MAGNETRON COATINGS*

PROCESSING GUIDE

VERSION 2.1 – JUNE 2019

*Stopray, StoprayT / Stopray SilverFlex / ipasol / Energy / iplus 1.1, iplus 1.1T, iplus 1.0, iplus 1.0T, Energy N, Energy NT, iplus Light, iplus Top 1.0 / Planibel Top N+, Planibel Top N+T / Planibel AS

Excluding Stopray Smart, Stopray LamiSmart, ipasol bright, ipasol grey 40/50/60/70 and design coatings such as ipachrome design

Your Dreams, Our Challenge

This version of the guide replaces and cancels all previous versions.
Please regularly check www.agc-yourglass.com for any updates.

W A R N I N G

Carefully read this manual before processing Stopray, ipasol & iplus products.

Preliminary Important Instructions

- At each stage of the processing procedure, the personnel responsible for handling the glass must have the appropriate equipment: safety shoes, safety gloves, safety glasses, etc.
- We strongly recommend that everything that comes into contact with the coating during preliminary processing should be pre-validated.
- Stock sheet shelf life without any protection: the glass must be consumed within 3 months from the delivery.
- Stock sheet shelf life with protection (closed packaging): the glass must be consumed within 6 months from the delivery.
- Cut-sizes shelf life: four weeks after delivery. Once the pack is opened, the glass must be consumed within one day. The pack should not be opened until the glass has nearly reached room temperature so as to prevent condensation from forming on the glass sheets.
- We advise processing and handling this coated glass with care in order to avoid damaging the coating. Personnel responsible for handling must wear clean gloves to ensure that no fingerprints are left on the glass. The gloves must be approved for use with coated glass. If, despite the precautions taken, marks do appear on the coating (fingerprints, etc.) they should be removed at once using a clean, soft cloth.
- If the glass is handled on the coated side please use protection caps on the suction cups. Please note that the weight that can be handled by the suction cups is reduced if using protection caps.
- Cutting on the coated side. Use volatile oil.
- Heat treatment: within 48 hours after cutting. A furnace with at least top convection is compulsory. No SO_2 inside the furnace.
- Lamination, silkscreen printing, bending: see below.
- IGU assembly: within 7 days after heat treatment.
- Packaging of cut-sizes: see below.

Further recommendations regarding the product description and processing are available below.

CONTENT

0. PRODUCTS

This Processing Guide covers the following groups of products:

- Products that cannot be heat-treated
- Products that must be heat-treated
- Products that can be heat-treated

1. Products that cannot be heat-treated

This group comprises the following products:

- Stopray
- ipasol (except ipasol bright)
- iplus 1.1
- iplus 1.0
- Energy N
- iplus Top 1.0
- iplus Light
- Planibel Top N +

These products must be annealed. All of these coatings must face the outside surface of the laminate. They may not touch the interlayer.

2. Products that must be heat-treated

These products are available in a non-temperable version delivering similar aesthetics. Example: Heat-treated Stopray Vision-61T is similar to its annealed version Stopray Vision-61. All of these coatings must be applied to the outside surface of the laminate. They may not touch the interlayer.

Products that must be heat-treated	Silk screening	Heat treatment	Hot curving heat-treated	Hot curving annealed	Lamination
Stopray T	CAN BE	MUST BE	CAN BE	CAN BE	CAN BE
iplus 1.1 T	CAN BE	MUST BE	CAN BE	CAN BE	CAN BE
iplus 1.0 T	CAN BE	MUST BE	CAN BE	CAN BE	CAN BE
Energy NT	CAN BE	MUST BE	CAN BE	CAN BE	CAN BE
Planibel Top N + T	CAN BE	MUST BE	CAN BE	CANNOT BE	CAN BE

3. Products that can be heat-treated

These products can be annealed or heat-treated. The advantage is that it is necessary to keep only one product in stock. None of these coatings may face inward or directly contact the interlayer.

