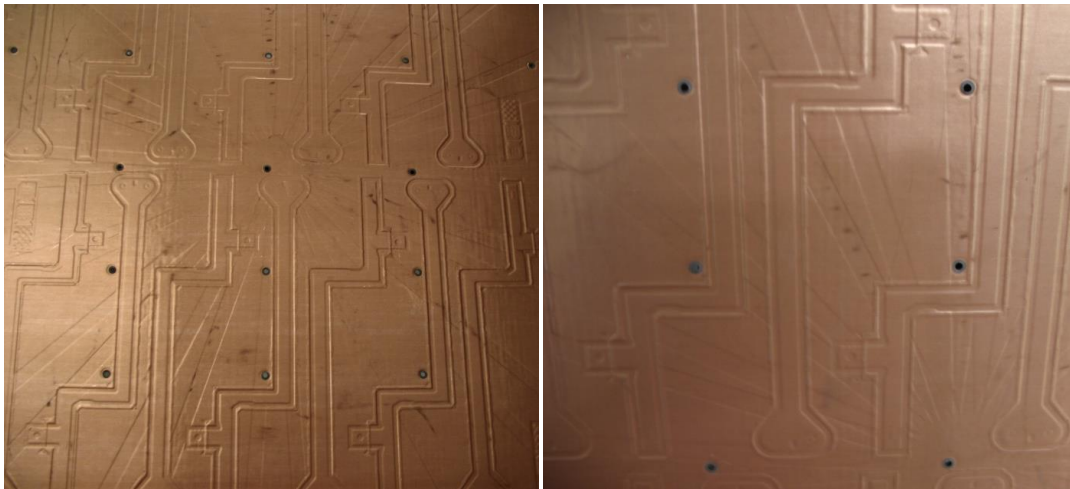


New Product Development Bulletin

September 25, 2015

CONFORMAT - a conformal drill sheet for drilling PCB's with image transfer

These photographs show a flex panel with excessive image transfer that would ordinarily require special handling in the drill room, taking approximately 20 minutes to setup per panel.



All of the low or thin areas on this panel will have significant burring on the exit side of the panel, requiring time consuming rework and possible scrap due to damaging the drilled hole.

Examples of this panel drilled with CONFORMAT and without CONFORMAT:



With CONFORMAT

Without CONFORMAT

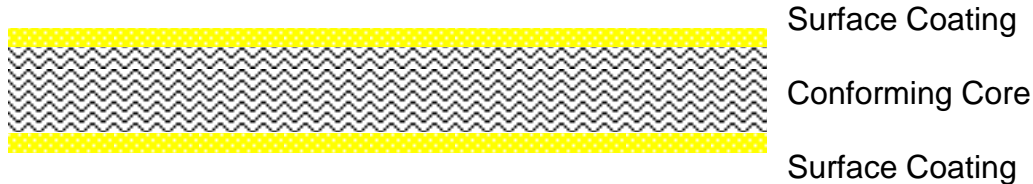
The panel without CONFORMAT requires sanding and hand rework. The panel drilled with CONFORMAT requires no rework and can move directly to the next process.

Following pages show the steps to use CONFORMAT in your process. LCOA will assist you in the initial trials of this product.

What is CONFORMAT?

CONFORMAT is a conformal drill sheet that can shape itself to various topographies that may be present in a multilayer or rigid flex PCB. This keeps the Back-up in intimate contact with the surface copper, reducing burrs.

This product is a 3 layer composite.



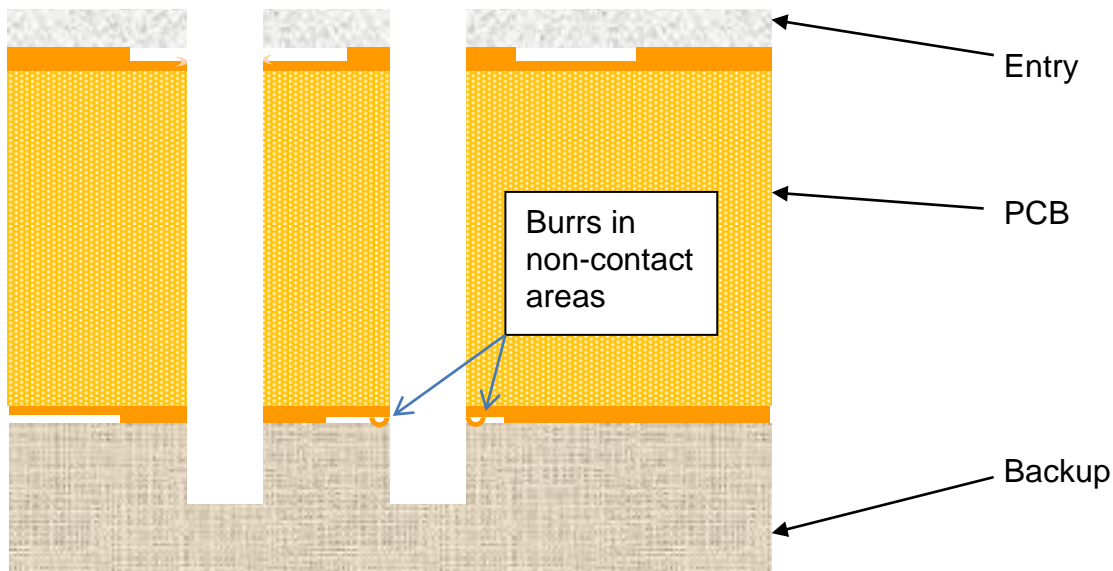
CONFORMAT will not melt, smear or otherwise contaminate the holes in the PCB.

