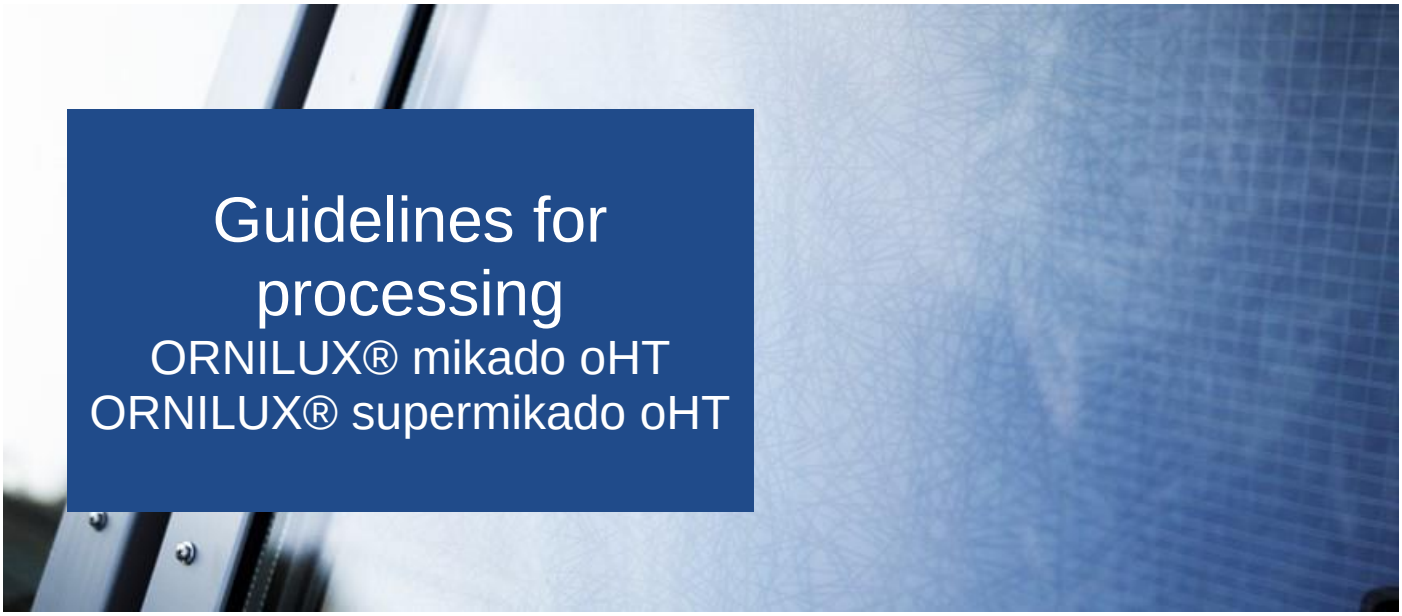
CUSTOMER INFORMATION



Guidelines for processing
ORNILUX® mikado oHT
ORNILUX® supermikado oHT

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1 Introduction

ORNILUX® mikado coatings have been developed to ensure bird-friendly glass facades, while keeping the protective coating practically invisible to the human eye.

Within the product family ORNILUX®, arcon offers transparent, structured coated glasses to:

- ORNILUX® mikado oHT
- ORNILUX® supermikado oHT

ORNILUX® mikado oHT is applied toward the cavity of the insulating glass unit.

ORNILUX® supermikado oHT is a coating on the outer surface of the glass for use as railings and balustrades, including freestanding applications (i.e. roof tops, terraces, etc.).

These products can be used either annealed or tempered, but to improve the desired mechanical (bending strength) and thermal (thermal shock resistance) properties of the glass, the coated glass should be thermally treated.

To process these products for their best performance, processing guidelines as detailed in this document must be followed.

The present document contains processing guidelines including information on specific steps for surface detection, handling and storage, glass cutting, washing, heat-treating, insulating and storage. This document is reviewed and updated. Ignoring and non-compliance can result in damage to coated surface.

2 References to standards and guidelines

DIN EN 1096:	Glass in the building - coated glass
DIN EN 572:	Glass in the building – Basic soda lime silicate glass products
DIN EN 12150:	Glass in the building - Thermally toughened soda lime silicate safety glass
DIN EN 1863:	Glass in the building - Partially pre-stressed lime soda glass
DIN EN 12543:	Glass in the building - Laminated glass and laminated safety glass

Guidelines for processing arcon soft coatings

Guidelines for processing arcon heat treatable coatings

Guidelines for assessing the visual quality of enamelled and textured coated glass

Customer information “Cleaning instructions”

3 Package and storage

The products mentioned under 1 are delivered in jumbo sizes of 6000mm x 3210mm as well as split sizes of 2250 mm x 3210 mm. The sizes can be adjusted. The available thicknesses are 4, 5, 6, 8, 10 and 12 mm on clear glass substrates. Low-iron glass is available on request.

