Rhodes Engineering Ltd

Notes on usage of laser cut paper stencils

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The laser cut paper stencil can be used in much the same way as a frameless stainless stencil with the following notes (it is assumed that the reader has some experience with the hand/manual use of stainless stencils).

- The smallest hole that can be cut in the stencil is 0.2mm (round). 0.4*0.4mm is the reliable size limit for aperture, below this paste may not release reliably. This size limit is paste dependant, if an aperture used is smaller than this a paste test would have to be preformed to confirm stencil performance.
- When used on multiple boards the back/underside of the stencil should be gently cleaned/wiped between each use. This is important when fine pitched parts are used and prevents smearing of paste between fine pitch pads. If there are no fine pitched parts the stencil can be used a number of times between each cleaning/wiping. **Care must be used when wiping the back of the stencil.**
- The board being stencilled can be framed with another boards or plastic strips that must be the same height or less than the board being stencilled. If stencilling a low number of boards they can be just taped in place with no edging. This works well if the board has parts well in from the edge of the board. The stencil should be taped in place at one edge so it can fold backward on to a **clean smooth** surface for cleaning, this surface will get paste on it that can be recovered between each cleaning.
- Use a finger or tape to hold the opposite edge to the main taped edge when using the spatula to apply the paste. Because the stencil is flexible this stops the trailing edge from moving and smearing the paste.
- It is recommended that a plastic spatula is used to increase the life of the stencils. Care must be taken to insure the spatula remains flat against the stencil when the final pass is made. Because the plastic spatula is flexible it can lift at points alone its edge (more of a problem when no edging is used around the board, see above). Fingers can be used to hold the edge down.
- These laser cut paper stencils have been used up to 10 times before a new one is needed. The life of the stencil is related to the pad pitch fineness and the level of care used when cleaning the back of the stencil between uses.
- Once a stencil is used it must be used again within about 30mins (the time varies with paste type and environment condition) or the paste will dry onto the stencil and the quality of the runs will degraded. This will make the result unusable with fine pitch parts. The dry paste can not be reliably cleaned without damaging the paper stencil.
- The laser cut paper stencil is not intended to replace a stainless stencil but in many cases can work as well and save the cost for a small run of prototype boards.
- How well the paper stencils work is very dependent on how they are used, including the exact process and equipment used. Rhodes Engineering Ltd cannot and will not be held responsible for the solder pasting results of using the supplied laser cut paper stencils.

Below is an example of the use of a paper stencil.