STEP-WEDGE DENSITOMETRY · 21 WEDGE SHEETS · 4 PICTORIAL PRINTS · 4 NEGATIVE CURVES · AUG 3 — AUG 20, 2026

The grade dial only works over its bottom half

Twenty-five Platinotype scans on Bergger COT320, measured off the linear scan data rather than the rendered preview, and sorted into the *three separate contrast series* they actually are — 20260803 interleaves two different negative curves and was never one series. All three agree: the Solution A/B dial does useful work from 0% to 50% chlorate and gives it back above that. Two findings sit alongside that: the density figure the reports print is an estimate rather than a measurement, and a fresh batch of developer moves the print further than one full 25-point increment of chlorate.

PROCESS	PAPER	DEVELOPER	EXPOSURE
Platinum (Platinotype)	Bergger COT320	Ammonium citrate, 5 min	UV box at full power, 12 min

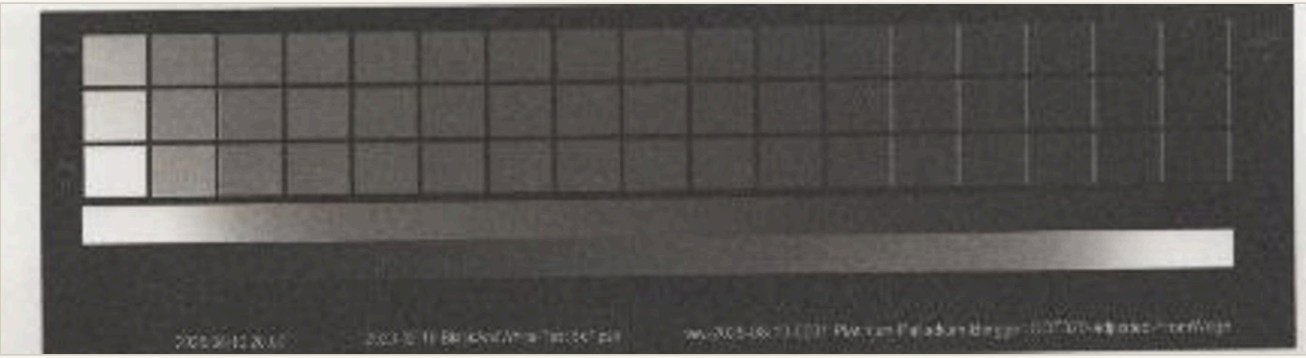
SCANS	SESSIONS	SERIES
Epson V850 raw, 300 dpi	20260803 · 20260810 · 20260819	3, one per negative curve

WHAT THE SERIES LOOKS LIKE

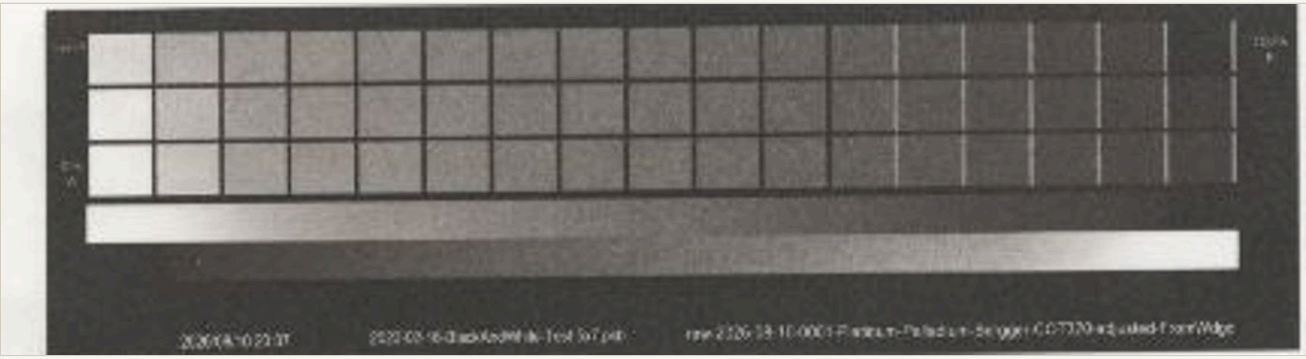
Four wedges, scanned

All four sheets went through the same negative — the August 10th one — so they can be compared directly. Same twelve minutes with the UV box at full power, same five minutes in ammonium citrate. Only the chlorate fraction changes, except in the last strip, where the chemistry matches the third and only the developer is new.

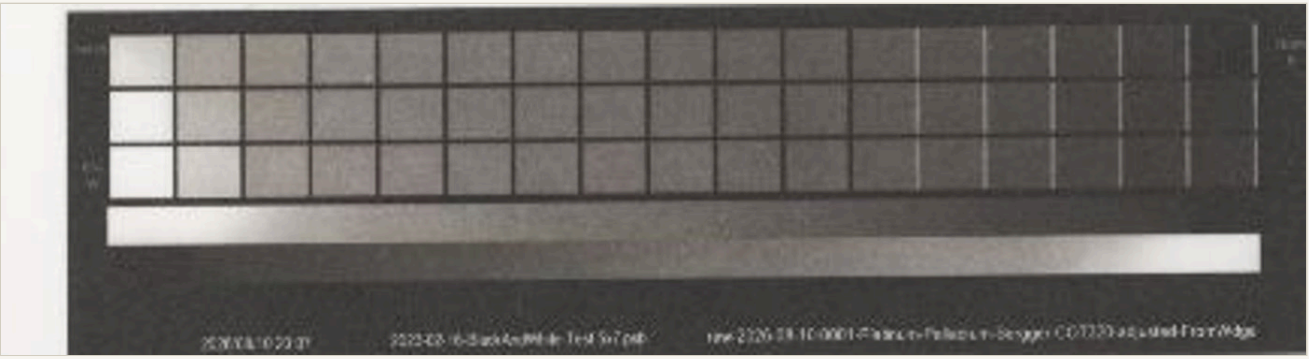
Grade 0 — no chlorate 2026-08-10-0004 Dmax 1.198 · D50 1.009 · shape 0.29



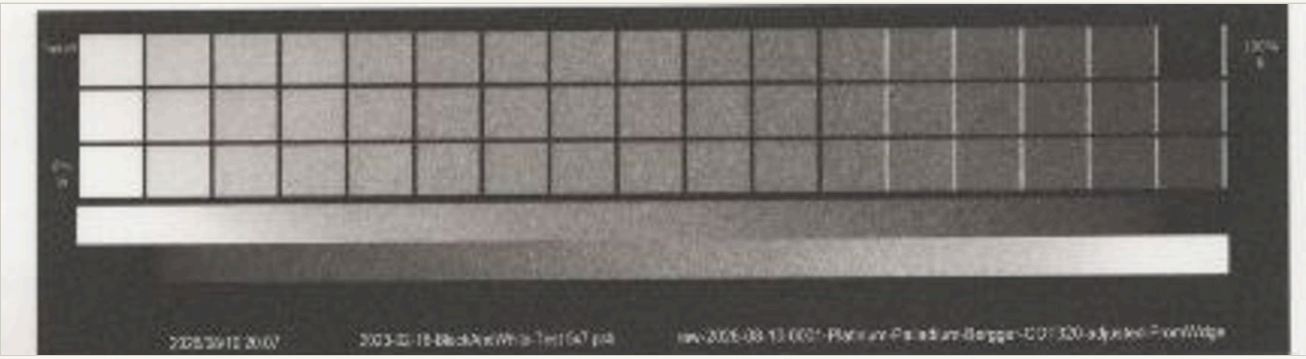
Grade 5 — half chlorate `2026-08-10-0002 Dmax 1.149 · D50 0.682 · shape 0.65`



Grade 9 — full chlorate `2026-08-17-0003 Dmax 1.270 · D50 0.780 · shape 0.66`



Grade 5, fresh developer `2026-08-20-0001 Dmax 1.199 · D50 0.548 · shape 1.08`



Read each strip left to right: seventeen columns of three tiles, paper white at the left, maximum black at the right. All four cropped from the same position on the sheet, from the full scans below. Click any strip to enlarge.

BEFORE ANYTHING ELSE

Where the numbers in this report come from

Every density quoted here is measured from the linear scan data, not taken from the StepWedgeDensitone report. The two do not agree, and the reason is worth setting out before any of the results rest on it.

Each report carries a statistics block with four figures in it. They are not all on the same scale, and the difference between them is the whole of this section:

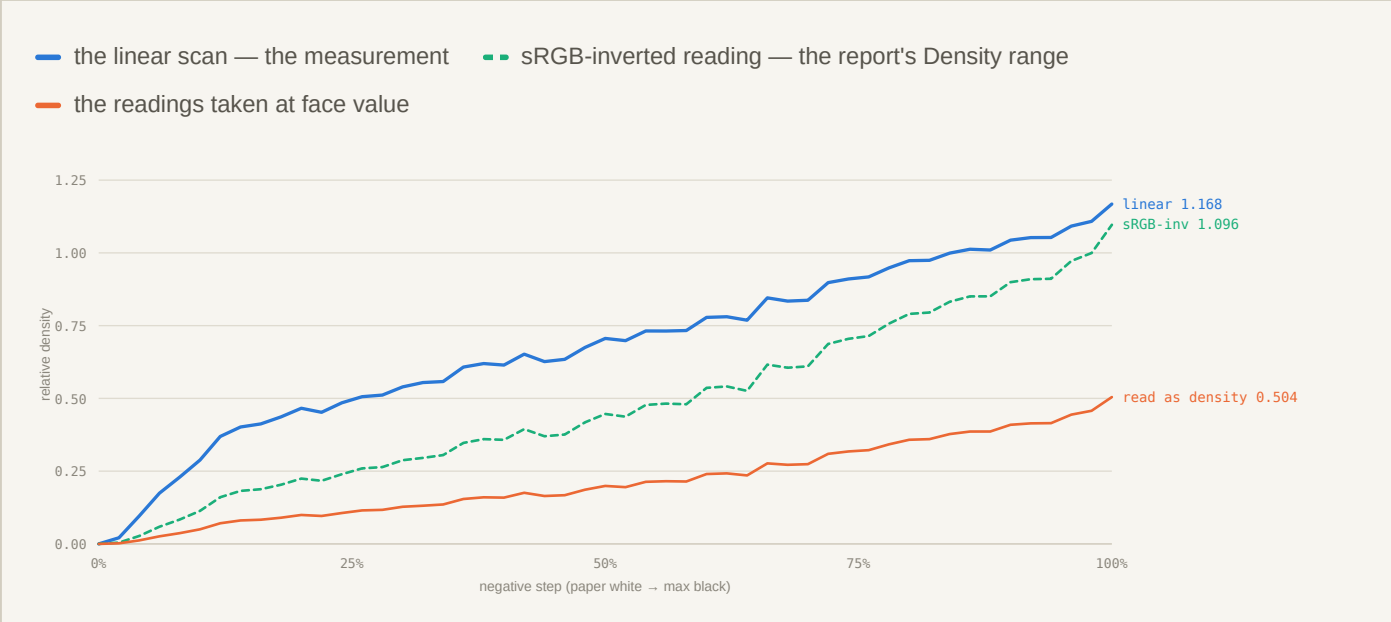
LABEL	VALUE	WHAT IT IS	SCALE
White reading	0.984	the lightest patch on the sheet — paper white plus whatever stain the coating left	tone, 0–1
Black reading	0.308	the darkest patch on the sheet	tone, 0–1
Reading spread	0.676	the two above, subtracted — how much of the tone scale the print occupies	tone, 0–1
Density range	**1.096**	an estimate of the print's density range, derived from the two readings	$\log_{10}$

Statistics block, `raw-2026-08-10-0002`.

