

Technical Bulletin 4.1

Guidelines on handling, converting and applying Mactac Digital media

This Technical Bulletin provides detailed information on how to handle, transport, convert and apply Mactac digital media and laminating films. For specific information on a product's properties, please consult its corresponding technical datasheet.

STORAGE

Mactac digital products should be stored at +15 to +25°C and ± 50 % relative humidity, in the original packaging.

- ➔ Avoid directly exposing the vinyl to high temperatures (near radiators, in direct sunlight, etc.)
- ➔ Rolls should never be placed on their sides as this could lead to a large matt section appearing in the whole roll. Any partially used rolls should be kept upright or hung on racks.

TRANSPORTATION

To allow easy transportation, printed & laminated films can be rolled up, with the image on the outside, with a minimum diameter of 15 cm (for example on a 6' core).

When the image is not protected with a laminating film, make sure that the print is perfectly dry before rolling it over. To avoid exposing the print to any aggressive liquids, prints should be protected by a plastic bag. During transport or storage of printed material, avoid exposure to extreme temperatures or humidity variations.

CLEANING THE SURFACE

Even if they appear clean, all surfaces should be cleaned prior to applying a printed vinyl, using the procedure below:

- ➔ Clean with soapy water, then rinse with clean water (do not leave any traces of soap on the surface).
- ➔ Clean away any grease using isopropyl alcohol or denatured petrol.
- ➔ Dry the surface using a dry cloth or a clean paper towel that does not leave any small pieces behind - before the isopropyl alcohol or denatured petrol has had a chance to evaporate.

PRINTING

Most Mactac digital products are designed for solvent, eco-solvent, latex and UV inkjet printing on wide-format printing. For detailed information, consult the relevant product datasheet.

If printed on UV, print speed and curing settings should be adapted as required. Please refer to the printer manufacturer settings for thin, soft media.

PROFILES

- ➔ To achieve the best possible print quality, the correct ICC profiles and printer settings should be used. Profiles can be obtained from our subsidiaries or distributors, or can be downloaded from www.mactacgraphics.eu
- ➔ Printer & heater settings and ICC profiles can also be downloaded from some OEM web sites.
- ➔ ICC profiles are provided solely as a customer resource. Print environments, the individual nature of printing systems, inks and software can significantly affect output. It is the customer's responsibility to determine the suitability of any profile for use in their specific print environment.
- ➔ The maximum allowable ink saturation is 270%.

PRINT ROOM AND DRYING CONDITIONS

- ➔ Print in a conditioned pressroom at ± 23°C (73°F) and 50% RH.
- ➔ The presence of a solvent softens the film and makes it more stretchable. An improperly dried print will reduce adhesive performance and increase the risk of undesirable outcomes such as edge lifting, excessive shrinkage, delamination and excessive adhesive transfer.
- ➔ We recommend placing the printed graphic into an additional drying unit for at least 24h (preferably at 30°C). If no additional drying unit is available, the print will need a longer drying time of 36 – 48h, with the print laid out on a flat surface or hung to dry. Allow enough space for a good airflow over the surface of the film - keeping the graphic tightly rolled up will not allow solvents to evaporate.
- ➔ With Bubble-free products, the film must be dried sufficiently or the customer will not realise the full benefits of reduced application times. Insufficient drying can also cause adhesive residue to be left behind, and prevent repositionability.

LAMINATION

Please ensure the print is perfectly dry. The printed material should be left to dry for at least 24h prior to lamination or transport.

If printed graphics are likely to be exposed to corrosive liquids, smoke, fumes or highly polluted areas, or if there is a likelihood of scratching or friction, then the print should be laminated so that durability is improved.

Prior to laminating printed media, make sure that:

- ➔ The rollers of the laminator are clean and not damaged
- ➔ The rollers are parallel to each other
- ➔ The rollers are set at the correct temperature, speed and pressure
- ➔ The material is centered in the middle of the laminator.

Always set the laminator tension of the overlamine and the printed media in such a way that they are laminated flat but without stretching. Improper adjustments create differences of tension between the laminate and media which is THE major cause for wrinkles and possible delamination.

Please note that increased roller temperatures in combination with a higher winding tension can lead to unwanted elongation of printed media. Winding tension should therefore be carefully monitored and kept at an appropriate level. This is especially critical for highly conformable laminates. Mactac digital laminating films are not intended to be laminated using heat.

The use of UV inks can typically result in a very slightly embossed surface, based on the ink type and/or the amount of ink deployed. This structure can become visible after overlamination, as a result of the laminate encapsulating air in the ink structure. The use of specific UV laminates will reduce or eliminate this effect.

For specific settings of the laminator, please consult the technical manual that comes with the laminator from the original supplier.

APPLICATION METHOD

A wet method or dry method application technique should be used for flat and slightly curved 2D surfaces. The method chosen should suit the size of the graphics to be applied and the complexity of the surface to be decorated.

On 3D surfaces that require the media to be shaped (over rivet heads, corrugations, welded areas, etc.) only Cast media products should be used. Their minimum application temperature is +10°C, and they require the use of a heat gun.

1. Wet method:

This method of application produces very little initial adhesion, allowing the applicator to position the vinyl where required, avoiding air bubbles and folds.

The adhesion will gradually increase after several hours as the water evaporates, and will reach final adhesion after 24 or 48 hours.

It is not advisable to apply Mactac digital products using the wet method in temperatures lower than +15°C. Do not use the wet method for Bubble-free products.

