Technical Bulletin 4.3

Guidelines on surface preparation, conversion and application of Mactac WW Series

The present Technical Bulletin provides detailed information on how to prepare, convert and apply Mactac WW Series products for indoor and outdoor applications.
For specific information on a product's properties please consult its corresponding technical datasheet.

WW Series films are coated with a High-Tack grey adhesive (except WW 200), ensuring a great level of opacity and good adherence on a wide variety of difficult substrates. Various textures, finishes and film properties are available in this portfolio, to suit a very broad range of applications. In order to ensure a successful application, please read carefully the instructions below.

REQUIRED TOOLS

To ensure proper application of the film, you will need the following tools:

➡ Mactac Fluids to clean the surfaces prior to application when appropriate.

➡ Hygrometer to measure the level of humidity of the substrate prior to application.

➡ Laser level and measure tape to ensure accurate positioning.

➡ Infrared thermometer to control surface temperature.

➡ Marking pencil for positioning.

➡ High tack masking tape.

➡ Felt squeegee or soft plastic squeegee with velvet strip in order to avoid damaging the film.

➡ Soft roller to ease application onto uneven or textured surfaces.

➡ Heat gun to ease seam finishings and conformable applications (application onto brick walls).

➡ Cutter with new blades and cutting guiding ruler.

➡ Mactac gloves to protect the film.

➡ Lint-free cloth for cleaning.

➡ Suitable brush and vacuum cleaner to remove loose coarse dust (brick walls and joints).

SURFACE PREPARATION

Proper cleaning and preparation of the substrate prior to application is critical for successful graphics. Even if they appear clean, all surfaces must be cleaned prior to application following the instructions below:

➡ Make sure the humidity level of the wall is acceptable (below 65% relative humidity).

➡ Clean away dust or any other residues with a brush (supported by a vacuum cleaner), a moisturized towel and a lint-free cloth.

➡ Use Mactac Cleaner to clean away grease, glue or any other residues from a previous application, or use detergent when appropriate.

➡ Dry the surface using a lint-free cloth or a clean paper towel that does not leave any small pieces behind before the Mactac Cleaner has evaporated.

➡ Molds, corrugations, edges and corners must be cleaned thoroughly with a moisturized lint-free cloth and may take longer to dry.

Prior to application, please ensure that the substrate is moisture free and that all surfaces have been thoroughly cleaned and completely dry. A smooth substrate texture is required for successful application. If necessary, it should also be properly primed, painted, and cured according to the instructions of the paint manufacturer in order to ensure the best results.

TYPE OF SURFACES AND PAINTS

It is important to understand the type of surface and/or paint the products will be applied onto, in order to ensure a successful adhesive bond with the substrate.

There is a wide variety of surface finishes and paints for indoor and outdoor applications, and this may influence adhesion performance, even causing failure if the surface is not compatible.

Below are the common types of surfaces and paints:

Common Surfaces:

➡ Plasterboard: a smooth finish, which has to be primed or painted.

➡ Raw concrete: slightly textured, with an unfinished surface or polished.

➡ Plaster: a smooth finish, which has to be primed or painted.

➡ Cement plastered: a slightly textured finish (but can also be a smooth surface).

➡ Bricks or cement blocks: slightly porous surfaces with joints.

➡ Stone tiles: a slightly textured finish with joints (but can also be a smooth surface).

Common Paints:

➡ Glossy: a smooth shiny finish, which provides a good homogenous surface.

➡ Semi-gloss: a smooth somewhat shiny finish, which provides a good surface.

➡ Eggshell: a smooth somewhat shiny finish, featuring water repellent properties.

➡ Flat or matte: a non-reflective finish with a slightly porous textured surface.

➡ Satin or low luster: a lustrous finish, not as porous as flat paints. Provides good adhesion.

Prior to application, please ensure that plaster, paint and other surface coatings are fully cured and dry according to the instructions of the manufacturer.

Although some paints cure and dry quickly, others may require a longer period prior to the application of the film depending on room temperature and humidity level. In cases where there is heavily textured surface decoration, this will reduce/limit the adhesive contact surface and affect proper bonding of the film to the substrate.

Surfaces and paints to avoid:

➡ Heavy textures: unfinished porous and heavily textured surfaces will affect adhesion level.

➡ Wallpapers: application of self-adhesive films onto wallpapers is not compatible.

➡ Chalking and sandy surfaces: the formation of powder on these surfaces will decrease the adhesion level, and failure of the applied film may occur.

➡ Latex paints: some components in Latex paints are not compatible with self-adhesive films and may cause adhesion failure.

➡ Matte paints: the matting agents used in these paints can negatively affect ultimate adhesion of the film. The porous textured surface of these paints can hold dust, making cleaning difficult. This may, in addition to the matting agents, influence adhesion performance.