Products that can be heat-treated	Single stock*	Self-matchable **	Silk screening	Heat treatment	Hot curving heat-treated	Hot curving annealed	Lamination
Stopray SilverFlex		YES	CAN BE	CAN BE	CAN BE	CAN BE	CAN BE
Energy Light	YES		CAN BE	CAN BE	CAN BE	CAN BE	CAN BE
Planibel AS		YES	CAN BE	CAN BE	CAN BE	CAN BE	CAN BE

* One product in stock. After thermal treatment, we obtain a different visual appearance
** One product in stock. After thermal treatment, we obtain a similar visual appearance

I. RECEPTION and STORAGE

1. Unloading

The packs of glass must be inspected upon arrival. AGC will accept no liability for faults arising after delivery or during handling, processing or installation of the finished product in the building if this procedure is not followed:

- The rack must be positioned on perfectly level ground.
- Use the appropriate handling equipment.
- The grab must be perfectly centred.
- Avoid damaging the protective packaging whilst handling.
- The glass must be stored on appropriate racks.
- All recommendations given in this Processing Guide must be followed strictly.

General comments:

- Clamps, slings, lifting beams and other handling equipment must comply with prevailing regulations and be approved by the relevant authorities.
- Ensure the safety of personnel at all times. Keep all unnecessary personnel out of the handling area. Wear appropriate personal protective equipment.
- Personnel must have received the required training.

2. Storage of the packs

Storing packs correctly reduces the risk of chemical or mechanical damage to the glass.

As a general rule, care should be taken to avoid major fluctuations in temperature and humidity that may cause condensation on the glass. Such fluctuations generally occur near loading and unloading areas. No water or any other liquids may be allowed to come into contact with the sheets of glass.

Care should be taken to ensure that the ambient air is not polluted by any corrosive elements such as chlorine or sulphur. Sources of such elements include machinery fitted with heat engines/combustion engines, battery-charging points, road salt on the ground and so forth.

Factory racks are used for packaging during transport and are not designed to be used for storage. Consequently, the PLFs must be stored on racks with spacers between packs ensuring that all packs of the same size are stored together.

3. Packaging and shelf life

3.1. Packaging

The packaging of the glass blocks depends on the type of product and on the final destination.
For some coatings and markets, the glass block is packed with a tape on the perimeter. Desiccant bags are placed between the glass block and the tape.
When unloading the truck, the packaging must be inspected carefully. Any damage must be reported to AGC.
Care must be taken to ensure that, before the pack is opened, the glass has reached approximately the same temperature as the surrounding warehouse.

3.2. Shelf life

For non-taped packs, the storage time in the customer facility is three months.
For taped pack, six months.
For cut-sizes: four weeks.

II. PROCESSING

1. Safety

At each stage in the processing procedure, the personnel responsible for handling the glass must have the appropriate equipment: safety shoes, safety gloves, safety glasses, etc. AGC strongly recommends wearing protective equipment when handling glass.

2. Cutting

The following specific precautions must be taken when cutting:

- When cutting, the coated side must be face-up to avoid any contact between the coated side and the surface of the table.
- The cutting oil used should be compatible with the coating, sufficiently volatile and water soluble.
- The table and any breaking equipment liable to come into contact with the coating on the glass must be pre-validated.
- Cutting personnel must wear clean gloves to avoid leaving finger marks on the coating.
- If the glass is to be cut using a template, the template must be positioned very carefully and care must be taken to ensure it does not scratch the coating. We recommend placing a protective sheet of pH-neutral paper between the template and the glass.
- The cut sheets of glass must be stored on racks. Care must be taken when handling them to ensure that the coating on the first sheet does not rest against the back of the rack. All subsequent sheets should be turned the other way.
- No particular spacer is needed if the original interlayer powder is still present. However, if for any reason there is not enough interleaving powder left on the glass, we recommend that you place cork pads between the sheets. They will be placed on the perimeter of the glass, never in the centre.
- pH-neutral paper or corrugated cardboard can be used, assuming that they are clean and dry.
- The coating around the edge of the glass may be removed during the cutting process, provided that dust from grinding is properly removed.

