

LUXAR[®]

Anti reflective coated glass

Handling Procedures for LUXAR[®]

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0. Introduction of LUXAR®

- LUXAR® is a transparent sputter coated glass, which reduces residual reflection almost completely.
- As a both-side anti-reflective coated glass, the glass isn't visible on a level of 90° (for example as stock sheet), except on the edges.
- 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® be handled carefully especially in the manufacturing process since finger-prints, dirt, etc. are more pronounced. They must be eliminated before final processing.
- LUXAR® is a hard coating and resistant against environmental influences.
- There's no corrosion/oxidation of the LUXAR® coating due to the hard outerlayer.
- LUXAR® 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
- Sizes of stock sheets are 280 x 190 cm (110"x75") except 2mm thick glasses: max. 237 x 180 cm.

1. Transportation / Packing

- Delivery can be made in two different ways of packing:
 - unpacked on a L- or A-Rack (max. 3,5 t)
 - wooden packing - Picture Frame or End Caps (max. 1,8 t)
- As a standard LUXAR® stock sheets are covered on the coated side(s) with a thin plastic adhesive. On request it can be delivered without this adhesive, instead with an intermediate acid-free paper.
- One side coated stock sheets are covered on the coated side with the plastic adhesive.

- Deliveries of one side AR coated glasses on a L- or A-Rack: the coated side looks to the front (towards the sucker).
Deliveries of one side AR coated glasses in Picture Frames, End Caps or Cases: the coated side of the first glass is marked with a little sticker.
- Tempered, partially tempered or custom furnished AR coated glasses are delivered with an acid-free paper interlayer or with cork pads. The thin plastic film is removed.
- The adhesive film protects the coating from dust, dirt, scratches, etc.
- On the adhesive is a layer of Acrylic Powder (Lucite).
- There are three possibilities for transportation/movement of the coated glasses with CLEAN vacuum suckers:
 - directly on the adhesive film
 - with cleaned suckers on the coated side without adhesive
 - with an intermediate tissue paper between the coated side without adhesive and the sucker
- Even 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. Storage

- LUXAR[®] with adhesive film can be stored 6 months indoors and max. 1 month outdoors in a dry environment after which the adhesive film must be removed.
- LUXAR[®] without adhesive film can be stored 5 years.
- No horizontal storage of stock sheets because of the danger of the adhesive films sticking together.
- Different dimensions of glasses must be separated by acid-free papers, plastic or distance-units of cork after removing the adhesive.

3. Handling / Cutting

- When handling LUXAR[®] 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).
- When working with one side coated glasses, 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® 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.
- LUXAR® both sides anti-reflective coated (which is covered with an adhesive) needs to be cut on a table for laminated glass.
- Keep the adhesive(s) on the coating(s) when cutting the glass. Adjust the cutting pressure and the cutting angle, that the adhesives will be separated and the glass will be scratched.
HY-TECH-GLASS works with a silver cut-hard metal wheel; Ø 6 mm, thickness 1.14 mm, cutting angle 135°. The pressure of the cutting heads is 1.5 to 2.5 bar, top and below, depending on the thickness of the glass (for both side coated and adhesived glass).
- Edge-cut: For stock sheets it's imperative to keep an edge-cut of 2 cm on all sides.

4. Treatment

- Edge-treatment of single glass – dry or wet – (border, polish, grind) should be done with the adhesive on the glass, so that no dirt-particles deposit on the coated glass. Cut a little bit the adhesive film back before polishing to prevent a grease film.
- Drill holes with the adhesive film in place. Be careful, the adhesive could be drawn into the drill.
- Wash the glass immediately after the treatment. Remove the adhesive completely after washing. The glass must be dry totally. Remaining water on the glass causes water spots.

5. Washing / Cleaning

- Washing-machines with cylindric bristles, equipped with soft plastic-bristles, are suitable for LUXAR® . 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[®] glass should not stand still within the washing-machine.
- After washing, please dry immediately the LUXAR[®] glass. Remaining water on the glass causes water spots.
- LUXAR[®] can be washed with adhesive film on (see item 4. Treatment).

6. Manufacturing of insulation glass

- Remove the adhesive film.
- Insulation glass, consisting of 2 x LUXAR[®] A.R. coated glass can be built together „dry“ as well as in traditional manner (see instruction „manual for insulation glass, consisting of 2 x LUXAR[®] A.R. coated 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[®] , according our test results. No corrosion in the border-compound. Please ask your sealant producer about tests with LUXAR[®] .
- It's necessary to test sealants (which haven't been tested with LUXAR[®]) 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 side.

7. Manufacturing of laminated glass

- For manufacturing laminated glass you need one side coated LUXAR[®] -glass, the coating is on the tin-side. The LUXAR[®] coating needs to be on the Number 1 and 4 surfaces.
- Recognition of the coated side:
One side coated LUXAR[®] -glass has an adhesive film on the coated side.
- The uncoated side of one side coated LUXAR[®] -glass has a higher reflection, e.g. place a white paper against the glass, or look through the edge.

Laminating LUXAR[®] :

- Remove the adhesive film before washing the glass.

- 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:

- 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[®] -glass like normal laminated glass in the autoclave.

8. Thermal tempering

- One side and both side coated LUXAR[®] -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[®] 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[®] -glass before tempering (see point 4. Treatment).
- The coated side of one side coated LUXAR[®] -glass looks above.
- Both sides coated LUXAR[®] -glass must be absolutely clean and dry, also very clean rolls. No water-stain and little dirt on the glass, as this could burn into the glass during the tempering. The fire-side (transparent foil) looks above.
- Adjust the temperature of the roof and the bottom as well as the cycle time of the furnace, that the coating doesn't crack („cobweb“, crazing). (Adjustment of HY-TECH-GLASS, for temperature above 680°, cycle time 250 sec.).
- 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. Coating of custom furnished material

- 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[®] -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[®] ist 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 color. Also as the angle changes images can be slightly changed. These are normal with this coating and are not reasons for complaints or claims.

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