THE GREAT PAPER CHASE

INNOVA DIGITAL FINE ART PAPER

Mike McNamee looks at the Innova range and gets some pleasant suprises, just in time for Focus!

The Base Properties

We list all the Digital Fine Art papers together for this review. The product list is tabled along with the baseline properties which are also plotted graphically. The graph shows the cream of the Warm Tone Gloss, Soft Textured Natural White, Cold Pressed Rough Textured, Canvas Textile Paper and Smooth Cotton Natural White. The Smooth Cotton High White and Soft White Cotton are a slightly warmer cream than those listed previously. The baryta-like group of the FibaPrint range are progressively more blue, that is they are both cooler and brighter, owing to the OBA concentration employed. The two (older) canvas material are just on the cool side of neutral (at D65). The composite uv-illuminated swatches show the overall, visual OBA activity, as do the OBA lift values tabled.

The Dmax capabilities fall into three categories. The FibaPrint gloss and semi gloss variants are all over 2; the matte papers are all around 1.5 and the matte canvas options are less than 1.5. All these values are both representative and expected for material of their class.
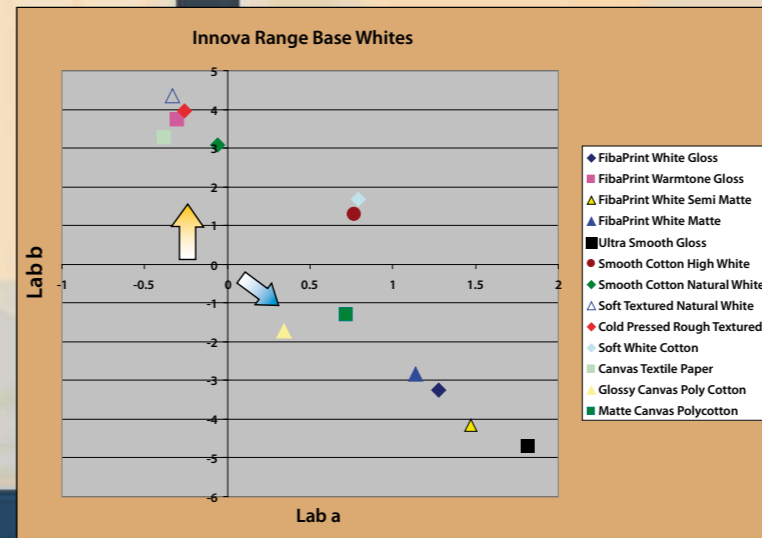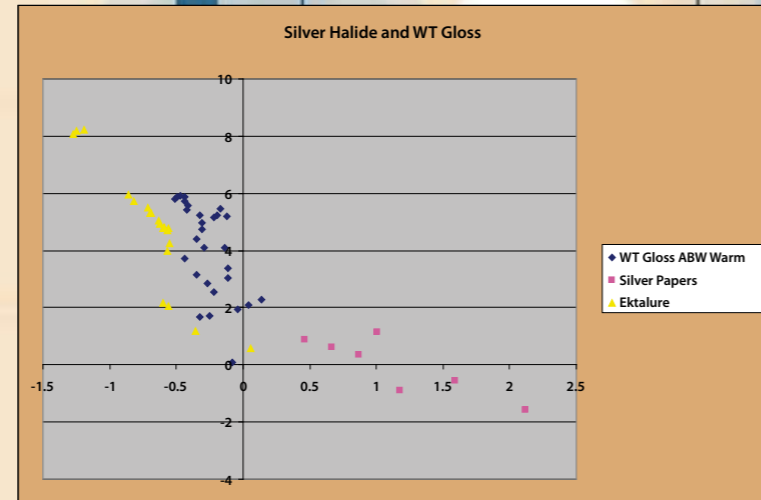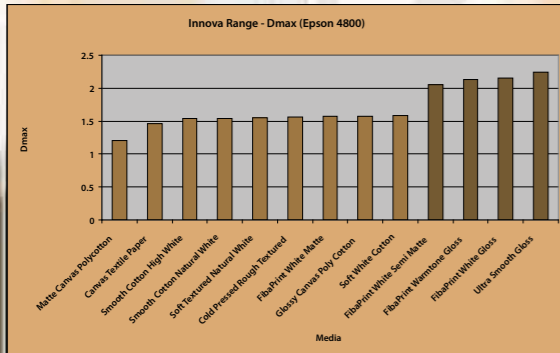

Innova Range Base Whites

In a world in which their rivals have been operating for centuries, Innova Fine Art are very much the new kids on the block. However, since they commenced operations they have rapidly gained a reputation for high quality inkjet art media and have gathered a faithful following of users. One of the highlights of Focus 2007 was the Innova display of panoramic landscape images by David Osborn, which really showcased the media to great effect.

