



SET-UP & DECORATING INSTRUCTIONS



GRAPHICS STORAGE CONDITION REQUIREMENTS

Prior to application, GRAPHICS must be stored in climate controlled environment as follows:

GRAPHICS should not be pressed or stacked upon. GRAPHICS should be stored at a temperature between 10°C - 35°C / 50°F - 95°F, and should not be stored in direct sunlight or high humidity. Partially used GRAPHICS rolls need to be re-rolled tightly and taped in place after initial use. Store in a box with an airtight lid if possible.



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Applying Polyfuzze Graphics™ to PP and PE components is similar to hot stamping and heat transfer decorating. The combination of pressure, temperature and dwell is required to transfer an image from a carrier to a part. These three components are interdependent and a change in any one of them, may affect success or failure in the application process. Unlike standard heat transfers and hot stamp foils, Polyfuzze Graphics™ do not have any ink or adhesives used in their composition.



1) PRESSURE

The Polyfuzze Graphic™ requires a minimum of 75 lbs. per square inch of pressure. This is a lot lower pressure requirement than hot stamping and heat transfers. This pressure must be solid without the part deflecting or moving and must be even across the decorating surface.

The **Pressure** required for an application can be determined using the following guidelines:

Example: Artwork Size = 4" x 6" or 24 square inches
24 sq. in. x 75 PSI = 1,800 pounds
2000 (pounds per ton) = 1 ton of force required



2) TEMPERATURE

The Polyfuzze Graphic™ requires an application temperature of 445-460°F. This is a lot higher than the temperature required for hot stamping and heat transfers. This is the temperature that we require at the die face which may put the temperature control setting around 540°F. This is for cold parts. Hot parts will require a lower temperature depending upon the part temperature.



3) DWELL TIME

The time that the die is in contact with the Polyfuzze Graphic™ and the part. This depends on the temperature of the part and the die. **This time can be from 0.5 to 1.5 seconds.**

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4) PART SUPPORT FIXTURES

Part Support Fixtures are required to secure and hold parts while being decorated, support the stamping area and locate/position part for repeatability. Support fixtures should be manufactured to be user friendly and easy for automation or an operator to load and unload parts.

Fixtures are manufactured out of various materials as dictated by the part shape, substrate, size and support requirements. The fixtures should not allow for any deflection in the part while pressure is being applied. Any movement in the part does not allow for even, consistent pressure. The support area must be larger than the die area to ensure the edges bond properly. The fixture should have a 1/2" minimum larger support per edge than the die size.



5) SILICONE RUBBER DIES

Silicone Rubber Dies are used to apply Polyfuzze Graphics™. Silicone rubber dies are available in flat and contoured configurations for diverse applications. We do not recommend the use of dies made from aluminum, brass, steel or rubber glued to any of these surfaces.

The die material should be 80 durometer silicone rubber with a 0.120" relief (a 0.090" relief will suffice). The die should be 1/8" larger than the graphic on all sides. We recommend Thermasil® silicone rubber (or equivalent to Thermasil®) as it has excellent fire resistance properties. Also, it will withstand temperatures in excess of 275°C/527°F.



6) STRIP DELAY or HEAD-UP DELAY

Strip Delay or Head-Up Delay is a feature on most application presses that can be turned on and off. Application of Polyfuzze Graphics™ will need this feature turned on and timers set properly. There are two timers to this feature, the HEAD-UP and

the HEAD DELAY. The HEAD-UP timer is normally set to a value below one second. This timer starts after the dwell timer counts down, then the HEAD-UP timer starts to count allowing the heated die to raise off the part but allowing the carrier to stay attached. This will allow the carrier to have even cool air flow around it and strip off the part with an easy clean motion. The HEAD DELAY timer is a time value for how long the head stays above the part allowing the air to cool the application. When the carrier peels off in one consistent motion the gloss left on the part is even across the decorating surface. When the carrier peels off in sections you will see peel lines with changes in the gloss level which is not desirable.



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BEFORE YOU START STAMPING

- 1) Make sure the face of your silicone rubber die is at least 450-460°F and clean from all debris.
- 2) Make sure your tooling is lined up with the application die and everything is bolted tight.
- 3) Make sure the Polyfuzze Graphics™ are tracking straight through the press. The stripper rollers should have the film approximately 1/2” below the die face.
- 4) Make sure the right air pressure is set for the size of graphic that you are stamping.
- 5) Set dwell time and make sure the HEAD-UP delay is on.
- 6) Check all safety devices on the press.

Remember: When molding a plastic part, the molding press must lock up solid to make a good part. The same is required when decorating that part, it must be fully supported and solid.

DETERMINING WHAT IS A GOOD APPLICATION

To determine if the graphics have been applied properly there are a few tests that can be done after the part cools.

- 1) **Visual Inspection.** Was all of the graphic applied and is it straight with no wavy lines? Do you see an impression from the die showing the melt line around the graphic? This is our Quality Control mark. When you see this mark you know that the graphic is fused into the part.
- 2) **Touch Test.** Run your finger across the graphic. Does it feel like it is on top of the plastic? Polyfuzze Graphics™ are designed to fuse into the plastic. The surface should feel smooth depending on the base material.
- 3) **Scratch Test.** If the graphic scratches off easily with a fingernail, it isn't fused. However, if you dig at it to remove it, and damage the part in doing so, it's fused.
- 4) **ASTM D3359-09 Crosshatch Tape Test.** Score the graphic with a knife into 1/8” squares. Apply Scotch 893 tape over the crosshatch pressing firmly. Peel the tape off perpendicular to the graphic and inspect for any graphic on the tape.

For any additional help or concerns in starting your Polyfuzze Graphics™ decorating, please contact Jason Brownell, VP, Polyfuzze Graphics™ Corporation at (928) 634-8888 x156.