GUIDELINE FOR PLANICLEAR® / PLANILUX® / DIAMANT® / PARSOL® and ORAÉ®

SAINT-GOBAIN

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1. GENERAL

1.1. PRODUCT DESCRIPTION

PLANICLEAR® is a new standard float glass specification with lower iron content. The lower iron content of PLANICLEAR® reduces the level of absorption - thereby increasing the level of solar gain (g value).

ORAÉ® is the new low carbon footprint substrate which presents same aesthetic, mechanical and optical quality than a substrate PLANICLEAR®. This new substrate is produced with higher level of cullet and with higher proportion of green energy letting to reduce the carbon footprint of the substrate.

DIAMANT® is a highly transparent extra clear glass, which has very little residual color. It has a unique appearance and very specific optical qualities.

PARSOL® is a body-tinted glass, manufactured in the same way as PLANICLEAR® clear float glass. PARSOL® has a colored appearance, as well as basic solar control properties.
PARSOL® ULTRA GREY is a highly body-tinted float glass, manufactured in the same way as standard float glass. This method ensures PARSOL® ULTRA GREY has a high shine and intense grey color.

To improve customer satisfaction, we constantly advance the quality of our products and learn about the best way how to process it. This could lead to updates in the processing guideline of our products, so please make sure you have an up-to-date version of these guidelines: https://www.saint-gobain-glass.com/processing-guidelines.

1.2. THICKNESS AND DIMENSIONS

Product	Thickness	Standard dimension
PLANICLEAR®	3/4/5/6/8/10/12/15/19 mm	6000 x 3210
PLANILUX®	3/4/5/6/8/10/12/15/19 mm	
DIAMANT®	3/4/5/6/8/10/12/15/19 mm	
ORAÉ®	3/4/5/6/8/10/12mm	
PARSOL® Green	3/4/5/6 mm	
PARSOL® Grey	4/5/6/8 mm	
PARSOL® Saphire	4/5/6/8/10 mm	
PARSOL® Ultra-Grey	4/5/6/8 mm	

Information in above table is only informative and for last availabilities of float products please contact your local commercial team. Some products availabilities could change depending on your world region.

1.3. CE MARKING

PLANICLEAR® / ORAÉ® / DIAMANT® / PARSOL® comply with the EN 572-2 '' Glass in building — basic soda lime silicate glass products — Part 2: Float glass''. These products receive the CE-Marking. The Declaration Of Performance (DOP) of each product CE marked is available at the web site:

www.saint-gobain-glass.com/ce

1.4. QUALITY CRITERIA FOR FLOAT GLASS

1.4.1. Definition of appearance defects

The following definitions are given by the standard EN 572-2

1.4.2. Conditions of observation

The conditions of observation are given in the standard EN 572-2. Please refer to it for details.

1.4.3. Acceptance criteria of float glass defects

Without prior agreement between both parties, the standard EN 572-2 will apply.

2. TRANSPORT, RECEPTION, STORAGE AND HANDLING

2.1. TRANSPORT

- Float glass sheets are usually transported in 2.5 tonnes packs measuring 6000 mm x 3210 mm (jumbo or PLF sizes).
- Glass sheets must be transported vertically (at 3 – 7 degrees).
- During transport, violent and repeated shocks should be avoided.
- When handling with a manipulator, measures must be taken not to damage the pack.

2.2. RECEIPT OF THE DELIVERY

- Labels are never placed on the glass face.
- In case of packing (delivery for special application), the pack must be opened with care in order not to damage the glass sheet (contacts, scratches, breakage, etc.).
- All deliveries are identified with an identification label providing the following data:
  - Product name
  - CE Marking
  - Dimensions and thickness
  - Number of sheets
  - Net-weight
  - Date and time of production
  - Bar code and batch number of the glass
  - Bar code of the float glass backing sheet
  - CE marking information: in addition to the CE symbol, website address and CE product code are mentioned. By going on www.saint-gobain-glass.com/ce then entering the product code and the production date, one can access to the CE product declaration of performances and characteristics related to the product (DOP document)
- In case of delivery with obvious disagreements detected at reception (water, breakages…), glass should not be unloaded and waybill (CRM) fully completed by customer and transport entities. A possible expert visit could be organized to define responsibilities.

2.3. STORAGE

2.3.1. General

All glass products will become stained if they are stored in humid conditions; the iridescence has the appearance of a "rainbow" or milky white coating on the surface of the glass.
The glass sheets have to be stored vertically (at 3 - 7 degrees) under the following conditions:

- In a dry, well-ventilated store, to prevent any condensation on the surface;
- Protected from rain and running water (e.g. any roof leaks must be rectified);
- Never outside or in the open air;
- Protected from wide changes in temperature and humidity.

