Technical Bulletin 4.2

Application Bulletin of JT 10700 Series and JT 10500 Series

The present Technical Bulletin provides detailed information on how to apply the Mactac JT 10700 Series and JT 10500 Series.
For specific information on products' properties please consult their corresponding technical datasheet.

JT 10700 Series are **cast products** which have been especially designed for 3D full or partial wrapping.
JT 10500 Series are **polymeric calendered products** which have been designed for compound and moderately concave and convex surfaces. The main characteristics of these series are the unique repositionability and ease of application features due to the advanced adhesive technology.

JT 10700 Series and JT 10500 Series has to be applied in the best possible manner in order to ensure that the product will perform as intended and designed.

REQUIRED TOOLS

To ensure proper application of the material, you will be needing the following tools:

- Mactac Fluids to clean the surfaces and remove adhesive residues prior to application.
- Heat gun to heat the material.
- Infrared thermometer to control surface temperature when post heating the material.
- Soft plastic squeegee with velvet strip in order to avoid damaging the material.
- Cutter with new blades for a clean cut.
- Mactac gloves to protect and ease application.
- Lint-free cloth for cleaning.

SURFACE PREPARATION

Even if they appear clean, all surfaces should be cleaned prior to application following the instructions below:

- Wash with soapy water, then rinse with clean water (do not leave any traces of soap on the surface).
- Clean away grease, any other residues and the more critical shaped surfaces such as corrugations, complex curves or more demanding surfaces with Mactac Cleaner.
- Dry the surface using a dry cloth or a clean paper towel that does not leave any small pieces behind-before the Mactac Cleaner has had a chance to evaporate.
- Rivets and seams must be cleaned with a cloth and may need longer time to dry due to trapped moisture in the complex areas.

Before starting application, ensure all the surfaces have been cleaned correctly and completely dried.

Painted surfaces must be completely dried and cured according to the instructions of the paint manufacturer to ensure best results and avoid improper adhesion of the material.
Make sure the paints are compatible with the substrate according to the OEM instructions to avoid paint lifting during the removal of the material.

APPLICATION METHOD

JT 10700 Series has a high degree of conformability compared to other Mactac products.
Although JT 10500 Series is recommended for vehicle decoration, the different nature of the two films requires to ensure the surface suitability prior to application.

Only the dry method application technique must be used.
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 according to the technical datasheet.

On 3D surfaces that require the media to be shaped and stretched (over rivets, corrugations, welded areas, etc.) only the JT 10700 Series must be used.
On compound and moderately concave and convex surfaces, the JT 10500 Series may be used with a finishing cut to avoid the material from lifting.

During the application, considerable tension is put on the material which is essential to release otherwise it may pop-out of the recess later.

LAMINATION

It is highly recommended to laminate JT 10700 Series and JT 10500 Series with LF 10700 Series in order to protect the prints against scratch, UV exposure and to ensure a longer durability to the graphics.

Please refer to "Technical Bulletin 4.1 Guidelines on handling, converting and applying Mactac Digital media".

Note: It is very important to monitor temperature and tension during the laminating process.

LF 10700 Series are extremely flexible and the use of heat could easily cause the film to be stretched.

Improper tension could also cause the film to elongate causing defects after the combination has been applied to a substrate.

LIMIT OF CONFORMABILITY

Although JT 10500 Series is a conformable product, it will not be suitable for the more challenging corrugated and convex surfaces.

In these instances the material may lift away/pop out.

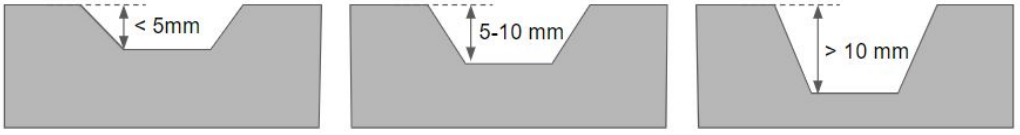
We therefore highly recommend to use the JT 10700 Series for difficult corrugations.

