



THE

GREAT



PAPER CHASE

Baryta Roundup

Round up? It's been more like herding cats! Mike McNamee attempts to shepherd baryta papers into the right pens and unravel some of the mysteries of this inkjet paper type.

Since PaperChase has been running we have collated more than 9,000 audit files and analyses in 762 folders. The 'Baryta' or 'Fibre Based' types of paper are a specialised case; we first collated them in 2007 and, most

recently, failed to do so in 2011. We felt it was time to knuckle down and round up the strays once again. Our tardiness in completing the task arises from the anticipated confusion of re-branding, re-boxes and new launches that seems to revolve around papers today.

The true baryta papers have a barite (barium sulphate, BaSO₄) coating, but only a handful of the papers that bear the name 'baryta' or 'fibre based' contain the mineral in the coating. For our purposes, then, we have lumped together papers which attempt to mimic the surface properties and feel of the traditional air-dried, fibre-based, silver halide papers, typified historically by such revered names as Ilford Galerie and Agfa Record Rapid. While their characteristics, such as weight (grammage), base fibre (cotton rag, alpha cellulose or mixtures), brightness (as controlled by optical brightening agents, OBAs), stiffness (thickness and base fibre related) and finally cost, vary greatly, they form a cohesive statistical group by virtue of their outstanding colour accuracy when we audit them. Our best stats of all time come from this group of papers.

The bulk of the papers are around 300gsm, quite stiff to handle, slightly more expensive and generally have a slightly undulating finish with a moderate gloss. All other parameters outside of this clustering are as variable as any other collection of inkjet papers. There is a slight, but not universal, tendency to employ an alpha cellulose base fibre.

The majority of the media employ pigment and specifically Epson Photo Black inks – there are just a couple of matt papers requiring Mk ink and even some canvas baryta medias. This brings us to our first problem – many of our legacy data relate to older ink sets. In rough terms the gamut of our predominantly Epson ink sets has risen progressively through UltraChrome K3, UltraChrome K3 Vivid Magenta to K3 UltraChrome Vivid Magenta HDR. If this moving target is not enough, we have also thrown in better profiling software and more stringent audit testing. Also, as well as increasing the gamut, the newer ink sets have improved metameric characteristics. OBAs have remained a thorn in the side, disproportionately degrading the statistics but not always the 'look' of a finished print.

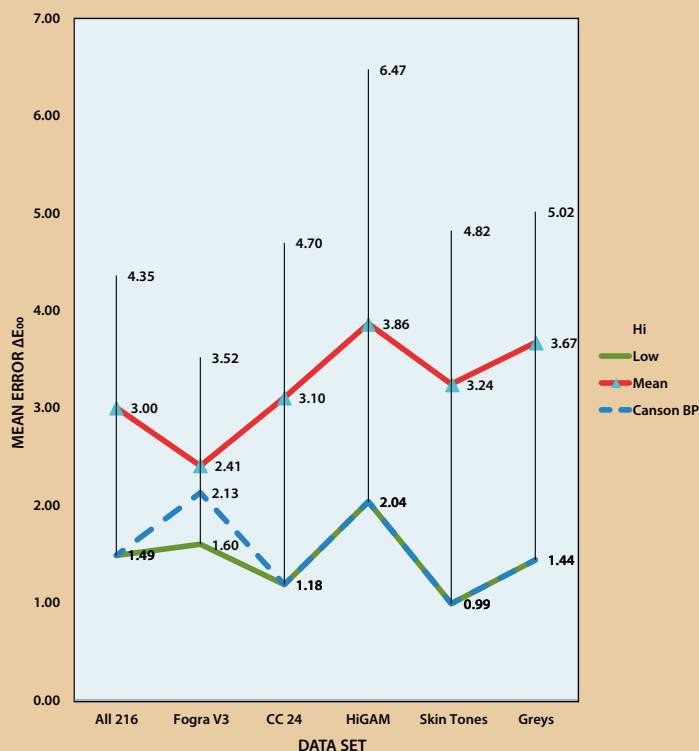
Most of this we can cope with, using a bit of fleet-footed statistics. The major headache has been the media names. Manufacturers continuously refresh their names and branding, and also cut new deals for re-boxed product sold by additional distributors. We also have to be alert to new coating processes being introduced. Our big table is therefore an honest attempt, but comes with a health warning, especially on costs and naming. We took our costs from supplies thrown up by Google in much the way that a newcomer might seek them out for the first time – better deals are most likely available with shopping around. The range of costs is interesting; in 2007 they ranged from 116p to 335p per A3 (equivalent to 157p to 452p for an A3+) and in 2013 they range from 184p to 432p per A3+. Some media we failed to find any prices for, Google returned no hits at all.

