



## **DECOR GLASS LAMINATE**

### **Handling Instructions for Glass and Flat Interior Materials**

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## Content

1	Introduction .....	3
2	Product Description .....	3
2.1	Properties and use of the product .....	3
2.2	Material .....	3
2.3	Application .....	3
2.4	Designs .....	4
3	Technical description .....	4
3.1	Formats .....	4
3.2	Weights .....	4
3.3	Handling .....	4
3.3.1	Tools .....	4
3.3.2	Storage of the material .....	4
3.3.3	Cutting .....	4
3.3.4	Eliminating protrusions .....	5
3.3.5	Smoothing edges .....	5
3.3.6	Covering edges .....	5
3.3.7	Treating and painting the backside .....	5
4	Quality description .....	5
4.1	Colours and UV-radiation of the decor layer .....	5
4.2	Colours and UV-radiation of the adhesive layer .....	5
4.3	Edges .....	5
4.4	Backside .....	6
4.5	Thermal stress .....	6
4.6	Mechanical stress .....	6
4.7	Water and vapour .....	6
4.8	Chemicals .....	6
4.9	Cleaning .....	6
5	Processing of the material .....	7
5.1	Preparation of the glass .....	7
5.2	Preparation / conditioning of the glass decor laminate .....	7
5.3	Lamination process .....	7
6	Post lamination processing .....	7
6.1	Storage and shipping .....	7
6.2	Installation .....	7
6.3	Problems .....	8
6.3.1	Lamination problems .....	8
6.3.2	Cuts and other damages .....	8
7	Special products and applications .....	8
7.1	Non-planar glass .....	8
7.2	Double-sided decor .....	8
7.3	Plexiglas / Acrylic glass .....	8
7.4	Front laminated decor .....	8
7.5	Back-Side heating of the element .....	8

8	Technical data .....	9
8.1	Adhesive layer .....	9
8.2	Decor layer .....	9
8.3	General data .....	9

## 1 Introduction

This handling instructions are intended to assist in the use and application of Decor Glass Laminate products for glass and other planar materials in the interior. The instructions does not replace competence and craftsmanship on the side of the user/applicator.

The instructions are based on the current knowledge that is available to the producer and may be updated at any time without notice. It is therefore recommended to check with the supplier / dealer for new versions of the instruction.

All legal and industry standards and regulations have to be observed, even if they are not mentioned explicitly or in case they conflict with the handling instructions.

Contractual claims based on the handling instructions are not possible, because the handling instructions are not part of commercial agreements. Any contractual issues have to be settled and defined in the course of a purchase. The same is true for omissions or errors in the handling instructions.

The issuer takes no obligation to update the handling instructions or to communicate changes.

## 2 Product Description

### 2.1 *Properties and use of the product*

The product is a decorative laminate of less than 0,5 mm thickness for the coating of glass on the backside. It is intended for the interior. The edges and the backside should be protected against moisture, vapour and water. Occasional and short exposure to humidity poses no problem to the product. The product can also be used to create a sandwich of two glass layers with one or two decorative layers in between.

### 2.2 *Material*

The product consists of one layer of decorative laminate plus a transparent adhesive layer so that it can be laminated on the backside of glass or other transparent material. The backside is not decorated and the product is not intended for use as uncovered layer on top of materials, but always behind transparent materials.

Modifications of the material can include an adhesive backside to laminate a protective sheet there, a second layer of decor that makes the backside also suitable for decorative use (e.g. in a sandwich between two glass panels) or protective foils for additional UV filtering, splintering etc.. Modified material is only available on special request.

### 2.3 *Application*

The intended use is to cover the backside of glass with a decorative layer. The product is not a replacement for protective foils against UV radiation, splintering, explosion or other uses. Please observe the local building code for maximum size and technical quality of the glass.

## 2.4 Designs

Please consult our current design papers to see the available designs. In principle there are hundreds of designs available, but many of them require large minimum order quantities. The main designs are different colours of marble, different stone types and colours, but also metal imitations, true metals, wood imitations and monochrome colours.

For special projects there is also the possibility to use individual designs (for technical restrictions and minimum orders please contact us.)

