

Technical Bulletin: CAR WRAPPING, printing & application guide.

1. Product Availability

The following products are being offered for car wraps:

JT 5529 P/PM for full 3D applications, convex and concave.

JT 5599 P

JT 5529 MBF a bubble free product on application: dry application at its best!

JT 5129 PM for flat & convex surfaces, short term.

For more product information, please have a look at the corresponding technical data sheets.

Technical Data Sheets can be found on our web site: www.mactac-europe.com or can be obtained from our National Sales Organisations worldwide or from our Distributors.

2. Precautions for printing JT5000 films

Point 1 : Always **use** the corresponding media-printer-ink-rip **ICC profile** before starting a print job. Media profiles can be found on our website www.mactac-europe.com , section Media Profiles and Printer Settings Library, or through our Partners : OEM's and Distributors.

Point 2 : Don't take shortcuts when drying graphics!

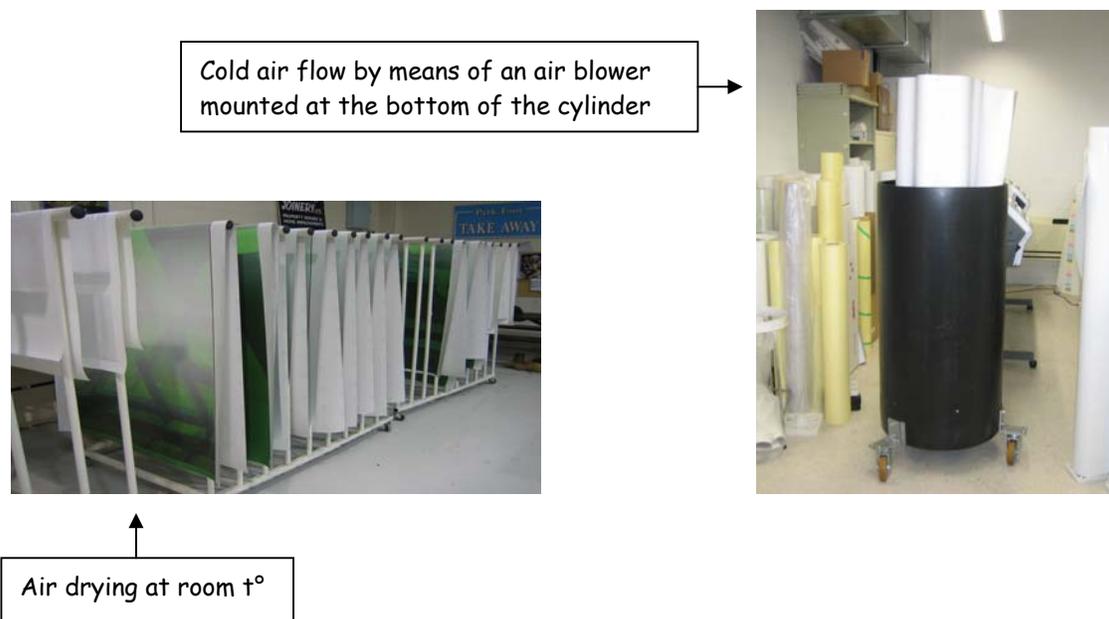
*Solvents cause the graphic to become soft and stretchy and the adhesive may become too aggressive.

This may result in edge curling, shrinkage, media lifting from the substrate and adhesive transfer.