A reading is not a density. The first three figures are *tone* values, taken from the rendered preview of the scan on a linear 0–1 scale where 1 is white and 0 is black. Only the fourth is a density — a base-10 logarithm of a reflectance ratio, measured relative to the lightest patch. The per-step Measurement Data table further down each report is in tone throughout, which is exactly right for building a correction curve and misleading if a column of it is read as density.

What happens if you read them as densities anyway. Taking the two endpoint readings at face value and converting the obvious way, $-\log_{10}(0.308 \div 0.984)$, gives **0.504** for this sheet and about 0.54 averaged over the study. That would be a poor print — a maximum black reflecting nearly a third of the light that paper white does, roughly newsprint. It is not what these sheets did, and the reason is that a rendered preview applies a highlight rolloff, which is precisely where a reflection print keeps most of its information.

How good is the Density range figure? It is derived by taking the two endpoint readings and undoing an assumed sRGB transfer curve. That can be said with confidence rather than as a guess: computing the sRGB inverse of each report's own White and Black reading reproduces its printed Density range to within **0.002 on all twenty-one sheets**. Against the linear measurement, it runs **0.045 low on average**, standard deviation 0.033, worst case 0.105, correlation 0.85. Right conclusion, right ballpark, still an estimate built on the rendered preview.



Print 2026-08-10-0002, read three ways from the same file. The report's estimate lands close at the black end — but the curve shows why that is partly luck: extended across the whole scale, the sRGB inversion sits **0.26 low at the mid-tone**. The preview's transform is not sRGB; it only resembles it near the ends. The lowest line is what the readings give if taken at face value.

Hence the rule followed throughout: every density in this report is sampled from the DNG's linear channel, which needs no assumption about what the preview did. It is the same file the app already has open.

One figure to watch when reading a report alongside this one: the statistics block mixes its scales. Density range is in log units while Mid-tone, 0.622, is still a tone reading, so the two cannot be compared with each other. And the pictorial print report is not on the same footing at all — `raw-2026-08-20-0004` prints white and black points of 0.985 and 0.214 with no density figure derived from them.

> **What this means for the tool**
>
> The measurement geometry, the tile finding and the linearisation logic are all sound. What remains is one line in the pipeline: read the linear buffer instead of the rendered one. Everything downstream — the γ figures, the mid-tone, the data table — then lands on the same scale as the density range without any curve being assumed.

THE INSTRUMENT

How much of this can the scanner actually tell us?

Every figure in this report rests on one thing: that the numbers in the file are proportional to how much light the paper sent back. That is worth writing down properly rather than waving at, because if it fails, everything above it fails with it.

The chain runs like this, and each link is a different kind of claim — something a manual states, something the files themselves prove, something physics guarantees,

something measured here, and one thing that remains an assumption. They are worth keeping apart.

DOCUMENTED

VueScan writes 16-bit raw files at gamma 1.0

> *"The image gamma value is 1.0 when there are two bytes (16-bits) per sample, and 2.2 when there is one byte (8-bits) per sample."*
>
> VueScan Manual, Output tab — Raw file

Gamma 1.0 means no tone curve at all: the number stored is proportional to the light the sensor received. The 8-bit path would have applied 2.2 — exactly the kind of encoding that opens the gap between a tone reading and a density in the section above.

VERIFIED IN THE FILES

All twenty-five scans are on the 16-bit path

Not assumed — read out of the DNG headers. Every file in the three folders carries the same tags, and every one of them is on the gamma-1.0 side of that sentence.

Make / Model	Epson · PerfectionV850
Software	VueScan 9 a64 (9.8.56)
BitsPerSample	16, 16, 16 — all 25 files
PhotometricInterpretation	34892 · LinearRaw
SamplesPerPixel	3
Compression	1 · none
Size / resolution	2400 × 3000 · 300 dpi · 8×10 in

The photometric tag is the DNG format's own word for the same thing: LinearRaw, a linear-light buffer with no rendering applied.

PHYSICS

A CCD is a photon counter

The V850's sensor accumulates charge in proportion to the light falling on it. Linearity is not a feature the scanner offers, it is what the device does before anything is applied on top — which is why the raw path is the one worth reading, and the rendered preview is not.

MEASURED HERE

The field is flat and the print is not clipped

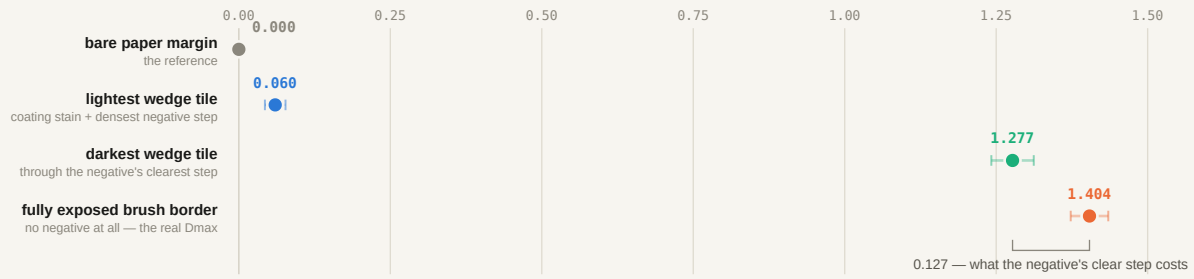
Every sheet carries its own flat-field target: the margin of uncoated paper around the coated area. Across all 21 wedge scans, that margin measured top strip against bottom strip differs by **+0.001 density, sd 0.003** — flat to about 0.002 along the scan axis. Across the sensor there is a falloff, but it is an edge effect: from 200 px in from the platen edge the profile holds within 0.003, and across the span the wedge occupies the tilt is **0.0006**.

Clipping exists — up to 12% of the frame — but sits entirely on the white document mat above and below the sheet. Paper margin tops out near 0.97, the lightest wedge tile at 0.84. Nothing on the print is against the ceiling.

STILL ASSUMED

Absolute linearity, and the black end

Everything above establishes that no *deliberate* tone curve was applied. It does not establish that the sensor and its electronics respond perfectly linearly across the whole range: nothing in these scans has a known density, so a smooth departure would be invisible. Stray light inside the scanner works in one direction only — it raises the reading in dark areas — so every density in this report is a floor rather than a ceiling. One scan of a reflection step tablet laid on the glass beside the sheet closes both gaps at once.



Four density landmarks, each measured against that sheet's own bare paper margin and averaged over all 21 wedge scans. Bars show one standard deviation.

What the black end is really doing. The brush-coated border — sensitized paper that saw the UV box through nothing at all — reads **1.40 ± 0.03** across the twenty-one wedge sheets. It is the right place to look for what the process can reach, because it is the only part of the sheet limited by paper, chemistry and exposure rather than by the negative. The wedge's own darkest tile only reaches 1.28, because it was exposed through the clearest step of a digital negative rather than through open air. The difference, **0.127**, is what the negative's base density costs the print. At the other end, the lightest wedge tile already sits 0.06 above bare paper: coating stain plus the negative's densest step.

Nearly, but not quite, indifferent to grade. Read against chlorate fraction, all three series agree: the no-chlorate sheets carry the densest border — 1.431, 1.436 and

1.463 — and the half- to three-quarter-chlorate sheets the lightest, a fall of about **0.04** within a single session, arrived at independently three times. Developer state does not move it beyond the scatter: the fresh-developer sheet reads 1.385 against 1.404 and 1.432 for the two aged sheets on the same negative. So the agent that redistributes a quarter of a density in the mid-tones costs about a twentieth of one at maximum black — small, but not the zero it would be if maximum black belonged to the paper alone.

What is still assumed. Field uniformity and clipping are measured. Linearity itself is not — nothing in these scans has a known density, so the response could bend smoothly and nothing here would show it. Stray light inside the scanner works in one direction only, raising the reading in dark areas, so every density in this report is a floor rather than a ceiling. One scan of a reflection step tablet laid on the glass beside the sheet would close both gaps at once, which is why it sits at the top of the list at the end. It matters for the figure above: **1.40 is not this paper's Dmax in the sense a reflection densitometer would report one**. It is measured against each sheet's own bare margin rather than a known reference, so the paper's own base density is folded inside it. Practitioner figures for matte platinum prints — absolute reflection densities, clustering near 1.4 and generally held below about 1.6 without surface treatment — land in the same region, which is reassuring and nothing more, since they are a different quantity read on a different instrument.

WHAT ACTUALLY MOVES THE PRINT

Four variables, measured on one scale

All four figures are shifts in mid-tone relative density, so they can be read against each other directly. Three of them are large. The fourth is what the measurement can resolve.

ONE GRADE STEP

0.15

25 points of chlorate

And only below half strength. Above 50% B every series gives the contrast back instead of adding more.

THE NEGATIVE

0.125

Changing the curve alone

Same mix, same day, different correction curve — at the 25% mix. At the ends of the series the same swap is worth under 0.01.

THE DEVELOPER

0.162

One fresh batch

A freshly mixed ammonium citrate against the same mix in aged developer, on the same negative. More than one full 25-point increment of chlorate.

A WEEK LATER

+0.09

Same mix, same negative

The study's two same-curve repeats drift +0.055 and +0.124, both denser — which is what an ageing developer does. Under it, the measurement itself is good to 0.002.

SECTION 1

Three contrast series, not one

A step wedge measures the print *and* the negative it came through. Each report names the correction curve its sheet was printed with, and across these three folders there are four of them.