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

TYPE OF APPLICATIONS

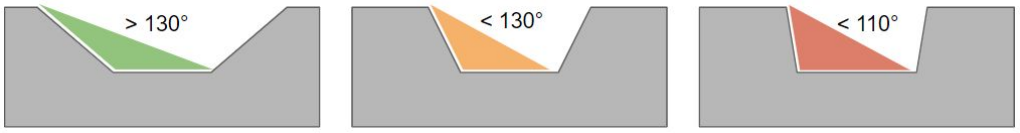
The following figures define the different types of surfaces that may have an influence on the conformability and complexity of an application:

1) **Depth of the recess.**



Easy recess | Moderate recess | Difficult recess

2) **Angle of the corrugation.**

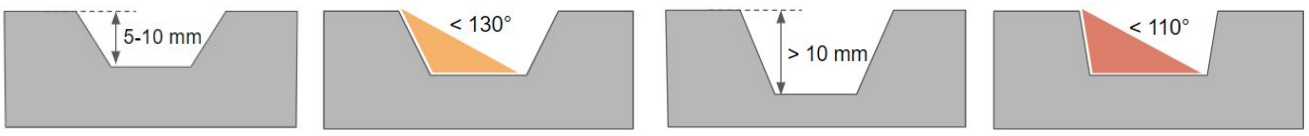


Easy angle | Moderate angle | Difficult angle

APPLICATION SURFACES: JT 10700 Series

Only the JT 10700 Series must be used for the complex applications.

The nature of the film, allows it to withstand stretch and a high degree of conformability to suit these types of applications as shown below.



Moderate recess and angle to Difficult recess and angle

(Please note all materials have an elongation / stretch limit that may vary drastically based on the specific corrugation being considered. Tests prior to wrapping are recommended to confirm specific suitability)

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Application with post-heating technique:

This hollow or bowl-shaped form implies that the material will be laid into a rounded or curved-in surface.

