

# Glass for insulation



**AGC**

GLASS UNLIMITED

FOCUS ON  
THERMAL INSULATION  
FOR RESIDENTIAL BUILDINGS  
AND HOMES

IPLUS

# AGC Glass Europe presents...



# ...the most comprehensive range of products for thermal insulation



## IPLUS

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# Improving energy efficiency in homes with innovative low-e glass coatings

— IPLUS —

iplus is a comprehensive range of low-emissivity products dedicated to thermal insulation, providing a more comfortable living space. Using advanced magnetron technology, our low-emissivity coatings are the most performing on the market today, and certified by the rigorous Cradle to Cradle programme. Whatever your needs may be – protection from the cold, achieving both thermal insulation and solar control, good insulation while preventing condensation or additional safety functions – there's a product engineered to meet each specific requirement. In addition to this, their durable surface resists scratches and handling, making it easy to process, something glass processors and architects will appreciate.

# Making the most of light and solar energy

## IPLUS TOP 1.1 ON CLEARLITE and IPLUS TOP 1.1<sup>T</sup> ON CLEARLITE\*

Balancing the quantity and quality of light greatly impacts the comfort level of any living space. Used in double or triple glazing, iplus Top 1.1 on Clearlite and iplus Top 1.1<sup>T</sup> on Clearlite ensure that as much light and energy from the sun enters the building, while delivering a good level of thermal insulation.

What's so special about it? | What does this mean for you?

**Very high solar factor** – High free solar gain means less heating needs

**High light transmission** – Generously distributes natural light in the home

**Good thermal insulation** – Enhances thermal comfort

**Neutral colour** – Meets the trends of the residential market

**To be used in double or triple glazing** – Enables additional design, safety and acoustic functions when combined with other AGC glass products

**After toughening, iplus Top 1.1<sup>T</sup> on Clearlite has exactly the same appearance as iplus Top 1.1 on Clearlite** – These two coatings can be used on the same glazed surface

\* iplus Top 1.1<sup>T</sup> on Clearlite is the version of iplus Top 1.1 on Clearlite which requires tempering.

### Key performance\*\* figures

	Coating position(s)	Ug Value W/(m <sup>2</sup> K)	LT (%)	SF (%)	LR (%)
<b>Double glazing 4-16-4 (Argon 90%)</b>					
iplus Top 1.1 on Clearlite	3	1.1	82	64	12
iplus Top 1.1 <sup>T</sup> on Clearlite	3	1.1	82	66	12
<b>Triple glazing 4-14-4-14-4 (Argon 90%)</b>					
iplus Top 1.1 on Clearlite	2 and 5	0.6	74	53	16
iplus Top 1.1 <sup>T</sup> on Clearlite	2 and 5	0.6	75	55	15

\*\* For more information, please see our Performances guide at the end of the brochure.



# Advanced cold protection

## IPLUS ADVANCED 1.0 ON CLEARLITE and IPLUS ADVANCED 1.0<sup>T</sup> ON CLEARLITE\*

Just as their names suggest, with a Ug factor of 1.0, these products offer advanced protection against the cold to ensure optimum comfort. Users also benefit from their outstanding solar factors and light transmissions, significantly high for this level of insulating performance. Innovative in the market, iplus Advanced 1.0<sup>T</sup> on Clearlite is the first AGC low-emissivity coating with a thermal insulation of 1.0 to offer a safety function thanks to the toughening process.

What's so special about it? | What does this mean for you?

**Enhanced thermal insulation** – Superb thermal comfort

**High light transmission** – Generously distributes natural light in the home

**To be used in double or triple glazing** – Delivers additional design, safety and acoustic functions when combined with other AGC glass products

**iplus Advanced 1.0<sup>T</sup> on Clearlite: the first toughenable glass with a Ug factor of 1.0** – Benefit from this innovative glass product's optimal Ug factor, even after toughening

**After toughening, iplus Advanced 1.0<sup>T</sup> on Clearlite has exactly the same appearance as iplus Advanced 1.0 on Clearlite** – iplus Advanced 1.0 on Clearlite and iplus Advanced 1.0<sup>T</sup> on Clearlite can be used on the same glazed surface

iplus Advanced 1.0<sup>T</sup> on Clearlite is the version of iplus Advanced 1.0 on Clearlite which requires tempering.