Presently the range consists of five papers in their FibaPrint range, six papers in their Photo Art Collection, six papers in their Fine Art Collection, and a number of canvas materials. Their newest paper, the baryta-like Ultra Smooth Gloss, we reviewed in detail in the last issue, when we also touched upon the other FibaPrint materials. However we kept some of the testing back for a more comprehensive all-Innova review this issue. You may recall that the Ultra Smooth Gloss material broke the colour fidelity record and the baryta-like FibaPrint range remains much favoured.

Media Name	Weight gsm	Calliper microns	Base White CIE Lab			Dmax	Lift at 440nm %
			L	a	b		
FibaPrint White Gloss	300	350	96.56	1.28	-3.25	2.15	5.1
FibaPrint Warm Tone Gloss	300	340	97.09	-0.3	3.73	2.13	-11.4
FibaPrint White Semi Matte	300	330	96.56	1.47	-4.15	2.05	7.2
FibaPrint White Matte	280	340	96.71	1.14	-2.84	1.57	4.9
FibaPrint Ultra Smooth Gloss	285	350	96.58	1.81	-4.67	2.22	9.3
FP Ultra Smooth Gloss (Colourpicture)	285	350	96.69	1.76	-4.13	2.26	8.5
Smooth Cotton High White	315	410	97.6	0.77	1.28	1.54	-4.3
Smooth Cotton Natural White	315	400	97.68	-0.06	3.09	1.54	-8.9
Soft Textured Natural White	315	435	97.42	-0.33	4.36	1.55	-11.6
Cold Pressed Rough Textured	315	470	97.46	-0.26	3.95	1.56	-10.8
Soft White Cotton	280	400	97.29	0.79	1.68	1.58	-5.3
Canvas Textile Paper	315	430	97.53	-0.38	3.27	1.46	-9.5
Glossy Canvas Polycotton	390	485	94.9	0.34	-1.72	1.57	-0.3
Matte Canvas Polycotton	380	490	95.95	0.72	-1.3	1.21	-1.9

INNOVA DIGITAL FINE ART PAPERS

Innova Range - Dmax (Epson 4800)

Silver Halide and WT Gloss

Legend:
- ◆ WT Gloss ABW Warm
- ■ Silver Papers
- ▲ Ektalure

FibaPrint Warm Tone Gloss

The terminology 'warm tone' originally applied to chlorobromide silver papers which were usually laced with cadmium to control the grain size and toning properties. They were typified by Kodak Bromesko, Royal Bromesko, Agfa Portriga and Record Rapid. Most were initially modified to get around the cadmium problem (it was banned) then eventually dropped around the turn of the millennium. Another favourite was Kodak Ektalure which had a highly textured surface, a rich cream/ivory base and a warm tone coating. As late as April 2006 Ektalure was still being lamented on the web forums as 'the best paper ever'. With a single surface, a single grade and a distinctly low Dmax, it does not stand up to the historical (or should we say hysterical?) hype. To confirm our suspicions we dug some prints out, made in the 80s and ran them under the spectro alongside FibaPrint. To be honest Ektalure was a pretty indifferent, inflexible paper and even though it was jaw-droppingly expensive, your editor never even finished the box and gave it away. During our research for these older papers we came across the reported invention of baryta coatings, which occurred around 1866 and was originally intended to level out the fibres and protect the emulsion coating from the ravages of chemicals in the coarse paper base layer (end of history lesson).

Armed with this dose of history we made monochrome prints onto FibaPrint Warm Tone using the Epson Advanced Black and White driver on the 'warm' setting. We repeated the trials discussed in Paul Gallagher's column in this issue and made the same measurement set. Using a media setting of Premium Semigloss Photo Paper, the 'light' tone setting and a resolution of 2880dpi on an Epson 3800, we obtained a tonal range close to that achieved by our very accurate full-colour profile – that is the result was different to that found with the Premium Lustre media as discussed in the Gallagher section. The tone colour itself was very close to that of Kodak Ektalure, although the base tone of FibaPrint Warm Tone is very much brighter. At 2.13, the Dmax was massively higher than Ektalure and higher than the 2.1 and 2.06 we obtained from real prints made onto Agfa Record Rapid.

