TECHNICAL BULLETIN 7.4
Overlaminating and Edge Sealing Recommendations

For most outdoor applications, it is recommended to protect the edges of the decoration in order to avoid liquid infiltration between the laminating film and the print (or in certain cases in the top coating). This is to avoid any damage that could be caused by such infiltrations (for example, colour changes (darker colours in the humid/wet areas that will affect the print/colour appearance). The necessity to edge seal is based on the nature of the media, the nature of the top coating, the type of inks used and the exposure.

It is very difficult to avoid water infiltration into an 'immersed print' (even when the image is laminated and edge sealed) especially by the corners. It is therefore not recommended to immerse printed images.

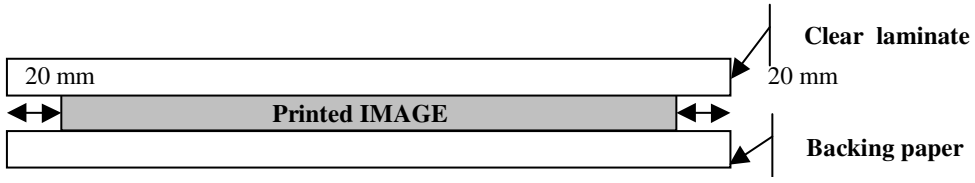
There are different ways to seal the edges :

1. EDGE SEALING WITH "LARGER LAMINATE" (overlap):

In order to ensure longer durability, more flexibility in substrate alternatives, better resistance to UV (silicones and varnishes can turn yellow or crack), a uniform finish of the graphic, we recommend that the edges of the print be protected with a ***larger laminate.***

HOW TO PROCEED:

- ☑ Before printing JT 5000 series products, ensure that an unprinted zone of about 20 mm is left all around the print,
- ☑ After printing, cut the unprinted edges of the JT 5000 series product straight (with a very sharp cutter/knife) - do not cut through the backing paper. Peel off the unprinted part from the backing,
- ☑ Protect the image and the edges with a pressure-sensitive laminate from the PERMACOLOR series larger (20 mm on each side) than the printed media, applying uniform pressure with a laminator. Consult the laminator's user's guide for specific settings.



2 - EDGE SEALING WITH "VARNISH OR SILICONE":

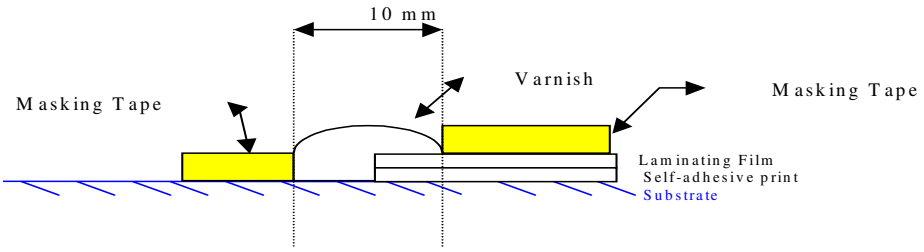
Customers should be aware of the following points :

- ***The adhesion or anchorage*** of silicone or varnish is dependent on the substrate used. The use of a primer coating can improve the anchorage of the silicone or varnish.
- ***The finish*** of this type of edge sealant can be different from the finish of the laminate and therefore may affect the appearance of the decoration.
- ***The clarity*** of the layer of edge sealant may be an issue. Some silicones or varnishes have a milky aspect (when dried) that may affect the appearance of the decoration.
- ***The durability*** of some varnishes or silicones is limited outdoors and may turn yellow and/or crack. Most of them cannot resist more than 12 months outdoors.
- ***The cleaning of the edge sealant:*** When removing the printed decoration, the silicone or varnish left may cause damage to the substrate. Please refer to the substrate's manufacturer for silicone and varnish compatibility.

MACtac ideally recommends edge sealing by the "larger laminate" method rather than by using silicones and varnishes. MACtac will not accept any responsibility for possible problems resulting from the use of silicones or varnishes.