CONFORMAT is approximately 0.025" thick and can absorb approximately 0.012" of thickness variation in the PCB. CONFORMAT is used on top of conventional Back-Up. It is shaped in a step prior to drilling.

Drilling PCB's with Image transfer without CONFORMAT

Circuit boards that are not flat and uniform present some challenges. This is especially true with rigid/flex constructions. The non-uniform topography that comes with image transfer will prevent contact with the back-up material in some locations. As the drill penetrates these areas, there will be zero burr suppression. This could lead to rework and possibly scrap.

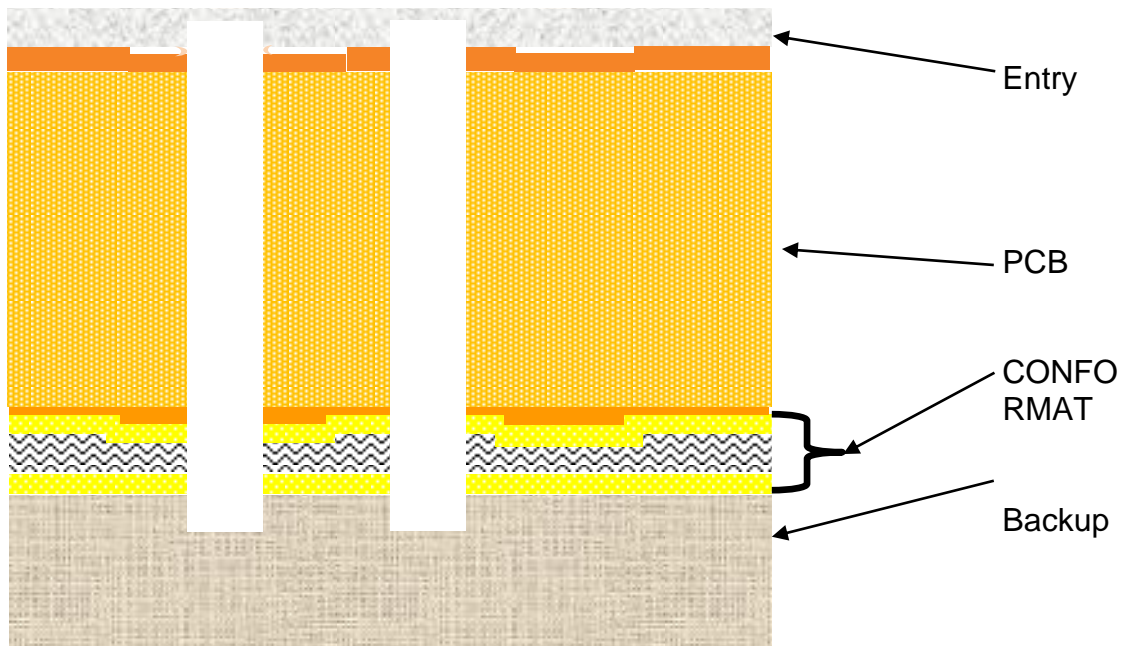
Below is a typical example of the problem when a PCB has a significant problem with image transfer and CONFORMAT may be able to help. The entry material can flex a little and the top side of the PCB typically does not have a burr problem.



Using CONFORMAT between Backup and PCB with image transfer

CONFORMAT does not need much heat or pressure however; it does need to be shaped to the PCB. Before drilling, the CONFORMAT sheet is secured to the PCB and shaped either using a lamination press or an HRL laminator. This should reduce or eliminate many of the burrs.

Type of backup material will depend on the other needs of the particular PCB construction. (i.e. fracture control with SlickBack). Burr suppression on a non-flat PCB surface is the reason to use the CONFORMAT sheet.



This will reduce or eliminate many of the burrs related to this problem.