Application process:

- ➔ Prepare a solution of soapy water (5 cl pH neutral soap for 10 liters of water) and pour it into a spray bottle.
- ➔ Use the spray bottle to wet the entire surface (do not use a sponge or a cloth, as these can leave behind dust, fluff, etc.).
- ➔ Make sure the media is flat and pull the liner off (not the face film off) at an angle of 30°.
- ➔ Wet the adhesive all over using the spray bottle.
- ➔ Place the film on the wet surface and wet it to make it easier to slide the squeegee without scratching the film during the application.
- ➔ Start squeegeeing at approximately 10 cm from the top edge, working horizontally with overlapping strokes from the centre outwards, to the left and to the right of the film.
- ➔ Apply enough pressure to squeeze out any water trapped between the adhesive and the substrate surface.
- ➔ Squeegee the last 10 cm of the top edge, working from the centre outwards, to the left and then to the right of the media.
- ➔ Continue to squeegee horizontally, moving from the centre outwards with overlapping movements.

- ➔ Check that no pockets of water have been trapped. If there are pockets of water, squeegee from the centre to the edge in order to squeeze them out. Wipe the vinyl and the edges.
- ➔ Check that no pockets of air have been trapped. If bubbles are still trapped and cannot be squeezed out to the edge of the film, you can punch a small hole with a needle and push the air out through it, starting from the edge of the bubble.

If “tiny bubbles” of air (diameter < 2 mm) become trapped, they will disappear after a few days due to the porosity of filmic media.

Advantages of the wet method:

- ➔ Allows films to be applied to surfaces in high ambient temperatures (>25-30C).
- ➔ Makes it easier to apply large sections of media on flat or slightly curved 2D surfaces.
- ➔ Allows the applicator to position the vinyl where required, avoiding air bubbles and folds.

2. Dry method:

Dry application is a safer application method, because the film reaches its final adhesion more quickly than when using the wet application method.

Small to medium applications:

- ➔ Place the media upside down on a flat surface and remove the liner along one edge for 2-3 cm.
- ➔ Fold the liner backwards, showing a 2-3 cm edge strip of exposed adhesive.
- ➔ Position the film that is still covered with the liner. Once it is in the right position, press the exposed adhesive into the substrate.
- ➔ Start squeegeeing at approximately 10 cm from the top edge, working horizontally with overlapping strokes from the centre outwards, to the left and to the right of the film.
- ➔ Squeegee the film while removing the liner at a distance away of approximately 15-20 cm.
- ➔ Apply enough pressure to squeeze out any air trapped between the adhesive and the substrate surface.
- ➔ Do not allow pleats or bubbles to be formed.
- ➔ Proceed with this application until the film is completely applied.
- ➔ Squeegee the last 10 cm of the top edge, working from the centre outwards, to the left and then to the right of the film.
- ➔ Check that no pockets of air have been trapped. If bubbles are still trapped and cannot be squeezed out to the edge of the film, you can punch a small hole with a needle and push the air out through it, starting from the edge of the bubble.

Large applications (hinge method):

- ➔ Place the media with the liner in the right position onto a flat substrate and fix edges firmly with some tape.
- ➔ Make a hinge perpendicular to the largest edge, allowing a maximum of 1m from the closest edge, using some tape.
- ➔ Fold the short side of the media on top of the other side, remove the liner as far as the hinge and then cut the liner off.
- ➔ Unfold the media back into position, and leave space between the film and the substrate to avoid unintended adhesion.
- ➔ Start squeegeeing firmly from the hinge centre, working with overlapping strokes from the centre outwards to the edges. Work the strokes parallel to the hinge.
- ➔ Repeat the same set of actions for the other section of the film.
- ➔ Check that no pockets of air have been trapped. If bubbles are still trapped and cannot be squeezed out to the edge of the film, you can punch a small hole with a needle and push the air out through it, starting from the edge of the bubble.

If “tiny bubbles” of air (diameter < 2 mm) become trapped, they will disappear after a few days due to the porosity of filmic media.

3. Vinyl Removal

In case of short-term advertising campaigns, self-adhesive media with removable adhesive can be used. The media can be removed without any difficulty at ambient temperatures (from +15 to +40°C), without leaving adhesive residue on most common surfaces.

In the case of media with permanent adhesives, removal should be done with heat:

- ➔ Heat the vinyl to a temperature of +70 to +80°C using a heat gun.
- ➔ Peel off the film gently.
- ➔ Chemical products for easier removal are also available. Follow the instructions carefully.

- ➔ Any remaining adhesive residue can be removed with a towel soaked in isopropyl alcohol, denatured petrol or an adhesive remover.

GENERAL REMARKS

To ensure application suitability:

- ➔ Always test the proposed construction under actual application and end-use conditions before going into full production.
- ➔ The removability of Mactac digital media may be affected by the following substrates: polystyrene, nitrocellulose painted surfaces and soft PVC. With such substrates, an increase of adhesion over time may occur and adhesive residue may be noticed upon removal.
- ➔ When exposure to chemicals, solvents or high pressure water hoses is envisaged, an edge sealant should be used in order to avoid penetration of these liquids.
- ➔ The following factors can change adhesion of the self-adhesive product:
 - ➔ Dust, dirt, grease, oxidation
 - ➔ Low tension surfaces such as polyethylene
 - ➔ Some materials such as polypropylene
 - ➔ Application below the minimum application temperature or use outside of the service temperature ranges must be avoided.

DISCLAIMER

All Mactac statements, technical information and recommendations are based on tests believed to be reliable but do not constitute a guarantee or warranty. All Mactac products are sold with the understanding that the purchaser has independently determined the suitability of such products for its purposes. All Mactac products are sold subject to Mactac's general terms and conditions of sale, see <http://terms.europe.averydennison.com>

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