- Once the glass is cut, care must be taken to ensure that the cut edges do not come into contact with coated glass in the pack to avoid any damage, such as scratches.

These coated products must be heat-treated within 48 hours of cutting. The glass should also be shaped and cleaned during this period.

3. Edge deletion

The coatings must be edge-deleted all around the edge of the glass so that the sealing compound makes contact with the glass and not the coating.

The edges must be stripped to the same depth as the sealing compound. The edge of the stripped zone must meet the butyl line. Edge-stripping may be carried out either during the double glazing assembly process or during cutting. In both cases, care must be taken to ensure that dust from grinding is completely removed.

Edge deletion is performed using appropriate grinding wheels and other tools. The following settings must be taken into consideration:

- Tangential and displacement speed of the wheel
- Contact pressure

The quality of the edge deletion process can be inspected in one of two ways:

- using an ohmmeter (if the ohmmeter does not react, the coating has been correctly removed);
- visual inspection of reflection.

In each individual case and for each individual production process, in addition to the coating it is necessary to test and approve the correct adhesion of the sealant used. Care must be taken to check whether it is possible to ensure good adhesion for all types of secondary sealant in a production run, together with all coatings used with one grinding disc.

4. Edge processing

4.1 Handling the glass

The personnel responsible for handling and shaping the edges of the glass must wear safety gloves.

4.2 Shaping the edges

Several types of edging machine are available on the market:

4.2.1 Crossed belt system
We recommend that personnel work with diamond belts and adhere strictly to the supplier's instructions, specifically in terms of speed and cooling. For glass thicker than 6 mm, we recommend smooth edge shaping.

4.2.2. Vertical single-edging system
Since the glass is held by chain tracks, there is a risk of scratching the coating.

4.2.3. Horizontal double-edging system
It is possible to use this type of machine, provided that the glass is held by smooth, non-textured belts.

The speeds of the various belts must be synchronised. Water jets are positioned in such a way that any impurities (e.g. Lucite or glass dust) are rinsed off the coating just before they come into contact with the upper roller belts.

4.2.4. Numerical Control Systems (CNC)
Shaping using a numerically controlled machine is permitted, provided that the glass is placed with the coated side face-up.

General recommendations for edge-processing:
- The glass must remain moist throughout the shaping process in order to prevent natural drying.
- The glass must be washed as soon as it has been shaped.
- The glass may be drilled, provided that the press is covered with a soft protective material.
- The glass may be processed using dry crossed belts, provided that the extraction system is sufficiently effective to remove the dust from grinding.

5. Washing

This stage involves washing, rinsing and drying the glass. Generally, the washing machine must be maintained regularly and the settings and tools must be adjusted for coated glass.

A water spray station should be installed just before the point where the glass enters the washer. This will remove any abrasive elements on the coating (treatment residues) that could cause scratches when the brushes make contact with the coating. The water must be applied in such a way that the full coated surface remains wet before the actual washing starts.

The glass must be washed in clean, deionised water with a pH of 7 (±1) and a conductivity of < 50 µS/cm. No hard particles (such as calcium) or acidic/detergent agents should be present in the water used for washing and rinsing as these may damage the coating.

We recommend using 'soft' brushes (bristle diameter <0.15 mm), 1-2 mm of which comes into contact with the glass. There must be enough water to guarantee that the water is distributed evenly and efficiently across the coating before it comes into contact with the brushes.

It is also important not to stop the cycle whilst the glass is in the washer. After washing, micro-suction pads should be used on the perimeter of the glass in the area that is going to be edge-stripped in order to avoid any contact between glass and coating. For large sheets of glass, a sheet of paper should be placed on the centre of the glass.

The glass must be completely dry. We recommend checking that the air filters of the ventilation units are clean.

Two or three halogen projectors will be available at the washer exit to light the glass correctly (vertically from top to bottom) and even detect and quickly correct any deviations from the requirements listed above.