Important considerations

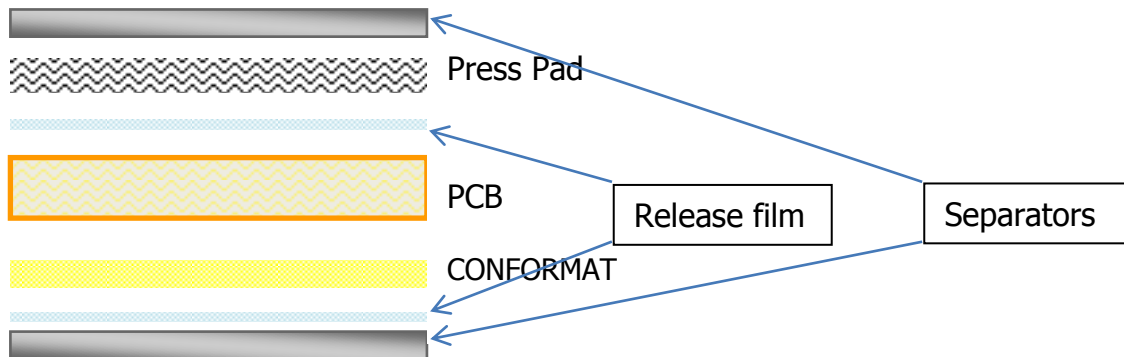
CONFORMAT will add approximately 0.025" of thickness to the overall drill stack height, so this must be planned for. CONFORMAT compression is limited to a certain percentage of its thickness, so very bad image transfer (>0.012") may not benefit as much.

The shaping process cannot happen at low pressure and at room temperature. There are two methods of shaping the Conformat to the PCB. 1) Shaping in a lamination press or 2) Shaping using a HRL (Hot Roll Laminator)

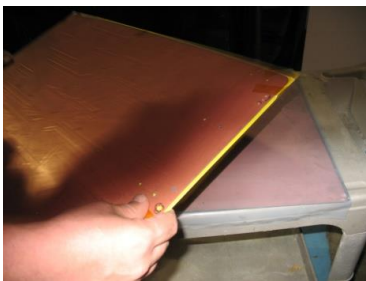
1) Press Shaping of CONFORMAT – Process steps

IMPORTANT: Once the CONFORMAT is shaped to a particular PCB, it must stay with, and in position until after drill. **CONFORMAT must be secured to the panel with tape or other adhesive.**

1. Size the CONFORMAT sheet equal to the size of the PCB.
2. Cut or punch the CONFORMAT to clear the PCB tooling holes used for drilling.
3. Tape the PCB down to the CONFORMAT sheet with thin, double sided tape or wrap tape around the corners of the panel and CONFORMAT.
 - a. Press the PCB into the CONFORMAT to shape it.
 - b. Platens at 200 to 250°F
4. The PCB does not have to reach this temperature
5. Lay-up with clean separators and release film on both sides.



6. Press @ 200 PSI for 10 minutes.
7. Carefully remove the PCB and CONFORMAT package making sure they stay together and in intimate contact. **Do Not Bend**



Assembled PCB/CONFORMAT before press



Release film on the PCB



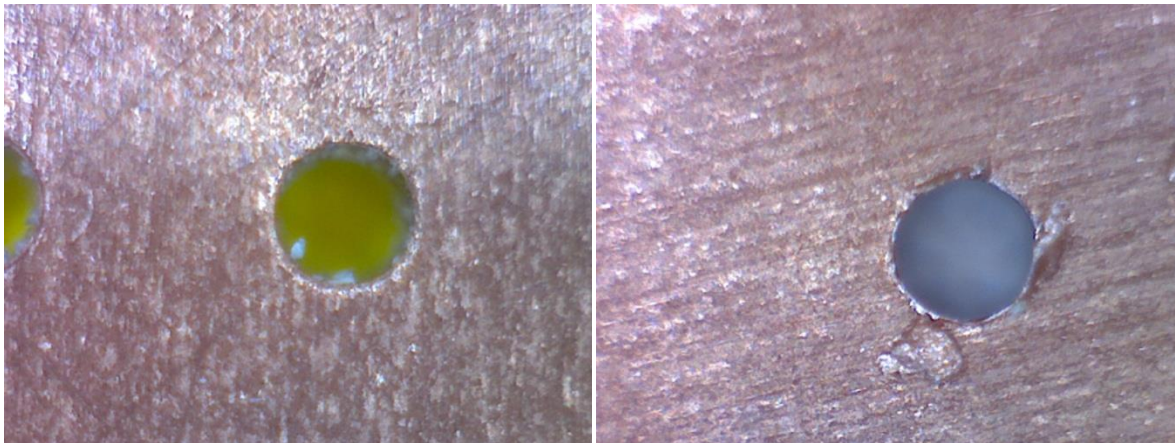
Remove books after press and cool

Drilling CONFORMAT

1. Once at room temperature, place the PCB/CONFORMAT package on the drill table on top of the backup.
2. Drill the PCB/CONFORMAT panel. Remember to account for the thickness of the CONFORMAT. You want to drill through the CONFORMAT, into the normal backup material.
3. Remove the CONFORMAT and inspect exit side.



CONFORMAT after press and drill



Hole drilled with CONFORMAT at 100X magnification Hole drilled without CONFORMAT at 100X magnification

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