Cost, of course, is only part of the deal and its influence depends upon the application. For an enthusiast, making prints to fling about in their local competition, cost can be a sensitive issue. For a fine art printer, making images to sell for thousands of pounds, the cost is negligible. For the majority of those in between these extremes other factors come into play. The name of the mill may be important for the bragging rights: 'This paper comes from the same mill that made paper for Matisse and Picasso' may carry more weight than, 'We have just collected this Scaggyjet paper on a special deal at Staples!'

Colour Audits

Our latest colour audit protocols seek to examine the accuracy of reproduction of a full range of colours with subsets pulled out for neutrals, skin tones, high gamut colours as well as swatch sets from GretagMacbeth CC24 and SG and the Fogra V3 (CMYK) patch set. The paper is but a small part of achieving accuracy along with profile-

AVERAGE COLOUR AUDIT STATISTICS



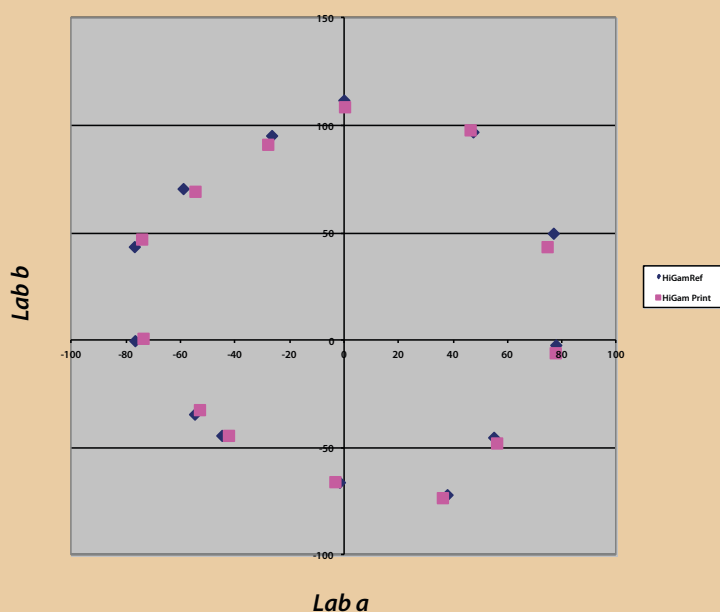
ABOVE:

Data plot showing the average of all colour audits for all media along with the highest and lowest recorded errors. The data for Canson Baryta Photographique are plotted (blue dashed line), the lowest errors in all patch sets bar Fogra V3. All of the baryta data fall below the red line, ie better than average.

BELOW:

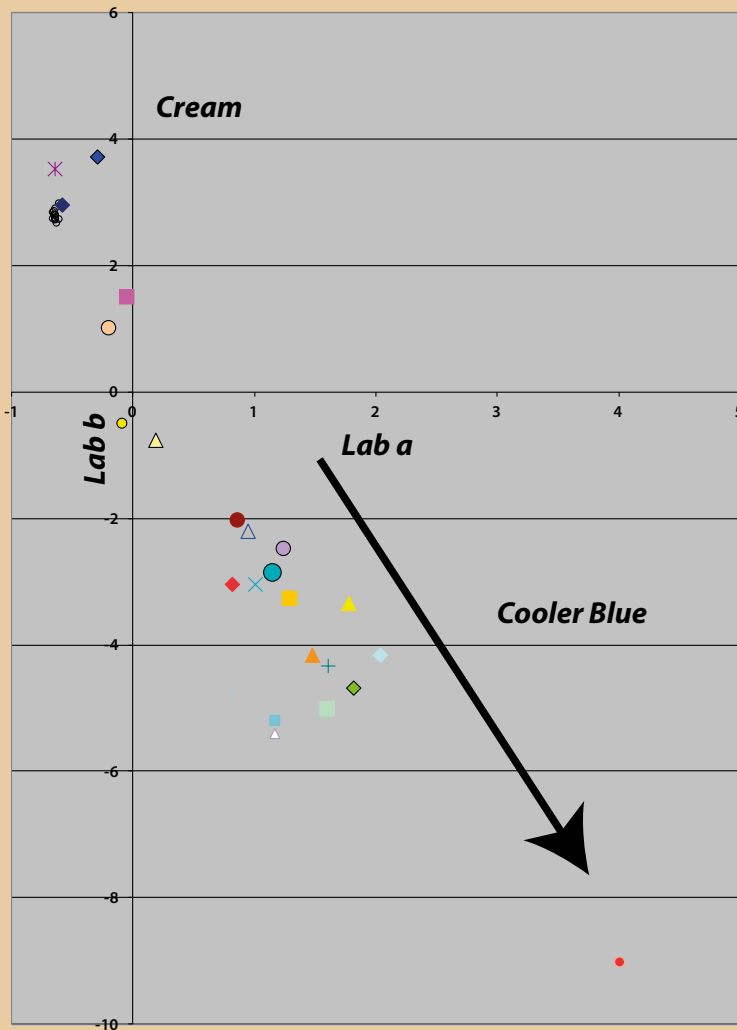
Although the ink set is a major contributor to Hi Gamut colour accuracy, the paper coating influences any shift of the tones. Here the colours show high accuracy and are almost perfectly centred.