5.1 Quality of water used for shaping and washing the glass

Shaping is usually done with additives for cooling and flocculation of grinding sludge. At least some common additives should be tested and approved for use. Any additives added to the washing water must be compatible with the coating.

	SHAPING	WASHING	
		Washing	Rinsing
Coolant	See above	---------	---------
Detergent	---------	No	No
Temperature	---------	< 40°C	< 40°C
pH	7±1	7±1	7±1
Conductivity	---------	< 50 µS/cm	< 30 µS/cm

In addition to the defined water quality, care must be taken to ensure that no part of any equipment which comes into contact with the coating is itself soiled or dirty (e.g. adipic acid).

Unloading the glass from the washer:

- Due to the fact that the interleaving powder is removed during the washing process, we recommend placing micro-suction pads[1] around the edge of each sheet of glass in order to prevent contact between the glass side and the coated side.
- pH-neutral paper or corrugated cardboard can be used, assuming that it is clean and dry.

We also recommend the use of closed UV light systems to ensure the water is sufficiently disinfected.

6. Silkscreen printing

Heat-treatable coated products can generally be used for silkscreen printing as long as the instructions given below are followed:

If the silkscreen printing is to go as far as the edge of the glass, the coating should be trimmed first and the sealing compound should be checked for compatibility with the enamel.
If it is not possible to trim the coating before applying the enamel, the silkscreen printing must be trimmed so that the subsequent coating can be stripped.

Any impurities on the upper surface (coated side) can be removed using a compressed dry-air jet.

AGC recommends using clear-coloured enamels that have a sufficiently high energy reflection level. A dark-coloured enamel will have a relatively high energy absorption level and the coating may be damaged under the enamel during the heating process.

Similarly, when the coverage percentage is very high and confined to a very small area, the printed section of the glass may behave differently to the uncovered section in the quench.
In any case, the final result will depend on the type of furnace used, its parameters, the colour and type of enamel used and the desired pattern. The processor will have to carry out preliminary tests on a case-by-case basis in order to avoid these problems. AGC is not liable under any circumstances for the outcome of the operation.

The presence of enamel on the coating changes the optical properties of the final glass product. These performance properties can be obtained from our Technical Advisory Service (tas@eu.agc.com).

7. Thermal toughening and heat strengthening

7.1 Introduction

This section only pertains to heat-treatable coated products.
Heat-treatable coated products are designed to be assembled in double glazing once they have been thermally toughened or heat-strengthened. We would advise you to process and handle this coated glass with care in order to avoid damaging the coating.

7.2 General

When clear glass is placed in a toughening furnace it deforms considerably (concave shape) during the first heating cycle. The deformation is even more pronounced with low-emissivity glasses.

This is due to the different heating speeds of the surfaces.
In a purely radiation furnace, the lower surface is heated by conduction (contact with the rollers) and radiation (lower heating resistance). Since the upper surface is covered with a low-emissivity coating, which, by definition reflects the radiation emitted by the upper heating elements in the furnace, it does not heat up as quickly. The two surfaces do not, therefore, heat up symmetrically, leading to concave deformation of the glass due to differential expansion (Fig.1). This phenomenon causes a marking, or even an optical deformation of the glass in the centre of the pane.

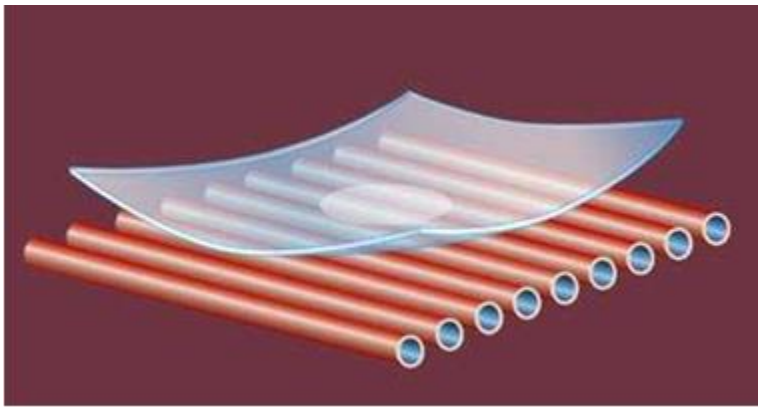


Fig.1

The only way to neutralise these defects is to balance the heating process by projecting additional heat onto the upper surface. Significantly increasing the temperature of the roof does not resolve the problem because the low-emissivity coating will still reflect this increase in radiated energy. Moreover, this will cause the rollers to overheat which could aggravate the problem.