One interesting thing we noted when looking through the archive silver materials was the level of OBA used in some of them. The passage of time has robbed us of some of the notes and data. However, one paper peaked at 104.5% reflectance at 430nm, as high as many inkjet materials. Ilford Multigrade IV did not breach the 100% barrier but was certainly quite peaky at the 440nm part of the spectrum. Other fibre base silver materials were equally active in the UV booth. On that score at least FibaPrint Warm Tone wins hands down, there is absolutely no trace of OBAs.

TOP LEFT: The histogram shows the Dmax values of the media tested.

ABOVE: We took archive prints from your editor's collection and measured them up against prints made on FibaPrint. Despite the nostalgia that seems to abound for silver prints, from a technical standpoint they have little to offer that is different to modern inkjet and the inkjet is far less hassle to tone using the ABW drivers from Epson.

FibaPrint White Gloss, White Semi Matte and Ultra Smooth Gloss

We put all these papers to test using the tuned profile made originally for the Ultra Smooth Gloss. This is not a tactic we would normally employ but initial trials had suggested that the very high accuracy obtained on the Ultra Smooth would be replicated on the other materials. The data obtained were all quite exceptional and are tabulated (opposite) for completeness – it seems that one profile might do for all.

The only niggle was with the White Semi Matte. This had been cut across the grain – that is, the residual roller marks ran across the short direction of the A3 sheet. This induced some curl in the media and caused it to clatter into the head of the test-bed Epson 3800, an issue noted before and one reason we prefer the cross-backed Permajet Royal variant of the baryta-like papers. We also noted that the Semi Matte needed a longer drying time; the surface was marked by the rubber wheel of the spectrophotometer, not an issue we normally see. We obviously measured the test sample a little too soon.

SUMMARY ERROR DATA FibaPrint 'Gloss' Media						
MACBETH SWATCH	Ultra Smooth Gloss		White Gloss		White Semi Matte	
	ΔE *Lab*	ΔE 2000	ΔE *Lab*	ΔE 2000	ΔE *Lab*	ΔE 2000
dark skin	2.1	1.20	2.0	1.57	3.2	2.74
light skin	2.0	1.29	2.0	1.39	2.4	1.49
blue sky	4.4	1.33	2.1	1.29	2.4	1.93
foliage	1.6	1.37	2.1	1.87	2.1	1.87
blue flower	4.3	1.14	2.7	1.34	3.1	1.85
bluish green	1.8	0.89	1.7	0.85	0.7	0.33
orange	4.3	1.05	0.9	0.61	1.6	0.81
purplish blue	6.8	1.16	1.9	1.46	2.8	1.89
moderate red	2.2	2.19	3.2	2.04	2.3	1.31
purple	3.1	1.67	2.8	1.71	2.7	1.53
yellow green	3.6	1.52	1.8	0.95	1.8	1.00
orange yellow	5.2	1.24	0.8	0.60	1.0	0.74
blue	8.4	0.97	2.5	1.89	2.6	1.54
green	1.2	0.85	1.0	0.92	3.5	1.25
red	2.3	0.90	3.2	1.13	1.9	0.54
yellow	6.4	1.99	3.6	1.65	3.6	1.67
magenta	0.8	1.68	2.9	1.36	3.5	1.63
cyan	7.2	1.71	3.6	2.28	4.1	2.39
white	5.7	3.77	5.6	3.56	5.7	3.65
neutral 8	3.6	2.94	3.4	2.67	3.3	2.57
neutral 6.5	2.4	2.11	2.1	1.93	1.8	1.62
neutral 5	2.2	2.30	1.9	2.24	0.8	0.92
neutral 3.5	1.4	1.40	1.8	1.78	1.0	0.96
black	1.1	0.67	2.1	1.65	1.1	1.24
Mean	**3.51**	**1.56**	**2.41**	**1.62**	**2.45**	**1.56**
Std Deviation	2.15	0.72	1.04	0.67	1.19	0.75
Biggest	8.42	3.77	5.58	3.56	5.70	3.65
Smallest	0.80	0.67	0.83	0.60	0.68	0.33
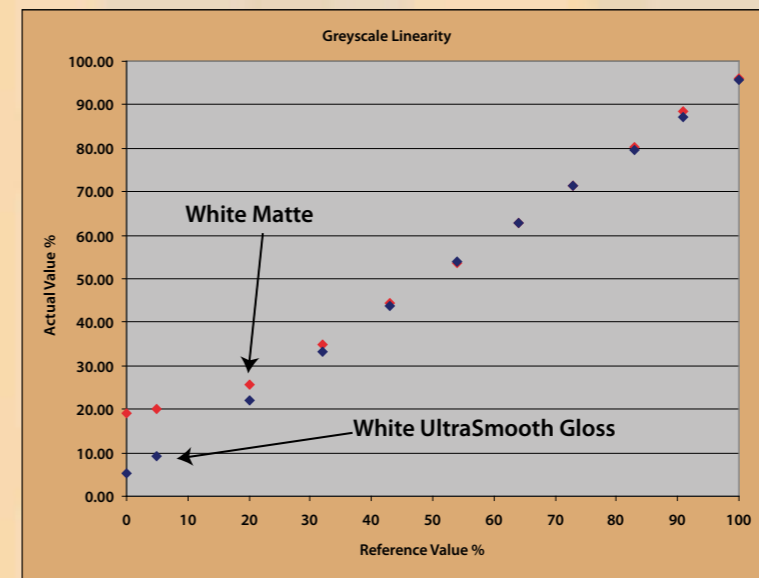
FibaPrint White Matte

