

Environment



Glazing benefits & BREEAM

For those working with architects on commercial and public buildings, Glassolutions also has the knowledge of how glass specification will help them towards high BREEAM ratings. In terms of numbers, customers can earn up to 40 credits using Planitherm.

In summary

Once installed, Glassolutions glass has energy saving benefits – keeping heat in, keeping excess heat out, increased natural light and reduced need for artificial light etc.

Even more critical is how Glassolutions products are manufactured, processed, supplied, maintained and recycled. Window glass is a highly recyclable product, and the Group has the expertise and innovation to industrially incorporate recycled window glass into its products whilst maintaining their excellent clarity. At 30%, Planitherm products contain more recycled glass content than any other UK-made glass.

If you are a customer, that means you don't have to worry about the sustainability of your glass supply chain – and Glassolutions can demonstrate this easily by giving customers online access to an Environmental Product Declaration (EPD) for key products.

Why Glassolutions?



Key messages

- Glassolutions knows Planitherm and soft-coated glass inside out.
- Planitherm is a tried and tested, highly-engineered product - it is reliable.
- Glassolutions has a nationwide network of branches - supporting customers to convert them to Planitherm.
- Glassolutions is backed by Saint-Gobain, one of the world's leading industrial groups.



Why Glassolutions?



20+
YEARS

20+ years as
the premier
Planitherm glass
specialists

1

A unique capability

With its longevity, scale and coverage in the UK marketplace, no other glass processor and distributor is set up to offer the products and services that Glassolutions does.

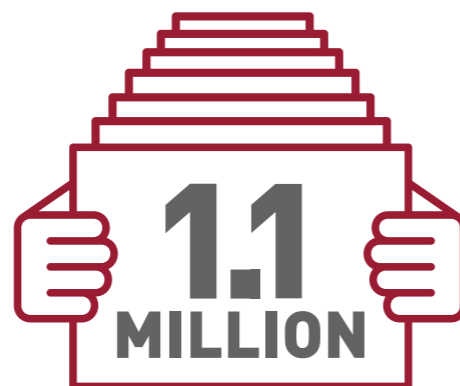
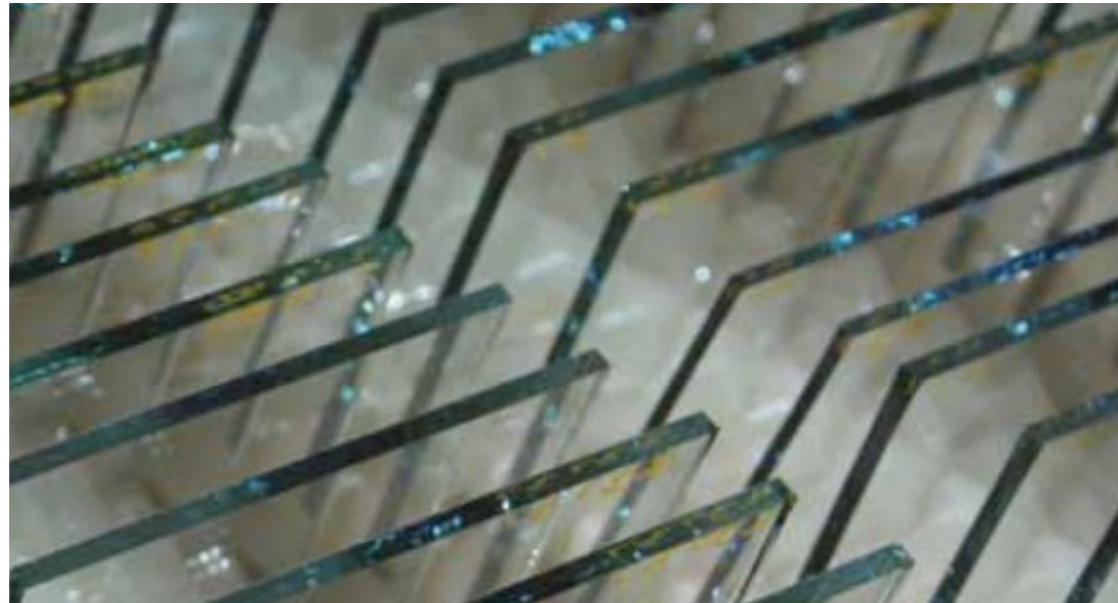
The company has been processing Planitherm for more than 20 years, which makes it unrivalled in terms of its experience in processing and supplying low-E softcoat glass.

