LUXAR® F
Anti reflective coated glass

Handling Procedures for LUXAR® F

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Table of contents

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0. Introduction of LUXAR® F

- LUXAR® F is a transparent sputter coated glass, which reduces residual reflection almost completely.

- LUXAR® F is intended to be combined together with a low-E coating. Different applications have to be tested. We recommend to always sample those applications.

- Due to the AR coating, finger-prints or dirt are more visible than on normal float glass. They can easily be removed according the description in point 10.

- We recommend that LUXAR® F is handled carefully especially in the manufacturing process since finger-prints, dirt, etc. are more pronounced. They must be eliminated before final processing.

- LUXAR® F is a hard coating and resistant against environmental influences.

- There's no corrosion/oxidation of the LUXAR® F coating.

- LUXAR® F meets the specifications and has been tested to the following standards:

Abrasion	ISO 9211-4
Adhesion	ISO 9211-4
Humidity	ISO 9022-2
Solvent stability	ISO 9211-4
Temperature	ISO 9022-4

1. Transportation / Packing

- LUXAR® F is available in PLF size with thicknesses from 3 -16 mm as well as laminated glass sheets in the same thickness range.

- The position of the coating is indicated by a label.

- Between the glass sheets is a layer of Acrylic Powder (Lucite).

- There are three possibilities for transportation/movement of the coated glasses with CLEAN vacuum suckers:
  - with cleaned suckers on the coated side
  - with an intermediate tissue paper between the coated side and the sucker

- Even while moving the glass in the factory you need to separate the glasses with an intermediate layer !

- Try to avoid all steps that may scratch the glass such as sliding the glass sheets.

2. <u>Storage</u>

- LUXAR® F can be stored 2 years.

- To separate sheets we recommend the usage of acrylic powder, paper and special distance holders. Cork plates are usually not recommended since they may cause print marks on the coating.

3. <u>Handling / Cutting</u>

- When handling LUXAR® F always wear clean gloves, which don't leave sweat-, dirt-, grease-residues or similar on the coating (rubber gloves or gummed gloves are ok, but no cotton- or leather gloves).

- The coated side has to be up on a working table.

- The working table must be free of glass particles and clean. CLEAN OFF the working table before each new glass.

- LUXAR® F should be cut dry or with a evaporating cutting oil (i.e. ACPE 5503 from Aachener Chemischen Werke). The dose and atomization should be the least possible.

- Edge-cut: For PLF sheets it's imperative to keep an edge-cut of 5 cm on all sides.

4. <u>Treatment</u>

- Wash the glass immediately after the treatment. The glass must be dry totally. Remaining water on the glass causes water spots.

5. <u>Washing / Cleaning</u>

- Washing-machines with cylindric bristles, equipped with soft plastic-bristles, are suitable for LUXAR® F. Thickness of bristles 0.35 mm or less.

- Be careful with 0.5 mm thick bristles and plate-bristles (normally used for a hard pre-cleaning), because they could scratch the glasses. Therefore clean without plate-bristles.

- Please wash with warm and distilled water (about 40°).

- The washing-machine and the bristles must be clean.

- LUXAR® F glass should not stand still within the washing-machine.

- After washing, please dry immediately the LUXAR® F glass. Remaining water on the glass causes water spots.

6. Manufacturing of insulation glass

- It's not necessary to remove the coating on the border, because two-component sealings like polyurethane, polysulfide or silicone connect well with LUXAR® F , according our test results. No corrosion in the border-compound. Please ask your sealant producer about tests with LUXAR® F.

- It's necessary to test sealants (which haven't been tested with LUXAR® F) together with the producer against adhesion, water-resistance and climatic-shocks (DIN 1286 part 1).

- Clean all excess sealant from the glass immediately after the unit is complete.

- Note: Never put stickers on the coated LUXAR F side.

7. Manufacturing of laminated glass

- For manufacturing laminated glass the LUXAR® F coating needs to be on the Number 1 and 4 surfaces.

- The uncoated side of one side coated LUXAR® F -glass has a higher reflection, e.g. place a white paper against the glass, or look through the edge.

  Laminating LUXAR® F:

- Regarding the washing/cleaning see point 5.

- Make sure the transport rollers are clean.

- It is a good idea to devise a marking system where the operator can tell which side of the glass is coated. Maybe a small mark or sticker. Once the glass has the PVB film in between the glasses it is extremely hard to determine the coated side.

- Remove any marks or stickers after having laminated together the glasses.

  Pre-compound-pressing:

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- In this process, the AR coated side of the glasses looks outside. The surfaces of the rollers should be cleaned frequently. It's necessary to control and clean often the rollers (hard-rubber or asbestos).

- Fast rolls (passage from slow pressing to fast transportation) could damage the coating.

   In the autoclave:
- Use suitable distance-holders. Cork distance-holders will leave stains on the glasses. Otherwise handle the LUXAR® F -glass like normal laminated glass in the autoclave.

8. <u>Thermal tempering</u>

- LUXAR® F-glass can be tempered. The glass and the furnace must be clean. It's necessary to work in a determined temperature- and stay-interval to prevent a destruction of the coating and the glass.
  LUXAR® F will absorb the heat of the furnace more than normal float glass. Therefore the interval-time and the temperature are lower than for float glass in equal thickness.

- Border or polish the edges of LUXAR® F-glass before tempering (see point 4. Treatment).

- The coated side of one side coated LUXAR® F-glass looks above.

- Adjust the temperature of the roof and the bottom as well as the cycle time of the furnace, so the coating doesn't crack („cobweb", crazing).

- It's difficult to make a precise statement for different furnaces, because the measurement of temperature and the places of these measurements are different.

- Be careful with thermal tempering of glasses with holes or edge-outbreaks, because it will be done by these intervals.

9. <u>Coating of custom furnished material</u>

- Only DLF and PLF formats are accepted for coating.

- Custom furnished glass must be clean, free of oil, grease, finger-prints, scratches and circular damages.

- No marks with a pencil or similar on the surface.

- Custom furnished glass to be coated on one side (e.g. tempered glass with silk screen printing) should be coated on the tin-side.

- The coating on laminated glass, custom furnished, should be done on the tin-side.

- LUXAR$^{®}$ F-coating shows dirt very clearly.

- Glass to be delivered should not be separated with cork-pieces but with paper.

- Use „fresh" glass (max. 3 weeks old).

- Do not put any adhesive labels on the glass.

10. Cleaning of finger-prints etc.

- Finger-prints can be wiped off with ammonia-free glass detergent (e.g. Mr. Proper) or alcohol and a dry and soft paper-tissue. Do not use rags, tools (e.g. glass-plane) or cleaning detergents which scratch or scour.

- For further informations see instructions „ Technical informations" resp. „Cleaning informations".

13. Warranty

- LUXAR$^{®}$ F is to be viewed at a 90 degree angle. The coating is applied so that it works when it is viewed straight on. As the viewing angle is changed the coating can be detected and will have a slightly blue purple colour. Also as the angle changes images can be slightly changed. These are normal with this coating and are not reasons for complaints or claims.