This paper is part of the FibaPrint group but, with a completely matte surface, it has radically different properties. We changed over to Matte Black ink in the Epson 3800 for the test, and used Archival Matte Paper as the media setting, at 2880dpi.

The paper has a smooth matte surface with no texture to speak of. We managed a Dmax of 1.59, good for a matte finish. The base tone is a cool bright white because of the use of OBAs.

The audit print was visually smooth. The blacks were differentiated down to 20 RGB points. There was slight mottling in the Granger Chart, particularly in the deep blues.

The colour audit turned in a very commendable 6.2 ΔE*Lab*/2.89 ΔE 2000 overall. The flesh tones were a little desaturated but almost exactly the correct hue, giving an overall flesh tone error of 2.0ΔE 2000. The earth tone suffered from the lack of Dmax, coming in at 4.9ΔE 2000. Although this is twice that obtained with the media's glossy siblings it is quite typical of this class of material.

Monochrome
The depth of a black always suffers in a matte paper. The difference, down the tone range, is shown in the graph, with White Matte lagging about 14% behind its companions. The metamerism on the 'full colour' grey was low at 1.0 *ΔE Lab* (D65 to Tungten on 50% grey). The neutrals were mapped to within 1 *ΔE Lab* point of neutral to give a very clean looking image.

Advanced Black and White
In keeping with the trend for this issue we also tried a variety of setting for making monochromes with the Advanced Black and White drivers of the Epson 3800. These included ABW on Light, Normal, Dark and Darkest tone settings, along with a full-colour variant using a bespoke profile. The Light setting was the closest to the bespoke profile and was also the most accurate when compared to the original input data (see table). The neutral 'colour' values were all within half a point of pure neutral.

Setting	Aim	Colour	Light	Normal	Dark	Darkest
Luminance	50	52	50	45	39	34

Overall the results from the White Matte were impressive for the class of media and very significantly better than all of the matte proofing papers that we have tested. They are on a par with other quality matte media, although exact comparisons with previous testing is not possible because the older data were derived from less modern printers (principally Epson 4000 and 2100 machines). Suffice to say, Matte White is not going to let you down at exhibition standard printing.

Greyscale Linearity

White Matte

White UltraSmooth Gloss

LEFT: The graph shows a comparison between the Ultra Smooth Gloss and White Matte luminances down the tone range. The half, three-quarter and highlight tones are comparable but the depth of the black is less in the matte media. The eye accommodates so well that this is not particularly noticeable in a print.

FAR LEFT: Deliberately photographed in glancing light, the gloss of the papers and their texture just about show, but you need to see actual prints to decide which surface to go for.

INNOVA ART PAPERS

The art series are, in the main, heavier in weight and more textured than the FibaPrint range and are more suited to the reproduction of art work or perhaps more artistic interpretations of digital art, derived from programs such as Corel Painter. For these papers, more than others, the user needs to have the paper to hand to get a true feel of its properties – descriptions and photographs of the surface are not really adequate (so go and take a look on the stand at Focus!).

Smooth Cotton High White

With an addition of OBAs, this is a very white, 100% cotton rag media of archival quality (ie acid- and lignin-free). It has a smooth surface that is a little towards cream, although only by a point or so. We built a bespoke profile using an Epson 3800 and Matte Black ink. We chose Archival Matte Paper as our media setting and 2880dpi as our resolution.