The filenames say how each curve was made, and the distinction matters for what follows. `PSAdjusted` or `adjusted` means the curve was corrected **by hand in Photoshop**. `FromWdge` means it was **generated automatically by StepWedgeDensitone** from the wedge measurement — the app reads the 51 tiles and writes the corrected `.acv` itself, with no hand-shaping in between. Two of the four curves below came out of each route, and curves ii and iii are the *same measurement of the same sheet* sent down both — the one place in this study where the two methods can be set against each other directly. The sheets they produced agree to **0.008** in mid-tone density and diverge to **0.073** at the quarter-tone, the hand-corrected one running lighter there.

i **2026-06-08-Platino-P900-COT320-001-PSAdjusted-002.acv**

June 8th. Built on the P900 for COT320 and adjusted by hand in Photoshop; the trailing `002` says it had already been revised once. This is where the study starts. Six sheets were printed with it: a complete series on August 3rd and 4th, plus a repeat of the half-chlorate mix a week later, in the 20260810 folder, which was then measured to build curve iv.

ii **raw-2026-08-03-0001-…-adjusted.acv**

Measured from 2026-08-03-0001, the first sheet of the study, then corrected by hand in Photoshop. Exactly one sheet was printed with it: 2026-08-03-0002. It belongs to no series.

iii **raw-2026-08-03-0001-…-adjusted-FromWdge.acv**

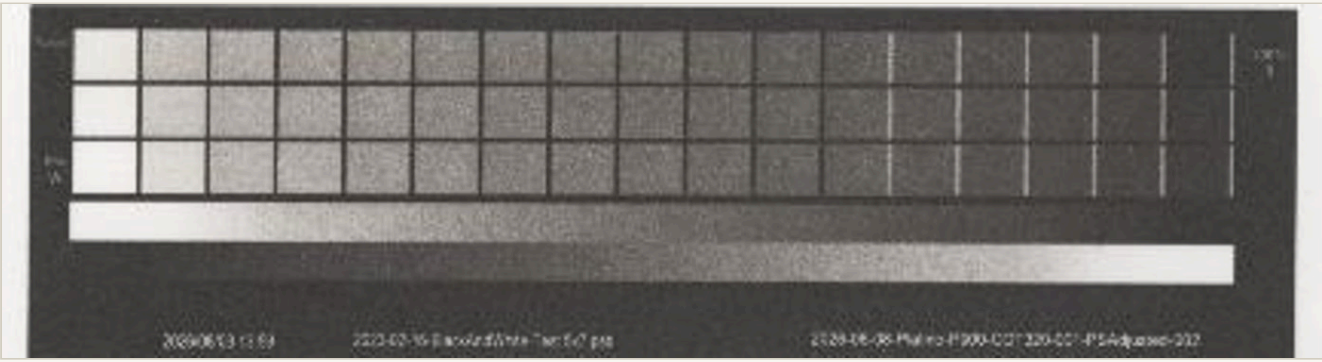
The same measurement of the same sheet, but written automatically by StepWedgeDensitone from the wedge data rather than shaped by hand — so this curve and the one above it differ only in how the correction was arrived at. Another five sheets, again one at every chlorate fraction: a complete second series.

iv **raw-2026-08-10-0001-…-adjusted-FromWdge.acv**

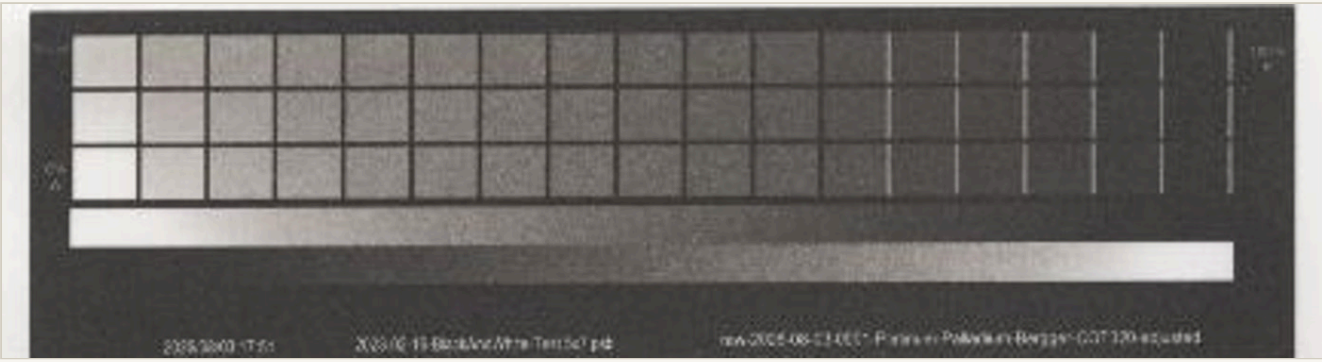
The next generation, again generated automatically by the app, this time from 2026-08-10-0001. Used for every other sheet in 20260810 and for the fresh-developer sheet in 20260819. The third series.

So 20260803 is not one contrast series with replicate pairs, which is how it reads if you sort the folder by filename. It is two complete series — 0, 25, 50, 75 and 100% chlorate printed once through the June curve and once through the August FromWdge curve — plus a single extra half-chlorate sheet on the hand-adjusted variant. Sheets on different curves are not replicates of each other, and nothing below averages across them.

June curve `2026-08-03-0001 D50 0.730 · hi load 0.36`

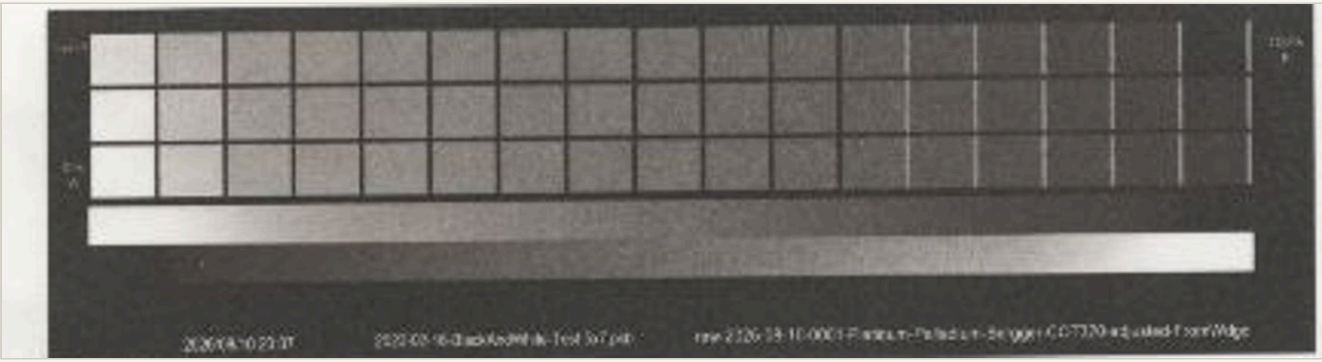


Aug 3 · hand-adjusted `2026-08-03-0002 D50 0.773 · hi load 0.42`



Aug 3 · from wedge `2026-08-03-0003 D50 0.765 · hi load 0.50`

Aug 10 · from wedge `2026-08-10-0002 D50 0.682 · hi load 0.44`



The identical half-chlorate mix through four different negatives. The first three were printed on the same day, so their spread — 0.730, 0.773, 0.765, a range of 0.043 — is the negative and nothing else. The fourth came a week later on the fourth curve and carries a week of drift with it.

How far a change of curve moves the reading depends on where you are standing in the series. Comparing the two complete August 3rd series mix by mix, same chemistry and same day:

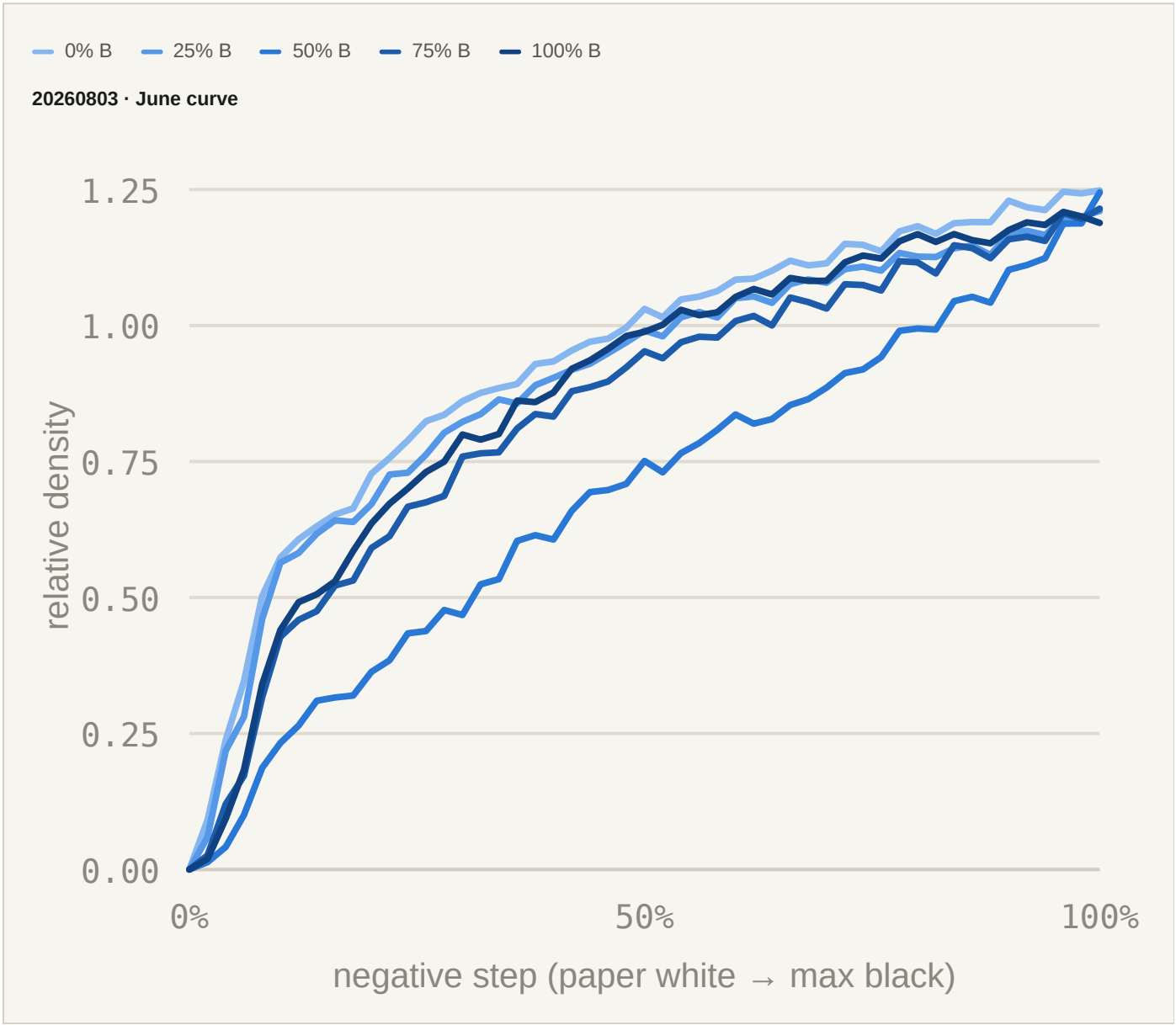
CHLORATE	JUNE CURVE	AUG 3 FROMWDGE	DIFFERENCE	SHEETS
0% B	1.016	1.024	+0.009	0007 · 0008
25% B	0.980	0.856	**−0.125**	0005 · 0006
50% B	0.730	0.765	+0.035	0001 · 0003
75% B	0.933	0.907	−0.026	04-0001 · 04-0002
100% B	0.979	0.973	−0.006	04-0003 · 04-0004

At the two ends of the series the curves agree to within 0.01 — the print is so shouldered there that the negative has almost no room to act. In the middle, where the response is most open, they diverge by up to 0.125, most of a grade step. That is the practical reason to keep them apart: the negative moves the reading hardest exactly where the grade is doing its work.