## 3 Technical description

### 3.1 Formats

The product is available in rolls with lengths of 50, 100, 200 and up to 800 running meters. The width may vary, but in most cases it is 130 cm.

The material is rolled on a roll core with a typical diameter of 150mm (6").

Special formats are on request.

### 3.2 Weights

The weight of the laminate foil is between 350 and 750 grams per square meter. A roll of 100 running meters has typically between 50 and 100 kg.

### 3.3 Handling

#### 3.3.1 Tools

The material is cut along an edge with a sharp knife, scissors or with a cutting die. It comes typically on rolls and a stable storage for these rolls is highly recommended to prevent ripping, braking and scratching of the material before or during processing.

The lamination itself is carried out in a suitable roller press to produce bubble-free lamination and full adhesion. To reach best results it may be necessary to warm the carrier material (e.g. glass) or the foil or both.

#### 3.3.2 Storage of the material

The product should be stored in a dry room without too large swings in temperature. Avoid hot, cold or humid conditions. The product should be protected from aggressive substances by good ventilation of the room.

Storage on a horizontal roll holder is recommended, vertical storage may cause damages on the side and horizontal storage on a shelf etc. may cause pressure zones.

Use the material within a 3-5 months of initial production to achieve best results.

#### 3.3.3 Cutting

The producer has positive experience in cutting the material along an edge with a sharp knife, scissors or with a cutting die. Take care of the risk of injuries and make sure the personnel uses protective gloves to avoid cuts.

For cutting the material should be fixed on a hard surface to avoid breaking.

It is recommended to cut the material with some protrusion over the glass sheet (or other carrier material) in order to produce professional lamination.

### 3.3.4 Eliminating protrusions

After the lamination process the protrusions can be cut away with a sharp knife, similar to furniture edge bands.

### 3.3.5 Smoothing edges

You may decide to smoothen the cutting edges directly after cutting to avoid injuries. When the material is handled with sufficient care this may be omitted.

After the elimination of the protrusion the edges should be smoothened. Avoid strong abrasion and mechanical stress that may break the laminate or lead to de-lamination during production.

### 3.3.6 Covering edges

It is recommended to cover the edges and a small part of the backside with (transparent) silicon or transparent polymer layer. This reduces the risk of mechanical damage to the laminate (breaking, peeling, de-lamination) and avoids entry of water.

Please ask for our recommended polymer product.

### 3.3.7 Treating and painting the backside

The back side of the material is not decorated. It is of light brown colour and smooth. If you fear of exposure to moisture it is recommended to cover the total backside with a thin layer of silicon or polymer to encapsulate the backside of the laminate. Another solution is to create a sandwich of two glass layers.

For decorative reasons you may paint the backside with acrylic colours. In this case please do a trial with the paint first to detect eventual reactions with the laminate.

## 4 Quality description

### 4.1 Colours and UV-radiation of the decor layer

The laminate is designed to the standard EN 438. The colours comply with the standard for interior products against greying / loss of colour.

Since this EN is valid for furniture, carpets and similar goods the use is limited to the interior. In case you intend to expose the material to higher levels of UV radiation, please check with us.

### 4.2 Colours and UV-radiation of the adhesive layer

The adhesive layer that bonds the material to the glass is transparent, does not change colour under UV radiation and is permanently stable for the intended use. The material is free from solvents and softeners and does not emit vapours after finished bonding. Technical data on the adhesiveness can be obtained from us.

### 4.3 Edges

It is recommended to laminate carefully especially at the edges. The recommended coating with silicon or transparent polymer closes the edges completely and improves the quality of your product.

In cases where the edges are covered and the risk of damage to them is low you may wave this step. In any case please keep in mind that the edge is probably the weakest point of the product that requires high quality work of your personnel and careful handling during transport and installation.

#### **4.4 Backside**

The risk of damage to the backside is relatively low. Scratches, shearing and abrasives have to be avoided, similar to the front side of the glass.

#### **4.5 Thermal stress**

The product is not very sensitive to thermal stress. It can be assumed that the glass will be the limiting factor. Nonetheless don't expose the glass to high temperatures. The laminate will form bubbles at temperatures of over 150 °C and the adhesive layer may get yellow or brown.