The only solution is to create additional energy via **convection over the upper surface**.

This can be done by creating an air flow over the upper surface that is hotter than the glass itself.
The air is provided by an external compressor and is pre-heated in the furnace before it is pumped over the upper surface of the glass via rollers fitted with jets (see figure below). Another technique involves drawing hot air out of the furnace and pumping it back in again (re-circulation).

The latest generation of convection furnaces no longer have internal radiation elements. They only heat the glass using pre-heated air.

This additional air supply to the upper surface of the glass helps:
- To keep the glass flat during the heating process and avoid the aforementioned defects.
- To reduce significantly the heating time and therefore boost the productivity of the plant.

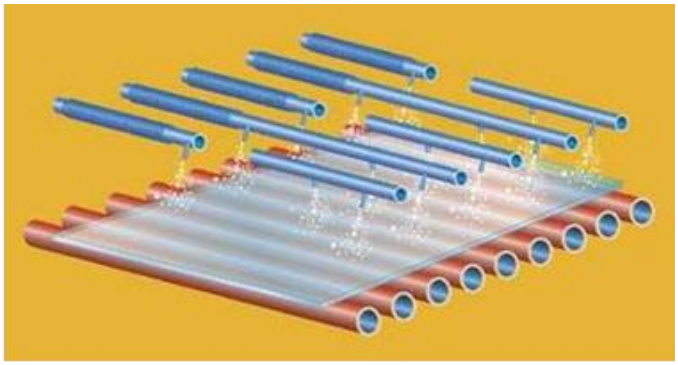


Fig.2

7.3 Recommendations

- We recommend that coated products be heat-treated within 48 hours of cutting.
- The glass must be placed with the coated side face-up.
- The personnel handling the glass must wear clean gloves. Larger and heavier sheets should be handled with suction pads covered with a protective material.
- Prior to heat treatment, markings may be made on the coated side.
- We recommend stopping the SO_2 supply in the toughening furnace at least 24 hours before the product is heat-treated. The combination of SO_2 and a preliminary process that is not completely correct may change the appearance of the product.
- Regarding the furnaces heated by gas, some coating deterioration could occur. This will give some hazy appearance on the top layer of the coating. The level of haze depends on the gas composition and can be totally or partially washed.

7.4 Settings

Each furnace has its own settings for heating and quenching. As a result, the following recommendations should be taken as general guidelines.

The furnace settings depend on:

1. Product

a. asymmetrical absorption (emissivity of the coating/absorption of the substrate
b. glass thickness
c. glass/furnace dimensions

2. Type of furnace

a. power density

b. convection rates
- radiation with compressed air (type A)
- radiation with re-circulation (type B)
- convection (type C)

c. heating geometry (relative position of the heating/thermocouple/glass elements).

In practice, it is advisable to start with volumes of 1500 x 1500 mm

1. *Temperature* 700°C at the top and bottom

2. Cycle time

a. Furnace type A: 60-75 sec/mm
b. Furnace type B: 50-55 sec/mm
c. Furnace type C: 40-45 sec/mm

Important: For heat-strengthened glass, it is possible to achieve the desired surface stress by combining the quench pressure profile and heating time. However, an overly short heating time could lead to colour inconsistency. Accordingly, for heat-strengthened glass, AGC recommends not dropping below 95% of the thermally toughened glass heating time.