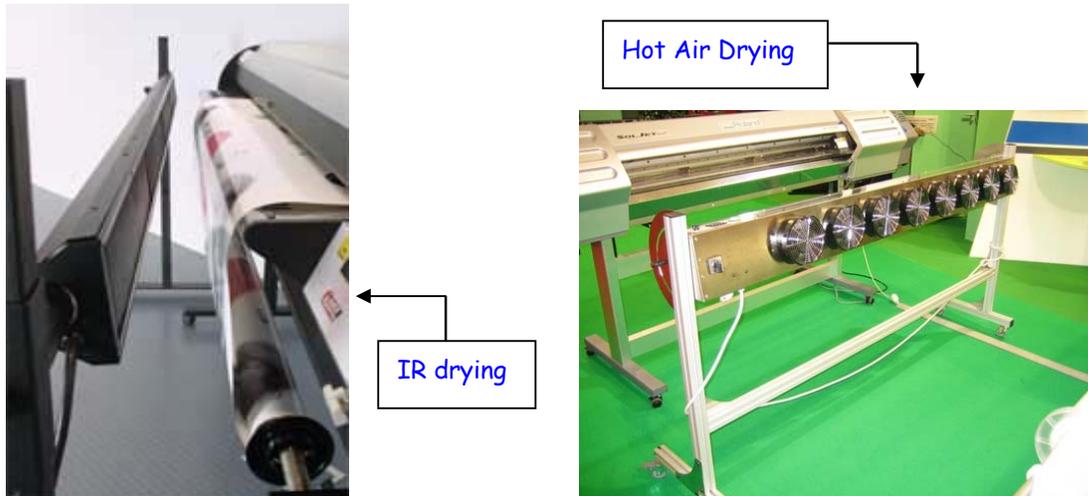
*It is recommended to use an auxiliary dryer or air drying for at least 48h.

*Extended air drying **MUST** be considered on the UNROLLED graphic if total ink coverage is 300% or more.

*Solvent retention may significantly affect post-printing operations & handling!



Additional drying equipment:



3. Protecting the print before Application

Prints must be protected before application on the car body.

Why overlaminate?

Effect - Gloss sharpens colors and contrast, Matt softens colors and contrasts, good at hiding imperfections, good for interior applications as it minimizes glare of in-store lighting.

Protection - Protects print from scratches, chemicals and graffiti.

Durability - Some overlaminates contain UV inhibitors and protect inks against color fading.

Application - Make prints more rigid, easier to apply.

Liquid lamination can be an option in some specific cases but is more limited for long-term protection and durability.

4. Substrate Preparation

There are several kinds of surface contamination:

-Organic Contaminates : dirt, bug splatters, bird droppings, tree sap, spilled food, etc.

-Petrochemical Contaminates : (petroleum based): wax, road tar, grease, oils, gasoline, water pollution, etc.

-Atmospheric pollution

And therefore, even if they appear clean, substrates must be cleaned:

- **Step 1** Wash area with soap and water.
- **Step 2** Clean the area with a petrochemical based solvent cleaner : Isopropyl alcohol is a good choice. Use a soft *clean* towel.
- **Rivets and Seams need to dry!**
 - Trapped moisture in these complex areas take much longer to dry.
 - Heat from an Industrial Heat Gun can speed up the process.

5. Applying the Graphics

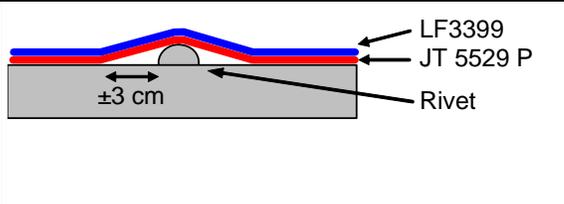
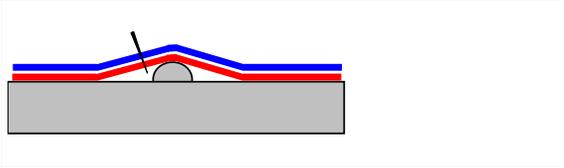
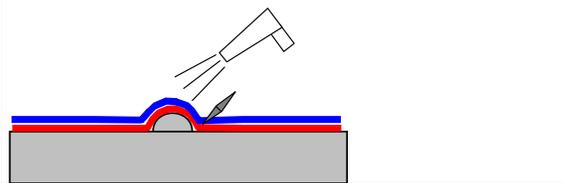
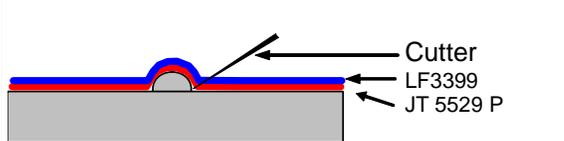
For car wraps or any other full three-dimensional surface, only the dry application method must be used. Dry application is a safer application method because the Graphic reaches its final adhesion more quickly than if water & soap would be used.