Unlike other more recent entrants to the low-E glass market, Planitherm offers an important assurance to customers. Planitherm low-E coatings have been around for 30 years which demonstrates the rigour of the coatings – i.e. it works and lasts. This confidence should not be underestimated in an industry where proven longevity of products is a vital asset.

In good company

Backed by the corporate strength of the Saint-Gobain Group, a world leader in design, production and distribution of construction materials, Glassolutions offers long term supply chain reliability and security. This is complemented with meaningful, market leading warranties, an ongoing investment programme in product innovation and access to unrivalled technical back-up.

Why Glassolutions?



We handle and process more Planitherm than anyone else - 1.1 million m² in 2013

2

Planitherm pioneers

Today Glassolutions processes more Planitherm than anyone else in the UK – over 1.1 million m² in 2013.

Planitherm is absolutely at the heart of Glassolutions' thermal comfort offering, with a team which knows how the product performs and has lived the journey every step of the way – as the recent advertising campaign highlighted.

That means customers can depend on a glass supplier that understands and has lived the challenges they face on a daily basis wherever they operate in the glazing supply chain – with the expertise to provide effective solutions.

See it here...

Glassolutions further supports customers to choose Planitherm by providing them with:-

- Step-by-step guides
- Access to a team of experts
- Sample product for processing trials
- Production information
- Details of all necessary consumables and processing equipment
- Factory visits for demos, set-up and trouble-shooting

Why Glassolutions?



With 18 branches in England, Scotland and Wales we're never far away

Glassolutions branches across England, Scotland and Wales.

This means the company is never too far away to provide a consistent technical service and practical support wherever customers are located.

All of Glassolutions' activities are underpinned by a single ethos – "Your glass. Our world."



This demonstrates Glassolutions' commitment to delivering service-led glass solutions through a customer-focused approach whilst also emphasising the organisation's drive for global sustainability.

Why Glassolutions?



National
Consumer
Awareness of
Planitherm thanks
to “Pam and Fern”
campaign

As seen on TV

In recent years there has been a nationwide consumer awareness campaign for Planitherm on TV, radio and in printed press. For consumers this was brought to life by the TV personalities ‘Pam and Fern’.

Planitherm Installer Network

Additional extensive advertising has been undertaken to explain the benefits of Planitherm to both Installers and Fabricator customers.

A Planitherm Installer Network has also been created with unique benefits for installers who have registered.

Thanks to the new **Planitherm Rewards** scheme, those network members can now earn points on every window they install containing Planitherm glass and redeem points on branded merchandise or personalised marketing materials quickly and easily.

Why Glassolutions?



Glassolutions is part of the Saint-Gobain group, one of the world's leading industrial companies with sales of more than €43billion

In good company

Glassolutions is part of the Saint-Gobain group, one of the world's leading industrial companies with sales of more than €43billion. Its sister companies include well-known market-leading brands such as Jewson, Graham, British Gypsum and CTD.

The group strategy

The group companies' shared ambition is to be the reference point for sustainable habitat - that means developing innovative materials and services for working and living environments which consume less energy and help protect or improve the environment.

It also means a focus on growing through delivering real value to customers to deliver solutions for the biggest challenges of our age - Growth, Energy and the Environment.

How we work

The Principles of Conduct and Action underpin Saint-Gobain's diverse activities and interactions - a common understanding that makes the group strong.