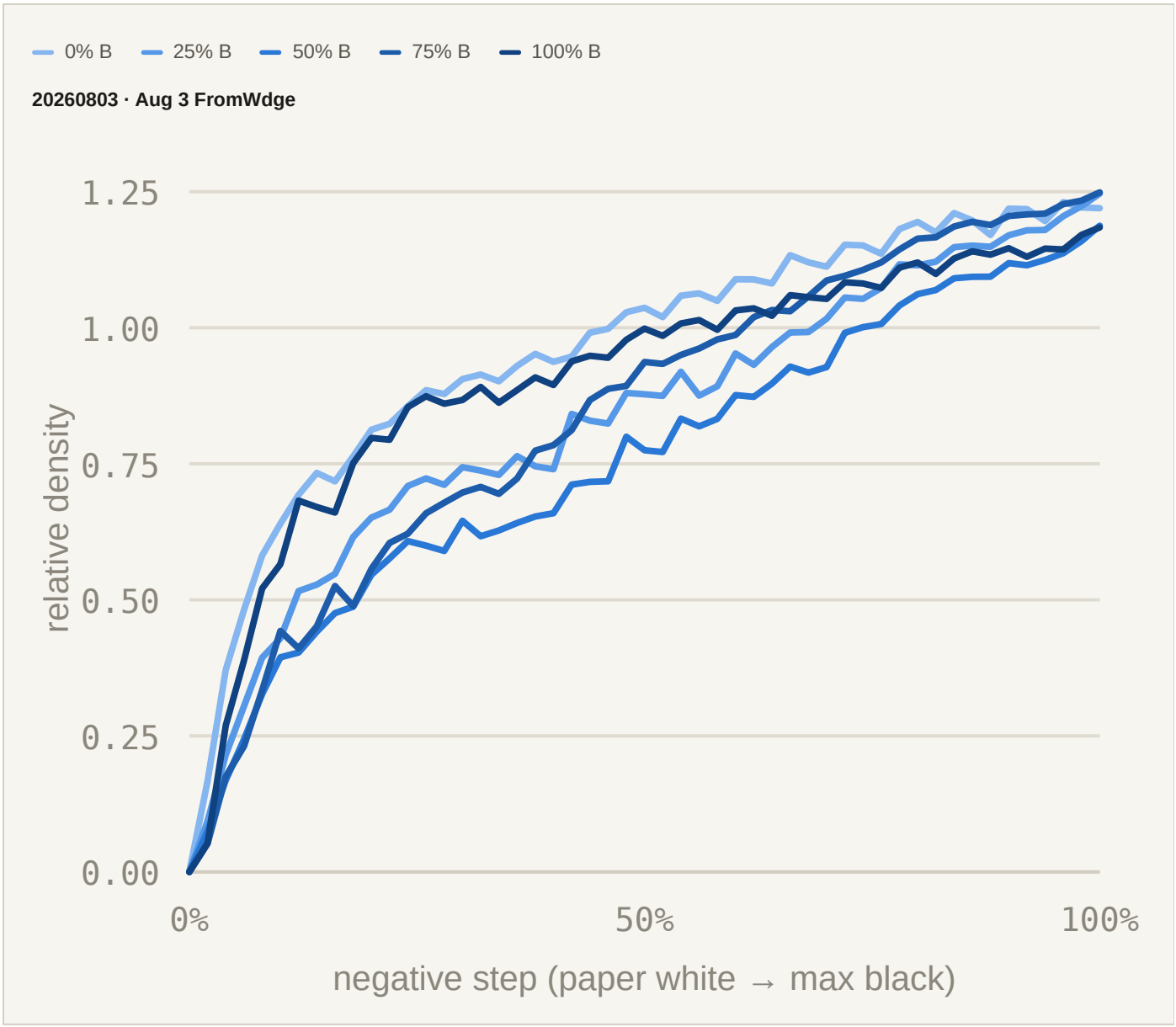
SECTION 2

What each grade does to the curve

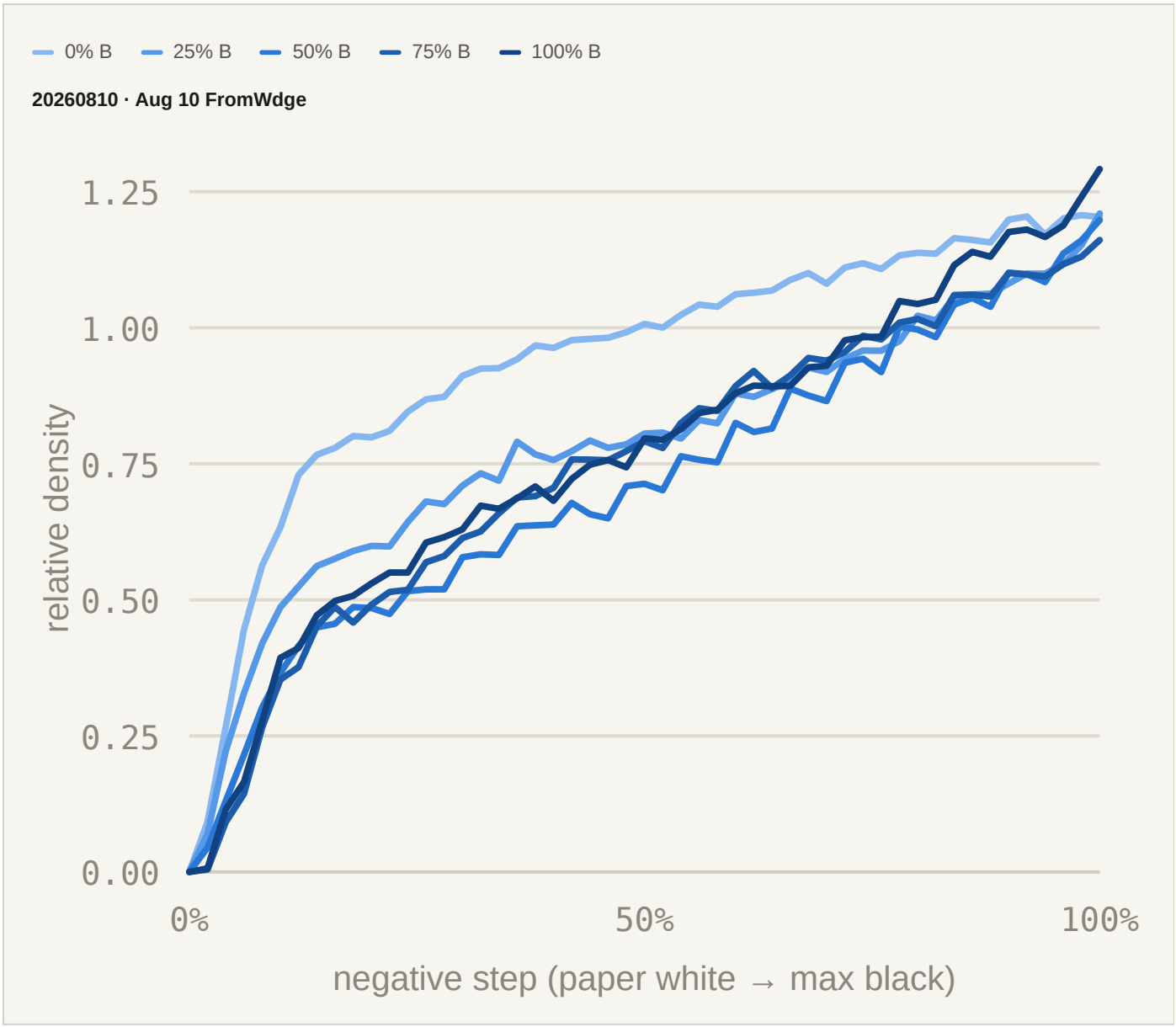
One panel per negative curve — never mixed. Relative density against the negative's step value, one sheet per mix except the 50% mix of the third series, which has two. The sheet with a coating band is left out.



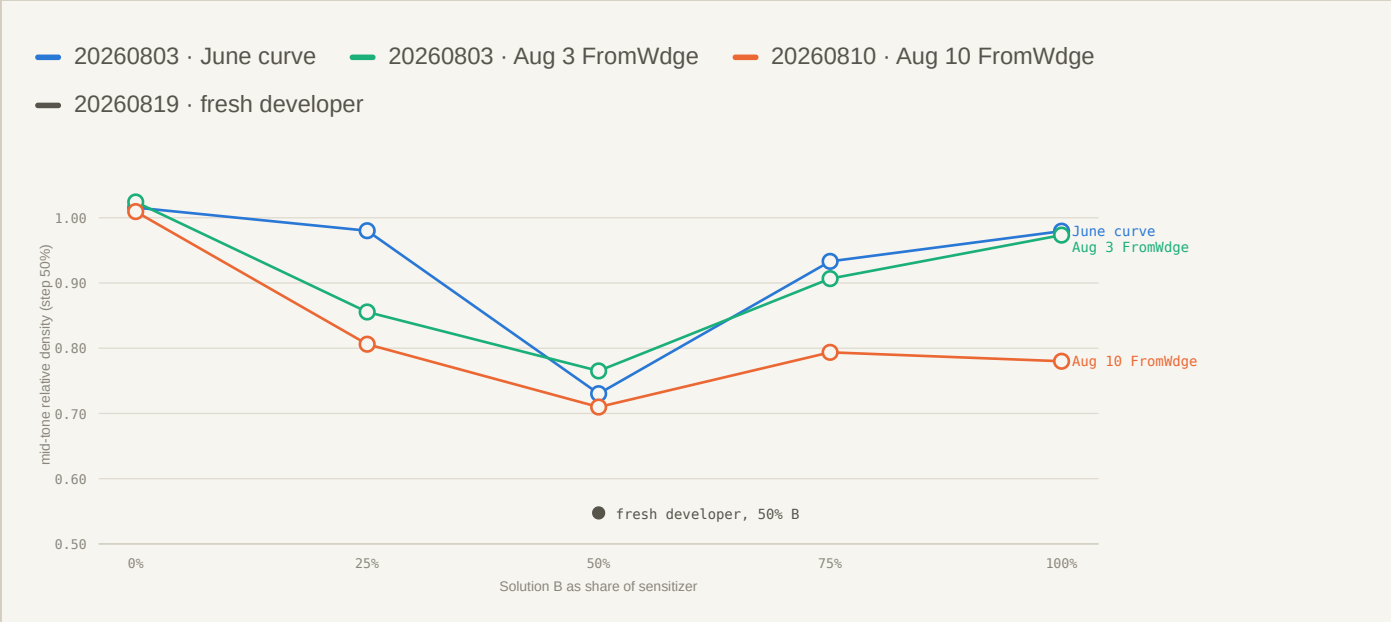
20260803 · June curve. Opens from 0% to 50% chlorate, then swings back past the 25% line.