The suitability of the film on matte or flat paints may be enhanced when treated with a compatible coating solution.

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➡ Low/zero VOC paints: paint manufacturers have been reducing the level of Volatile Organic Compounds by changing paint chemistry. Films applied onto these paints have shown low adhesion levels, and failures may occur.

➡ Silicon or Teflon based paints: these paints feature "easy to clean" and "non-stick" properties which are not compatible with adhesives.

Note: It is the user's responsibility to determine a film's suitability, prior to full production and application of graphics.

To ensure application suitability and substrate compatibility, always test the proposed construction under actual application and end-use conditions before going into full production.

PRINTING

Mactac WW Series films are designed for solvent, eco-solvent, latex and UV-curable inkjet wide-format printing. Always perform the whole printing job at the same time, using the same product batch number to avoid colour differences and any other deviations. For detailed information, consult the relevant product datasheet.

LAMINATION

WW Series films may be laminated according to the specific overlaminate combination. Textured products must not be overlaminated. For specific information on compatible combinations and overlaminate durability, please consult corresponding technical datasheets.

Note: It is very important to monitor temperature and tension during the laminating process. Using heat with extremely flexible products can easily cause the film to be stretched. Improper tension can also cause the film to elongate, causing defects after the combination has been applied to a substrate.

For specific settings or further information on printers and laminators, please consult the original manufacturer's technical manual.

For further information on printing and overlaminating, please refer to the Technical Bulletin 4.1 - "Mactac Digital TB 4.1 _Guidelines on handling, converting and applying Mactac Digital media".

APPLICATION METHOD

Only the dry method application technique must be used for the WW Series. This method should suit the size of the decorative feature to be applied and the complexity of the substrate to be decorated. Never apply the product below the minimum application temperatures given on the technical datasheet. It is also important to monitor the humidity of the room to ensure performance and durability of the film.

Prior to installation of graphics, make sure you follow the steps below:

➡ Ensure prints are completely dry and the inks fully cured.

➡ Unroll the graphics onto a clean, dust free and flat surface, allowing the material to relax and acclimatize to room conditions.

➡ Measure and verify the area that will be installed.

➡ Ensure that printed tiles have a bleed zone of approximately 20 mm, to ensure that a minimum 15 mm overlap is possible.

➡ Make sure that the graphics fit the area where they will be installed.

➡ Taking into account graphics size and shape, mark the tiles with some masking tape to show the installation position.

➡ Ensure that the first tile is straight, to avoid unwanted tilted graphics.

➡ Always apply the tiles working vertically.

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INSTALLATION

Small to medium applications:

➡ Place the media upside down on a flat surface and remove the liner along one edge for 10 cm.

➡ Fold the liner backwards, showing a 10 cm strip of exposed adhesive.

➡ Place the media in the right position and press the exposed adhesive into the substrate.

➡ Start squeegeeing from the top edge to the bottom, working horizontally with overlapping strokes from the centre outwards, to the edges of the film.

➡ Squeegee the film while removing the liner straight at a distance of approximately 20 cm.

➡ Apply enough pressure to squeeze out any air trapped between the adhesive and the substrate.

➡ Do not allow pleats or bubbles to be formed.

➡ 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 the edges firmly with some tape.

➡ Make a hinge horizontally using some tape, at a maximum of 1 m from the top edge.

➡ Fold the short side of the media on top of the other side. Remove approximately 50 cm of liner and then cut the liner off.

➡ Unfold the media back into position, and leave some space between the media and the substrate to avoid unintended adhesion.

➡ Start squeegeeing firmly from the top edge to the bottom, working horizontally with overlapping strokes from the centre outwards to the edges. Work the strokes parallel to the hinge.

➡ Remove the liner approximately 50 cm at a time, keeping it parallel in order to avoid deviation and unintended tension during squeegeeing.

➡ Apply the tile working with overlapping strokes outwards from the centre to the edges.

➡ Place the next tile with the liner in the right position, overlapping by 15 mm, and fix the edges firmly with some tape.

➡ Repeat the actions above with the next tile.

➡ Overlapping seams must be applied with the help of some heat and a roller to achieve optimal bond of the film and prevent lifting:

- Simple overlap seam: a minimum overlap of 15 mm is required from each side of the tile.
- Double-cut seam: a minimum overlap strip of 15 mm is cut in the middle, from top to bottom, in order to obtain 7.5 mm strips from each side of the tile. The detached stips must be removed. Reposition and apply the strip to achieve a smooth and clean finish.

➡ 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.

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Application of WW 100 Pro on brick walls:

➡ Install the product as outlined in the steps above, as required by the size of the graphics.