Terminology

Glassolutions is an industry authority on standards and regulations with a highly skilled, knowledgeable team equipped to offer advice on all kinds of technical issues. Part of being in a technical leadership role involves helping the wider industry to make sense of product and coating technology as well as legislation and standards. Which is why Glassolutions provides a comprehensive glossary on the main terminology used within the sector. This is available on the Glassolutions website: www.glassolutions.co.uk/knowledge-centre/glossary

U-value

The rate of heat loss of a building component. It is expressed as Watts per square metre, per degree Kelvin, W/m^2K .

U_w

The rate of heat loss through the “whole window”. It takes account of all elements forming the window; glass, cavity fill, spacer bar, edge seal and the window frame itself.

U_g

The rate of heat loss through a single pane of glass or an Insulating Glass Unit (IGU). It is also known as the ‘centre pane U-value’ and takes no account of the spacer bar or edge seal (if it is an IGU) or the window frame.

WERs/DERs

Window and Door Energy ratings which allow consumers to compare the energy efficiency of products using a simple labelling system.

Soft coating

Planitherm products are sometimes referred to as ‘soft’ or ‘offline’ coatings which simply refers to the fact that the coating is applied using a Magnetron coater.

G-value

The % of total solar radiant heat energy entering the room through the glass.

IGU

Insulating glass unit – can be double or triple.

Emissivity

Emissivity is the ability of a surface to absorb and emit energy in the form of radiation. Low-emissivity (Low-E) coatings greatly reduce heat loss through glass.

DGU

Double glazed unit.

TGU

Triple glazed unit.

SAP

The Standard Assessment Procedure (SAP) developed by the BRE is the methodology used by the Government to assess and compare the energy and environmental performance of dwellings.

Product range



GLASSOLUTIONS
SAINT-GOBAIN

Product range

New build dwellings



- **Planitherm Total +** is the compliance solution for new build dwellings.
- **Planitherm One** has a possible 1.0 W/m²K centre pane U-value (90% Argon) and is an even better solution for an optimised energy balance between U-value and g-value to give better SAP ratings. As it has been designed to minimise heat loss, Planitherm One is also ideally suited to areas such as large south facing windows where Winter Comfort (keeping warm in the Winter) is key.

The Planitherm family

Glassolutions offers easy online access to its CALUMEN tool, which allows customers to calculate performance themselves depending on their desired thicknesses and types of glass and coatings.

Glassolutions is aligned closely with the 'as seen on TV' Planitherm and have the complete Planitherm family of products available.

The Planitherm family puts a range of market leading, pioneering glass products at Glassolutions' disposal. This is backed with expert advice on which products to use to achieve the optimum thermal performance for DGUs and TGUs.

Glassolutions has a solution for every application, every performance level and even for different orientations of a building.

- **Planitherm Total +**
- **Planitherm One**
- **Planitherm 4S**
- **Planitherm Ultra N**

Product range

Refurbishment dwellings



Planitherm Total + is the compliance solution for replacement windows and is optimised for WERs (Window Energy Ratings).

Planitherm One has a possible 1.0 W/m²K centre pane U-value (90% Argon) and is an even better solution when selling on optimum U-value performance.

As it has been designed to minimise heat loss it is also ideally suited to areas such as large south facing windows where Winter Comfort (keeping warm in the Winter) is key.

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- Planitherm Total +
- Planitherm One
- Planitherm 4S
- Planitherm Ultra N

Product range

Conservatory side walls and roofs



Planitherm Total + is the compliance solution when there's no dividing wall in the conservatory.

Where excessive heat gain might be an issue **Planitherm 4S** is a great solution. It comprises a neutral solar control coating and is optimised for both lower U-values (Winter Comfort) and solar reflection (Summer Comfort). It is also ideal for large bi-folding door units.

Conservatory roofs may also benefit from solar control properties. Find out about solar control [here](#).

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- Planitherm Total +
- Planitherm One
- Planitherm 4S
- Planitherm Ultra N

Product range

New build non-dwellings



Planitherm Ultra N is ideal for commercial new build, particularly suited to steel and aluminium frames.