3. Convection

The convection profile will be modified to obtain a flat sheet of glass as quickly as possible and to maintain this flatness until the end of the heating process. If, despite a maximum convection rate, the glass retains a concave profile for too long, the temperature on the lower side will need to be reduced by 20-30°C.

The cycle time will be adjusted to prevent breakage in the quench and obtain an acceptable optical quality.

The quench parameters will be set to ensure that the glass comes out flat (top/bottom air balance) and that the desired break pattern is achieved.

For very low-emissivity products, a much higher air pressure needs to be applied to the upper surface of the glass during the actual toughening process. This is due to the fact that the coated surface does not cool down through radiation whilst the lower surface does. This phenomenon is all the more noticeable when the air pressure is low (thermally toughened glass thicker than 8 mm and heat-strengthened glass thicker than 6 mm). A quench capable of producing highly asymmetrical air pressure flows is therefore required.

Gas-fired furnaces can be used for the heat treatment of these products, provided they are fitted with a heat exchanger in order to avoid direct contact between combustion fumes and the coating.

As far as possible, every single sheet of glass will be loaded in the furnace in such a way that the base (bottom side parallel to the floor) of the glass is parallel to the rollers.

For further information, please contact the AGC Technical Advisory Service (tas@eu.agc.com).

7.5 Unloading

- If the glass is unloaded manually, the personnel must wear clean gloves.
- Larger and heavier sheets should be handled with a suction-pad lifting beam. The suction pads must be covered with a protective material. The heat-treated sheets are then stored on racks.
- Care must be taken when handling them to ensure that the coating on the first sheet does not rest against the back of the rack. All subsequent sheets should be turned the other way.
- Given that heat-treated glass sheets are never perfectly flat, micro suction pads should be placed around the edge of each sheet of glass in order to prevent contact between the glass and the coatings. For large volumes, pH-neutral paper can be placed in the centre to avoid all contact with the glass/coating during handling and transport.

7.6 Heat soak test

The risk of spontaneous breakage due to nickel-sulphide inclusions is inherent to thermally toughened glass. The presence of such inclusions can in no way be considered a fault in the glass. In order to eliminate the risk of spontaneous breakage, an additional heat soak test can be carried out in accordance with standard EN 14179-1 (or equivalent standards for countries outside the EU).

AGC highly recommends using electrical equipment for heat-treatable coatings. Gas-fired furnaces can be used, provided they are fitted with a heat exchanger in order to avoid direct contact between combustion fumes and the coating.

Interlayers should only be placed on the perimeter of the glass.

7.7 Quality control

The declared properties of heat-treatable products correspond to the performance after thermal treatment.

For further information, please contact the Technical Advisory Service (tas@eu.agc.com).

After thermal treatment, the coated products should be inspected as follows:

- The coating must be inspected in accordance with EN 1096-1*.
- Thermally toughened glass must comply with EN 12150-1*.
- Heat-strengthened glass must comply with EN 1863-1*.
- Heat Soak Tests (HST) must be carried out in accordance with EN 14179-1*.

*Or equivalent local standards for countries outside the EU.

For the EU, the heat-treated coated products must be CE marked in accordance with EN 1863-2, 12150-2 or EN14179-2. In accordance with EU regulations, all the requirements set out by these standards (ITT, FPC, etc.) must be met by the processor.

7.8 Packaging

If these coated products are not assembled in double glazing in the same factory, the following recommendations for packaging must be followed:

- A 1 mm thick polyethylene foam spacer should be placed between each sheet. The glass must be cooled to temperatures below 45°C prior to packaging, otherwise the interlayer will leave marks on the coating.
- The pack of glass should be packaged in watertight plastic. Sachets filled with desiccant should be place inside the packaging.
- Care must be taken to ensure that the pack is properly attached to the rack so that the sheets do not rub together.
- The glass will be assembled into insulating glass within one week after it has been heat-treated.

8. Bending

This section only pertains to heat-treatable glass products.

Bending tests have been carried out in different types of bending furnaces.

