



SPYMIRROR

Optical thin film coated glass

Handling Procedures for SPYMIRROR



Table of contents

0. Introduction of SPYMIRROR
1. Transportation / Packing
2. Storage
3. Handling / Cutting
4. Treatment
5. Washing / Cleaning
6. Manufacturing of laminated glass
7. Thermal tempering
8. Cleaning of finger-prints

0. Introduction of SPYMIRROR 1%, 12% and 20%

- SPYMIRROR is a single side coated one way mirror which is used as partition between a supervised and an observation area. The reflection of the coated side is higher than for the glass side. Thus the observer can look clearly into a bright illuminated area, while for the observant the partition acts as a mirror. For a 1% SPYMIRROR is the transmission $T = 1\%$ (for 12% respectively 20% SPYMIRROR
- $T = 12\%$ respectively $T = 20\%$)
- 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 9.
- SPYMIRROR is a hard coating and resistant against environmental influences.
- There's no corrosion/oxidation of the SPYMIRROR coating due to the hard outerlayer.
- SPYMIRROR 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 300.5 x 190 cm (119"x75")

1. Transportation / Packing

- Delivery can be made in two different ways of packing:
 - unpacked on a A-Rack (max. 3,5 t)
 - wooden packing - Picture Frame or End Caps (max. 1,8 t)
- SPYMIRROR stock sheets are covered on the coated side with the plastic adhesive (except laminated glass).
- Deliveries of one side AR coated glasses on a 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**

- SPYMIRROR 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. Do not expose the glasses with the protective film to sunlight.
- SPYMIRROR 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 SPYMIRROR® 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 SPYMIRROR, 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.
- SPYMIRROR 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.

- 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; \varnothing 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 before washing. The glass must be dry totally. Remaining water on the glass causes water spots.
- UV-gluing possible with Spymirror glass

5. Washing / Cleaning

- Washing-machines with cylindric bristles, equipped with soft plastic-bristles, are suitable for SPYMIRROR. Thickness of bristles 0.2 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.
- SPYMIRROR glass should not stand still within the washing-machine.
- After washing, please dry immediately the SPYMIRROR glass. Remaining water on the glass causes water spots.
- SPYMIRROR can not be washed with adhesive film on (see item 4. Treatment).

6. Manufacturing of laminated glass

- Depending on the application, the coated side can be used outside or inside to the PVB respective to the cast resin.

Laminating SPYMIRROR:

- Remove the adhesive film before washing the glass.
- Regarding the washing/cleaning see point 5.
- Remove any marks or stickers after having laminated together the glasses.
- 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 SPYMIRROR -glass like normal laminated glass in the autoclave.

7. Thermal tempering

- SPYMIRROR 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. Therefore the interval-time and the temperature are lower than for float glass in equal thickness.
- Border or polish the edges of SPYMIRROR-glass before tempering (see point 4. Treatment).
- The coated side of SPYMIRROR-glass looks above.
- SPYMIRROR-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.

8. 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“.