Ink Technology Rules

Epson's World Leading UltraChrome™ HDR Inkset

Producing a high quality photographic or fine art print involves several technologies: the printing machine, the paper onto which it prints, and perhaps most importantly, the ink itself.

It is the ink, after all, which is what we look at. How it is applied to the media and the media onto which it is applied both depend on the qualities of the ink itself: colour, range, reflectivity, longevity. When choosing a printer to work with, just as important is the ink that will flow through it to produce your printed images.

Pigment or Dye?

Ink is either dye-based or pigment-based. In the past the majority of inkjet printers utilised dye-based inks, which at the time had a wider colour gamut than pigment-based inks, producing prints with more vivid colours. This was a pity because pigment-based inks had better longevity characteristics, something that dye-based inks still struggle to match.

Since then, Epson has developed a unique micro-encapsulated technology for pigment-based inks in which each pigment particle is coated in resin, yielding an increased colour gamut while retaining the excellent longevity characteristics of pigment inks. This technology, which has resulted in a series of inksets called UltraChrome™, has become the de-facto standard for the most discerning professional photographers who seek the highest image quality combined with the greatest print permanence.

And with the latest UltraChrome™ HDR inkset, you have pigment-based inks that offer the best of both worlds – an amazing colour gamut with incredible longevity.

Green And Orange

So how does UltraChrome™ HDR produce such a large, all-encompassing colour gamut? And why is a large colour gamut so important?

People worry about colour accuracy when it's wrong, mainly because it's so easy to see. The print no longer looks natural because it can't reproduce what the viewer knows should be there, or it can't reveal what the artist wants to describe. Problem colours are called ' out of gamut' because the printer doesn't have the inks necessary to reproduce the colour accurately.

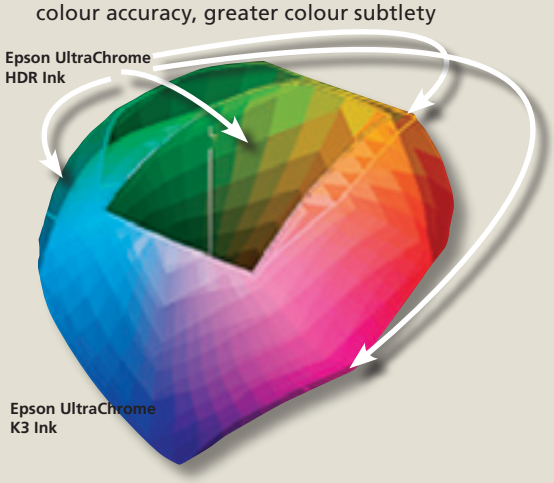
The solution is to have an inkset with such a wide colour gamut that very few colours, if any, are ever out of gamut. This means it doesn't matter if you're photographing Australia's red outback, the Great Barrier Reef's crystal clear waters, or the subtle skin tones of a family portrait: if you have an all encompassing colour gamut, your printer can reproduce the colours of your photographs accurately.

Easier said than done, yet this is precisely what Epson has done with its new UltraChrome™ HDR inkset and the new Epson Stylus Pro 7900 and 9900 printers.

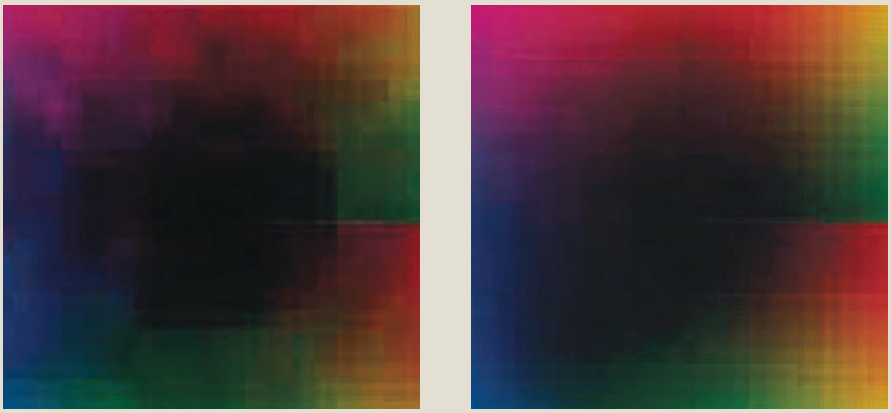
Although earlier UltraChrome™ inksets already had very broad colour gamuts, there remained some colours that they couldn't reproduce. This was particularly true in the green to yellow and yellow to red portions of the colour space.

Now with two new colours added to the inkset – a Green and an Orange – there is almost nothing that can't be reproduced. Grass and foliage are much more vivid and natural, and orange tones found at sunset are more dazzling. Photographers will be delighted to see that the orange ink also serves to lessen the image grain in skin tones (more explained later).

As the name Epson UltraChrome™ HDR (High Dynamic Range) implies, this new inkset provides a much wider tonal range, which in turn means higher colour accuracy, greater colour subtlety



The larger colour gamut of the new Epson UltraChrome HDR colour gamut can be seen in the darker colour areas around the edges.



Smooth colour gradations cut to the heart of every photographic print, providing clearer, more accurate reproductions. (Left) Poor gradation. (Right) Good gradation.

and smoother gradations.

Having a giant colour gamut is great, but having the cabability to use it is equally important. Epson's new LUT (Look-up Table) Technology enables the colour gamut to be maximised.

Ink Placement

Developed through joint research with the Munsell Color Science Laboratory at the Rochester Institute of Technology, USA, Epson's New LUT Technology not only increases colour fidelity, it decreases unwanted grain and improves smooth gradations between colours.

To print a given colour on an inkjet printer, colour information must be converted so the injet printer knows which ink colours to blend and in what proportion. To peform the extremely complex calculations required for image data to ink conversion, a massive reference table of colour data called a Look-up Table, or LUT, is used. Image quality is to a large extent determined by the choice of which ink colours to blend, and how much of each should be used.

In addition to maximising the wide colour gamut, the New LUT Technology provides three other major benefits.

First, it produces smoother colour gradations. In photography, colours blend into one another and the smoothness of this blending is a major factor in determining image quality. The New LUT Technology produces smoother gradations than ever before (see diagrams above).

Second, Epson's New LUT Technology reduces image grain by optimising the fine colour dispersion in each pixel. A part of the smoother colour gradation process, it also reduces image grain, especially in skin tones which can be so important in commercial and portrait photography. And having that Orange ink further helps refine the process.

Third, we all know inkjet prints can look different under different light sources, but the New LUT Technology virtually eliminates colour inconsistency, so prints look the same under all light sources.

Neutral Blacks

While colour is important, so are great blacks and whites and Epson's UltraChrome™ HDR ink continues to produce a standard of black and white photography that you never thought possible from a colour printer. Skin tones come alive and shadows reveal subtleties that were lost on other printers.

The use of a light black and a light light black ink in the Epson UltraChrome™ HDR inkset provides more even gradations in the highlights. Shadowed areas also reveal more detail and produce denser blacks – without colour twists or tone jumps

The three different density blacks found in Epson UltraChrome™ HDR ink produce smooth gradations without tone jumps.

And of course there is a choice between Matte Black and Photo Black, depending on whether you're printing on matte or glossy media. Best of all, both these blacks are loaded in the new printers. Enough said!

There's not much the new Epson UltraChrome™ HDR inkset can't achieve! For further information about Epson's Stylus Pro 7900 and 9900 printers, and Epson's Ultrachrome™ HDR inkset, visit www.epson.com.au or contact Epson on 1300 131 928.