2.3.2. Shelf life

If the above (§ 2.3.1) storage conditions are respected, PLANICLEAR® / ORAÉ® / DIAMANT® / PARSOL® is guaranteed for 2 years from the date of reception at the customer's premises. This 2 years maximum shelf life could be shorter depending of the region/country (humid...), in case of doubt please refer to your local commercial team.

It is thus important to record the date of reception of the glass. In case the date of reception is lost by the customer, the date of the delivery note will serve as evidence.

2.4. HANDLING

The float glass sheets must be handled with dry, clean gloves.
In case you cannot avoid handling operations with vacuum cups, make sure that the vacuum cups are silicone free and perfectly clean.

3. PROCESSING OF PLANICLEAR®, PLANILUX®, DIAMANT®, PARSOL®, ORAÉ®

3.1. CUTTING

PLANICLEAR® and equivalent must be cut as standard float glass.
Usual recommendations are:

- Clean table to avoid any scratches risk
- Use of clean gloves to avoid any marks on the glass
- Avoid any contact with silicones (suction cups, protective personal equipment ect.). This could let un-washable marks disturbing future processing like enameling
- Use cutting oil in adapted quantity
- Use adapted cutting wheel (angle/type) depending of the cut product and use
- Make sure that the cut has no interruption, if necessary clean the cutting wheel and/or reduce the cutting speed
- Respect EN 572 standards in term of edge quality after cutting to avoid risk of thermal break

3.2. EDGE DELETION

No need of edge deletion for PLANICLEAR® / ORAÉ® / DIAMANT® / PARSOL®. Only in case of a substrate with a coating, edge deletion could be necessary, please in that case refer to corresponding processing guideline.

3.3. WASHING

Having a clean glass float is essential for a number of processes. Here are a few examples:

- **Tempering:** If the glass is not clean, heating may result in marks that cannot be removed.
- **Screen Printing and Digital Printing:** Poor cleanliness may affect ink adhesion to the glass, potentially causing gaps in the decorative enamel.
- **Lamination:** Inadequate cleaning can lead to either insufficient or excessive adhesion, which may compromise the safety performance of the laminated glass in the future.
- **Offline Coating Deposition (e.g., spray application):** Any contamination could result in areas where the coating does not function as intended.
- **Insulating Glass Unit (IGU) Process:**
    - Ensures clear vision and prevents residues within the IGU cavity.
    - Maintains proper mastic adhesion to the glass surface.

Across all stages of glass manufacturing, it is vital to begin with a glass surface that is both clean and consistently prepared. Common contaminants include interlayer powder, cutting oil, dust, fingerprints, glove marks, silicone residues, fragments from cutting or grinding, carton spacer marks, suction cup marks, and traces from plastic spacers, all of which must be thoroughly removed by the washing machine process.

To address these concerns, we recommend the installation described below. Should your washing system differ from this specification, we advise conducting tests to assess the quality of cleaning—checking for traces, rings, dust, and similar residues—and to confirm that the equipment does not cause any harm to the glass. If you require further assistance, please contact your local TSM representative.

Per steps, <u>washing will be:</u>

Pre-washing area:

- Prewash ramp followed by one pair of cylindrical brushes
- Tap water temperature of at least 33°C and up to 40°C, preferably close to 40°C, without any detergent
- The prewash ramp is particularly important for the removal of the glass dust and splinters created during the edge-working process

Washing area:

- 2 pairs of cylindrical brushes
- demineralised water
- pH value comprised between 6 and 8;

Rinsing area:

- Demineralised water at room temperature
- Maximum conductivity 20 µS/cm
- pH value comprised between 6 and 8;

Brushes:

- Flexible clean polyamide bristles
- Maximum diameter of 0.2 mm, 20 - 40 mm long.
- Take care that all the brushes are perfectly clean and regularly maintained

Drying:

- Use an air-blowing installation equipped with filters
- Clean and regularly maintained filters;

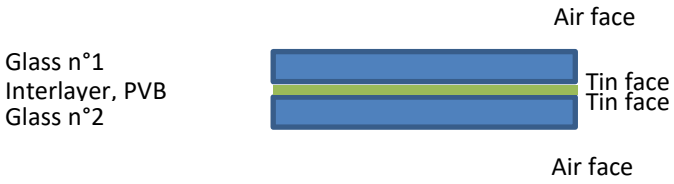
Water should be sprayed directly onto the glass, not onto the brushes

It is strongly recommended that the washing machine is regularly cleaned, especially for the brushes and in areas where demineralised water is used. Clean the filters every day, and the tanks every week. For the brushes, steam cleaning gives good results, but do not spray the bristles with high temperature and high pressure water.

In case dirt / stains are still present on the glass after the washer, cleaning may be performed using a soft cloth and isopropanol (IPA) or ethanol followed by rapid drying, provided this is done carefully and immediately after contamination has occurred.