### Key performance\*\* figures

	Coating position(s)	Ug Value W/(m <sup>2</sup> K)	LT (%)	SF (%)	LR (%)
<b>Double glazing 4-16-4 (Argon 90%)</b>					
iplus Advanced 1.0 on Clearlite	3	1.0	77	57	15
iplus Advanced 1.0 <sup>T</sup> on Clearlite	3	1.0	81	62	13
<b>Triple glazing 4-14-4-14-4 (Argon 90%)</b>					
iplus Advanced 1.0 on Clearlite	2 and 5	0.6***	66	43	21
iplus Advanced 1.0 <sup>T</sup> on Clearlite	2 and 5	0.6***	73	50	18

\*\* For more information, please see our Performances guide at the end of the brochure.

\*\*\* A value of 0.5 is attained when 16mm spacers are used instead of 14mm spacers.



# Let the sunshine in, even with triple glazing!

## IPLUS LS and IPLUS LST\*

Triple pane structures provide high insulation properties but generally compromise on the amount of light and free solar energy that the glazing lets through. Specially developed for use in triple glazing, these low-emissivity coatings maximise solar energy gains, offering good thermal insulation. Ideal when extremely low energy consumption levels are required, it's the best solution for energy-efficient homes like passive houses where every source (or waste) of energy needs to be considered.

What's so special about it? | What does this mean for you?

**Specially designed to guarantee a high solar factor in triple glazing** – Incoming solar energy helps to reduce heating requirements

**High light transmission** – Delivers maximum amount of natural light

**Good thermal insulation** – Controls energy costs

**Dedicated to triple glazing** – Delivers additional design, safety and acoustic functions when combined with other AGC glass products

**After toughening, iplus LST has exactly the same appearance as iplus LS** – Their similar appearance means they can be used on the same glazed surface

\*iplus LST is the version of iplus LS which requires tempering.

### Key performance\*\* figures

Triple glazing 4-14-4-14-4 (Argon 90%)	Coating positions	Ug Value W/(m <sup>2</sup> K)	LT (%)	SF (%)	LR (%)
iplus LS	2 and 5	0.7	74	60	17
iplus LST	2 and 5	0.7	74	60	17

\*\* For more information, please see our Performances guide at the end of the brochure.



# Need solar protection too?

## IPLUS ENERGY<sup>N</sup> ON CLEARLITE and IPLUS ENERGY<sup>NT</sup> ON CLEARLITE\*

In homes with large south-oriented glazing or in commercial buildings with glass-based facades, solar energy often needs to be controlled to avoid overheating. These coated products bring together the best of solar control and thermal insulation, keeping the sun's excessive energy out so occupants can comfortably enjoy sunny days while providing excellent thermal insulation.

What's so special about it? | What does this mean for you?

**High level of protection from the sun** – Prevents overheating while maintaining a pleasant temperature

**Enhanced thermal insulation** – Optimal comfort

**A neutral appearance** – Meets the trends of the residential market

**To be used in double or triple glazing** – Delivers additional design, safety and acoustic functions when combined with other AGC glass products

**After toughening, iplus Energy<sup>NT</sup> on Clearlite has exactly the same appearance as iplus Energy<sup>N</sup> on Clearlite** – Together, they can be combined as desired on a same glazed facade

