METHODS FOR APPLYING CONFORMAL COATINGS:

WHICH IS BEST FOR YOUR PROCESS?

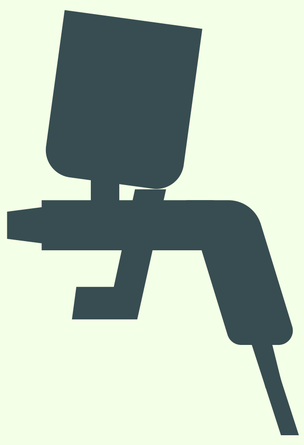
There are multiple ways to apply conformal coatings to printed circuit boards.
But not all of them are created equal. Use this special guide
to determine the best method for your particular needs.

BRUSHING

- Best suited for short-run, prototype, and touch-up after repair/rework
- Also works for high-topography assemblies
- Low-cost initially, but difficult to achieve uniform coverage

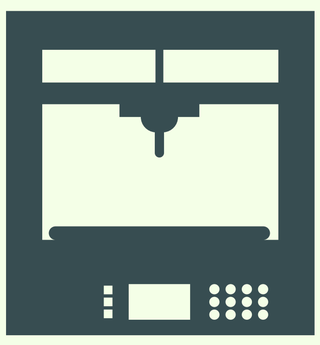
CURTAIN COATING

- Material falls continuously as the board passes underneath on a conveyor
- Good for coverage on complex shapes and low-volume production
- Viscosity should be closely monitored



MANUAL SPRAYING

- Fastest method for applying conformal coatings
- Stable viscosity with reliable, consistent results
- Masking is required, but implementation costs are reasonable



AUTOMATED

- Designed for repeatability
- Suited for medium-volume applications
- Can be applied for in-line operations with curing

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METHODS FOR APPLYING CONFORMAL COATINGS:

THE PROS & CONS OF BRUSHING

The simplest form of application, this method uses a manual brush to apply the coating to the circuit board. It requires agility and care.

PROS

- Very simple
- Low start-up cost
- Can protect against airborne foreign object debris
- Minimal masking required

CONS

- Difficult to control uniform thickness
- Increases risk of bubbles and voids
- Brush bristles can be a cause of foreign object debris
- Brushes can push coating under parts
- Not practical for high-volume production
- Results can vary depending on operator experience

RECOMMENDED FOR

- Prototypes
- Touch-ups
- Repairs
- Small parts
- Low-volume / high-mix production

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METHODS FOR APPLYING CONFORMAL COATINGS:

THE PROS & CONS OF CURTAIN COATING

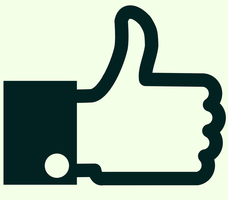
This method uses an uninterrupted curtain of coating material that falls onto the circuit board. It can be manual or automated.

PROS

- Even coverage
- Relatively inexpensive
- Material can be collected and reused
- Uncomplicated design

CONS

- Material can be affected by temperature and humidity
- Coating viscosity must be monitored
- Collection reservoir can become contaminated, causing defects
- Masking and preparation is required



RECOMMENDED FOR

- Complex shapes
- Smaller parts within assembly
- Low-volume production

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METHODS FOR APPLYING CONFORMAL COATINGS:

THE PROS & CONS OF MANUAL SPRAYING

The most popular and fastest method of applying conformal coatings. With the proper technique, this method can produce reliable and consistent results.

PROS

- Simple system
- Material viscosity is very stable
- Reasonable cost
- Can provide better coating on high-topography assemblies
- Good for 3D assemblies (with proper training)
- Easy to move the nozzle back and forth for better coverage

CONS

- Hard to control the material thickness
- Excess material is wasted or lost in the process
- May require multiple coating/curing cycles
- Masking is required
- Harmful vapors need to be contained
- Requires a disposable backing, which may cause foreign object debris or hazardous waste

RECOMMENDED FOR

- Reworks
- High-topography assemblies
- Difficult 3D assemblies

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METHODS FOR APPLYING CONFORMAL COATINGS:

THE PROS & CONS OF AUTOMATED SPRAY DISPENSING

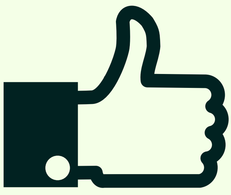
Automated Spray Dispensing is ideal for complete topside surface coverage. Thickness will be affected by the feed system, nozzle speed, temperature of the material, and atomization pressure.

PROS

- Repeatable process
- System is not complicated to program
- Can be applied to in-line operations with curing

CONS

- May require masking
- Material waste/loss
- Excess over-spray and harmful vapors must be contained or exhausted
- Longer cycle time
- Requires slightly more maintenance
- Difficult to coat under components



RECOMMENDED FOR

- Complete topside surface coverage
- Medium- to low-volume production
- Projects where repeatability is required

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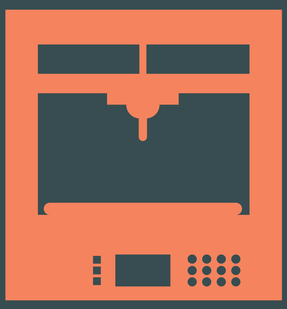
METHODS FOR APPLYING CONFORMAL COATINGS:



THE PROS & CONS OF AUTOMATED SELECTIVE DISPENSING

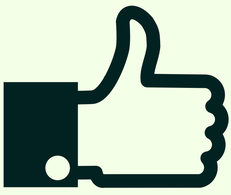
While Automated Selective Dispensing may be more expensive than Automated Spray, it is the fastest and most reliable method for applying conformal coatings.

PROS

- Repeatable process for functional topside surface coverage
- Eliminates the need for masking
- Limited material loss
- Shortened cycle time
- Can be applied to in-line operations with curing

CONS

- Not ideal for side coverage
- Higher systems cost than spray application
- System more complicated to program than spray applications



RECOMMENDED FOR

- Moderate to high-volume applications
- Functional topside surface coverage
- Projects where repeatability is required

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