20260803 · Aug 3 FromWdge. A different negative, the same shape: peak at 50%, reversal above it.



20260810 · Aug 10 FromWdge. Same again, with a much smaller reversal — but the top two mixes are one sheet each.



Mid-tone density at the 50% step against actual chlorate fraction. Three series, three negatives, two sessions a week apart, and all three turn at the same place.

Read down the three series and the same thing happens each time. Mid-tone density falls steadily to half strength — 1.016 → 0.980 → 0.730 on the June curve, 1.024 → 0.856 → 0.765 on the August 3rd one, 1.009 → 0.806 → 0.710 on the August 10th — and then turns and climbs again: to 0.979, to 0.973, to 0.780.

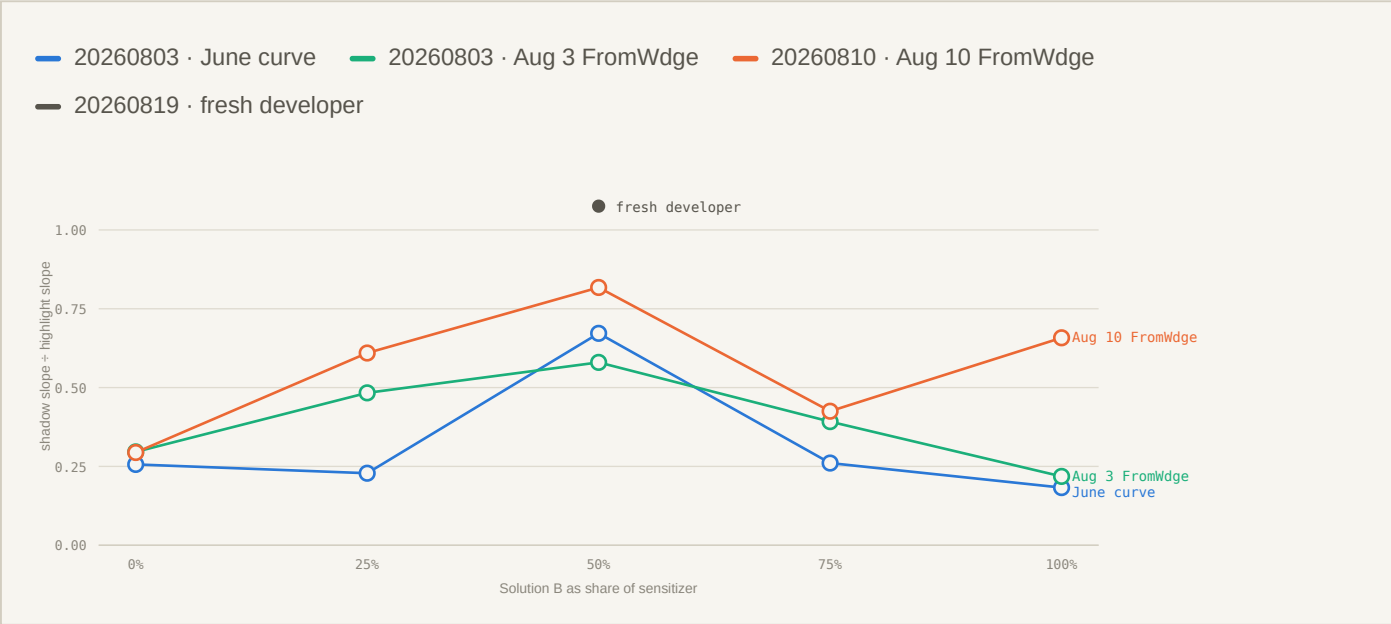
Three separate negatives, made in three different weeks from three different reference prints, cannot conspire to produce the same turning point. Whatever the top of the series is doing, it is a property of the process and not of one negative.

What the curves disagree about is *how far* the reversal goes. The two August 3rd series give back 0.25 and 0.21 of the density they gained; the August 10th one gives back 0.07. That is a large difference in degree for the same nominal chemistry, and it is the thread worth pulling next.

SECTION 3

Contrast here means shape, not range

Since every sheet reaches paper white and the same maximum black, the useful description of a grade is *where it puts its density*. The shape index divides the slope through the shadows (steps 70–90%) by the slope through the highlights (steps 10–30%).



Below 1.0 the print spends its density in the highlights and compresses the shadows — a soft, shouldered curve. Above 1.0 the highlights stay open and the shadows separate. Only one sheet in the study clears 1.0, and it is not a grade change that got it there.

All three series start at the same place — 0.26, 0.30, 0.29 with no chlorate — and all three peak at half strength, at 0.67, 0.58 and 0.82. Then they fall: to 0.18 and 0.22 on the two August 3rd curves, and to 0.66 on the August 10th one. Same direction every time, wildly different magnitude.

Losing shadow separation looks at first like the signature of underexposure, and there is a mechanical reason to reach for it: chlorate is a restrainer, and the practical literature describes its action as slowing the exposure process in order to raise contrast. What that costs in exposure is not a figure I can find quantified anywhere — the standard contrast-control tables give proportions and say nothing about compensating the clock. It was my first reading of these curves. The sheets rule it out on three counts.

Maximum black does not move with chlorate. Pooled over the three series, wedge Dmax runs 1.218, 1.208, 1.200, 1.201 and 1.214 from 0% to 100% B — a spread of **0.017** against a sheet-to-sheet standard deviation of 0.031. The full-chlorate sheets reach the same black as the no-chlorate ones. A print starved of light does not get there.

The high-chlorate mixes shoulder earlier, not later. Taking the step at which each sheet first reaches 90% of its own Dmax: 0% B at step 66, 25% at 79, **50% at 89**,

75% at 79, 100% at 74. The half-chlorate mix uses the most of the scale and both ends run out before it. Underexposure would push that point later.

And their mid-tones are denser, not lighter. D50 climbs back to 0.979, 0.973 and 0.780 at full chlorate from the 0.730, 0.765 and 0.710 minimum at half. Underexposure lightens a print everywhere; these got darker.

So the shadows at the top of the series are not short of light. They are crammed against a ceiling they have already reached — the curve shoulders early and the last third of the scale piles up near Dmax, which is exactly what a low shadow slope measures. That is saturation, and it also disposes of the idea that more exposure would help: the blacks sit where the curve has no slope left, so extra minutes would land on the highlights and quarter-tones instead, darkening them against a fixed Dmax. The range would narrow and the curve would flatten. If anything opens a shouldered shadow it is *less* exposure, not more.

Every sheet in all three series got the same exposure — the UV box at full power for twelve minutes, which is what the notes field means by `Full 12min`. Not a fraction of full, not a nominal setting: the lamp was already giving everything it has. That removes one candidate explanation for the differences between sessions, since the box cannot have been set lower on one day than another, and it leaves time as the only exposure variable there is.

What saturation does not explain is why the reversal differs so much between negatives — 0.25 and 0.21 of density given back on the two August 3rd curves against 0.07 on the August 10th one, for nominally identical chemistry. Something is still moving that is neither the chlorate nor the exposure.

> **What would settle it**
>
> Bracket the exposure *both ways* — 8, 10, 12 and 16 minutes at 75% and 100% B, all on one negative. The prediction from saturation is that none of them reopens the shadows and the shorter times simply lift the whole print off Dmax; if instead the shadows separate at 8 or 10 minutes, the twelve-minute standard is overexposing the high-chlorate mixes and the shoulder is the thing to design around. Either result is worth more than another sheet at 12. Bracketing only upwards, which is what this study first proposed, could not have distinguished them.

SECTION 4

Is 20260803 really the dirtier set?

No — and the appearance that it is comes from reading two series as one.

At the level of individual tiles the two sessions are indistinguishable. Step-to-step jitter averages 2.76 in 20260803 and 2.59 in 20260810; local residual scatter after removing each curve's own trend is 0.019 and 0.021 once the two defective sheets

are set aside. Nothing about the coating, the scan or the measurement is noisier on August 3rd.