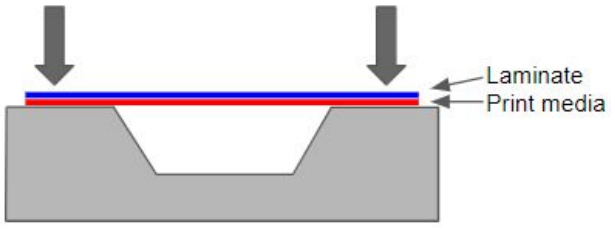

Fig.1

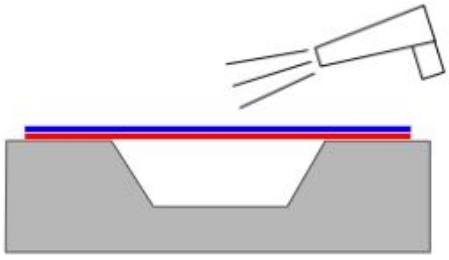

Fig.2

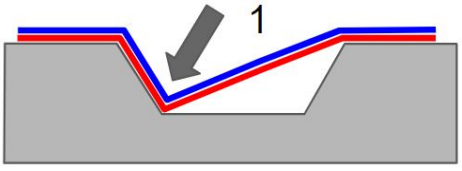

Fig.3

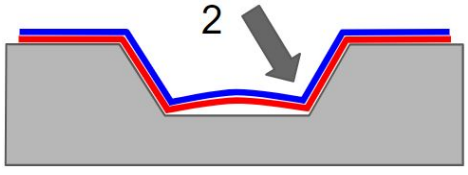

Fig.4

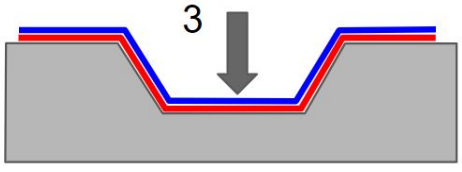

Fig.5

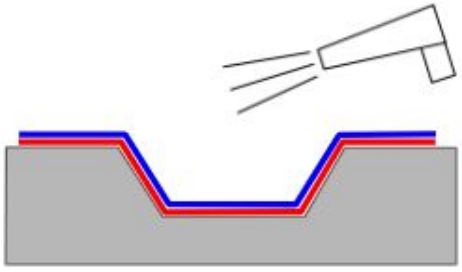

Fig.6

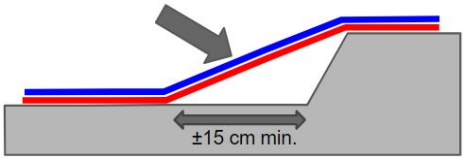

Fig.7

1) Position the film over the entire surface area and apply it on the surface with the help of a squeegee.
   Fix the edges firmly before applying the film into the corrugation. *Fig.1*

2) Heat the material between 35°C and 50°C to soften the film, thus making the inlay process easier. *Fig.2*

3) Press down using your fingers into the deepest part of the corrugation and take care to obtain 100% contact between the film and the surface. Heat any areas that have not yet come into contact with the substrate and gently follow the form with the fingers.
   The use of slightly wet hand gloves will make this process easier (always keep temperature between 35°C and 50°C during this step). *Fig.3*

4) Repeat the same application process to the second corrugation as seen above. *Fig.4*

5) Once the film comes into contact with the surface, press firmly using a plastic squeegee or the finger when appropriate. This point is essential to expel the trapped air under the material. If needed, puncture any air bubbles that appear. *Fig.5*

6) In order to cancel the 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 the areas where the material has been shaped with a heat gun and control the temperature with an IR thermometer, out of the airflow, to obtain <95°C on the surface.
- Keep the heat gun at a close distance from the material.
- Move the heat gun very slowly to stabilise ±20-30 cm of material.
- Be careful to avoid local overheating.
- Let the material and the surface cool down prior to any cutting of edges or overlays.
  Fig.6

IMPORTANT: When the application is done on a single corrugated surface, always respect a minimum distance of 15

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cm of non applied material in order to stretch it into the deep corrugation.

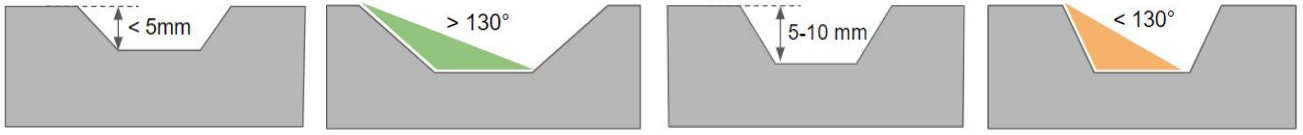
Replicate the application process as described above. *Fig.7*

APPLICATION SURFACES: JT 10500 Series

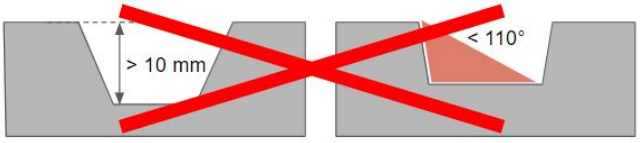
JT 10500 Series may be used for less demanding corrugations as shown in the figures below.

On compound and moderately concave and convex surfaces, the JT 10500 Series may be used with a finishing-cut technique to avoid the material from lifting.

During the application, considerable tension is put on the material which is essential to release otherwise it may pop-out of the recess later.



Easy recess and angle to Moderate recess and angle*



JT 10500 Series is not suitable for difficult applications as shown in this figure.

** with a finishing-cut technique to avoid the material lifting from recess.*

Note: If the depth and the angle of the corrugation do not ensure the suitability of JT 10500 Series, we highly recommend the use of JT 10700 Series.