Short, local heat of up to 80 °C will not pose a problem.

#### **4.6 Mechanical stress**

Due to the fact that the laminate is behind the glass, mechanical stress should not be a problem for the decor layer. In case the backside is not covered it may be necessary to put on a protective layer. This can be done in three ways:

- painting the backside and protecting it (see acrylic paint)
- covering the backside with a second sheet of glass or some other material
- using two glasses and two glass decor laminates back-to-back

In cases two and three the mechanical fixing between the layers has to be done according to the technical standards.

#### **4.7 Water and vapour**

The product is not intended to be used in wet or moist places, but with proper installation the glass will protect the decor side sufficiently well.

In case you plan a specific use that includes higher stress from water, moisture or vapour, please consult with the producer or representative.

For use in showers, bathrooms and kitchens please make sure that the edges are closed and no moisture can enter the laminate.

#### **4.8 Chemicals**

The material is not intended to withstand chemicals, but the product should not be affected by typical household chemicals, cleaners, soap etc. Also in this case the front cover (glass) will shield the product from these influences. Make sure that the glass is sealed properly so that chemicals are prevented from getting in contact with the backside.

#### **4.9 Cleaning**

Since the product is covered by a glass side it will not get into contact with cleaning materials or processes. Clean the glass according to its specifications.

Make sure that the cleaning does not damage the sealed edges or the backside, if this should be accessible.

If the edge or backside are accessible, do not use steam- or high pressure water cleaners against these parts.

## 5 Processing of the material

### 5.1 Preparation of the glass

The glass has to be cleaned according to industry standards before applying the glass decor laminate. Make sure that there are no remains of cleaning materials, detergents or other chemicals left on the glass before starting the lamination process.

### 5.2 Preparation / conditioning of the glass decor laminate

It is recommended to condition the laminate in the workshop or room where the lamination is done before application to avoid problems.

### 5.3 Lamination process

The lamination is done with a roller press. The pressure should be ..... kg \*) for each 10 cm of width. The table must be stable and its surface hard enough to allow this pressure without damaging the glass.

The roll(s) should have a Shore A of .... \*)

NOTE: (\*) to be established with specified machines in test runs.

The carrier material has to be cleaned according to industry standards to avoid reduced adhesion.

The temperature for lamination should be between 30 and 40°C temperature of the glass. This can be reached by warming the table where the glass is placed or by blowing warmed air onto the glass before joining it with the laminate.

Avoid overheating, although it does not damage the laminate if it stays below 80°C.

During processing take care to:

- laminate without bubbles, wrinkles and inclusions
- protect the adhesive layer from contact with other materials, damage and dirt
- avoid de-lamination or second lamination attempts
- use high enough pressure with rolls, brush etc.

At the edges it may be helpful to use additional heat (e.g. from a heat gun) to improve adhesion, but avoid overheating.

The product can be laminated in a wet process, but so far this is not recommended by the supplier.

## 6 Post lamination processing

### 6.1 Storage and shipping

Store and ship the product with the usual care for glass. It is recommended to protect the backside against scratching and shear.

### 6.2 Installation

The installation is done according to industry standards for glass. No problems should be expected. Take care of protected edges and backside.

NOTE: if you use profiles for the edges, do factor in the thickness of the decor laminate (below 0,5 mm) in the dimension of the profiles.

## 6.3 *Problems*

### 6.3.1 *Lamination problems*

Anyone who has experience with and the right tools / machinery for lamination will be able to apply the product. For beginners we recommend to do small scale tests and trials first, then to increase to larger scales and only then to begin regular production.

### 6.3.2 *Cuts and other damages*

In case the product gets a cut after being laminated, you may try to close the cut and cover it with silicon or transparent coating.

If parts of the laminate are ripped off you may cut out a sector and put in a replacement that is cut to precise shape, if that is possible in respect to the design/pattern.

To cut out a piece, make cuts through to the glass but without scratching the glass. Then warm the damaged part with a hot-air gun to approx. 50°C and peel off the laminate from the glass (the adhesive should stay on the laminate). Use a putty to peel off the laminate.

