"HIGH DENSITY PRINTING"

WITH QCM'S "HIGH PROFILE" PRINTING INKS

High Density printing is the process of printing a specially formulated ink through a very thick stencil to achieve a raised, glossy smooth print with very sharp edges. Unlike Puff inks, which have a flat, rounded and somewhat dull appearance, High Density prints result in bright, glossy distinct colors. The result is an appliqué effect similar the "welding" or radio wave embossing but at pennies per shirt as opposed to $2.00 plus for the welding method. High Density printing is done using basically standard textile screen printing procedures and equipment, with some variations.

THE PROCESS:
STENCIL: The recommended stencil system is MURAKAMI "THICK FILM". This is a direct/indirect stencil mounting system. The capillary film is adhered to the screen using MURAKAMI SOL POT C emulsion. The film is available in micron thicknesses of 150, 250, 400, 700 & 1000. If you want more than 1000 microns of stencil thickness you can laminate different film thicknesses, i.e. 1000 & 700 will give you 1,700 microns of stencil thickness. MURAKAMI Thick Film is available through QCM Company.

Conventional capillary films can be used by employing the laminating method also. This requires laminating layer upon layer of capillary film to achieve the desired stencil thickness. The problem associated with that method is that it can take days to layer-dry-layer plus the expense of the film whereas the Thick Film is a one step process.

Another method involves using only direct emulsion. The screen is coated 3 passes each side and allowed to dry. When the emulsion is completely dry build a "dam" on the print side of the screen using tape. Pour emulsion into the dam to the desired thickness. Let dry thoroughly. Drying can take up to 3 days depending on the amount of emulsion and the screen room atmosphere. A de-humidifier helps tremendously.

EXPOSURE: Proper exposure is critical. A 5 kW metal halide exposure lamp is recommended. Lamp distance varies but is generally 40-50 inches from the screen. Exposure time is approximately 1 minute per 100 microns of film thickness. That is approximate and test exposures should be done prior to actual screen production. High pressure (pressure washer) is required to wash out the bulk of the image area. If fine detail is involved, use the high pressure at the beginning of the wash out phase and then reduce pressure to avoid washing out detail.

MESH COUNT: Mesh counts vary and depend on the "look" you are trying to achieve. Some printers prefer large, open weave monofilament mesh counts with a T thread in order to get the high screen tension. These range from 16T through I IOT. A popular mesh for high density printing is 80-SS, which is a 80 tpi count (32cm) with a very fine thread diameter. Extra care needs to be taken during stretching

when using this fine thread. Screen tension of 25 N/cm is

maximum recommended. Beyond that you run the risk of "blowing out" the fabric. The reason for using the fine thread is that it leaves virtually no mesh marks in the surface of the print further enhancing the appliqué look.

INK: ***QCM's "HIGH PROFILE***" base is a plastisol with special properties, which allows it to hold a sharp edge after printing. It has a very smooth, creamy consistency and is easy to print with. HP inks have excellent "stretch-ability". High Profile ink is a base and color is achieved by mixing 10% to 50% plastisol colored ink with the base. A 10% addition of colorant (ink) will give the gloss and stretch-ability. Additional percentages of colorant will reduce the gloss and some of the stretch ability but is advised if opacity is required. QCM's "QMX" Pantone matching system colorants are an excellent choice for use with High Profile ink. Most plastisol colored inks will work with our High Profile bases. Test for the desired results.

HIGH PROFILE BASES:

HP-1002 - GLOSS
HP-1005 - NON-GLOSS ULTRA-THICK
HP-1020 - LOW BLEED NON-GLOSS
HP-1050 – LOW BLEED GLOSSY

PRINTING PROCEDURES: Screens should be set up off-contact. A flood stroke is recommended to fill the "molds". Two or more passes may be required to achieve a full image. This will vary with the thickness of the stencil. Spot curing is an option but is generally not necessary unless you want to "build up" your print. If your print is multi-color but only one of these colors is HP, print the HP last in the sequence. If you are attempting to print multi-color HP it can be challenging. Example: Envision a 3 color HP design. Think of your screens as "molds". Sandwich your 3 color separations (positives) together and burn all 3 screens using the sandwiched positive. After exposure and washout, using emulsion, block out areas 2 & 3 on screen 1. On screen 2 block out areas 1 & 3. On screen 3 block out areas 1 & 2. Print your first color, flash, then bring your second screen down and in effect "straddle" the first deposit. Print the second color, flash and your third screen will come down "straddling" the first two deposits. This way your screens are flat as with normal multi-color printing. Some printers are having success printing wet on wet using this method. Since HP printing deposits such a large amount of ink, you may experience some pick up along the edge of the image when you lift the screen, if this occurs a few drops of QCM's DT-O1 detackifier will eliminate the problem.

CURING: Cure as you would any heavy layer of plastisol i.e. 330°F (160°C) for 90 to 120 seconds. If you cure for less time you will not achieve the high gloss and run the risk of the ink being under cured. Test your substrate for compatibility with these curing requirements. Flash or spot cure as you normally would. HP ink flashes in 5-7 seconds depending on your flash cure unit. If the ink is dull, it is probably not fully cured.

SUBSTRATES:
HP printing can be done on any substrate that you would normally print plastisol inks on. We do **not recommend PRINTING ON SUBSTRATES THAT EXHIBIT BAD "BLEED TENDENCIES**". Sometimes however, HP printing can hide the migration simply due to the extreme ink deposit. Consider the substrates weight when determining what thickness of HP printing you want to do. For example, it would probably be overdoing it to put a 1,700 micron ink deposit on a light weight T shirt, whereas it would be fine on a heavyweight fleece item.