



Permaset has been the leading brand of fabric printing ink in Australia since its inception 40-45 years ago. It currently holds a market share of 50-70%. 15 years ago, there was a strong move away from “water based” inks (so called even though they contained White Spirit/Distillate levels of 50% and above) to Plastisols. However in recent times, we have seen a world wide shift back to water based.

The new PERMASET AQUA is 100% SOLVENT FREE and yet demonstrates a combination of properties unheard of even with normal textile inks that usually contain 10, 20 or even 30% white spirit. The first, most obvious benefit of the new AQUA product is the low odour. Take a lid off the jar and smell.

Typically however, historically, when people changed from a solvent containing to solvent free system, they lost colour intensity. So the choice was either environmental/ OH&S responsibility OR colour yield; you couldn't get the 2 together. However, with the new AQUA, we have been able to achieve unsurpassed colour yield and brightness, partly through clever formulating and partly through a rigorous pigment selection process.

The next most obvious benefit is the softness of handle. This printing ink product displays excellent drape and handle properties due to the exclusive adoption of world leading polymer technology. Related to this but less obvious is outstanding adhesion, even to synthetic and stretch fabrics.

### **Wash & Wearability**

Typically, a soft print displays poor wash properties, showing significant deterioration even after 1 or 2 washes. A durable print on the other hand typically feels as stiff as a board, which is uncomfortable for the wearer. Colormaker has exclusive access to a polymer that is at once both SOFT & incredibly STRONG. Permaset AQUA prints on cotton lycra have been tested to 30 commercial wash cycles @ 60°C, a test so severe that it caused significant fibre breakdown in the unprinted area; the printed area however was actually protected by the polymer and exhibited virtually zero change.

### **In the Print Shop – no additives required!**

Further on adhesion, the unique polymer allows Permaset AQUA to achieve excellent adhesion on a full range of synthetics and stretch fabrics without additives. The benefits of such capability are obvious to any print shop owner. Typically, one operator puts in one additive for one job, and then returns the tub to the shelf. The next operator puts in another additive for the next job and so on. The ink in the tub drifts further and further from its virgin state, nothing is recorded and the risk of messing up a job or having to throw the ink out (waste) increases. How much easier to know that PERMASET AQUA performs on cotton, Lycra, full synthetics, stretch fabrics, even wool! All with good softness, adhesion, rub and wash-fastness and all with no additives.

### **To summarise thus far.....**

PERMASET AQUA gives exceptional softness, incredible adhesion to a full range of natural and synthetic fibres, excellent wash + dry clean and virtually eliminates the need for additives in the print shop.

## **Colour**

Pigments have been through a rigorous selection process. For light fastness, all pigments  $\geq 6$  on the Blue Wool Scale (goes up to 8). All pigments are wash & dry-clean fast (note detail on 30 x @ 60°C wash details above).

Pigments/colours selected to be on edge of colour wheel; that gives maximum cleanliness/brightness, so if dirtying off is required, end user can do that, but colour range offers maximum gamut of colours to be mixed from smallest range.

Pigment particle size also considered on evaluation process. 10µm particle is coarse enough to be felt by human hand; this has a number of effects. First, it makes the print feel rough. Second, it's like trying to stick lumps of gravel to a flexible substrate with a thin layer of glue; the gravel can be easily removed by simple abrasion, there are gaps between the lumps of colour (which translates as lower colour yield for the same weight of pigment laid down) and the size of the particle contributes to opacity, which has the effect of making the colour slightly dirty. By going to 1 micron and indeed sub-micron particle size, the feel is instantly improved, the lumps of gravel above are replaced by a layer of sand (to continue the analogy), the same layer of glue binds the colour much more permanently (hence better launderability), the colour yield is higher and the increased transparency has the effect of making the colour cleaner and brighter and allowing the base substrate to "shine through", conferring a greater vibrancy to the finished print.

The finer particle size also confers further commercial benefit; finer particles can fit through a finer mesh screen (we've had the std colours through 120T and SuperCovers through 90T), while the increased colour yield allows lower ink lay-down to achieve the same colour. Result? Better ink mileage (lower cost) and again, softer print. Also, the lower ink lay-down means less ink to dry out, so faster through-put in drying tunnel, hence greater productivity and lower environmental impact.

## **Open time**

This product cannot compete with a Plastisol where you leave a screen @ 5pm on a Friday, start again @ 7 or 8 on a Monday, do a couple of test pulls and you're away again. However, we have actively worked to improve the open time of this product and held a key-line on 62T mesh for >1 hour @ 28-30°C (Aside: most water based is printed through 43T, and the Super Opaques through 34T; the lower the count, the coarser the mesh. 62 + 70T represents a significant advance in water based product).

All products have upside and down-side and Plastisols are being seen increasingly as environmentally unfriendly (they contain PVC and phthalate plasticisers). When we re-address the comfort, feel and natural feel of a water based print + the virtual elimination of need for additives, the comparison should be well made.

## **Testimonials**

We have worked closely with Signature Prints in Sydney (check out their web-site) who do haute couture fabric and furniture, wall paper, curtains (harsh UV), intimate apparel, lingerie, swimwear and fashion for leading designers. Over the past 3 years, they have produced AUD \$3-4 m worth of finished products exclusively using Colormaker water based inks.

by David Stuart, MD, ColorMaker Industries