With bubble free products (MACTac BF series), given the low initial surface contact, the dry application method is a must! In this case, tiny entrapped air bubbles can easily be removed by pushing out the air with the thumb or a soft squeegee.

Never apply a Graphic below the minimum application temperature (indicated on the Technical Data Sheets). Cars, vans or trucks should be decorated inside to ensure correct application and adhesion build-up of the Graphic on the vehicle before it is released into the Traffic.

5.1. Three-dimensional surfaces : rivets

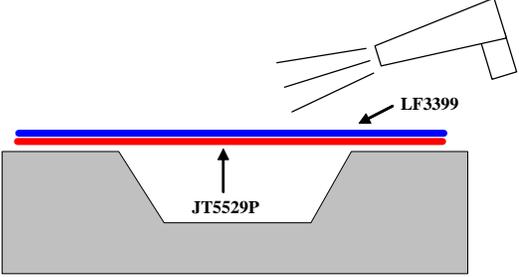
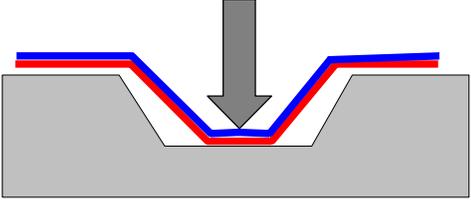
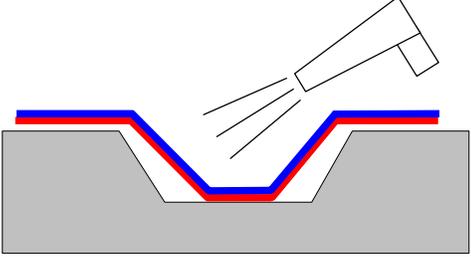
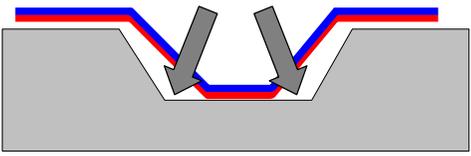
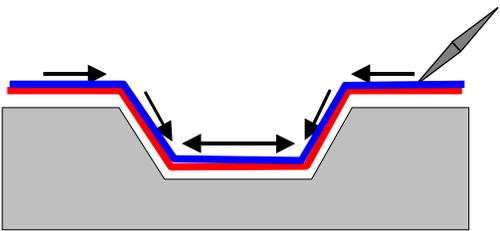
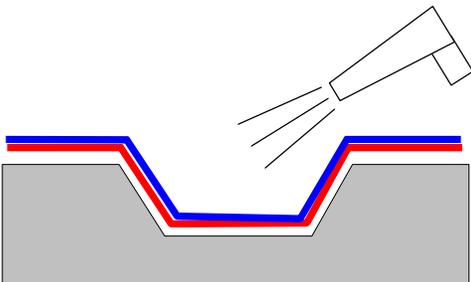
Products : JT5529P/PM or JT5529MBF, **do not use JT5129PM.**

| | | |
|----|---|--|
| 1. |  | Apply JT5529P, using the dry method described earlier, to the whole area of the surface of application, leaving a ± 3 cm gap between the vinyl and the substrate, around rivets. |
| 2. |  | Collect the bubble around the rivet without putting the vinyl out of shape. Prick several holes in the vinyl around the rivet. |
| 3. |  | Squeeze out any air trapped between JT5529P and the rivet using your finger. Press the vinyl down hard around the rivet using a plastic squeegee and a hot air blower (air temperature of $\pm 300^{\circ}\text{C}$). |
| 4. |  | Finish off by cutting JT5529P around the rivet using a cutter. |