3.4. LAMINATION

When laminating annealed cut size of thick glass (8mm or higher) it is recommended to perform the assembly with following configuration: **both tin faces in contact with PVB interlayer**



Use of tin check or UV lamp could be used to face detection. For Parsol Grey, the tin check device may not work. Use the UV lamp instead.

Objective is to avoid risk of edge bubbles due to thickness profile.
If this kind of configuration is not possible, it is recommended to remove 2 cm on the edge of the jumbo width at the cutting step.

Other recommendations are:

- Condition of storage of interlayer should be respected (temperature and humidity), please contact your interlayer supplier to get recommendations.
- Be sure the calendaring rollers are in good condition (clean and free of glass shards or particles)
- Calendaring rollers should be parallel to apply regular pressure at any position.
- If laminating heat-treated glass, take care that the PVB thickness is adapted to compensate the possible glass deformation (roller wave, bow, edge lift) created during the heat-treatment process. We recommend using 4 foils of 0.38mm in that case.
- Use of clamps to do lamination is not recommended at any time, especially during autoclaving. This could be a cause of optical distortion of the glass and possible delayed glass delamination. Use of clamps can hide possible quality deviation in production.

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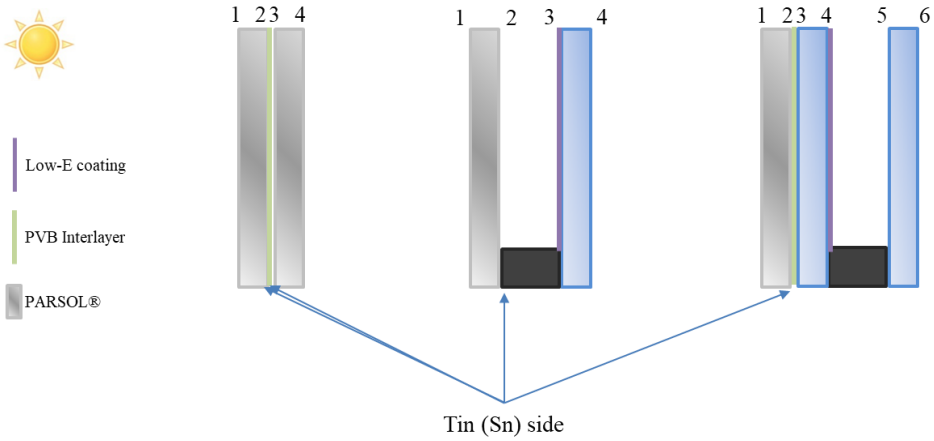
4. INSTALLATION ON FAÇADES: PARTICULAR CASE OF PARSOL® GLASSES

For aesthetical reason, to ensure a good colour matching between glass panes, whenever PARSOL® is to be used as the external pane of façade glazing, it must be placed so that the external side is always the opposite side of the tin side. Use a tin-check device or a UV-lamp (in the case of PARSOL® Grey, only the UV-lamp will give a reliable result) to correctly identify the correct side throughout the process.



5. ENVIRONMENT / WASTE GLASS / HEALTH ISSUES

PLANICLEAR® / ORAÉ® / DIAMANT® / PARSOL® can be recycled. Collection of substrates in what we call cullet is important for many reasons**. Collection should respect rules to get clean cullet possible to reuse in new glass production**.

PLANICLEAR® / ORAÉ® / DIAMANT® can be collected together.

PARSOL® should be collected in different way and per type of color (green, blue, grey).

Here is a not exhaustive list of cullet pollutant:

- Papers and cartons
- All metallic sources as aluminium spacer bar
- Pyro ceramic glass
- Borosilicate glass
- Bottle glass
- Georgian wired glass
- Cutting wheel metallic parts
- Glass marker and more generally all elements no nickel sulphite free
- …

Please contact your local commercial team and technical support to have full details about rules of glass collection.

Edge working residues have to be continuously and completely collected during the grinding process. These residues must be further treated in compliance with national legislation about industrial wastes. In some legislation, residues from grinding process have to be treated as toxic wastes.

As for any dust coming from the grinding process, any inhalation or skin contact of these residues must be avoided.

On request, a **S**afety **U**se **I**nstruction **S**heet (SUIS) relating to the ECDirective 91/155/EEC can be supplied.

6. DISCLAIMER

SAINT-GOBAIN GLASS has taken every reasonable measure to ensure that the information contained in the present leaflet was exact at the time of its publication.

However, SAINT-GOBAIN GLASS keeps the right to modify or add any information without previous notice. SAINT-GOBAIN GLASS is not liable for the possible lack of information on PLANICLEAR® / ORAÉ® / DIAMANT® / PARSOL® products that would not be contained in the present document.

No claim can be accepted for damages caused during and after processing due to a lack of adherence to these guidelines. Therefore, glass processor should ensure that the process is adapted for coated glass and that the quality control is relevant to detect any quality problem as soon as possible. In case of claim, samples will be required and a visit from a SGG representative may be requested.

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