



**General Technical Information**

**FOR ALL DERAlam METAL LAMINATES**

**FOR ANY FURTHER INQUIRIES PLEASE CONTACT OUR  
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## General Technical Information for all DERALAM Products

DERALAM sheets are covered with a **protective foil**. It is recommended to leave this foil on the surface of the laminates during processing. Nevertheless, colour, colour uniformity and other quality checks of the sheets must be carried out **beforehand**. Due to the deviations which are specific for natural products metal laminates display marginally wider colour variations than normal high pressure laminates. As a result of the processes involved in the production of metals, slight differences in the appearance of some products are inevitable. Please observe that only products of one production lot (see manufacturing date and additional advice on the protective foil) should be used in one application.

### **Important:**

**The surface which is protected with a removable foil should not be exposed to light for long periods of time. This could cause problems in removing the protective foil. (Use a cover sheet)! The protective foil is not diffusion tight towards liquids.**

### **Applications:**

#### **Application fields:**

Only for interior and vertical use.

As the horizontal use as well as the use in humid environment is limited, we do not recommend it. More detailed information is available from our technical department upon request.

The surface is resistant towards all household, solvent-free liquids.

#### **Resistance to fire:**

**DERALAM** metal laminates are - as far as correspondingly marked in the table - flame-retardant as to the FTP-Code annex 1 part 5, no. 2.1 (IMO-Res. A 653 (16)) and part 6 no. 2.1 (IMO-Res. A 687 (17)).

They comply with the FTP-Code part 2 for smoke-density- and toxicity criteria.

The products carry the Mark of Conformity ("steering wheel-logo").

#### **In addition to the general processing guidelines the following is valid:**

The fire reaction is affected not only by the laminate but also by the connection with other materials, the means of connections as well as the processing technology. Adhesives which are used in areas of type B and in connection with the isolation of cold-systems in shipbuilding have to be flame-retardant according FTP-Code annex 1 part 3 no. 3.1 and part 5 no.3.4 as well.

Lloyd's Register also certifies all products, classified as flame-retardant.

#### **Hygiene criteria:**

Odourless, suitable for use with foodstuff.

## How to process:

**Sawing:** DERALAM laminates – except stainless steel laminates (see special instructions) – can be sawn, drilled and milled like all standard high pressure laminates (HPL). It is advisable to use carbide-tipped cutting tools. When cutting, the decorative surface should always face upwards. Burrs can be removed with a fine file or abrasive paper.

**Base material:** All standard base materials used for laminates are also suitable for DERALAM laminates.

**Bonding:** Conventional glues and adhesives, e.g. white glue, two-component epoxide adhesive or neoprene contact adhesives.  
**Exception:** Urea adhesives are not suitable.

## **When processing always make sure that the running direction is the same as variations in the appearance might occur if ignored!**

When **bonding embossed laminates** to base materials, it is recommendable to achieve uniform pressure by means of padding, as, when pressing directly against the heat plate, the pressure designed for the entire area will only be effective at the raised points of the embossed surface and, therefore, considerably higher (exception when bonding to frames: Here too much padding can result in frame- marks on the surface).

Particular care should be taken to ensure that the moisture content of the base material never exceeds that of the metal laminates (see conditioning). If the base material contains too much moisture, this can lead to oxidation and blistering, especially between the metal foil and the laminate core due to moisture exchange.

## Care/Cleaning:

To clean the surface use a damp cloth and a mild cleaning agent which must not contain any abrasive substances. Solvents are only to be used very carefully and never on surfaces marked with polyester- and UV- lacquer according to the product survey. Stubborn stains, e.g. glues residues, can be carefully removed by using cleaning petrol. Avoid to allow liquids to react on the surface for a longer period of time.

## Postforming quality:

**Max. heating:** 120°C

**Obtainable radius:** Laminate thickness of 0.8 mm allow a radius of 6 mm.

For the postforming process the surface is protected by a heat-resistant polyester foil. There is an additional mark on the protective foil to identify them as a special quality. **This mark consists of two letters "PF"**. Due to the smaller thickness of laminates in PF quality in comparison to the standard quality differences in the depth of the relief occur.

## **Please note:**

This information is based on our current knowledge and experience. However, the user has to carry out own tests and examinations because of the wide variety of postforming machines.

**Bending Radii:**

Width of the test strips: 50 mm

Product group	Bending – towards the laminate direction dimensions in mm	Thickness of sheets			
		1,4	1,3	1,0	0,8
1	convex – lengthwise		130	90	55
	convex – crosswise		130	90	55
	concave – lengthwise		180	120	100
	concave – crosswise		180	120	100
2	convex – lengthwise		105	80	40
	convex – crosswise		105	60	30
	concave – lengthwise		180	105	70
	concave – crosswise		150	100	55
3	convex – lengthwise		130	75	55
	convex – crosswise		100	75	55
	concave – lengthwise		150	105	70
	concave – crosswise		130	105	70
4	convex – lengthwise		90	60	40
	convex – crosswise		85	55	30
	concave – lengthwise		180	90	60
	concave – crosswise		135	90	60
5	convex – lengthwise			80	40
	convex – crosswise			80	30
	concave – lengthwise			130	80
	concave – crosswise			130	60
6	convex – lengthwise			40	
	convex – crosswise			35	
	concave – lengthwise			90	
	concave – crosswise			80	
7	convex – lengthwise			80	
	convex – crosswise			80	
	concave – lengthwise			105	
	concave – crosswise			105	
8	convex – lengthwise			130	
	convex – crosswise			130	
	concave – lengthwise			140	
	concave – crosswise			140	
9	all directions	225			

The bending radii indicated in the table represent radii which can be achieved under normal conditions where constant force is distributed uniformly over the entire surface. Factors as the degree of moisture in the laminate, temperature, as well as the method of bending have an effect on the radii and can lead to deviations in the results.