The audit delivered an average error of 7.7ΔE *Lab*/3.65ΔE 2000. The flesh tones were a little desaturated but very accurate in the middle of the range with the Macbeth Light Flesh swatch registering just 1.6 ΔE *Lab*. The blues were the weakest of the primary colours and the remarks made about landscape tones under the White Matte (above) apply equally here. Metamerism was 1.3 ΔE *Lab* (D65 to Tungsten at 50% grey) and the gamut volume was 512, 900. The shadows clogged at 25 RGB points and the Dmax measured 1.5.

As with FibaPrint White Matte, there was a certain amount of speckling in the deeper tones of the Granger Chart, extending this time across both the greens and blues. The Granger Chart was otherwise smooth and problem free.

Smooth Cotton Natural White

This media is presumed to be the same as the Smooth Cotton High White with the OBAs left out. The difference is subtle in artificial light, very obvious in UV light and just discernable in D65 light. Purists will prefer the 'natural' product and will sacrifice little in brightness. The base tone is about 3 points towards cream.

After making prints it was possible to detect the increased warmth in the prints when stood alongside the High White prints. The audit statistics, however, were almost identical, the variations being only around tenths of a point.

Soft Textured Natural White

This media has a faint texture and is made from archival grade, acid- and lignin-free base materials. It is also OBA free. It might be chosen if you wished to get away from the smooth calendered finish of the 'smooth' media in the range. However, the soft finish does allow quite a lot of ink spreading and detail destruction, such as you would find with a true water colour paper. It is therefore much more suited to the type of application where a softening of detail and addition of 'character' is considered desirable – eg water colour and the more artistic interpretations of images.

The colour audit data are a little better than those for Smooth Cotton Natural White and Smooth Cotton High White, but only by tiny amounts.

Cold Pressed Rough Textured

This is an OBA-free, natural white surface that is cold pressed for a characteristic random surface texture. It is archival quality. The undulating nature of the surface gives rise to a slightly mottled appearance in large blocks of solid colour and gradients. On the correct image this would be considered to add character, but perhaps not so on other images. The colour audit data was similar to the media's companions in the range. The flesh tones were very accurate. There was none of the ink bleeding found in the soft papers so no additional character would be added to a reproduction water colour, which some might find preferable.

Soft White Cotton

This is an archival quality media made from mixed cotton linters and (presumably) alpha cellulose. It is natural white and OBA-free. The surface texture is slightly undulating, in between Cold Press Rough Textured and Smooth Cotton. The remarks about bleeding, made for Soft Textured Natural White apply here also, although they are even more pronounced. The colour audit data were the same as the others in the range. This then is a media for more artistic interpretations of water colours and artistic renderings of photographic images.

Summary

COSTS and AVAILABILITY
The costs of the Innova range are shown in the graph below. They are very attractive, being slighty more cost compeitive than average for the baryta type medias from all sources. The RRPs are given, calculated on a per A3 sheet basis, purchased in boxes of 50 sheets. They are available in A4 through to A2 cut sheet sizes, along with rolls in 16", 17", 24", 36", 44" and 60" widths.

INNOVA FINE ART MEDIA COSTS
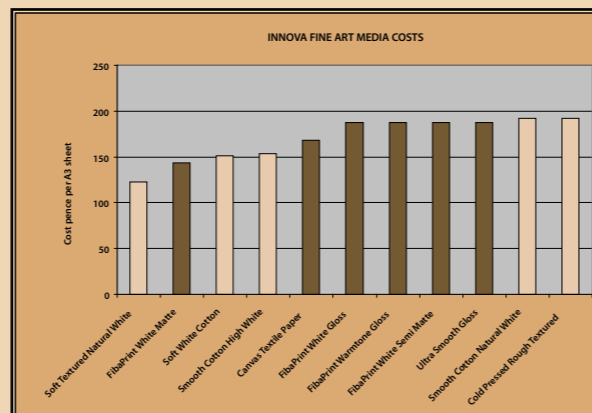
OVERALL
This is a comprehensive range of media covering all possible requirements. As might be expected from the company credited with re-introducing baryta-like papers, the FibaPrint range includes the best-in-class at the time of testing. The FibaPrint range is recommended without any caveats. Before choosing to buy any larger quantities of the Art Range you would be well advised to get hold of a sample pack and print some trials, they are so characteristic that they may not be suitable for your projects.