HiGamut Colour Test Canson Baryta Photographique



Baryta Roundup

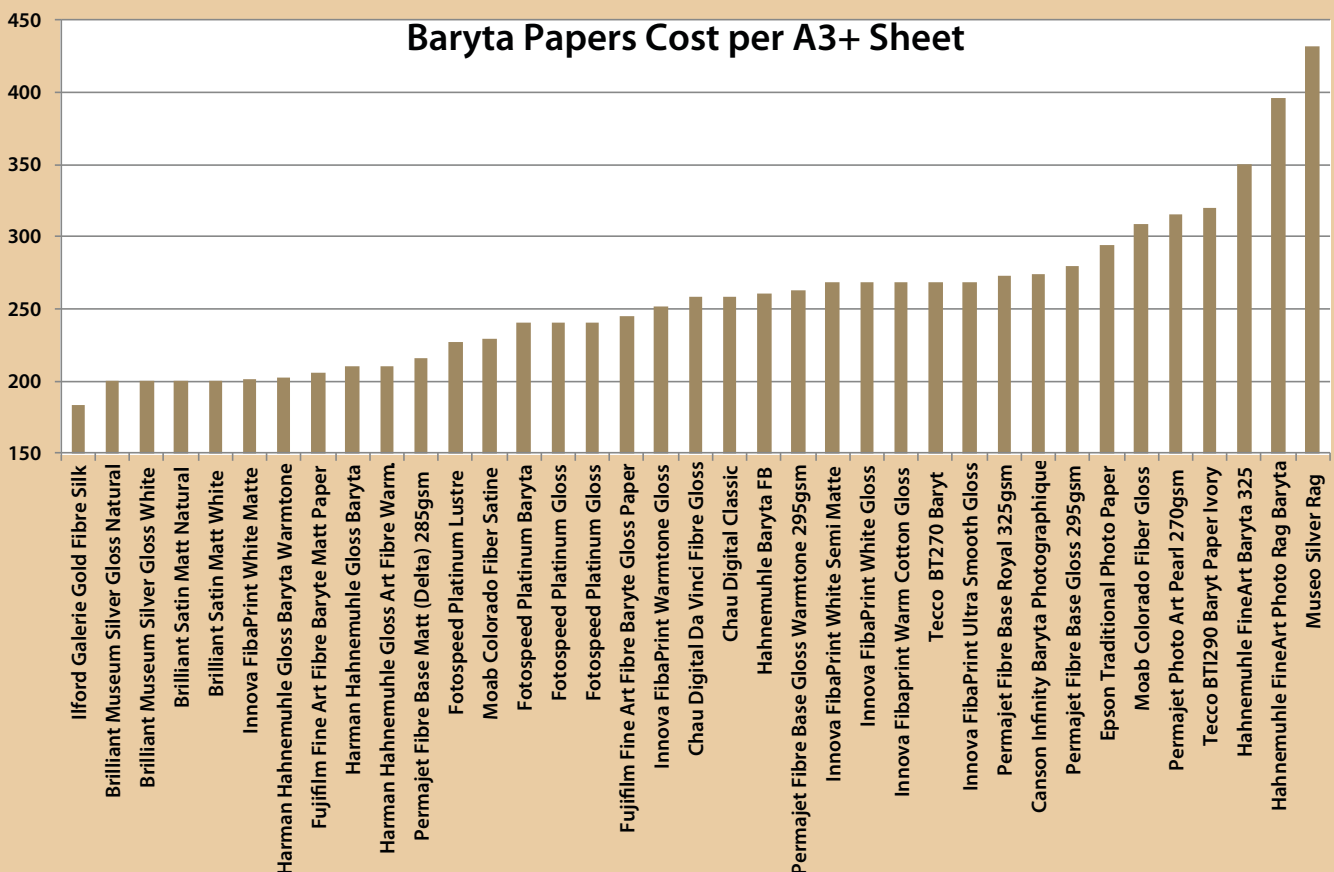
Baryta Papers				
Manufacturer	Media Name	Weight	Cost per A3+	
Calumet Brilliant	Museum Silver Gloss Natural	300	200	
	Museum Silver Gloss White	300	200	
	Satin Matt Natural	300	200	
	Satin Matt White	300	200	
Canon	Platinum Pro PT 101	300	NA	
Canson	Infinity Baryta Photographique	310	274	
Chau Digital	Da Vinci Fibre Gloss	300	259	
	Classic	300	259	
Epson	Traditional Photo Paper	350	294	
Fotospeed	Platinum Lustre	270	227	
	Platinum Baryta	300	240	
	Platinum Gloss	290	240	
	Platinum Gloss WT	290	240	
Fujifilm	Fine Art Fibre Baryte Matt Paper	310	206	A3
	Fine Art Fibre Baryte Gloss Paper	310	245	
Hahnemühle	Baryta FB	350	261	
	FineArt Baryta	325	350	
	FineArt Photo Rag Baryta	315	396	
Harman Hahnemühle	Gloss Baryta Warmtone	320	203	
	Gloss Baryta	320	210	
	Gloss Art Fibre Warm Tone	300	210	