**Please note:** Embossed copper and aluminium laminates had been grinded from 1.3 mm to the appropriate thickness for testing.

With reference to polished aluminium we have to point out that bending radii of less than 200 mm (7.9") might create fine hairline cracks in the surface – although barely visible with the naked eye. These are a specific characteristic of anodised surfaces and therefore do not indicate a defect.

**Balancing:**

Stresses always occur between two different types of material bonded together. Consequently, a base material should be surfaced on each side with materials which are subject to the same dimensional changes resulting from variations in temperature and relative humidity (adaptation to climate). This is particularly important if the finished sheet is to be self-supporting and not directly retained by a rigid structure.

**The larger the area to be covered, the more important is the right choice of the balancing material, symmetrical structure, density and rigidity of the base material.**

According to our experience base material with a thickness of  $\leq 13$  mm is critical with regard to the flatness of the compound element. Generally factors like for example stiffness and symmetric structure of the base material, the even application of the adhesive and the pressing temperature as well as the size and degree of fixing of the object do have a disproportionate high influence. Therefore, we recommend to use for compound elements with base material  $\leq 13$  mm the same laminate as balancing material.

Best results are obtained by using the same type of laminate from the same manufacturer on both sides. Both must always be bonded simultaneously from both sides to the base material in the same direction of grain or grinding respectively (never at right angles to each other).

In order to keep costs low use second choice laminates of the same type as balancing material or special balancing material without any demand on the surface according to the range of products. The use of other kinds of material as balancing material is not recommended – even when physical properties are as similar as possible to those of DERALAM metal laminates – as the results can never be predicted with certainty.

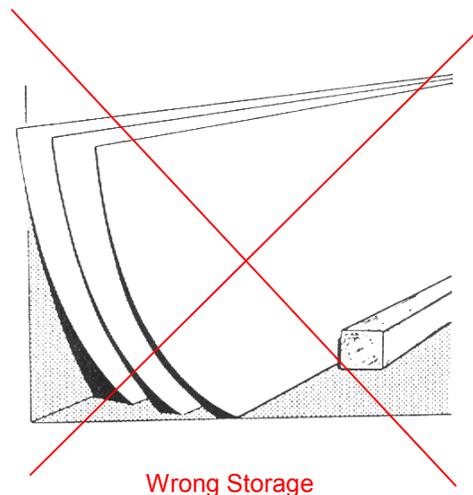
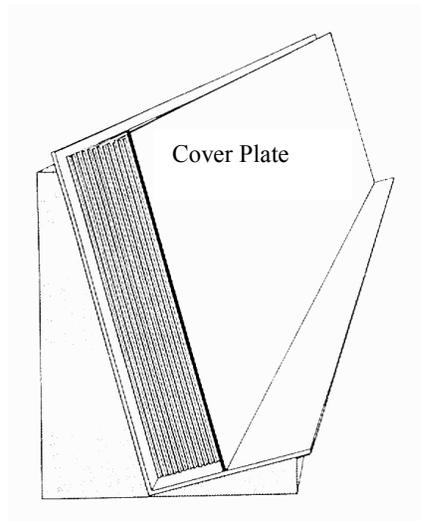
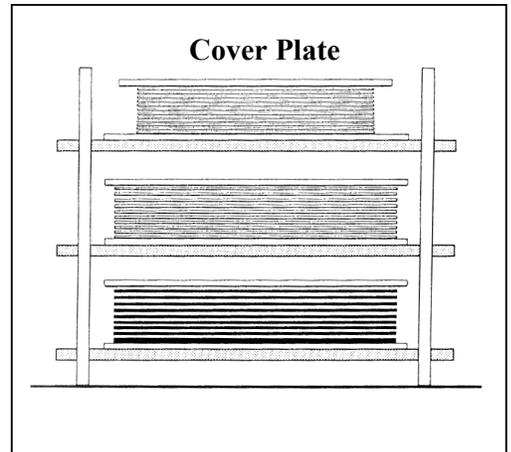
This information is based on our current knowledge and experience. However, the user must satisfy himself as to the suitability of the product for its intended use. No legally binding guarantee of features or suitability of the product for a specific purpose can be derived from this information. In case of doubt, we recommend consulting our technical advisers. The user of our products is responsible for observing all applicable patent rights as well as current laws and regulations.

## Storage and Adaptation to Climate of DERALAM Laminates

DERALAM laminates should be stored in a close warehouse, protected against humidity and maintained at normal temperatures like standard HPL. The storage should take place within a standard climate i.e. approx. 18-25 °C and 50-60 % relative air humidity.

The surfaces of DERALAM laminates are covered with a protective foil. It is recommended to remove this foil only when all work on the laminates is completed. In order to avoid changes concerning the adhesive power of the protective foil on the laminate surface, the temperature should not deviate more than  $\pm 10$  °C of the one mentioned below by a longer-term storage. **Attention: Before removing the protective foil do not expose the laminates to light for a longer period of time (cover plate)!**

Laminates should be stored horizontally. In case horizontal storage is not possible, it is recommended to place the sheets in an angled framework and propped up at an angle of about 80°. A counter support prevents the sheets from slipping down. (see sketch).



The best **conditioning** will be achieved in the room climate of the later application field. This conditioning is recommended as materials which will be used in a damp condition have a tendency to shrink and materials which are too dry will stretch so that a warping cannot be excluded. All materials should be conditioned together for at least 48 hours.

# DERALAM

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