Where an improved U-value is required Planitherm 4S provides a 1.0 centre pane u-value, and helps combat excessive heat gain from large windows and doors. For the commercial sector, the Planitherm range allows for an optimal solution to be chosen depending on individual building characteristics.

The Planitherm family

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- Planitherm Total +
- Planitherm One
- Planitherm 4S
- Planitherm Ultra N

Product range

Refurbishment non-dwellings



Planitherm Ultra N is ideal for commercial refurbishment, particularly suited to steel and aluminium frames.

Where an improved U-value is required Planitherm 4S provides a 1.0 centre pane u-value, and helps combat excessive heat gain from large windows and doors. For the commercial sector, the Planitherm range allows for an optimal solution to be chosen depending on individual building characteristics.

The Planitherm family

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- Planitherm Total +
- Planitherm One
- Planitherm 4S
- Planitherm Ultra N

Triple glazing



Key messages







- Whether double glazing or triple glazing is right for you depends entirely on your specific requirements.
- Triple glazing is likely to best suit customers seeking the lowest possible U-values or those working on a Passivhaus project.
- Glassolutions can advise on which applications are right for TGUs and help you understand all considerations before choosing the right product for you.



Triple glazing and double glazing

- the performance facts

How TGUs compare to DGUs with Planitherm Total+

 Energy saving	Save just £6 a year – less than 2p per day*
 Cost of glass	At least 100% more expensive - sometimes 400%
 Noise control	There is no difference between the two - it is a myth that triple glazing gives better acoustic performance. (when comparing the same specification on a DGU vs TGU e.g. 4-16-4, 4-16-4-16-4)
 Glass weight	TGUs need to be 8% bigger to let in the same light. A TGU will also tend to be darker to look at due to more mass of glass (when comparing the same specification on a DGU vs TGU)
 Amount of light	36mm TGU - very similar U-value can be achieved using a DGU. DGU is 50% lighter (Using the same glass coating a DGU = 1.2 Ug-value and a TGU = 1.1 Ug-value)
 Ug-value	44mm TGU - delivers a 25% better U-value than a DGU (when comparing the same specification on a DGU vs TGU)

* Based on: gas at £4.21 per Kwh, 10m² glazing. £6 saving is achieved when using 2 layers of Total+ within the TGU.
Calculations based on energy balance calculation done via an independent body.






All other facts based on: DGU = 4mm Planiclear - 16mm spacer - 4mm Planitherm Total+

TGU = 4mm Planiclear - 16mm spacer - 4mm Planiclear - 16mm space - 4mm Planitherm Total+ (36mm TGU based on 12mm cavity)

Triple glazing and double glazing

- the performance facts

TGU or DGU - you decide

SCENARIO	DGU	TGU
 Existing 36mm frame or meeting building regs	✓	TGU is 50% heavier but offers similar performance
 New installation with 44mm frame		✓ ...but if cost is a factor, consider DGU alternative
 For improved acoustics	✓	Based on the same spec, a DGU will perform the same as a TGU. In fact DGUs and TGUs both have a maximum noise reduction of approximately Rw 50dB.
 Meeting Passivhaus or a Uw of <0.8 (e.g. Code level 6)		✓
 Value for money cost v energy saving	✓ In most cases DGUs are most cost-effective	

Legislation and standards



Key messages

- Glassolutions is a leading authority on industry standards and regulations – with experts within the business that can advise on specific issues and questions.
- Glassolutions' authority and respect in the industry is illustrated by the fact the President of the GGF is an employee of Glassolutions.
- The updates to Part L (2014) and Section 6 (2013) have not changed the minimum requirements for glass and glazing performance.