The following general recommendations refer to 6 mm Stopray Vision-72^{T}. Other thicknesses and coatings have not been evaluated as such and require preliminary validation tests by the glass processor. This is particularly important for glass sheets thicker than 6 mm that will be subject to stay in the oven for a longer period of time.

The technical values stated (cycle times, temperatures and so forth) were noted during tests on certain types of bending equipment and obviously depend on the individual characteristics (shape, strength, convection rate and so on) of the equipment. The recommendations set out here are therefore intended as general guidelines and preliminary tests must be carried out for each bending furnace.

8.1 Hot curved annealed glass (on a concave mould)

Only bending ovens with upper and lower heating elements and with a convection system are suitable for bending these products.

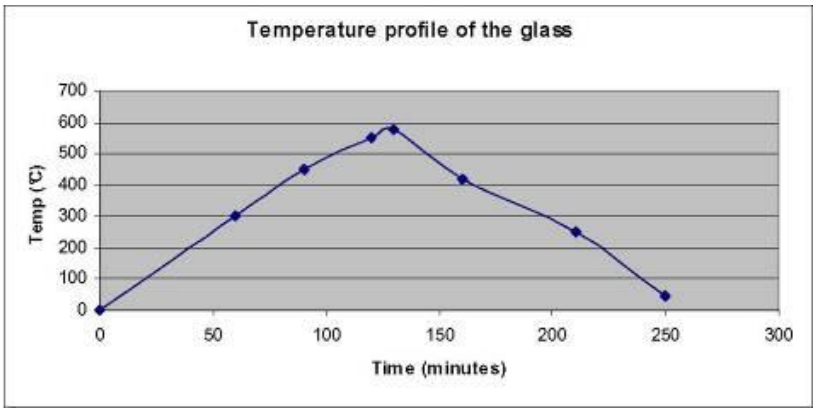
The glass sheets should be shaped to a smooth ground edge.

- Place the coated glass on the concave mould (coated surface facing upwards).
- Apply the appropriate packing powder (ESKAL 10 from KSL Staubtechnik GmbH).
- The powder will be spread without any medium, as uniformly as possible.
- Place a sheet of float glass on top, with the tin side facing upwards.

The same operation can be performed with the float glass at the bottom and the coated glass on top, with the coating facing downwards.

Heating/cooling parameters

- The temperature **must not exceed 580°C.**
- The temperature must be adjusted so that the **upper surface of the glass** describes the following curve as closely as possible.



Time (minutes)	Temperature (°C)
60	300
90	450
120	550
130	580
160	410
210	240
250	40

Note: The final heating phase must be adjusted according to the position of the glass in the bending mould.

8.2 Hot curved thermally toughened and heat-strengthened glass (on a concave mould). Oscillating furnace.

Compared to the tempering settings for flat glass, the heating time for curved glass must be increased by 15 to 30%. As the coating is facing upwards (opposite side of the rollers), it will be in compression, on the concave side of the glass.

For further information, please contact the Technical Advisory Service (tas@eu.agc.com).

9. Use in single glazing

These products must not be used in single glazing for buildings.

10. Lamination

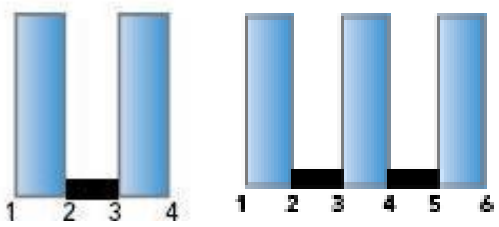
The coated glass can generally be laminated. However, the coating may not come into contact with any interlayers. Special care should be taken to ensure that the roller of the pre-nip presses do not damage or contaminate the coating. The pressure of the rollers and the material of the rollers should be adjusted according to the glass type and thickness and should take account of the coating's mechanical resistance. During the autoclave process, spacers should be placed around the edge of the glass, never in the centre. For autoclave-free or vacuum-based lamination processes, preliminary validation tests by the glass processor are recommended to ensure that the coating is not damaged during lamination. Specifically, materials in contact with the coating must be tested for compatibility.