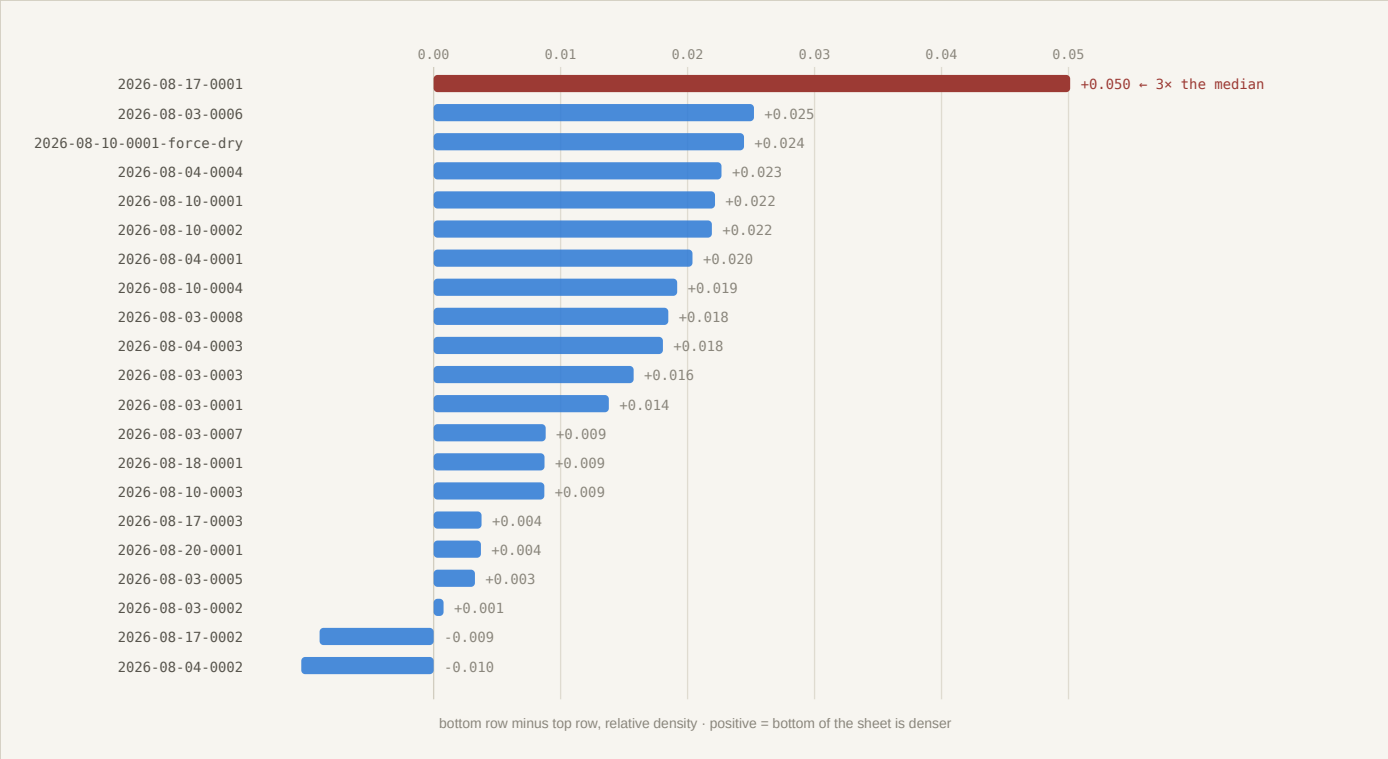
Sorted by filename the session looks unstable: pairs of sheets at the same grade that disagree by as much as 0.125. But those are not pairs. Every sheet in 20260803 is a unique combination of chlorate fraction and negative curve, and the disagreements are the curves, not the process — largest at the 25% mix where the negative has the most room, and under 0.01 at both ends where it has none.

The real limitation of 20260803 is subtler and harder to fix: **nothing inside it is ever repeated.** Not one condition appears twice within the session, so on its own it cannot tell you how reproducible anything in it is. The repeat exists, but it is in the next folder: 2026-08-10-0001 is the half-chlorate mix of series 1 printed again a week later on the same June negative, and it reads 0.124 denser in the mid-tones. The third series has its own repeat — 2026-08-10-0002 and 2026-08-17-0001, also a week apart — which drifts 0.055 in the same direction.

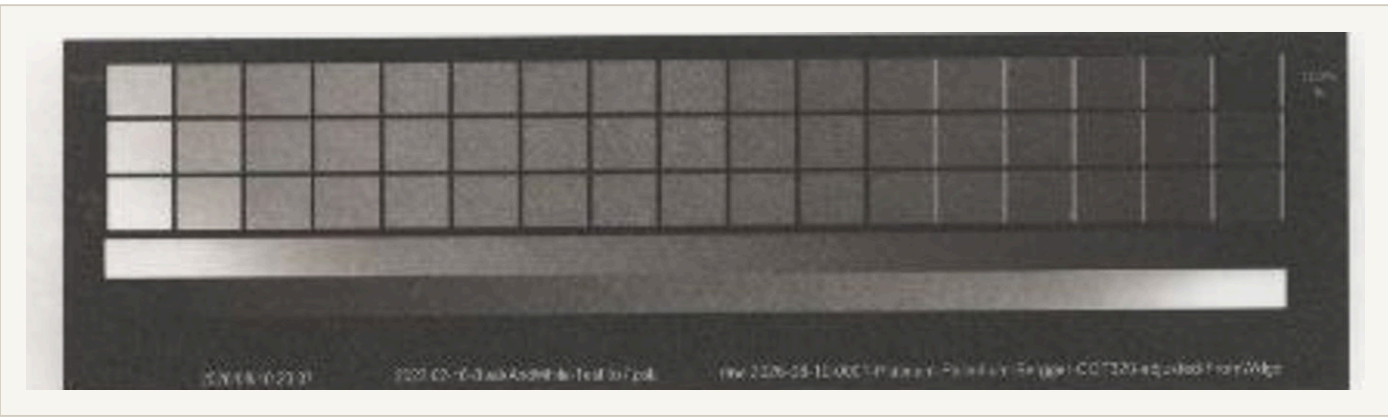
Two repeats, two negatives, both a week apart, both denser the second time. That is not scatter; it is drift, and mid-tones filling in over a week is exactly what an ageing developer does. It also means a week-old comparison in this dataset carries roughly 0.06–0.12 of built-in shift before any deliberate change is counted.

Underneath it sits a much smaller number. 2026-08-10-0001 was scanned twice: once immediately after being force-dried with a dryer straight out of the wash, and again twenty-one hours later, after the twenty-four-hour air dry every other sheet here got. Same print, lifted off the glass and laid down again, all 51 tiles re-found — and the two readings differ by 0.002. So the measurement chain is not what limits this work, and force-drying does not shift the print relative to natural drying.

20260810 is the session that holds the two physically damaged sheets, and both were made on August 17th.



Vertical density gradient across each sheet: the bottom row of wedge tiles minus the top row. The wedge is laid out 17 columns × 3 rows and read column-major, so this is a clean, trend-free estimate of how evenly the sheet itself printed.



2026-08-17-0001 — the worst vertical gradient in the study, +0.050. The bottom row of tiles reads half a stop denser than the top.

2026-08-17-0002 — a tonal step between the sixth and seventh columns, twice the banding of anything else. A coating streak, and enough to void the sheet's numbers.

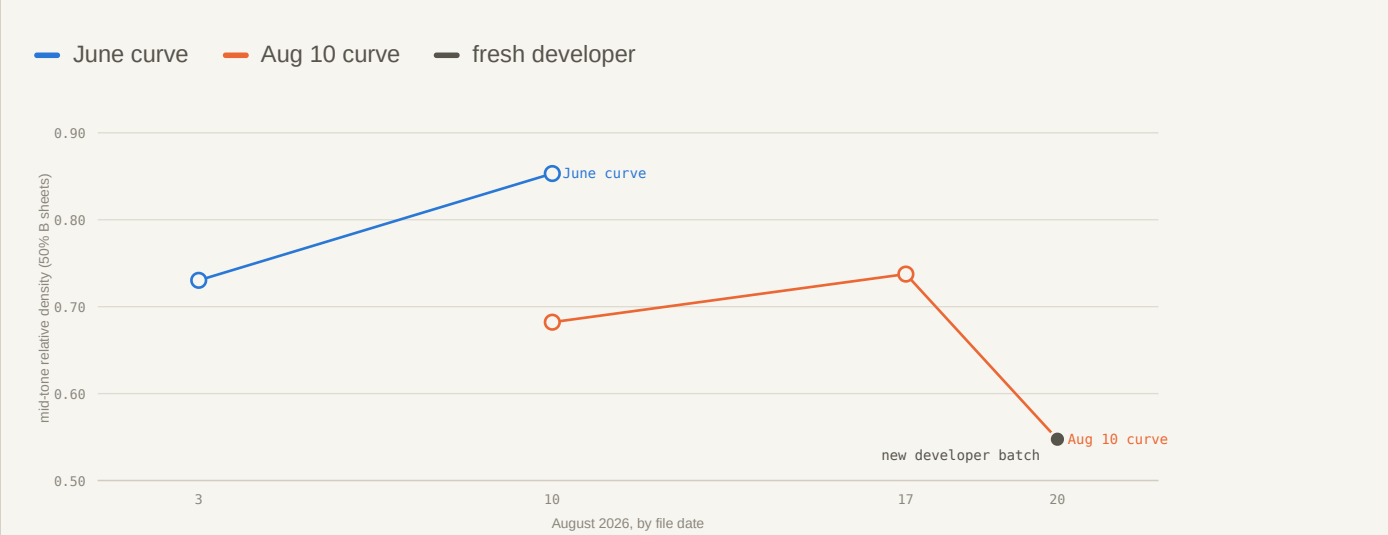
Nineteen of the twenty-one wedge measurements show the bottom reading denser than the top, always in the same direction, by 0.001 to 0.025 with a median of 0.016. A gradient that repeats across three sessions and five chemistries is not noise. Two independent checks say it belongs to the sheet. One — 2026-08-10-0003 — went onto the glass upside-down and was rotated back in software, and its gradient still points the same way. The other is the scanner itself: measured from the bare paper margins of all 21 scans, the V850's field along the scan axis is flat to 0.002 density, an order of magnitude below the gradient it would have to explain.

The practical consequence: with a 0.016 uniformity floor and a grade step worth about 0.15 in mid-tone density, this setup has roughly nine usable steps of contrast resolution — if the series delivered them. It delivers three.

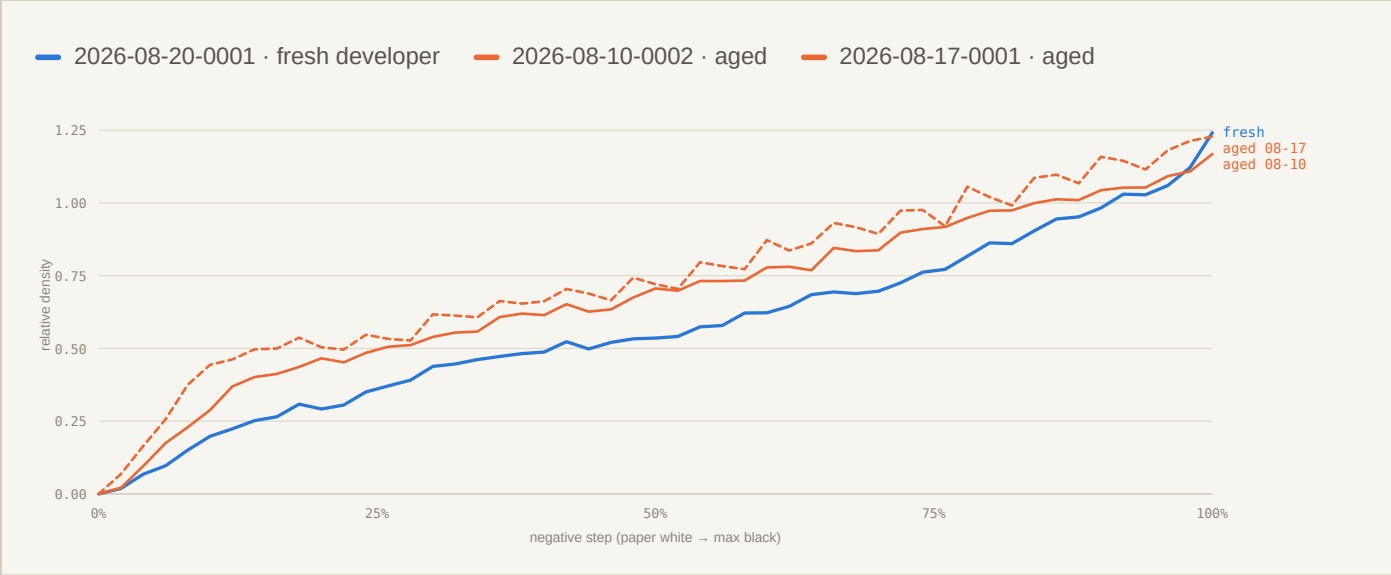
SECTION 5

Fresh developer outruns the grade dial

One sheet, the first out of a freshly mixed batch of ammonium citrate — same Grade 5 mix, printed through the same August 10th negative as the two aged sheets it is set against, so nothing but the developer differs.