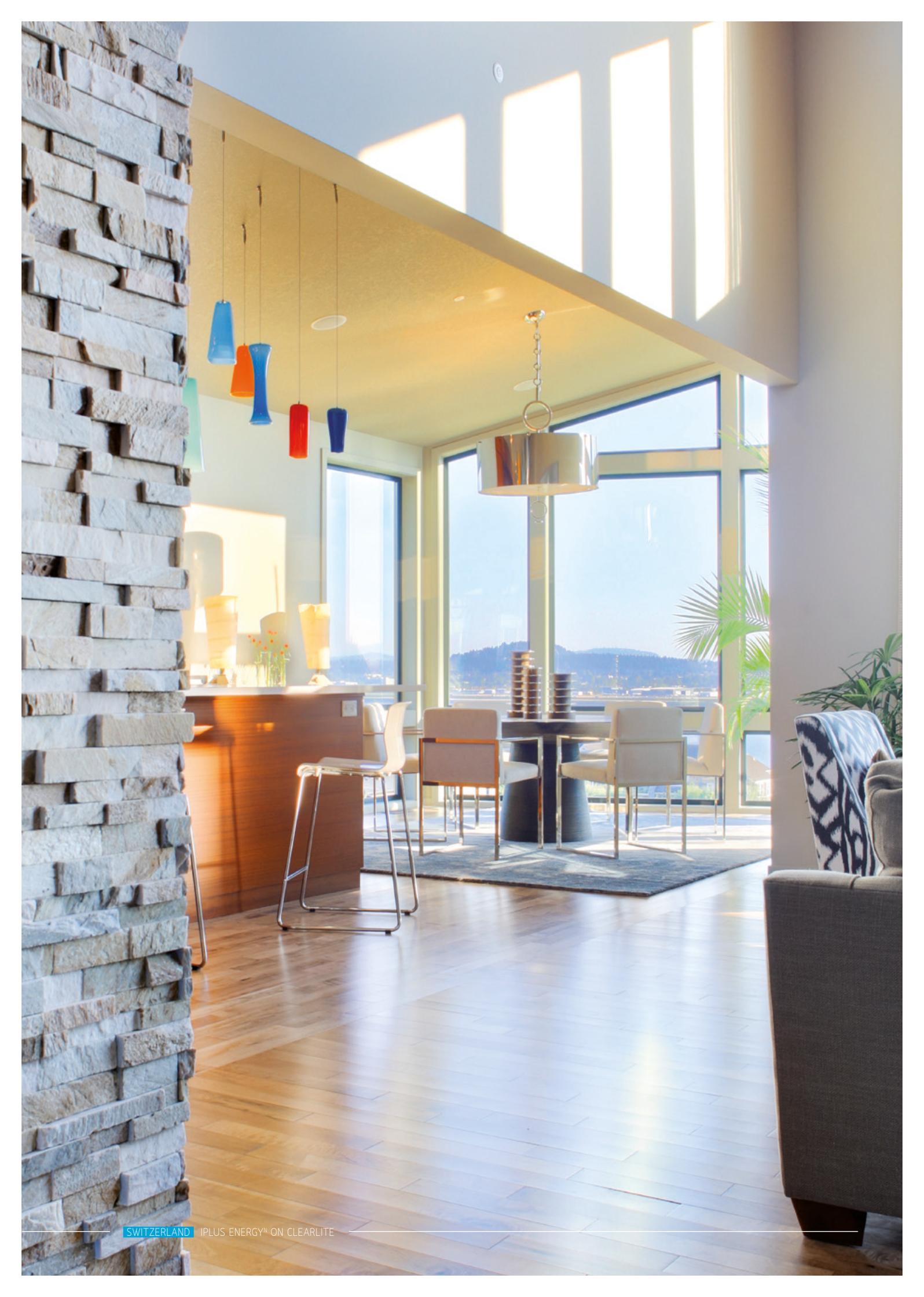
**Ideal for large bay windows and commercial buildings** – These benefits are also accessible for commercial buildings

iplus Energy<sup>NT</sup> on Clearlite is the version of iplus Energy<sup>N</sup> on Clearlite which requires tempering.

### Key performance\*\* figures

Double glazing 4-16-4 (Argon 90%)	Coating position	Ug Value W/(m <sup>2</sup> K)	LT (%)	SF (%)	LR (%)
iplus Energy <sup>N</sup> on Clearlite	2	1.0	73	41	12
iplus Energy <sup>NT</sup> on Clearlite	2	1.0	74	42	12

\*\* For more information, please see our Performances guide at the end of the brochure.



# Say 'no' to condensation

## IPLUS AF, IPLUS AF TOP and IPLUS AF ENERGY<sup>N</sup>

While highly-insulated windows provide comfort and energy savings, the more we insulate our homes and windows, the greater the possibility of external condensation forming. Capitalising on our years of know-how in coating technologies, AGC has succeeded in combining a special pyrolytic anti-condensation coating and a magnetron thermal insulation coating in a single pane of glass – the first time this has been done. This two-in-one solution provides good insulation and prevents condensation from forming. As well as ensuring a clear view to the outdoors, these three Anti-Fog products will make your living space more comfortable.

What's so special about it?

