

Technical Data Sheet

ShieldLam

PERMACOLOR

Shield Lam is a laminating film from the PERMACOLOR family, a series of high quality pressure-sensitive products providing fast, efficient processing through roll lamination techniques without the need for heat or drying.

PRODUCT DESCRIPTION

ShieldLam is an ultra clear gloss, soft 50µm PU film protected with a PET film and coated on one side with an ultra-clear permanent adhesive. The adhesive is protected with a transparent PET liner.

ShieldLam

- is especially designed for the outdoor protection of the Tuning Film range which are used in both boat and car wrapping applications
- is extremely durable and warranted, even in horizontal applications,
- stops 99% of the UV light and therefore helps extending the life and the gloss of the Tuning Films
- brings an ultra high gloss finish to the Tuning Films
- brings impact resistance
- has significantly higher abrasion resistance than standard vinyl (PVC) films,
- is a self healing material
- conforms very well to flat to slightly curved surfaces,
- offers superior protection to the Tuning Films against acid rain and high heat
- is chlorines and phthalates-free,
- does not influence the pH level of the substrate to which it is applied.

Seen its optical clarity, ShieldLam can also be used to protect see-thru print media for glass applications.

PHYSICAL PROPERTIES

| | <u>Average values</u> | <u>Test method</u> |
|-------------------------------------|-----------------------|-----------------------|
| <u>Adhesive</u> | | |
| Quick Tack on glass (N/25 mm) | 17 | FTM 9 |
| Peel 180° on glass (N/25 mm) | | |
| - after 20 minutes | 11 | FTM 1 (ASTM D 903-49) |
| - after 24 hours | 12 | FTM 1 (ASTM D 903-49) |
| Dimensional stability | <0.15mm | FTM 14 |
| <u>Release liner</u> | | |
| 75 µm PET film (gr/m ²) | 105 | ISO 536 |
| <u>Thickness</u> | | |
| Film + adhesive (µ) | 77 | ISO 534 (ASTM D 645) |

HEAT RESISTANCE

Application temperature range : + 15°C to + 40°C

End-use temperature range : - 40°C to + 90°C

For temperatures outside those quoted above, please consult MACtac.

CHEMICAL RESISTANCE

Resistant to detergents, acids, oils and diluted (50%) alcohols. Resistant to short contact periods with gasoline. Not recommended for contact with aromatic solvents, non diluted alcohols, ketones.

For further technical advice, please consult MACtac.

SHELF LIFE

2 years when stored at 15 to 25°C and ± 50 % relative humidity.

EXPECTED DURABILITY

The expected vertical outdoor durability of the unprocessed product in Central Europe (Zone 1) is up to :

| | Zone 1 | Zone 2 | Zone 3 |
|---------------------|---------|-----------|-----------|
| Vertical exposure | 8 years | 6 years | 4 years |
| Horizontal exposure | 5 years | 3.5 years | 2.5 years |

This information is based on successful real life experience and artificial aging according to ISO 4892-2.
Boat application : above data is reduced by 30%

Zone 1: North, West, Central & Eastern Europe, North America (excl. : USA desert's - zone 3)

Zone 2: South Europe, Central & South America, Asia Pacific, Australian South coastal area (from Perth to Brisbane), New Zealand

Zone 3: Greater Middle East, Africa, Australian Desert areas & North of Perth-Brisbane coastal area, USA (Arizona, California, Florida, Nevada, New Mexico, Texas, Utah), Mexico

Note : Exposure to severe temperatures, ultra-violet light as well as conditions in Southern European countries, tropical, sub-tropical or desert regions will cause more rapid deterioration. This also applies to polluted areas, high altitude and south facing exposure.

RECOMMENDATIONS

- In order to reach the best result, it is recommended to apply the ShieldLam laminate onto the Tuning Film with the help of a professional laminator with a top cylinder temperature of about 20-22°C. Keep PET protective sheet during lamination and regulate speed and pressure in order to avoid product stretching. Remove the PET protective sheet after lamination.
- Apply the complex Tuning Film + ShieldLam with the dry method on substrates using a soft plastic squeegee covered with a low friction sleeve.
- Where exposure to chemicals, solvents or high pressure water hoses is envisaged, or in boat applications, it is recommended to seal the edges of the Tuning Film protected with ShieldLam.
- Minor scratches can be eliminated thanks to the sun heat. The same effect can be achieved by gently heating the ShieldLam with a heatgun (film temperature ~ 80-90°C: heatgun temperature ~ 200°C)
- Tuning Film laminated with ShieldLam can be rolled up to allow easy transport. The roll should have a diameter above 7 cm and the coloured face should be facing outwards.
- After PET protective sheet removal, do not allow the laminate face to come in contact with itself or with the backing construction for at least 48 hours or it will stick together (block). Self healing will be slower during these first 48h.

IMPORTANT NOTICE

All MACtac products are subject to careful quality control throughout the manufacturing process and are warranted to be of merchantable quality and free from manufacturing defects.

Published information concerning MACtac products is based upon research which the Company believes to be reliable although such information does not constitute a warranty.

Because of the variety of uses of MACtac products and the continuing development of new applications, the purchaser should carefully consider the suitability and performance of the product for each intended use, and the purchaser shall assume all risks regarding such use. The seller shall not be liable for damages in excess of the purchase price of the product nor for incidental or consequential damages.

All specifications are subject to change without prior notice.