Remark : Using BF series instead of the 'classic' self-adhesive car wrap film, increases productivity during the application job. The micro-structured repositionable adhesive system allows the installer to remove and re-apply the decals during the job. It is possible to press out small entrapped air bubbles with ease! **A real time saver on the application job.**

5.2. Three-dimensional surfaces : corrugations

Products : JT5529P/PM or JT5529MBF, **do not use JT5129PM.**

| | | |
|----|---|---|
| 1. |  | <p>Heat the LF3399 + JT5529P films with an industrial air gun (air temperature: 250°C). The vinyl itself must reach a temperature of $\pm 60^{\circ}\text{C}$.</p> <p>At this temperature, the adhesive will be "activated". This will help to reach 100% of its sticking capacity to the surface.</p> <p>NB: Take care not to burn the vinyl. Use quick movements with the industrial air gun, keeping it ± 20 cm away from the vinyl.</p> |
| 2. |  | <p>Press the vinyl into the corrugation using your finger.</p> |
| 3. |  | <p>Heat any areas that have not yet come into contact with the substrate.</p> |
| 4. |  | <p>Press down once more using your finger.</p> |
| 5. |  | <p>Once the vinyl comes into contact with the surface, press firmly using a plastic squeegee.</p> <p>This point is essential to increase initial adhesion of JT 5529 P and to avoid lifting. Prick any air bubbles that appear.</p> |
| 6. |  | <p>Once 100% of the vinyl is in contact with the surface, heat it one last time (air temperature: 600-650°C, distance 4-5cm). This reinforces the initial adhesion.</p> <p>The decoration should not be exposed to temperatures lower than 10°C during the first 3-4 hours.</p> |

5.3. IMPORTANT REMARKS:

1. Limits to the elongation properties of JT 5529P/PM, JT5529M BF:

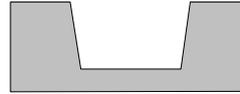
Depth of the corrugation:



Easy application

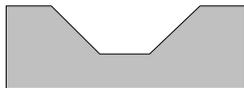


Difficult application

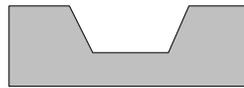


Very difficult application

Angle of the corrugation:



Easy application



Difficult application



Very difficult application

2. **The chemical nature and the surface tension of the paint system** used on the substrate will influence the final adhesion.

3. **Age of the paint:** the older the paint, the better the adhesion.

4. **Paint surface aspect** (smooth, rough).

6. Cleaning vehicles

To best preserve vehicle graphics throughout a campaign, the ideal way to clean is by hand with a sponge. However, it is not a problem to clean a car decorated with MACtac films through a brush or brushless car wash.

Some guidelines should be followed to decrease the risks of damage or lifting:

- Ensure all edges are properly squeegeed down
- Wait at least one week after application before cleaning. This gives the adhesive time to reach its ultimate adhesion value

The brushless car wash presents more of a danger to graphics. In this case:

- the water temperature should not be too high (ideally 30-40°C). Too high a temperature will reduce adhesion.
- the distance between the cleaning machine and the graphic should be higher than 60 cm,
- the pressure should be 100-120 bars as too high a pressure could lift the graphic
- the water jet impact angle **must** be higher than 45° If you attack the edge of a graphic with high pressure and with a small angle, you have a high risk of getting edge lifting with any self adhesive product



7. Removal of the vinyl

Some vinyl films exhibit higher adhesion end values to the substrate than others or may age in a different way. This aging phenomenon also depends from the type & age of the paint/varnish from the car body.

Therefore special care must be taken when graphics are removed:

- 1° Heat the vinyl to a temperature of 70-80°C using a hot air blower (air temperature of $\pm 300^{\circ}\text{C}$).
- 2° Peel off the film in small pieces. Do not try to remove in one piece just by pulling the film or by using excessive tension.
- 3° Eventually use chemical products for easier vinyl removal as readily available in shops.
Follow the manufacturer's instructions carefully.
- 4° Any residue of adhesive can be removed by rubbing with a towel soaked in isopropyl alcohol, denatured petrol or a shop-bought "adhesive remover".