If packages with ORNILUX® mikado comes with a cover sheet, then the first pane in the package is an uncoated float pane that is used for protecting the coated surface. The subsequent panes are positioned in a manner that the coated surface faces the first float pane. The position of this float pane is clearly marked on the package label according to the customer’s request (on the front or rear side). A special powder (PMMA type with qualified grain size) is applied as a separating agent between the individual panes to avoid damage during the transport.

The products should be stored in constant conditions. Open air storage should be avoided.

A sufficient distance to washing machines, external doors and chemicals (e.g. NaCl, HCl intended to be used for water preparation plants) has to be maintained.

When processing ORNILUX® mikado products, first in first out policy should be adopted. In combination with arcon low-e or arcon solar control coatings, the appropriate guidelines (see chapter 2) must be considered.

Each packaging unit is labelled with a tag containing a consecutive number, coating name, glass thickness, dimensions, number of jumbos as well as split sizes and the position of cover sheet. The package label must be kept since data are required for any warranty claims.

All boxes must be inspected for any damage on arrival and damages reported and recorded for potential insurance claims etc. Damages and defects should be reported and this glass should be stored for inspection by arcon representative. The package label must be kept since data are required for any warranty claims.

4 Identification of the coated side

The ORNILUX® mikado coatings are barely visible to the human eye. Hence, during all processing steps it is important that the coated side remains towards the air side i.e. not facing cutting pad or conveyor systems. The uncoated surface can be detected by a tin side detector (Tin side is always uncoated).

5 Handling

Before processing all workers must be informed about special requirements for ORNILUX® products as well as trained in its handling.

During each processing step marking-free clean gloves must be used. Lubricants, oils, liquid drops or finger and glove prints can cause irreversible imperfections during the thermal process. Therefore, any kind of soiling must be avoided. Glass cutting pads should be frequently cleaned by compressed air to avoid scratches on the glass surface. Scratches that can scarcely be detected with the naked eye before the tempering process can become clearly visible after the glass tempering. Hence, all care must be taken to avoid scratches particularly on coated side.

An additional risk is the use of vacuum cups on the coating. The vacuum cups should not be in contact with the coated surface when unstacking the glass sheets. However, if the manufacturing process requires the use of vacuum suction systems it must be ensured that they are always clean and silicone free. Therefore, we recommend the use of special clean protective covers for them. Protective covers must be replaced regularly!

Separators (e.g. cork) can leave irreversible prints on the coated surface. The coated side must not be marked or labelled.

All devices and tools which in coatings must be kept permanently clean.

6 Cutting and cutting fluids

When producing ORNILUX® products mentioned under 1, please note that a circumferential edge cut is necessary. This edge cut (top 20mm, bottom 35mm, left 20mm, right 20mm) must be made during the cutting process.

To avoid damages caused by scratches, glass splinters or dirt, the coated glass surface must remain towards the air side during cutting and all other processing steps. Only soft cutting fluids that can easily be removed during the washing process are to be used for the cutting procedure. Avoid all excess of cutting fluid and remove any residual glass splinters or dust from the cutting table.

The cutting table must be cleaned regularly by using compressed air.

7 Edge deletion

Edge deletion is not required, if the adhesion of the sealant used is proven in accordance with EN 1279.

8 Edge Working

Prior tempering glass edges must be processed to avoid glass breakage during the tempering process. There are different possibilities for edge working.

During automatic edge working all relative movement on the coated surface as well as too much pressure of the up-per belts must be avoided. The glass surface should remain fully wet during the whole operation and should be washed immediately after edge working. The belts should be cleaned continuously.

The coated side remains always towards the air side on conveyor systems. Gloves should be checked regularly for cleanness and replaced as necessary.

9 Washing process

When washing the glass the following specific aspects are to be taken into consideration.

- The coated glass surface must not be moved directly on the transport rollers.
- It is necessary to use clean demineralized water (conductivity < 30 µS/cm, pH value 6.0 – 7.5). Washing agents must not be used.

- A water temperature of 30°C is recommended.
- The brushes which are directly in contact with the coating must be particularly suited for coated glass (bristle diameter of 0.15 – 0.20 mm) to avoid scratches on the coating.
- Ensure the best possible continuous flow of production to avoid scratches on the coated surface if the washing process is stopped and restarted on one pane.
- Leaving the washing machine, the panes must be completely drying to avoid remaining water- drip stains on the coating.
- After the washing process, the glass should be visually inspected at the test station using an appropriate illumination in transmittance and reflectance.
- Rubber lips or brush bars must not rub against the coated surface and should be removed if necessary.

