

Guidelines for suppliers Requirements for fixed sizes

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1 General

These guidelines are valid for fixed sizes supplied by customers. This document contains requirements for order information, transport and delivery, weights and dimensions and describes special quality specifications.

In order to guarantee a smooth production flow the following aspects need to be taken into consideration.

Coated fixed glass sizes have to be processed into insulating glass units. For this purpose "Guidelines for processing arcon soft coatings" must be considered. The latest version can be downloaded on the internet at www.arcon-glas.de.

2 Order Information

The following details need to be provided by the customer:

- Lot Size
- Dimension
- Glass type
- Glass thickness
- Shape of the glass (rectangles or models)
- Drawing if edge tape is used
- Enamel coating or printing
- Type of coating
- Estimated date of supply
- Date of delivery

3 Transport and delivery

In order to guarantee economic, delay-free handling of fixed size coatings, the glass supplier must comply with or consider the following requirements:

The glass must come in at the agreed time. Late delivery of the preliminary product may result in a later coating time.

The following delivery times are to be noted:

- **Delivery times arcon plant Bucha**

Monday – Thursday	6:00 a.m. to 4:00 p.m.
Friday	6:00 a.m. to 2:00 p.m.
- **Delivery times arcon plant Feuchtwangen**

N34	not later then Friday
Sunbelt coatings	not later then Tuesday
Monday – Thursday	7:00 a.m. to 4:00 p.m.
Friday	7:00 a.m. to 11:00 a.m.

Delivery must be complete and must be made on typical commercially available reusable crane-liftable stillages, which must not be overloaded. Wooden boxes can only be accepted in exceptional cases (for very large panes larger than 4.2m x 2.3 m).

For oversized panes that cannot be delivered on stillages but must be delivered on the truck's side support bar (REFF), one cover pane is needed per dimension. If this cover sheet must be supplied by arcon, the incurred costs will be billed.

The following documents are to be hand out when delivered:

- Delivery note
- Packing list

4 Production possibilities

Fixed sizes of the following weights generally cannot be coated:

- > 250 kg (approx. 550 pounds) – Bucha plant
- > 300 kg (approx. 660 pounds) – Feuchtwangen plant

In the case of heavy panes, please contact the production management at the respective plant in advance to discuss the possibility of coating on dependence of the specific pane geometry.

5 Quality requirements

Adipic acid-free PMMA powder (e.g., Separol F) must be used as separate agent. Acid-free paper sheets shall be used to separate panes of greatly varying dimensions and greatly differing models. Cork pads may only be used with the glue surfaces on the non-coating sides. The compatibility of the glue with the glass surface must be considered.

No stickers or parts of stickers or labels may be attached to the coating side.

Labels must be easily removable.

Panes shall be piled stably (i.e., with the longer pane sides lying horizontally) on the stillage base.

The coating side shall be positioned in a manner that the coated side faces the inside of the stillage (label facing outward). Panes that cannot be handled by two workers due to their sizes or weights (≥ 80 kg, or approx. 176 pounds) must be delivered with the coating sides facing outward (labels facing inward) The arcon Easy Lift will be used in these cases.

For models, the coating side must be identified (e.g., sticker on the back with the notice "Coat other side" on it).

Panes constituting one item must be grouped, picked, and packaged.

The coating type must be indicated on the label or by another adequate manner on the stillage.

The delivery notes must be in agreement with the deliveries.

If edge tape is used (masking with tape to avoid coating), it must be ensured that there are no air bubbles in it. Air bubbles negatively affect the coating properties through outgassing during the high-vacuum coating process. The tape used must be vacuum-grade tape. Unsuitable tape can significantly disturb the coating process or might not be able to be removed completely after the coating process. Attachment of edge tape by the customer is not recommended due to the process risk associated with it.

In the Bucha plant, enamelled surfaces cannot be taped because the bubble-free state cannot be guaranteed due to the rolled and hence very rough surfaces. If a high-quality screen-printing process producing a smooth surface is used, edge taping is possible.

The panes must be protected from moisture, condensation water, humidity, and contaminants. Trucks with closed covers must be used for transportation. Coating defects caused by prior glass corrosion or the presence of non-water-soluble residues (stickers, cork pads) shall be the responsibility of the client.

For laminated safety glass, no residual foil may protrude from the edges. The glass surfaces must be free of residual foil.

To avoid the becoming visible of roller prints after the coating process we recommend that the tin side of the panes is facing downward (i.e. in contact with the rollers) during the tempering process. To avoid streaking and clouding, a minimal SiO₂ flow during tempering is recommended. The panes must be thoroughly cleaned and dried prior to tempering. Leaving the washing machine the panes must be completely dry to avoid remaining water drip stains on the coating. Contaminants (residual adhesive from labels) burnt in during the tempering process are usually not visible after tempering but become visible after coating.

Planarity: In certain cases, it might be necessary to place restrictions on the specifications given in DIN EN 12150, Part 1. Especially for glass with thickness ≥ 10 mm (0.4 in) or thickness ≤ 5 mm (0.2 in), compliance with the DIN EN tolerance specifications is insufficient. Due to the limitation on slot width in the coating system caused by the vacuum process, panes to be coated must not only meet DIN EN requirements but also fulfill the following pragmatic test specifications:

The greatest separation distance (h_1) between the curved glass surface and the intended chord is measured in the edge region on the concave side of the pane positioned with the surface lying **horizontally** on a flat support using a straight edge (see Figure 1).

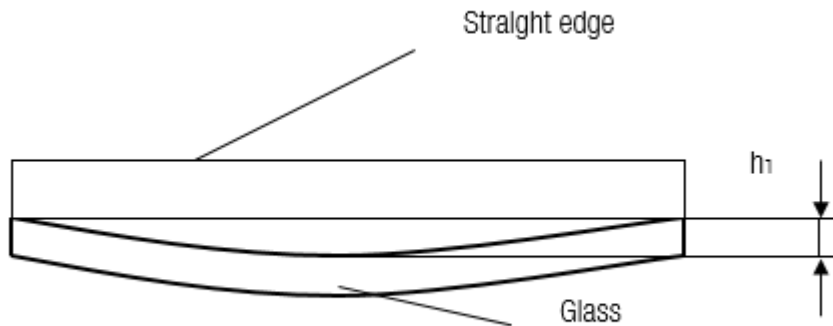


Figure 1: Determination of deviation from planarity (h_1)

Requirement: $d + h_1 \leq 14.5$ mm (0.57 in) where d = nominal thickness of glass in mm (in)
Fixed sizes are to be transported on carrier when coated: 8mm (0.31 in)

Because no incoming planarity checks can be made, scratches that arise due to exceeding of the allowable planarity are the responsibility of the client. Concave curvature of the glass panes additionally increases the probability of breakage in the coating machine. The result is usually an increase in the number of reject batches.

6 Identification

Each fixed size must be labeled with the following information:

- Order number
- Quantity
- Total quantity
- Dimensions
- Type of product

7 Associated Documents

Guidelines for Processing arcon Soft Coatings
Technical Specification for arcon Coatings