Every half-chlorate sheet in the study, in date order, split by negative curve so nothing is compared across one. Both curve families climb about a tenth of a density over a week or two; the last point is the first sheet out of a new batch of developer.



The fresh-developer sheet sits below both aged sheets across the entire scale, and the gap is widest exactly where a print is read — the quarter-tones and mid-tones.

SHEET	DEVELOPER	D @ 25%	D @ 50%	HIGHLIGHT LOAD	SHAPE INDEX	DMAX	JITTER
2026-08-20-0001	**fresh, sheet 1**	0.375	0.548	0.31	1.08	1.199	2.12
2026-08-10-0002	aged	0.509	0.682	0.44	0.65	1.149	2.04
2026-08-17-0001	aged	0.561	0.737	0.46	0.98	1.222	2.47

The mid-tones come out 0.162 lighter than the aged pair on the same negative. A 25-point step of chlorate buys about 0.15, so changing the developer was worth a full 25-point increment of chlorate — two of the grade numbers as they are currently labelled, and more than the largest curve-to-curve difference measured anywhere. The highlight load drops from 0.45 to 0.31, and the shape index of 1.08 is the only reading above 1.0 anywhere in the study: no grade, in either session, ever produced shadows that separate faster than highlights.

That gap has to be read against the drift above it: the two aged sheets are themselves a week apart and differ by 0.055, and the June-curve pair differs by 0.124 over the same interval. The fresh sheet does not continue that climb — it reverses it, by more than either week of drift, in three days. Maximum black is unchanged, 1.199 against an aged mean of 1.186. So fresh developer is not printing lighter for want of exposure — it is redistributing the same total range into a steeper, cleaner curve.

The cost is that the curve no longer fits. A linearisation built on aged developer does not describe a print made in fresh developer, which means a Platinotype correction curve is only valid for the developer state it was measured in.

> **One caveat on this comparison**
>
> This is a single sheet, and the week-to-week drift beneath it is measured from only two pairs. What holds the reading together is that all four intervals point the same way — mid-tones filling in as the developer ages, and snapping back when it is replaced — but that pattern is also consistent with anything else that ages on a weekly cycle, the UV lamp included. A second and third wedge pulled from the same batch after five and twenty sheets would turn a strong hypothesis into a calibration.

SECTION 6

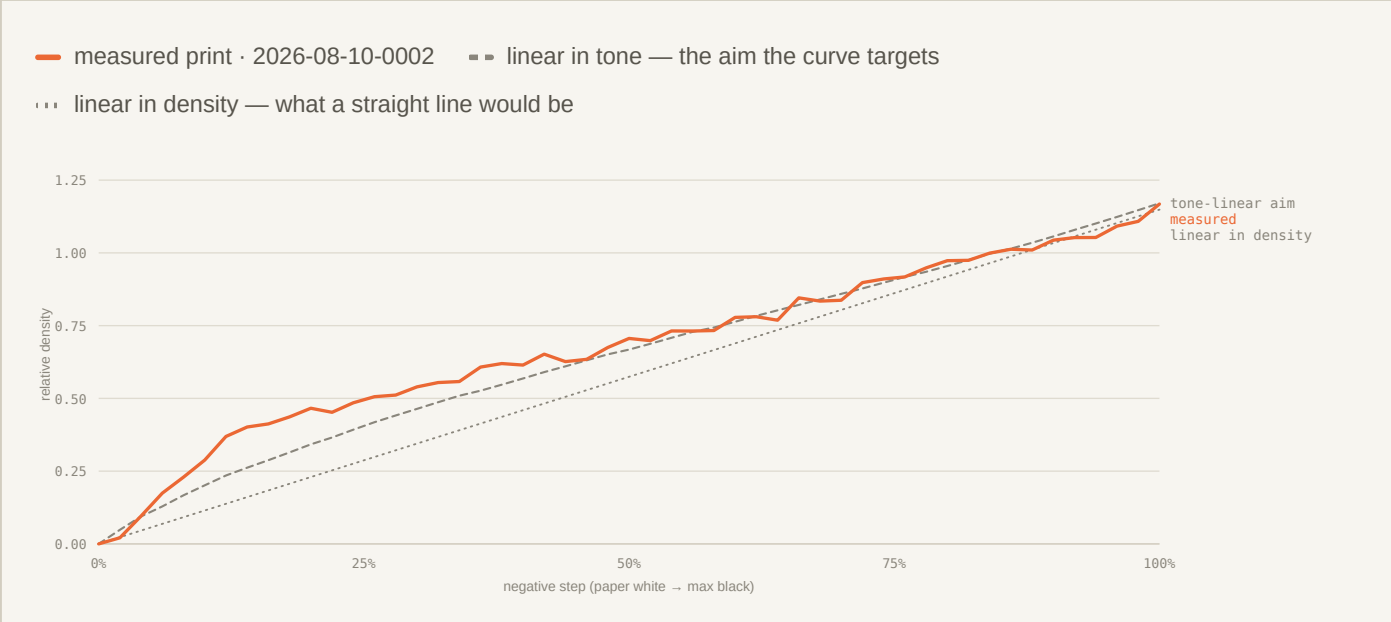
How to read these curves

Three things about the axes, because none of them is the classic characteristic curve and the difference matters.

Left is paper white, not black. The horizontal axis is the step value on the digital negative, running 0% at the paper-white end to 100% at maximum black — the same direction the wedge is printed and the same direction the app displays it. The vertical axis is relative density measured against that sheet's own paper-white tile, so every curve starts at 0.0 by construction and ends at that sheet's Dmax, around 1.2.

The horizontal axis is not exposure. Step value is a file number. Between it and the paper sits a Photoshop correction curve, which is deliberately non-linear — that is its whole job. So these are not H&D curves and their shape cannot be compared with a published characteristic curve. Within one negative they are strictly comparable to each other, which is the only comparison this study makes.

And the aim itself is curved. The correction curve is built to make the print's *tone* step evenly — equal visual steps from white to black. Density is the logarithm of reflectance, so equal tone steps are never equal density steps: they bunch up as the print gets darker. A print that has been linearised perfectly still bends in a density plot, and it bends in exactly the direction these curves do.



The same well-linearised sheet, against two ideas of "straight". The dotted line is what linear-in-density would look like. The dashed line is what linear-in-tone — the aim the correction curve is actually built to hit — becomes once converted to density, derived from the measured tone-to-linear transfer of all 21 wedges. The print follows the dashed line, not the dotted one.

By the halfway step the tone-linear aim has already spent 0.67 of its 1.17 total — 57% of the range in the first half of the scale. The measured sheet spends 0.71, or 60%. That 3-point gap is the grade, the developer and the coating; the rest of the bend is arithmetic. It is why the useful reading of these plots is never "how straight is it" but *where a sheet sits relative to the others on its own negative*, which is what the dashed series mean on each plate below is for.

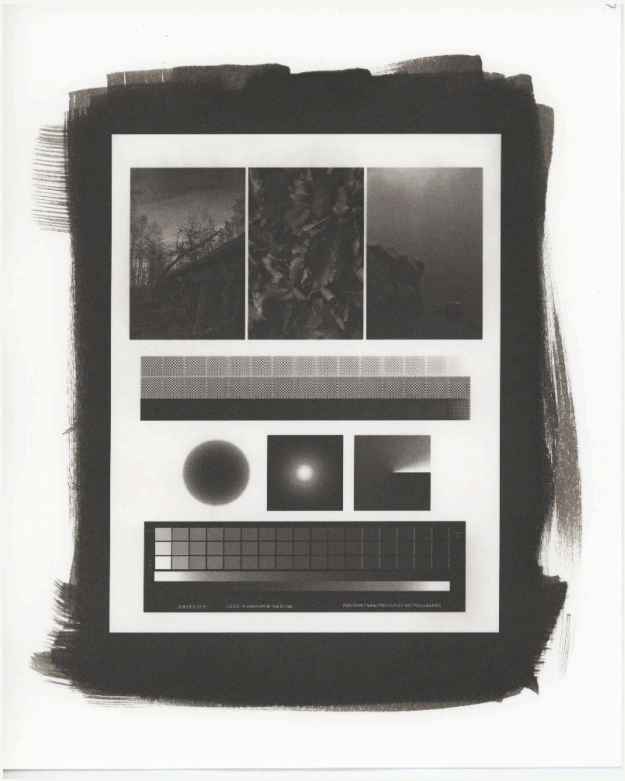
SECTION 7

The plates — all twenty-five scans

Rendered from the linear DNG data at the same gamma, grouped by negative curve rather than by filename, so that everything inside one block is directly comparable and nothing across blocks is. Each wedge sheet carries its own measured density curve — paper white at the left, maximum black at the right — drawn against the dashed mean of its own series.

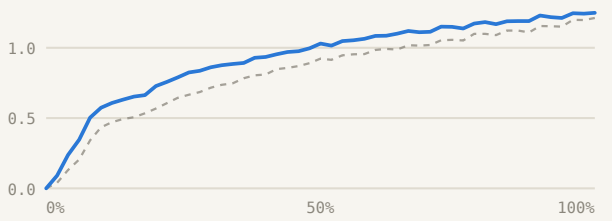
Series 1 — June 8 curve

A complete contrast series: one sheet at every chlorate fraction, all printed through the curve the study started with.