Legislation and standards

Minimum performance summary

England

Approved Document L

Domestic

Newbuild L1A 2.0 W/m²k

Refurbishment L1B 1.6-1.8 W/m²K*

Commercial

Newbuild LSA 2.2 W/m²K

Refurbishment LSB 1.6-1.8 W/m²K

*Depending on application

Scotland

Technical Standards section 6

Domestic

Newbuild 1.8 W/m²k

Refurbishment 1.4-1.6 W/m²K*

Commercial

Newbuild 2.0 W/m²k

Refurbishment 1.6 W/m²K

Wales

Approved Document L

Domestic

Newbuild 1.6 W/m²k

Refurbishment 1.6 W/m²k

Commercial

Newbuild 2.2 W/m²k

Refurbishment 1.6-1.8 W/m²k*

Legislation and standards

The glass and glazing industry is governed and affected by a complex web of Standards, Legislation and Codes of Practice. Glassolutions helps its customers better than anyone else because the company engages with Government and industry organisations at a senior level. This includes an active involvement with the GGF, the President of which is a Glassolutions employee.



Glass and Glazing Federation



Building regulations

The Building Regulations legislation concerning the energy performance of windows and doors is covered by Approved Document L in England and Wales and Section 6 in Scotland.

This is reviewed every few years in line with ever more demanding CO2 reduction targets for the UK as a whole. The performance of glass products plays a significant role in meeting these targets.

The latest review that recently came into force in Scotland (October 2013) and in England (April 2014) actually means little or no change for fabricators, installers and sealed unit manufacturers - so the message regarding Building Regulations is simple: 2013/14 is roughly equal to the Building Regulations we are used to from 2010.

This year for the first time Wales gets its own version of Approved Document L (from 31st July 2014) and Glassolutions' technical team can advise on what the impact will be for glass and glazing.

Legislation and standards

Energy Window	
XZZ Window Company Energy Saving Window	
Energy Index (kWh/m ² /year) <small>(Energy Index certified by BFRC and based on UK standard window. The actual energy consumption for a specific application will depend on the building, the local climate and the indoor temperature)</small>	+10 UK
The climate zone is:	
Thermal Transmittance (U _{window}) Solar Factor (g _{window}) Effective Air Leakage (L _{factor})	1.4 W/m ² .K 0.45 0.00 W/m ² .K
	Reg. No.: Sample www.bfrc.org
<small>This label is not a statutory requirement. It is a voluntary label provided as a customer service to allow consumers to make informed decisions on the energy performance of competing products.</small>	

Compliance with legislation

The Planitherm range of products has been proven to easily and cost effectively achieve A+, A, B or C WER ratings in the broadest range of profiles. The Window Energy Rating Scheme is the UK's national system for rating the energy efficiency of windows and is recognised within the Building Regulations as a method to show compliance for your replacement windows installation.

Window Energy Ratings use a consumer-friendly traffic-light style ratings guide that you may be already familiar with. This ratings label can help consumers make more informed choices about the energy efficiency of windows from different companies. Planitherm is so advanced that even the highest A Rating can be achieved in many profiles without the need for low iron glass.

The Planitherm range of products can also help you achieve compliance via the alternative 'Whole Window' Uw value method, with an option for air or argon filled cavities.

Sealed unit performance



Key messages

- Glassolutions has a 40 year record of double glazed unit manufacture.
- EcoClear units containing Planitherm can deliver indicative whole window U-values of as low as 1.2 W/m²K or 0.7 W/m²K for triple glazed windows.
- EcoClear units have a market-leading 10 year guarantee.