You can also use this technique to produce inlays or openings in the laminate. In this case try it out on test material first to get a feeling of the product.

## 7 *Special products and applications*

### 7.1 *Non-planar glass*

The product is intended for plane surfaces of glass. If you are familiar with lamination to curved surfaces, you may also use the product as long as the curve does not interfere with the format of the sheet. We strongly recommend that you do your own tests before this and cannot guarantee that perfect adhesion and bubble-free lamination will be possible.

Based on our best knowledge we expect that surfaces that are curved only in one direction (e.g. cylindrical curves) will be possible. Do not use the material for diameters of less than the roll core.

### 7.2 *Double-sided decor*

It is possible to produce double sided decors with the same or different types of decor. Please contact us for more information and limitations to this special application.

### 7.3 *Plexiglas / Acrylic glass*

Before using the product on Plexiglas, acrylic glass and other plastic materials please contact us.

### 7.4 *Front laminated decor*

The product is currently not intended for the use as unprotected front side, because the adhesive is on the wrong side. The surface can be adapted to this use, we are developing such a product. In the meantime please contact us with your requirements.

### 7.5 *Back-Side heating of the element*

There is the possibility to use a special large-surface and low-temperature electric heating foil that can be applied on the backside of the glass decor. The effect is comparable to that of an infrared heating, but at low temperatures like an underfloor heating.

There is no standard product available at the moment, but we are developing such a product. Please contact us with your requirements.

## 8 Technical data

### 8.1 Adhesive layer

The main property of the Glass Decor Laminate is described in the following graphs and concerns the strength of the adhesive layer.

RESISTANCE TO	1	2	3	4	5
Peeling					
Shearing					
Temperature					
Chemicals					
Weather					

Peeling: the adhesive layer consists of pure acrylic glue and bonds well with high-energetic surfaces like metals, paint and plastics.

Shearing: the inner strength guarantees a high resistance against searing forces.

Temperature: the high degree of cross linking allows a high temperature stress of the glue. The temperature range is -40°C to + 150 °C, short term up to 260°C

Chemicals: The special composition provides a good resistance against solvents, acids and bases.

Weather: The adhesive is totally resistant against weather influences like UV radiation and moisture.

Thickness: may vary between 130 µ and 250 µ

Peeling measurments (similar to Afera 4001):

- Steel: 37 N/25mm
- Aluminium: 33 N/25mm
- Glass: 33N/25mm
- Plexiglass: 26N/25mm
- PVC: 24N/25mm

Shearing measurments (similar to Afera 4012):

- at 20°C: 75N/625mm<sup>2</sup>
- at 70°C: 30N/625mm<sup>2</sup>

### 8.2 Decor layer

The material is intended for the use in rooms. It conforms to EN 438-2:2005 in terms of color stability / graying. For more details, please contact the supplier.

### 8.3 General data

formats supplied	on rolls, max. width = 1300 mm, max. length = 200 m
shelf life	process withing 3 months, adverse storage conditions may reduce the shelf life or may cause sub-optimal results
substrate	the substrate (carrier material) must be free of contaminats like fat, acids, bases,

	<p>dirty and chemicals. The cleaning methods and materials that are used in the glass processing industry have proved good results. Avoid lamination on anti-stick coating.</p> <p>Metal or plastic materials are to be prepared accordingly.</p>
cleaning	<p>since the material is laminated behind glass it will not be affected by the cleaning of the front. Use typical cleaning materials and methods for the glass. The backside is not to be cleaned. avoid moisture and aggressive substances on the edges of the product. In case you expect contact with it, take care to seal the edges and (if required) the backside against such influences.</p> <p>Avoid high-pressure cleaners or vapour cleaners at the edges or at the backside.</p>
processing	<p>the processing should be done only by trained personnel</p>
processing temperature	<p>best results are achieved at room temperature (18-25°C) and average humidity. The substrate or the foil or both may need warming to 30-40°C to achieve best adhesion and bubble-free lamination.</p>
material incompatibility	<p>currently no problems are known, except stains, dirt and anti-stick-coatings mentioned under "substrate"</p>
quality	<p>the quality is ensured by self-monitoring of the supplier and sub-contractors</p>