Given the low emissivity of the coatings, the settings of the laminating process should be adjusted.

Note: For the European Union, laminated coated products must be CE marked in accordance with EN 14449.

11. Assembly in insulating glass units

The coatings are designed to be assembled in insulating glass units with the following restrictions for the coating position.



For Stopray, StoprayT, ipasol, Energy N, Energy NT, iplus Light, Energy Light and Stopray SilverFlex, the coating must be in position 2 in DGUs and TGUs.

For iplus 1.1, iplus 1.1T, iplus 1.0, iplus 1.0T, iplus Top 1.0, Planibel Top N, Planibel Top NT, iEnergy N and Planibel AS, the coating should be in position 3 in DGUs. In TGUs, we recommend using these coatings in positions 2 and 5. For other multiple coating combinations in DGUs and TGUs, please contact the Technical Advisory Service (tas@eu.agc.com). We strongly recommend mock-ups be produced for colour validation by the customer.
In any case, AGC recommends performing a thermal shock assessment.

The glass should be assembled in insulating glazing within one week after being heat-treated.

Coatings must be compatible with the sealing products used.

Since all coatings are highly neutral in appearance, AGC recommends indicating the external surface after assembly to ensure that the units are installed correctly.

Note: For the European Union, IGUs must be CE marked in accordance with EN 1279-5. In accordance with EU regulations, all the requirements set out by these standards (ITT, FPC, etc.) must be met by the processor.

Quality control

It is essential to check that the coating is in the correct position before assembly. Any mistakes could lead to changes in performance and/or appearance.

Quality control for the final product (insulating glass) involves not only strict compliance with the instructions set out in this processing guide, but also meticulous checks at each stage in the manufacturing process.

Two or three halogen projectors must be placed at the exit of each processing machine to light the glass correctly (vertically from the top to the bottom) to immediately detect any deviation from the regulatory parameters that could affect the appearance of the coating (e.g. scratches or other contamination).

12. Use in structural glazing

When installation or assembly is by mechanical methods, structural glazing or other techniques, tests for compatibility and adherence of the coating or the sealant must be performed in each case with the manufacturer of the sealant.

13. Identifying the coated surface

Before the shaping process, the coated side can easily be identified by the cut, which is visible on the edge of the glass.

After shaping, and until the glass is assembled in double glazing, the coating may be identified using an electric tester, available on request from any AGC representative. Nonetheless, we recommend carrying out this test somewhere around the edge of the glass in an area that will later be stripped before the glass is assembled into double glazing.

14. Storage of cut-sizes/IGUs on site

When the glazing is delivered on-site for installation in the facade, it must be stored in a dry, sheltered and ventilated space. It must never be laid flat, nor stored in the sun or near a heat source.

III. CONFORMITY AND WARRANTY

1. Conformity

These coated products comply with standard EN 1096-1, category C.

Information regarding inspection conditions and quality criteria are available in that standard.

2. Warranty

The warranty is available on www.agc-yourglass.com.

3. CE marking

All information and declarations pertaining to the CE marking are available on www.agc-yourglass.com/CE.

Where customers process these coatings (heat strengthening, thermal toughening, lamination, assembly in IGUs), they are responsible for applying the CE marking to processed products and fulfilling the associated requirements (performing initial type tests (ITTs), marking the glass, factory production control, etc.).

4. Disclaimer

It is the responsibility of the processor to inspect the processed coated glass adequately before and after each step of fabrication and prior to installation. Failure to apply all professional standards, customary instructions and processing instructions set out in this processing guide and related links will automatically void any warranty pertaining to AGC coated glass. We advise the processor to undertake preliminary trials with the typical glass compositions for the project prior to any further commitment with its customer. The processor is solely responsible for the quality of the final product.

IV. GLAZING INSTRUCTIONS

AGC's glazing instructions are available at www.agc-yourglass.com.

V. CLEANING GLAZING INSTALLED IN FACADES

Cleaning instructions for glazing installed in facades can be found at www.agc-yourglass.com.