➡ Heat-up the film to between 35°C and 50°C, in small areas from left to right, using a heat gun.

➡ Firmly apply the film onto the bricks using a roller.

➡ Make sure you apply the film into the brick joints and recesses using a narrow roller. Re-heat the film if necessary to ease application. Do not apply the film onto recesses deeper than 5 mm.

➡ In order to avoid tension and allow the film to adopt the shape of the surface, it's mandatory to proceed with the post-heating technique as explained below:

- Re-heat all areas where the film has been applied into brick joints and recesses with a heat gun. Control the temperature with an IR thermometer, kept out of the airflow, to obtain <95°C.
- Keep the heat gun close to the film.
- Move the heat gun very slowly to stabilise ±20-30 cm of film at a time.
- Be careful to avoid local overheating, which may cause damage to the film.
- Let the material cool down prior to any cutting of edges or overlays.

➡ 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.

Trimming:

Areas around doors, openings, outside and inside corners of walls, and high traffic areas are susceptible to damage *Fig 1*.

To reduce the risk of damage and lifting, it is important to trim the film approximately 5 mm from the edges.

After application and trimming, it is necessary to squeegee the edges firmly to ensure good edge bonding and to prevent lifting.
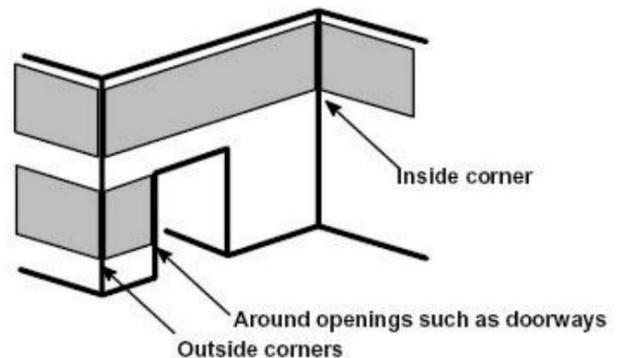

Fig 1

Overlapping technique:

An overlap is mainly used to merge two or more tiles together when a printed job is too large to be installed in one piece *Fig 2*.

WW Series films must be applied using an overlap of at least 15mm.

Due to the low initial tack properties of WW Smooth Paper, we recommend applying more pressure on the overlapping surface to avoid potential edge lifting.
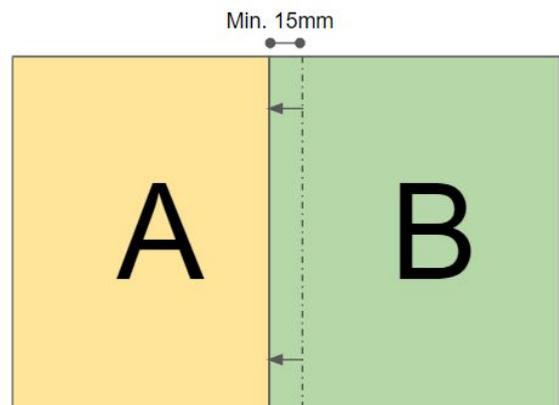

Fig 2

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REMOVAL

WW Series films (apart from WW 200) are not designed to be removable products. Permanent high tack adhesives are difficult to remove and have been designed to achieve a high level of bond onto various substrates. Removal of these films may cause paint delamination, plaster tearing and other damage to the substrate.

WW Series films may be removed with the help of some heat, by peeling off the material from top to bottom in small pieces at a time. Pull the film firmly keeping an angle of 60 to 90° between the substrate and the film.

GENERAL REMARKS:

- Always test the proposed construction under actual application and end use conditions before going into full production.
- Always use materials from the same batch number for each job. Complete the whole printing job at the same time to avoid colour differences and any other deviations.
- Due to the wide variety of paints, surfaces and finishes, no warranty is given for application or removability of WW Series products.
- It is the responsibility of the end user to ensure that all coated substrates have been processed and cured according to the original manufacturer's requirements.
- It is essential to follow a manufacturer's indications for surface preparation and for adequate drying/curing time prior to application.
- Failing to meet the paint manufacturer's requirements can lead to adhesion failures and unsuccessful applications.
- A substrate's appearance may change after the film is removed. This may happen due to improper cleaning prior to application, paint quality, exposure to heat and light, component migration in the paint, weathering or adhesive residue.
- Adhesive residue, paint tearing and other damage may be noticed upon removal due to the high tack permanent adhesive.
- 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 between the substrate and the adhesive.
- The following factors can change adhesion of the self-adhesive products:
  - Dust, dirt, grease and/or oxidation
  - Some low-energy surface materials such as polypropylene
  - Application below the minimum application temperature or use outside of the service temperature ranges (these must be avoided).

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