Ilford	Galerie Gold Fibre Silk	310	184	
Innova	FibaPrint White Matte	280	201	
	FibaPrint Warmtone Gloss	300	252	
	FibaPrint White Semi Matte	300	269	
	FibaPrint White Gloss	300	269	
	Fibaprint Warm Cotton Gloss	325	269	
	FibaPrint Ultra Smooth Gloss	285	269	
Kodak	Fibre Based Glossy	285	220	Roll
	Fibre Based Satin	285	220	Roll
Moab	Colorado Fiber Satine	245	229	
	Colorado Fiber Gloss	245	309	Roll
Museo	Silver Rag	300	432	
PermaJet	Fibre Base Matt (Delta) 285gsm	285	216	
	Fibre Base Gloss Warmtone 295gsm	295	263	
	Fibre Base Royal 325gsm	325	273	
	Fibre Base Gloss 295gsm	295	280	
	Photo Art Pearl 270gsm	270	316	
	Fibre Based Distinction	360	276	
Pictorico	Gekko Green	n/a	NA	
	Velvety Paper		NA	
Premier Art	Platinum Rag		NA	
Red River	SanGabriel SG Baryta		265\$	\$
SIHL	aka InkpressPro Baryta aka Satin Baryta	290		
	aka InkpressPro Baryta WT			
Tecco	BT270 Baryt	270	269	
	BTI290 Baryt Paper Ivory	290	320	A3



