

ALPHA[®] PRECISION MILLED STENCILS

Multi-Level Stencils for Screen Printing

DESCRIPTION

ALPHA Precision Milled, Multi-Level Stencils are printing stencils on which there are areas of multiple thickness present, allowing optimized control of print deposits necessary when assembling boards containing a wide variety of component sizes.

Typically referred to as Multi-Level or Step Stencils, **ALPHA Precision Milled Stencils** are created by first analyzing the volume requirements, identifying areas of the design where local thickness changes will produce better printing performance, and then accurately machining these areas using proprietary tooling and set-ups to achieve the optimum thickness to produce the correct sized deposit.

ALPHA Precision Milled Stencils allow greater flexibility in the transition from one thickness to another and improved surface quality, compared to technologies currently used to create Multi-level stencils.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

FEATURES & BENEFITS

Features

- Controlled, smooth transition from one level to another
- Surface roughness values in the steps similar to the main stencil – finer than chemical etching

Benefits

- Less paste smearing
- Less material extruded onto stencil underside – reduced stencil wiping frequency
- More repeatable printing process
- Lower print pressure required compared to etched step stencils
- Enables use of Multi-Level stencils on closed-head printing systems
- More flexibility in the design of “Keep Out areas” enabling more efficient use of PCB area

APPLICATION GUIDELINES

Step-Up Areas

Used to increase the volume and height of the solder deposit. This gives engineers options to provide solutions to:

- Poor joint reliability, caused by insufficient paste volume
- Use “Pin in Paste” printing for through hole components, e.g. edge connectors
- Overcome issues associated with coplanarity consistency such as head-in-pillow & non-wet-open

Step-Down Areas

Used to reduce the volume and height of the paste deposit.

- Improves Deposit Volume Repeatability in fine line and micro package attachment.

Step-Relief Cavities

Used to overcome board surface irregularities such as raised pads, vias, legends such as bar codes and edge clamping issues.

These features also afford relief for paste print deposits in two step stencil printing processes where the use of a thin stencil is followed up by a thicker stencil in order to achieve multi height deposits.

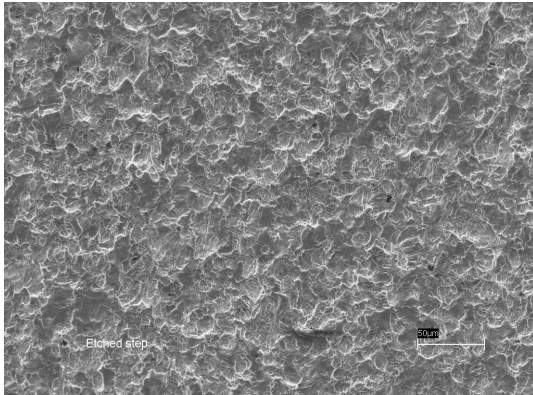
Printing on PCB’s with multi depth cavities

Provides process options that allow successful printing performance on PCB’s where local areas of the PCB have cavities and require paste to be applied at different Z- heights.

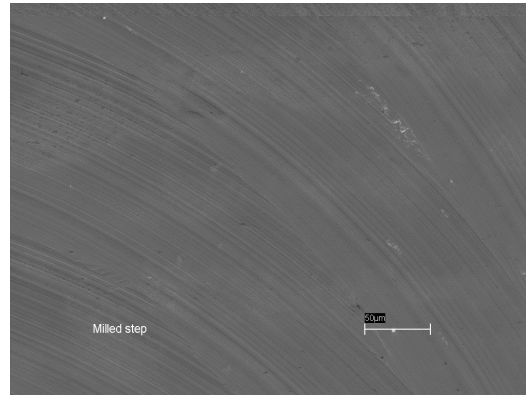
TECHNICAL DATA

Thickness range of stencils	75µm to 300µm
Thickness range of “stepped” area	50µm min thickness up to thickness of stencil
Surface roughness of stepped area	R _a = 0.2µm
Maximum size of stepped area	500 x 500 mm
Maximum number of steps on a stencil	Unlimited

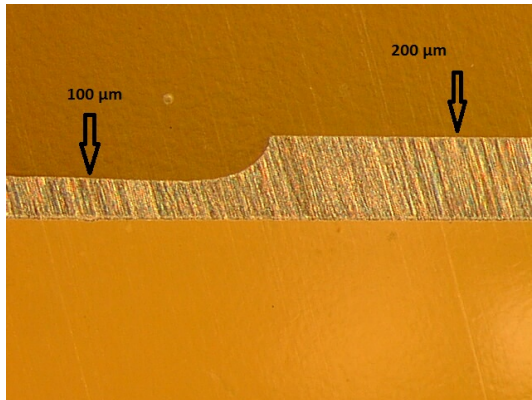
Etched Step:



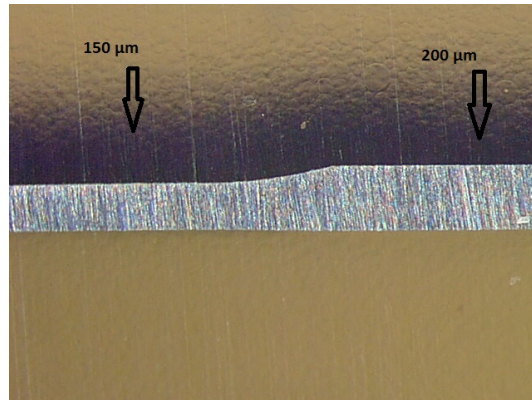
Milled Step:



Etched Cross Section:



Precision Milled Cross Section:



SAFETY & WARNING

It is recommended that the company/operator read and review the Safety Data Sheets for the appropriate health and safety warnings before use. **Safety Data Sheets are available at MacdermidAlpha.com/assembly-solutions/knowledge-base**

CONTACT INFORMATION

To confirm this document is the most recent version, please contact Assembly@MacDermidAlpha.com

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Also read carefully warning and safety information on the Safety Data Sheet. This data sheet contains technical information required for safe and economical operation of this product. READ IT THOROUGHLY PRIOR TO PRODUCT USE. Emergency safety directory assistance: US 1 202 464 2554, Europe + 44 1235 239 670, Asia + 65 3158 1074, Brazil 0800 707 7022 and 0800 172 020, Mexico 01800 002 1400 and (55) 5559 1588

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