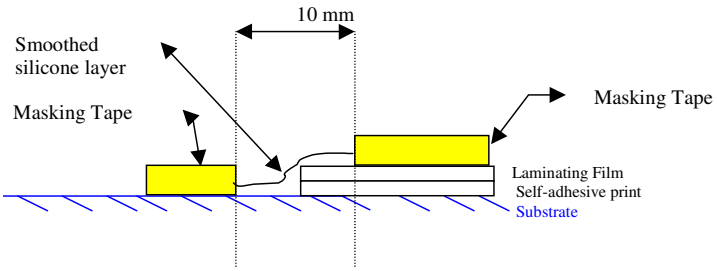
HOW TO APPLY THE VARNISH:

- ☑ Prepare the substrate and apply the print to it.
- ☑ Dilute the varnish with the recommended solvents according to the instructions issued by the varnish supplier. The varnish should be sufficiently fluid to permit a homogenous application.
- ☑ Apply a masking tape at 5 mm to all sides of the decoration in order to limit the varnish application and permit a clean and straight deposit.
- ☑ The varnish is applied with the help of a soft "brush", larger than 10 mm, to permit a "one pass" application and reach an optimum aspect.
- ☑ Ensure yourself that the varnish is completely dry (10 to 25 min) before peeling off the masking tape. The blowing of warm air can reduce the needed drying time.
- ☑ Allow 24 to 48 hours of drying before exposing the decoration to any corrosive or abrasive aggressions.



HOW TO APPLY THE SILICONE:

- ☑ Prepare the substrate and apply the print.
- ☑ Apply a masking tape at 5 mm to all sides of the decoration in order to limit the silicone application and permit a clean and straight deposit.
- ☑ If recommended by the silicone manufacturer, apply a "primer" layer to increase the silicone anchorage onto the substrate surface.
- ☑ With the help of a silicone "gun", apply a regular layer in "one pass" in order to reach an optimum aspect. Take care to respect the "application temperature" recommended by the silicone manufacturer (generally > 5°C).
- ☑ Smoothly press the silicone layer deposited with a soft squeegee (avoid physical contact and contact with soapy water).
- ☑ Remove the masking tape once the silicone is perfectly dried.
- ☑ Allow 24 to 48 hours of drying before exposing the decoration to any corrosive or abrasive aggressions.



MACtac has evaluated different sources and types of silicones and varnishes (as listed on the next page) in order to give recommendations to our Customers.

PARAMETERS TESTED BY MACtac:

- ➢ Evaluation of the ease of application.
- ➢ Evaluation of the transparency of the layer (after drying, milky aspect was not accepted).
- ➢ Drying time necessary (targeting 10 to 15 minutes maximum).
- ➢ Resistance to scratch test (anchorage on aluminium).
- ➢ Resistant to water infiltration (when exposed to high humidity level – not to water immersion).
- ➢ Resistance to UV (QUV artificial ageing test).
- ➢ Compatibility with our laminating films.
- ➢ "Cleaning properties" / removability.

From the products tested very few have passed the testing successfully.

Generally, the silicones showed better results than the varnishes in terms of :
- ➢ Durability : better resistance to UV and better resistance to water infiltration.
- ➢ Ease of removability.

- Compatibility with substrates (less corrosive) : some varnishes were found to be "***non compatible"*** because they were too aggressive either with the MACtac laminating films or with the inks or with the top coating.

Please find hereafter the references of the 3 edge sealants found to be the most suitable :

Edge Sealer	Primer	Advised "remover"	Address of the manufacturers
SERICOL VARNISH Reference : ***Polyplast PY383***	-	SERIWASH	SERICOL UK Pysons Road, Broadstairs, UK - Kent CT10 2LE Tel: +44-0-1843-866668 Fax: +44-0-1843-872087
DL CHEMICALS (silicone) ***PARASILCO CRISTAL***	**DETAPRIMER**	Parasilco Cleaner	DL CHEMICAL nv Roterijstraat 201-203 B – 8793 WAREGEM Tel: +32-0-56-62-70-51 Fax: +32-0-56-60-95-68
Dow Corning (silicone) ***1-2577 Conformal Coating***	-	"Toluene / Xylene"	Dow corning Customer service Tel: +44-0-1676-528000 Fax: +44-0-1676-528001

For more information or references on the edge sealants tested, please contact MACtac.

HOW TO CLEAN THE SUBSTRATE AFTER REMOVAL OF THE DECORATION ?

In case of decoration on painted surfaces (fleet, panels,…), it is strongly recommended to test the chemical effects/compatibility of the "remover" onto/with the specific painted substrate.
Some "removers" can indeed contain aggressive components that can deteriorate the painted surface.
The use of solvents like Toluol and Xylol as well as ethanol or white spirit should be more suited to painted surfaces but also need to be tested.