- Repeatability
- Han PRagPearl 320
- ▲ Han FA Pearl285
- × PJet FB Gloss 295
- × FotS DWPBWT
- FotS DWPB Neutral
- + Pjet FB Gloss 325
- △ FujiHunt Baryte
- ◆ Harman GlossFBAI
- Han FA Baryta 325
- ▲ Ilford Gallery Gold FB
- Epson Trad PhotoPaper
- ◆ PjetFB WT
- Lumijet Photo White Pearl 260
- Lumijet Natural White 260
- ◆ FotS DWPB Neutral
- Fiba print White matte 280
- ◆ Ultra Smooth Gloss 285
- FibaPrint White Gloss300
- ▲ Fibaprint White SemiMatte 300
- Canson Baryta Photographique
- △ Moab Colorado Fiber Gloss
- Moab Colorado Fiber Satine
- PermaJet FB Distinction
- Fibre Base Royal

**Baryta Media
Base Lab Parameters**

Baryta Papers Cost per A3+ Sheet



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making quality, printer, ink set and ambient air variations. One of the key 'error drivers' is the fluorescence caused by OBAs. These impede measurements, profile making and print auditing as well as having quite an influence on the 'look' of the print.

Arguments are sometimes made for ignoring the reams of data we produce, but if that is your stance then all you can do is buy every variant and make each of your prints on it and then choose your preference (and good luck, speak to your financial controller!).

We have statistical routines for collating Excel data across our audit database. This has shown an improvement in the average error from 3.3ΔE₀₀ to 3.0ΔE₀₀ over the past five years. This is a relatively trivial change and certainly one which many punters would be unable to discern in their real prints. However, the ink's gamut has increased steadily from around 800,000 to over 1,000,000 units and this shows up as more accurate reproduction of the colours at the edges of the gamut boundary. Our HiGAM patch set is only 13 colours out of a total of 216 and so has only a little leverage on the average statistics. It might, however, be vital in accurately reproducing an acrylic alizarin crimson!

One of the things that makes the baryta data special is that they provide all the best data and consistently perform better than the average across all the data subsets. The skin tones are particularly accurate and in many instances may be regarded as perfect. The record amongst the data set is Canson Baryta Photographique, but it is run tantalisingly close by Ilford Gold Fibre Silk which is offered at £76.88 ex VAT for 50 sheets of A3+ by on-linepaper.co.uk. The similarity in performance of these two papers is uncanny and they jointly represent the closest of the papers to a pure spectral neutral in D50 light, a result of the zero OBA loading in both papers.

Having said this, most of the other papers run close on statistics and any of them may be used with complete confidence. The major discriminators are cost and base brightness. Cost is self-evident from the graph although it will not be a driver in all instances. Coolness is effectively shown on the **Lab** plot – the lower down the graph you go, the cooler is the paper, maxing out at PermaJet Fibre Base Distinction, the coolest paper of the bunch. It is not the most fluorescent, that goes to Moab Colorado Satine or the 'Brightest' (as measured in accord with TAPPI T452) which goes to PermaJet Photo Art Pearl. These cool, bright papers make for a punchier print providing you can live with OBAs and the threat of yellowing with age.

"When image permanence may be an important factor, fluorescent brighteners should be avoided in the manufacture of photographic materials."

Henry Wilhelm,
IS&T's NIP19: 2003 International Conference on Digital
Printing Technologies.

The Lost Papers

Some got away. We were unable to find a price or supplier for Pictorico, SIHL, Red River or Canon baryta media. We also recognise that the tables are incomplete, indeed we found Pinnacle papers by Paper Spectrum after the data had been collated – there are almost certainly others lurking!

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Choosing

So how do you choose? Well the barytas are generally at the premium end of the price range and for many this limits them to exhibition prints and high-end sales – even we do not use barytas for proofing despite having boxes of samples to hand! The great accuracy is a help across the board including more certainty in the rather uncertain area of screen-to-print matching. It will help if reproduction accuracy across the gamut is vital. But what if your picture is predominantly blues? Herein lies the thorny issue of matching the paper surface to the image. A generally cool image will display more vibrance with a cool paper, at the expense of the yellows. A cool paper will degrade the yellows as the blueness of the base pollutes them, so a beach scene with yellow sand and blue skies presents a problem. Sand or sky has to be either sacrificed or artificially boosted in image processing. This is why you need to be alert to falling for the charms of a particular paper because of a colleague's image that presents well on it – your image, with a different colour emphasis might look a little disappointing. For exhibition work it is important to match the base tone of the window mount to the paper, a very bright/cool paper will look ghastly set in a cream or off-white window.

All baryta papers are favoured by monochrome workers. Here the choice is slightly easier. If your mono image's base tone is warmed then the image should be set on a warm to neutral paper. If you are after a cooler look then a cooled paper will assist, along with some cooling in the advanced black and white driver. A more senior portrait might look best, and most sympathetic, on a warm combination; a modern portrait or fashion shot might look best cool. By way of example, within our membership, this might be best illustrated by comparing the nude work of the Yerbury's and Damian McGillicuddy. Faye and Trevor produce very classical figure studies which lend themselves to their favoured Fotospeed Platinum Warmtone and are often warmed in image processing; Damian's more 'raunchy' style is usually cooled by the photographer himself and would naturally lend itself to a brighter and cooler paper. This comparison gives me the opportunity to reshoot my favourite images from these maestros – a fitting place to finish!



McGillicuddy



ABOVE:
The more classical fine art nudes of Faye Yerbury (left) and Trevor Yerbury (right) are suited to a warm tone baryta monochrome treatment. The cooler, progressive style of Damian McGillicuddy (top) would be more suited to a brighter, cooler paper.