STOP PRESS
See our analysis of three new Innova canvas media (which arrived just in time for this issue) On the following pages. If you did not see them at the Convention, make sure you take a look at Focus – McNamee has not been as excited by canvas for ages, the Ultra Glossy offering is a bit special!
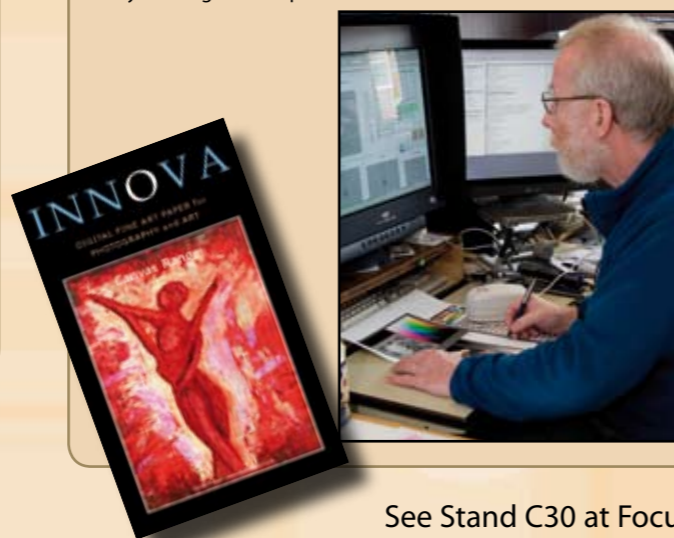
See Stand C30 at Focus

INNOVA – Three new canvas media

Our original intention was to hold over the review of Innova's three new canvas materials to the next issue. However, initial testing of the Photo Ultra Glossy Canvas was so impressive that we decided we had to prime you so that you could go and look for yourself at Focus. (Visit stand C30)

Ultra Glossy Canvas is, as far as we know, the first canvas to employ a baryta-like coating, the type which have so impressed us over the past six months of testing. Despite this we were still taken aback by the test results – this material has lifted the standards to new heights in every department, sometimes by considerable margins! Just to take Dmax as an example. It was so high that we immediately remeasured the sample thinking we had made an error. We recalibrated the spectrophotometer and returned the same value of 2.40. We should have been ready for it really. We noticed, as soon as we made the profiling target print, that the depth and vibrancy of the colours were outstanding.

We made high resolution profiles on an Epson 4800 using Photo Black ink. This printer does not have a media setting for 'canvas' so we chose Premium Glossy Photo Paper and a resolution of 2880dpi. The initial print was about 5 per cent too dark and a couple of per cent desaturated, so we tuned the profile to produce an almost 100 per cent improvement in what were already good figures. All parts of the gamut were accurately recorded, particularly in terms of hue and saturation. The remaining errors were in the lightness channel and caused by the slightly low reflectivity of the base material – you cannot add more lightness by adding ink. This had the greatest effect on the primary yellow, adding ink to create the saturated yellow dropped the lightness by a few points. Despite this the average error returned was 3.7 ΔE *Lab*/1.85ΔE 2000 bringing this canvas material up with the best of **any type of surface**. Rather bizarrely the results were so good that this canvas would meet the GRACol/FOGRA standards for high-end contract proofing! The average error for all the flesh tones was 1.2ΔE *Lab*, a barely detectable error over the entire gamut of skin tones.

The gamut volume measured at 875,754 after we had tweaked the profile (it was 853,398 before) and we show a comparative graph with our data from our canvas tests of 2004/2005. Some of the improvement, of course, is due to the improved ink set in the Epson 4800 but even so Ultra Glossy Canvas stands way above the crowd.

The media also performed well using ABW on the Epson 4800. We chose a 'Light' setting for the tone, which, on reviewing the print, might have been better with 'Normal'. However, we created a clean neutral print, which fully exploited the Dmax of 2.4 and a metamerism of just 1.7 (*ΔE Lab* D65 to Tungsten A at 50% grey).