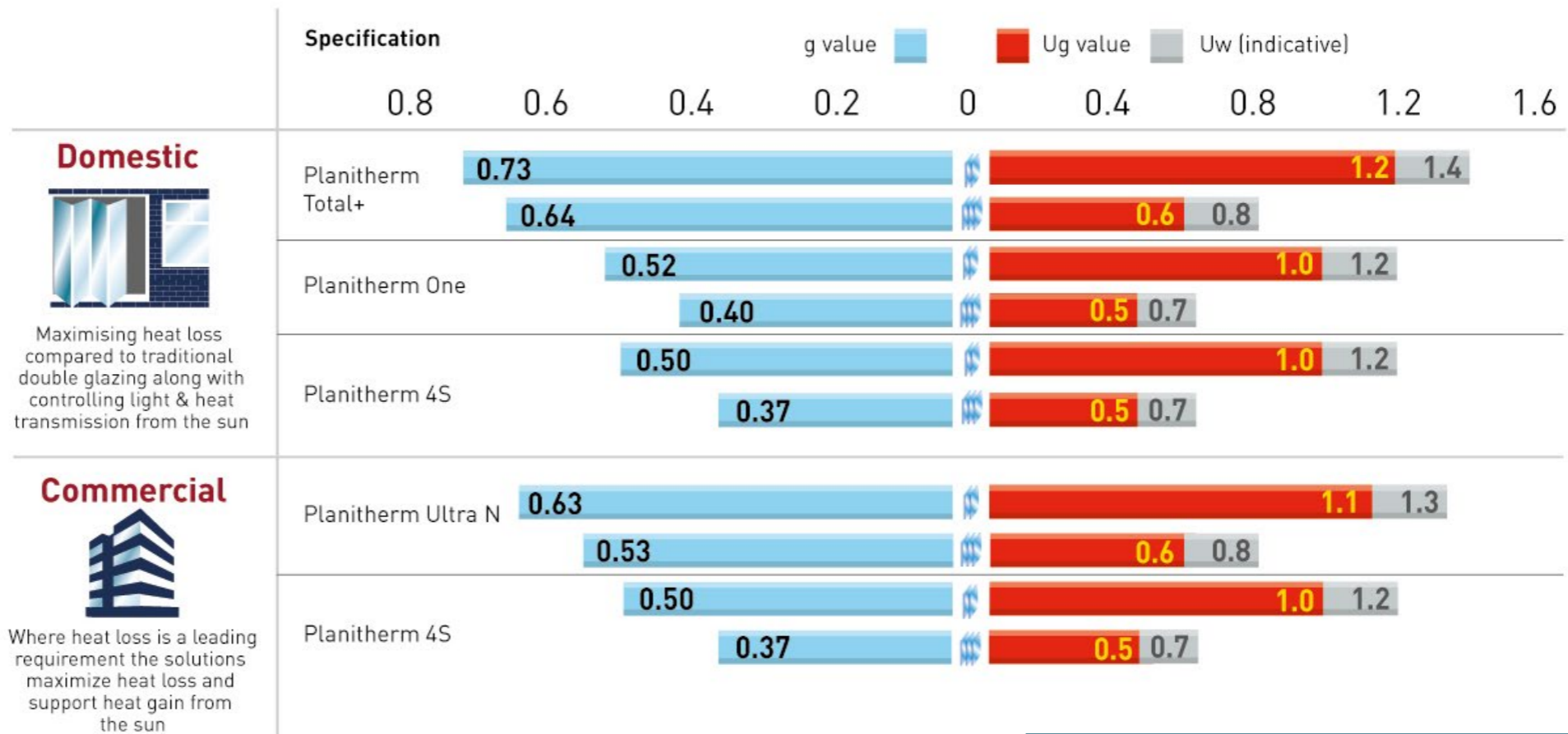


Sealed unit performance

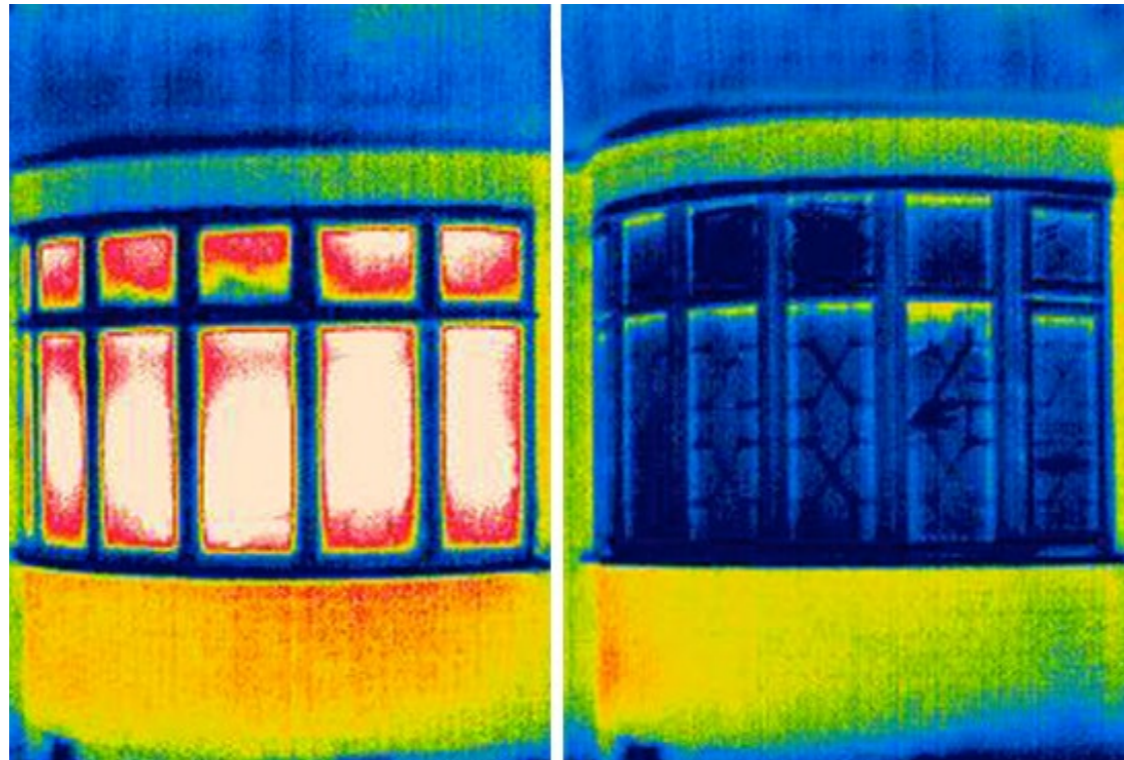
Double and triple glazing

EcoClear is the Glassolutions brand for sealed units, backed with an

INDUSTRY-LEADING 10-YEAR WARRANTY



Sealed unit performance



Performance you can trust

Glassolutions has been manufacturing sealed units for more than 40 years and specifically EcoClear sealed units since 2008 using the Planitherm family of low-E glasses.

Depending on which type of Planitherm product is used to create the sealed unit, EcoClear double glazed units will deliver whole window U-values (U_w) of between 1.2 and 1.4 W/m²K or between 0.7 and 0.8 W/m²K for triple glazed windows.

Superior quality

Glassolutions' sealed units are third party quality accredited by BM Trada (Q-Mark), BS EN 1279 compliant, ISO9001 and CE Marked.

Durability with dual-seal

Glassolutions' DGUs use the most secure 'dual-seal' sealing system with four sided desiccant fill to ensure long-lasting durability.

Sealed unit performance



Guarantees you can depend on

Customers want the assurance of knowing that their glass units are fit to last. EcoClear units are guaranteed for 10 years*, backed by the worldwide construction leader Saint-Gobain (since 1665).

Many guarantees for competitor units do not last as long, are not as comprehensive or – worse still – are not backed, and are therefore in jeopardy, if the supplying company goes out of business.