The depth and the angle of a corrugation is not the only factor to consider an application, the chemical nature of the paint, the age of the painted surface and the aspect of the surface on which the material is applied will also have an influence on the adhesion performance of the material.

(Please note all materials have an elongation / stretch limit that may vary drastically based on the specific corrugation being considered. Tests prior to wrapping are recommended to confirm specific suitability

Application with finishing-cut technique:

JT 10500 Series should be applied using the same method as explained above but due to the nature of the film, it requires to use the finishing-cut technique when applied to moderately concave and convex surfaces otherwise the film may pop-out from the recess.

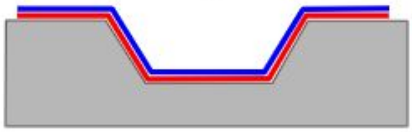


Fig.8

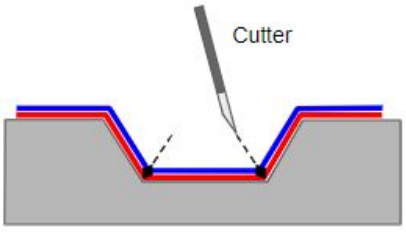


Fig.9

In order to cancel the tension and avoid lifting of the film from the recess, it is required to proceed with the finishing-cut technique as explained below:

- When the film is applied following the steps explained above, it is important to let the material and the surface to cool down prior to any cutting or overlapping. *Fig.8*
- With the help of a cutter, cut the edges where the material has built too much tension during application.
  Gently follow the form to obtain a straight and clean cut.
  This will release the tension and avoid the material from popping out of the recess. *Fig.9*

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IMPORTANT: When applying JT 10500 Series with a finishing-cut technique, it is important **NOT to re-heat** the material once the edges have been cut.

Riveted surfaces:

This small convex shaped form implies that the material will be stretched and laid onto a rounded or curved-out surface.

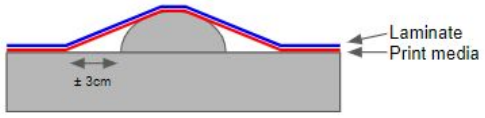

Fig.10

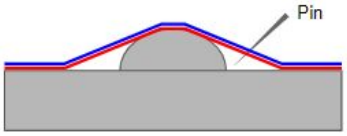

Fig.11

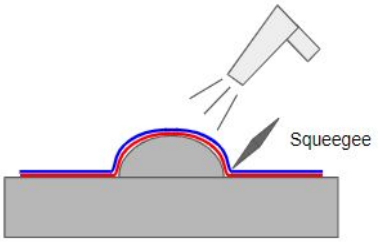

Fig.12

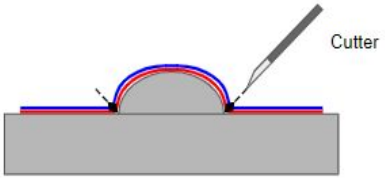

Fig.13

1) Position the film over the entire riveted surface, leaving a ±3 cm gap between the flat surface and the substrate around the rivets. *Fig.10*

2) Collect the bubbles around the rivet without putting the film out of shape. Prick a hole in the vinyl around the rivet and squeeze out any air trapped between the vinyl and the rivet using your finger. *Fig.11*

3) Press the vinyl down hard around the rivet using a plastic squeegee and a hot air gun. The applied temperature should be between 45 and 60°C. *Fig.12*

IMPORTANT: When using JT 10500 Series, it is recommended to finish off by cutting around the rivet using a cutter in order to release the tension otherwise it may pop-out later. *Fig.13*

REMOVAL

JT 10700 Series and JT 10500 Series can be removed using heat on most common surfaces.

Here below the steps on how to proceed:

1) Heat the vinyl to a temperature between 50°C and 60°C using a heat gun.
2) Peel off the permanent material in small pieces at a time. Pull the material firmly keeping an angle of 60 to 90° between the substrate and the film.
3) Any residue of adhesive can be removed by using Mactac Remover and a lint-free towel.

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