Ultra Glossy is billed as 'water resistant'. Although we do not have a scientific test for this feature, we were unable to smudge the print with a wet finger (and we did rub quite hard). The coating is very fast drying. We checked the 'drydown' time but saw no significant changes (<0.1 *ΔE Lab*) after the first two minutes. The surface is also very scratch resistant and was unmarked by dragging fingernails across it. Claims have been made for improved cracking resistance during stretch mounting. We were unable to crack the coating by tugging on it, but did crack it by folding it right back on itself (in the way you might if you were mitreing a corner).
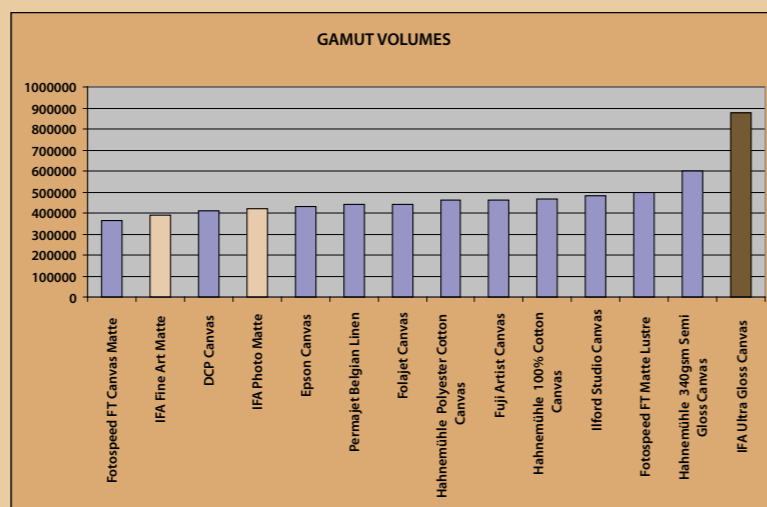
Overall then this media is now crowned as the king of the gloss canvasses, nothing we have tested to date gets even close in almost all of our measurments. It is a significant milestone in media development which will be welcomed by all canvas users and will also create a few converts to the cause!

"*…this media is now crowned as the king of the gloss canvasses, nothing we have tested to date gets even close…*"

Photo Ultra Glossy Canvas

SUMMARY ERRORS

Colours		U Glossy	Photo Mt	FA Matt
MACBETH COLOURS	Lab ΔE	3.7	12.2	12.8
	ΔE 2000	1.9	5.5	5.8
GREYS	Lab ΔE	2.6	9.4	10.0
	ΔE 2000	1.8	6.6	7.1
FLESH TONES	Lab ΔE	1.2	5.7	5.4
	ΔE 2000	1.7	4.2	4.1
EARTH TONES	Lab ΔE	3.8	17.7	18.6
	ΔE 2000	2.2	8.0	8.4

GAMUT VOLUMES

ABOVE: The Gamut Volume of Photo Ultra Glossy is almost 50% greater than its closest rival. The other canvas media are in the middle of thier closest rivals, the matte finishes. The blue bars are historical data, some several years old.

Fine Art Matte Canvas 340gsm

This is the second of the new media. The backing canvas appears to be the same as the Ultra Gloss, a polycotton, Oxford Twill with the same diameter warp and weft threads. The surface coating is radically different and is a natural cream colour. It is also quite absorbent with a high ink spread, running to between 0.3mm and 0.4mm alongside black-to-solid-colour interfaces. The media does not hold detail well (as found with the 'soft art papers' reviewed in this feature). This makes Fine Art Matte more suited to artistic interpretations and the reproduction of paintings but not well-suited to photographic work, in which detail is important.

After the excitement of record-breaking data from the Ultra Glossy, this was a slightly quieter test set! In the unvarnished state, data were very much ball-park for a matte canvas. The maximum error was 28.8 *ΔE Lab* (in an orange–red) although there were a number of 20+ error points. The average was 12.8 *ΔE Lab*/5.8ΔE 2000 with saturation and lightness being the main contributors to the overall error. The Dmax was 1.27 (29.2% Lightness value). Metamerism was 1.3 *ΔE Lab* (D65 to Tungsten A on 50% grey).

Photo Matte Canvas 350gsm

This is quite a different coating to the Fine Art Matt Canvas. For a start the print came out of the 4800 glistening wet. The colour stabilised to within 0.5ΔE Lab in about five minutes, but was only truly stable after 25 minutes.

Dry-down Innova Photo Matt
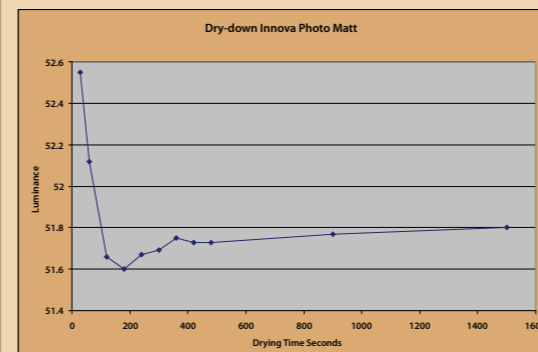
The colour audit data were similar to Fine Art Canvas, an average of 12.2ΔE *Lab*/5.5ΔE 2000. Again the errors were almost all within the lightness and saturation components, the hue values were very accurate. The Dmax was 1.25 (28% Lightness) and the metamerism was 1.1ΔE *Lab*.