The washing machine is to be maintained at regular intervals. During this inspection particularly the brushes are to be checked for their cleanness and correct adjustment. The washing water must be renewed regularly.

Before the tempering process, the coating must not be soiled (fingerprints, oil) because these impurities will become visible after the tempering procedure. Therefore, the coated surface must not be touched with bare and dirty hands. Clean gloves must be used during all steps of processing.

To remove stains use a mild, quick-drying cleaning agent. For this purpose, dab the surface carefully with a clean, soft cloth without applying any pressure onto the coating. Cleaning agents must not remain on the coated surface.

Recommendations for cleaning agents are given in chapter “production aids”.

Cleaned sizes are to be stacked after washing by using proper separating materials (e. g. cardboard stripes).

10 Heat Treatment

The ORNILUX® products mentioned under 1 require similar parameter settings as uncoated glass.

The panes should be heat treated under temperature conditions as low as possible to obtain a high-quality surface after the process. On the one hand temperatures and heating time must be adapted to avoid breakage in the quenching zone and, on the other hand, requirements for safety glass must be fulfilled.

The coated side remains toward the air side to avoid damages or scratches from the conveyor system.

The use of sulphur dioxide is not recommended and is at own risk.

11 Heat Soak Test

If heat-soaking is required, the processor must ensure that appropriate spacers are used to avoid marks on the coated side. In addition, the requirements of EN 14179-1 apply.

12 IGU assembling

ORNILUX® mikado oHT may only be used as a component of insulating glass or laminated safety glass.

ORNILUX® supermikado oHT requires use on position 1.

The IGU configuration is determined by Arnold Glas. Only the market approved ORNILUX® IGU configurations shall be produced.

Ensure the best possible continuous flow of production to avoid scratches or abrasions on the coated surface if the washing process is stopped and restarted on one pane. A water temperature of 30°C is recommended.

After assembling, the glass should be visually inspected at the test station using an appropriate illumination in transmittance and reflectance. Insulating glass units using ORNILUX® products must fulfil mandatory local market standards and requirements. The processor is fully responsible for proper IGU production.

13 Laminating

ORNILUX® mikado oHT can be processed to laminated safety glass. arcon recommends internal tests in advance to evaluate the adhesion properties.

14 Quality features

The evaluation based on European Standard EN 1096-1.

The pane of the glass to be examined is viewed from a distance of at least 3 m. As a source of light daylight (uniformly cloudy sky without direct sunlight) is agreed.

The examination of the coated glass in reflection is performed by the observer looking at the side which will be the outside of the glazing. The examination of the coated glass in transmission is performed by the observer looking at the side which will be the inside of the glazing.

Furthermore, “Guidelines for evaluating the visual quality of enamelled and screen-printed glass” continues to apply.

15 Quality Assurance

The processor of ORNILUX® products must ensure that the requirements of those guidelines are permanently fulfilled. It is glass processor’s responsibility to implement a quality assurance system. Attention should be paid to visual inspection of tempered glass panes.

The processor of ORNILUX® products has to implement a system of product identification and traceability.

16 Cleaning instructions

Cleaning recommendations are given in customer information “Cleaning instructions”.

17 Production Aids

The following list of production aids gives recommendations for processing of coated glass into insulating glass units. arcon emphasizes that only materials checked for their compatibility are used in IGU production. arcon cannot guarantee the quality of the recommended production aids. Production aids from other suppliers can also be suitable.

- **Gloves**

  Type: KCL-Protective cloves
  Supplier: Kächele-Cama Latex GmbH
  36124 Eichenzell
  Germany

- **Cutting Fluids**

  Type: CUTTING FLUID AC PE 5503, 5250
  Supplier: Chemetall GmbH
  41199 Mönchengladbach
  Germany

  Type: DIONOL GT 641, 644-1
  Supplier: MKU-Chemie GmbH
  63322 Rödermark
  Germany

- **Protection Cover**

  Type: Protection cover type MTC
  Supplier: Euro Tech Vakuum-, Hebe- und Transporttechnik
  72348 Rosenfeld
  Germany

- **Glass Cleaner**

  Type: ACECLEAN 6147
  Supplier: Chemetall GmbH
  41199 Mönchengladbach
  Germany

  Type: Mixture 50 per cent by volume Isopropanol and 50 per cent by volume demineralised water