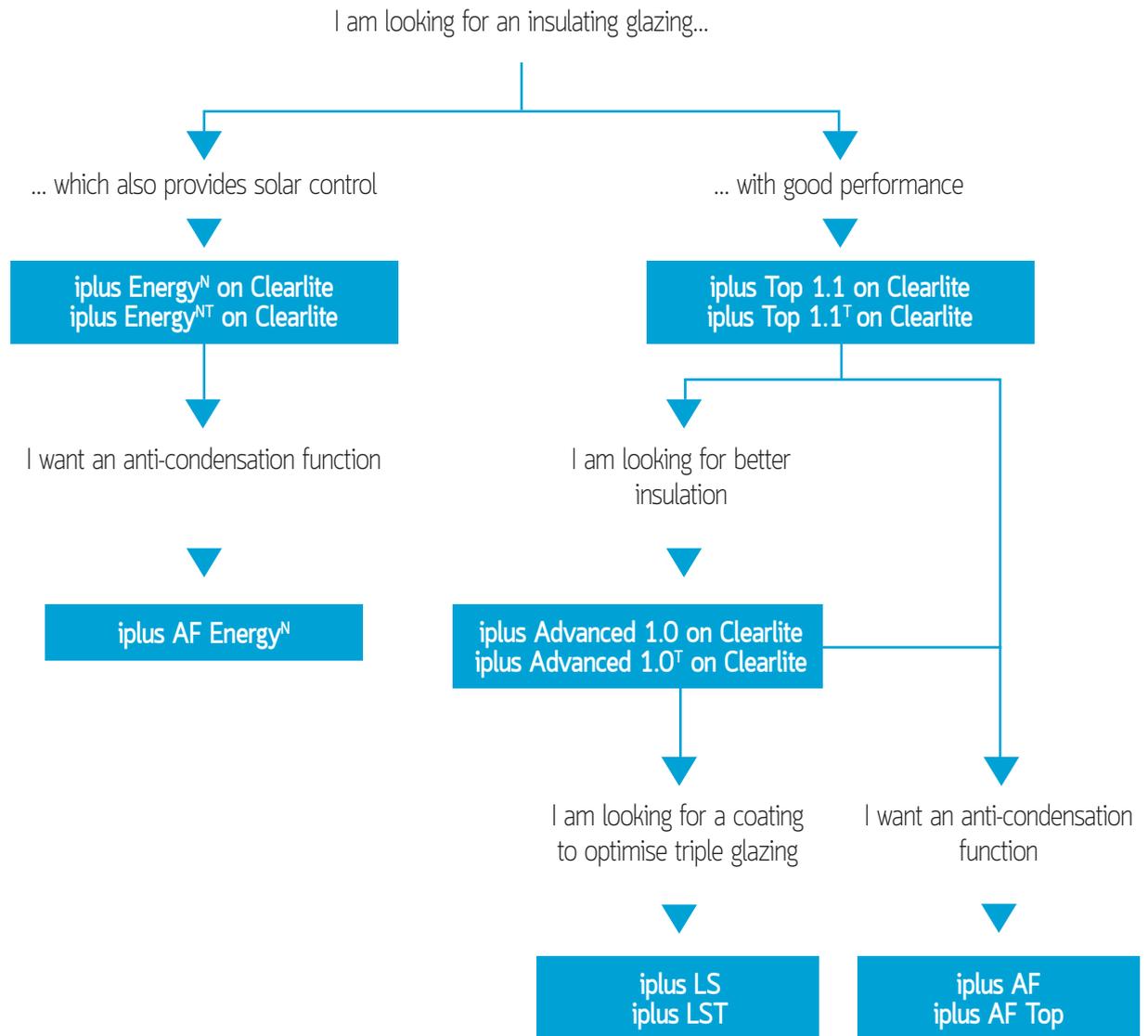
What does this mean for you?

- |   |  |
|---|--|
| <p>The use of a pyrolytic coating in position 1 increases the temperature of the outer glass, and prevents the formation of condensation</p> <p>Three products with anti-condensation properties:</p> <ul style="list-style-type: none"><li>- iplus AF: glass with anti-condensation pyrolytic coating in position 1</li><li>- iplus AF Top: double-coated glass (iplus AF in position 1 and iplus Top 1.1 on Clearlite in position 2), which combines anti-condensation and thermal insulation</li><li>- iplus AF Energy<sup>N</sup>: double-coated glass (iplus AF in position 1 and iplus Energy<sup>N</sup> on Clearlite in position 2), which combines anti-condensation, thermal insulation and solar control</li></ul> | <p>– Ensures a strikingly clear view of the outside world as the glass does not go opaque</p> <p>– Choose from multiple options so you find the right solution for your needs</p> <p>– Provide protection from injury and burglary, as well as a certain level of acoustic comfort</p> |
|---|--|

For additional performance information, please see the special "iplus Anti-Fog" brochure dedicated to these products.