***Refer to Glassolutions terms and conditions of supply for full and precise details.**



Technology



Key messages

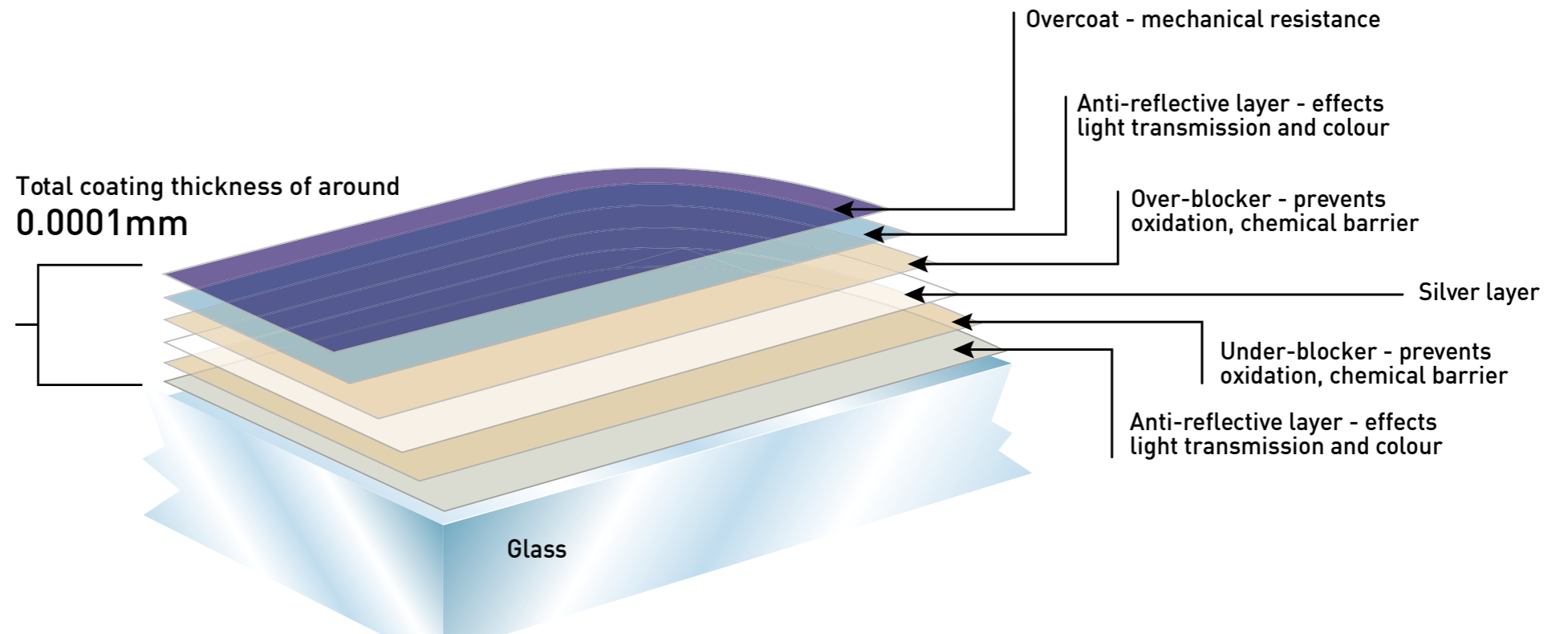
- Glassolutions has extensive knowledge of glass and coatings as well as everyday, wide-scale handling experience.
- Glassolutions' close relationship with the glass manufacturer underpins its know-how.
- Glassolutions is passionate about offering glass solutions that satisfy real needs like multi-functionality or aesthetics.



Technology

Anatomy of low-E coating

Almost a decade ahead of rivals, Planitherm has been made in the UK since 2004 using Saint Gobain Glass UK's magnetron coater.



Technology



**ACOUSTIC
CONTROL**



**FIRE
PROTECTION**



**INTERIOR
GLASS**



**SOLAR
CONTROL**



**THERMAL
COMFORT**

As the UK's largest glass processor and distributor, Glassolutions has extensive knowledge of a wide variety of glass products and the technology that is used in their manufacture.

Glassolutions has a particular specialism in the family of low-E Planitherm glass products which it has been processing and distributing for more than 20 years.

With its close working relationship with Planitherm manufacturer Saint-Gobain Glass, Glassolutions has access to detailed technical knowledge about the coatings – how they are made up and the role that each layer plays. **The 'Anatomy of a low-E coating' illustration explains.**

This enables Glassolutions to drive forward continuous improvement, responding to specific changes in the market and developing its own know-how. Ultimately Glassolutions has an important voice in pushing the boundaries of performance within what is possible in glass.

Glassolutions expertise' also extends into glass technology designed to address solar control, acoustics, safety, security and fire protection, as well as numerous innovative products offering extensive scope for creating visually unique interiors.