Photo Matt Canvas is far less absorbent than Fine Art Canvas with just a tiny amount of ink spread at solid-colour interfaces. The highlights held detail all the way up to 250RGB points, the Granger Chart was very smooth. The shadows blocked slightly early at 25 RGB points.

Varnishing

Both Matte Canvas media are suitable for accepting a varnish coat. We used two coats of DCP Giclée Varnish. This was applied with a soft 2" brush (a synthetic, *EasyClean*) which produced some smearing of lettering on the Photo Matte and some lightening of the crests of the weave in the Fine Art Matte. Our recommendation would be to apply at least the first coat with a velour or sponge roller and not to brush out this first coat at all. The depth of colour was increased by the varnish, in line with previous findings. The changes in Dmax are tabled. Neither media approached the Ultra Glossy, even after varnishing. However some uses demand that varnish is applied to the finished box-wrap.

Chroma Error Innova Photo Matte v Photo Ultra Gloss
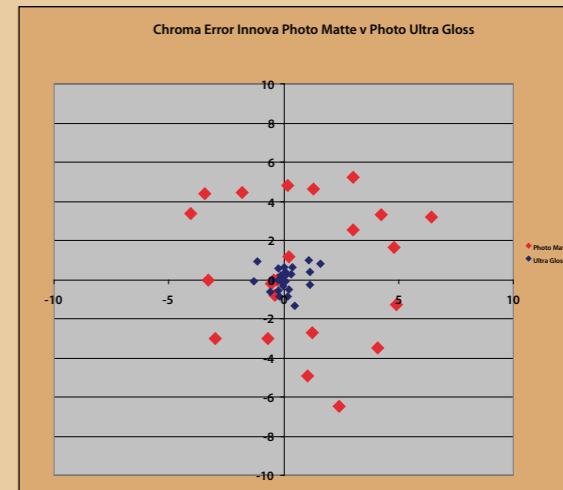
LEFT: The error in the chroma (saturation) compared for Photo Matte and Ultra Glossy Canvas. The errors of Ultra Glossy (blue diamonds) are tightly clustered around the centre (ie small error).

Macbeth Lab Plot
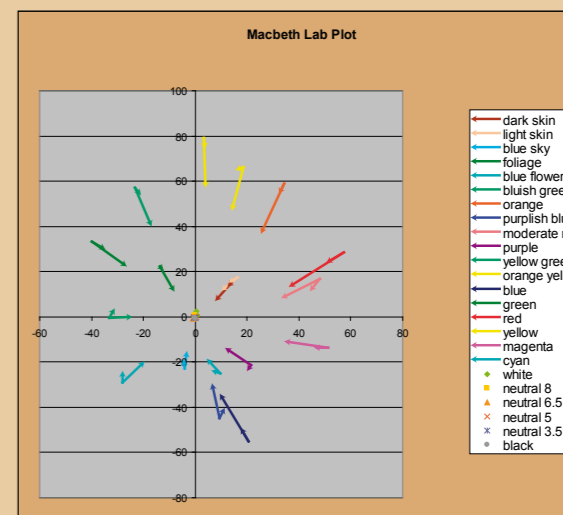
LEFT: The error bars highlight the accurate hue values but low saturation in Photo Matte, compared with Ultra Glossy (the very small error lines). The values for Photo Matte are typical for this class of material, the values for Ultra Glossy are outstanding.

Effect of Varnish on Dmax

Media	Dmax	
	Before Varnish	After Varnish
Photo Matt	1.25	1.78
Fine Art Matt	1.27	1.69
Ultra Glossy	2.40	

Summary

While the Ultra Glossy is obviously outstanding, the Fine Art Matte and Photo Matte media are reasonably typical of their type. If the claims for increased stretch cracking resistance are true, however, this will eliminate a feature that has proven troublesome in the past. Without varnishing, both media look a little flat, but some may prefer the look. Certainly the neutral base tone allows the creation of accurate hues, even if the depth and saturation are lagging.

COSTS
RRP for the 17" rolls (all 15m long) are as follows:

IFA-33-432x15m - Fine Art Canvas Matte 340gsm   – £125.10
IFA-35-432x15m - Photo Canvas Matte 350gsm   – £145.00
IFA-36-432X15M - Photo Canvas Ultra Glossy 380gsm – £166.00

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