# How to choose the coating you need?



# Comparative product table

	<b>iplus Top 1.1 on Clearlite</b> <b>iplus Top 1.1<sup>T</sup> on Clearlite</b>	<b>iplus Advanced 1.0 on Clearlite</b> <b>iplus Advanced 1.0<sup>T</sup> on Clearlite</b>	<b>iplus LS</b> <b>iplus LST</b>	<b>iplus Energy<sup>N</sup> on Clearlite</b> <b>iplus Energy<sup>NT</sup> on Clearlite</b> <b>iplus AF Energy<sup>N</sup></b>	<b>iplus AF</b> <b>iplus AF Top</b>
Application	Double and triple glazing	Double and triple glazing	Triple glazing	Double and triple glazing	Double and triple glazing
Heating needs (typically: residential buildings and homes)	***	****	****	**	***
Air-conditioning needs (typically: commercial buildings)	**	**	**	****	**

## Performance

High light transmission	****	***	****	***	***
High thermal insulation	***	****	**	****	***
High free solar gain	****	***	****	**	***

## Processing options

Lamination	iplus Top 1.1 on Clearlite	iplus Advanced 1.0 on Clearlite	iplus LS	iplus Energy <sup>N</sup> on Clearlite	NO <sup>(2)</sup>
Toughening	iplus Top 1.1 <sup>T</sup> on Clearlite	iplus Advanced 1.0 <sup>T</sup> on Clearlite	iplus LST	iplus Energy <sup>NT</sup> on Clearlite	iplus AF
Bending <sup>(1)</sup>	iplus Top 1.1 <sup>T</sup> on Clearlite	iplus Advanced 1.0 <sup>T</sup> on Clearlite	iplus LST	iplus Energy <sup>NT</sup> on Clearlite	iplus AF
Silkscreen printing <sup>(1)</sup>	iplus Top 1.1 <sup>T</sup> on Clearlite	iplus Advanced 1.0 <sup>T</sup> on Clearlite	iplus LST	iplus Energy <sup>NT</sup> on Clearlite	iplus AF
Position(s) of the coating in double glazing	2 or 3	2 or 3	-	iplus Energy <sup>N</sup> on Clearlite : 2 iplus Energy <sup>NT</sup> on Clearlite : 2 iplus AF Energy <sup>N</sup> : 1 and 2	iplus AF : 1 iplus AF Top : 1 and 2
Position(s) of the coating in triple glazing	2 and 5	2 and 5	2 and 5	iplus Energy <sup>N</sup> on Clearlite : 2 iplus Energy <sup>NT</sup> on Clearlite : 2 iplus AF Energy <sup>N</sup> : 1 and 2	iplus AF : 1 iplus AF Top : 1 and 2

<sup>(1)</sup> More information can be found in our "Processing Guide", available on [www.yourglass.com](http://www.yourglass.com).

<sup>(2)</sup> Available in Stratobel AF laminated version.

# Certifications

iplus magnetron coated products are Cradle to Cradle Certified™ Silver certified.

AGC Glass Europe is the first European glassmaker to be Cradle to Cradle Certified™ Silver for its float glass as well as its soft-coated, laminated and decorative glass products. Cradle to Cradle Certified™ is a certification mark licensed by the Cradle to Cradle Products Innovation Institute. This rigorous programme evaluates the sustainable nature of a product as a whole, i.e. over its entire lifecycle.



Certain iplus coated products carry the PassivHaus label when assembled in triple glazing. By using them in insulating glazing, you can offer clients an additional benefit for obtaining certification during the construction of a passive house. See [www.passiv.de](http://www.passiv.de) for more information.





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**AGC GLASS EUROPE, A LEADER IN FLAT GLASS**

AGC Glass Europe is the European branch of AGC, the world's leading flat glass producer. Its base-line, Glass Unlimited, reflects its core assets: innovative strength in advanced glass technologies, a global sales network and an industrial presence stretching from Spain to Russia. AGC Glass Europe has representatives worldwide - See [www.yourglass.com](http://www.yourglass.com) for further addresses.