2026-08-03-0007

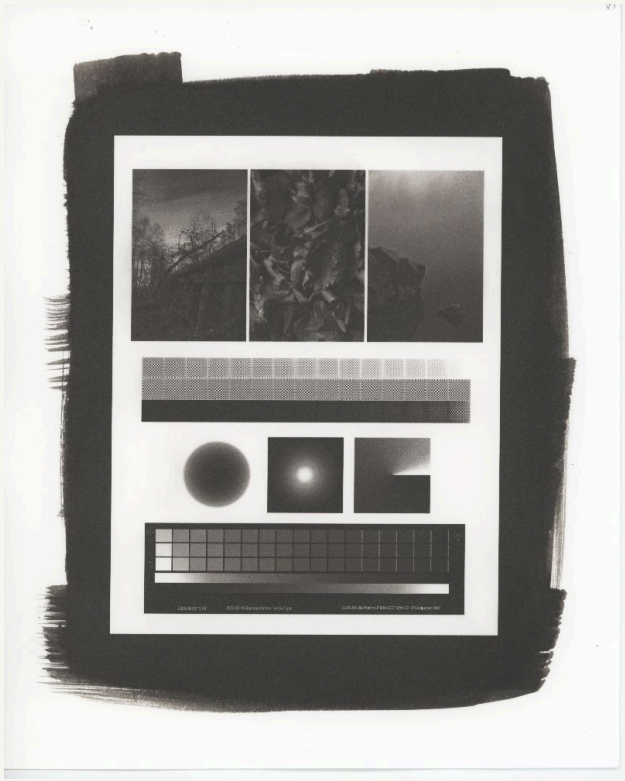
Grade 0 · 0% B · June curve



paper white → max black dashed = June series mean

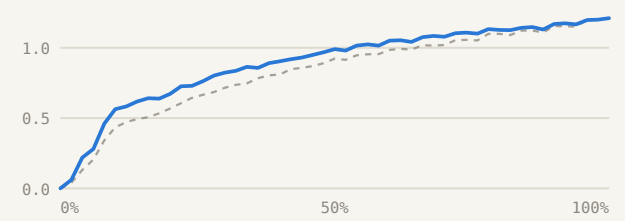
`curve June 8 curve` `D50 1.016` `highlight load 0.64` `shape 0.26`

The bottom of the June-curve series. Pure ferric oxalate, no chlorate at all, and nearly two thirds of the print's entire density range is gone by the 25% step. You can see it without measuring anything: the three photographs across the top of the sheet close up, and the gradient square at centre-right goes to solid black about a third of the way in.



2026-08-03-0005

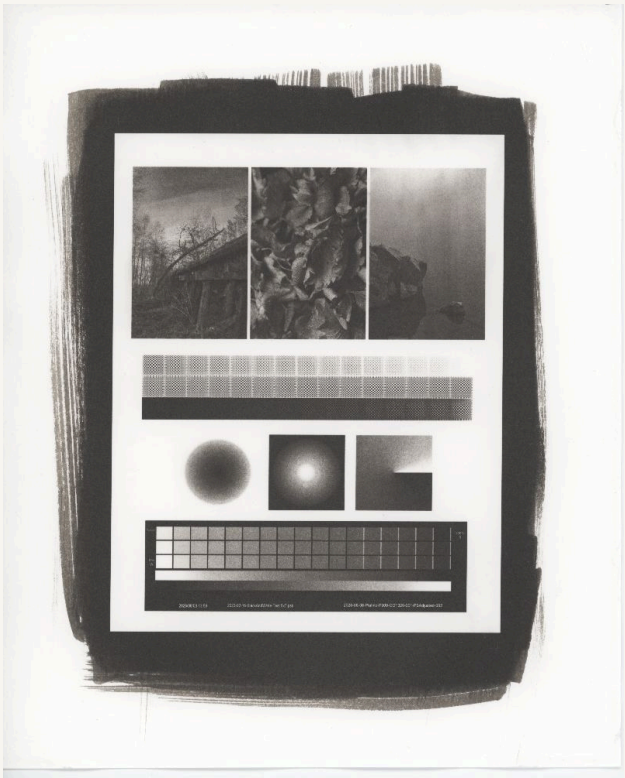
Grade 2 · 25% B · June curve



paper white → max black dashed = June series mean

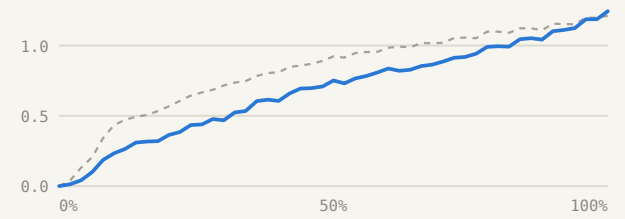
`curve June 8 curve` `D50 0.980` `shape 0.23` `jitter 3.45`

A quarter chlorate on the June curve, and barely distinguishable from no chlorate at all: 0.980 against 1.016, shape index 0.23 against 0.26. Through the August negative the same mix reads 0.856. The chemistry did not change between those two sheets — the negative did.



2026-08-03-0001

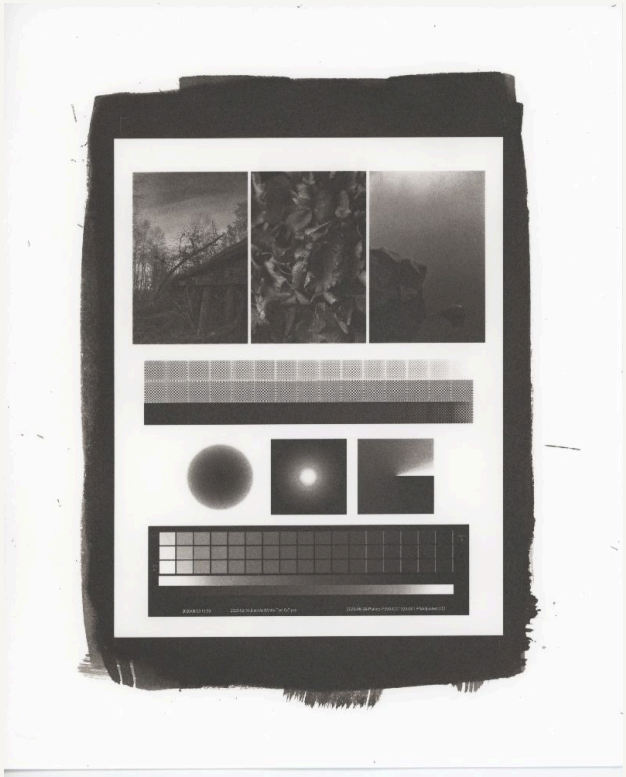
Grade 5 · 50% B · June curve



paper white → max black dashed = June series mean

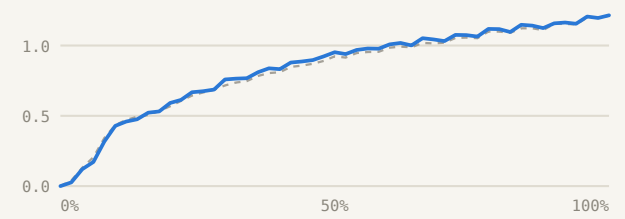
curve **June 8 curve** | Dmax **1.230** | D50 **0.730** | highlight load **0.36**

The first sheet of the study, printed on the June curve and then measured to build the August one. Coating even, brush border unbroken, no visible contamination anywhere on the paper. It also has the most open highlights of the whole session — only 36% of its density range spent by the 25% step. Its one true repeat, 2026-08-10-0001, came a week later on the same negative and landed 0.124 denser.



2026-08-04-0001

Grade 7 · 75% B · June curve



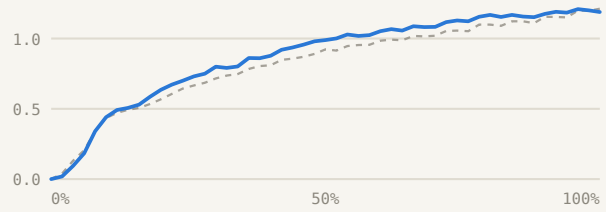
paper white → max black dashed = June series mean

curve **June 8 curve** | highlight slope **1.89** | shadow slope **0.49** | shape **0.26**

The steepest highlight slope in the study paired with one of the flattest shadow slopes. The curve dumps its density early and then goes nearly horizontal — the opposite of what three quarters chlorate is supposed to do. In this series the print has already given back everything the 50% mix gained.

2026-08-04-0003

Grade 9 · 100% B · June curve



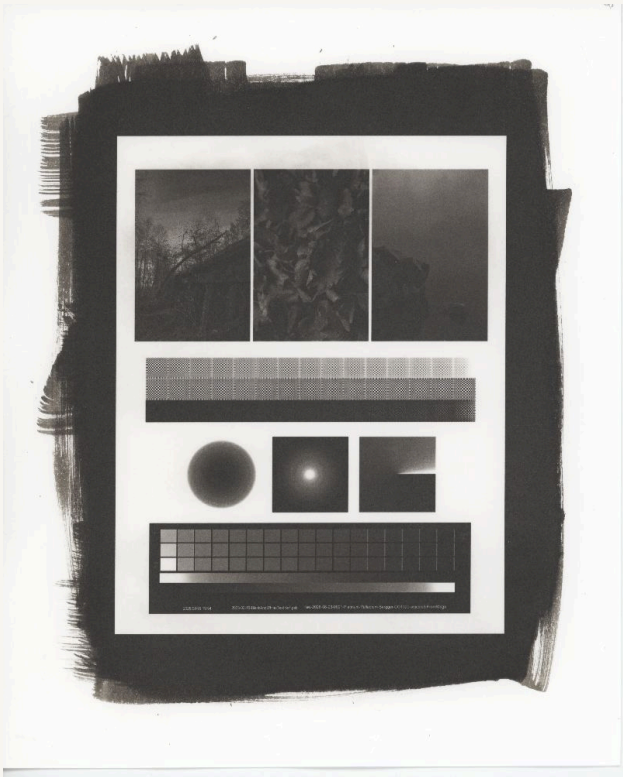
paper white → max black dashed = June series mean

curve **June 8 curve** | shape **0.18** | highlight slope **2.02** | D50 **0.979**

The top of the June series, and on the numbers the softest print in the whole study: shape index 0.18, highlight slope 2.02, shadow slope 0.37. If the grade scale meant what its label says, this sheet should be the most contrasty in the study. It is the least.

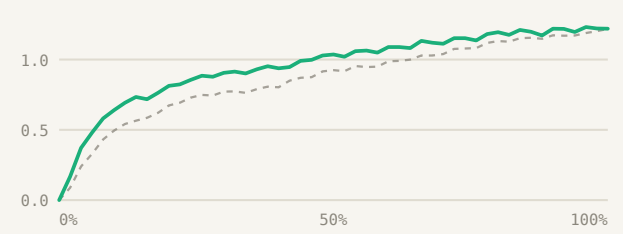
Series 2 — Aug 3 curve, from wedge

The same five chlorate fractions again, through the curve measured from sheet 0001. Comparable within this block, not with the block above.



2026-08-03-0008

Grade 0 · 0% B · Aug 3 FromWdge

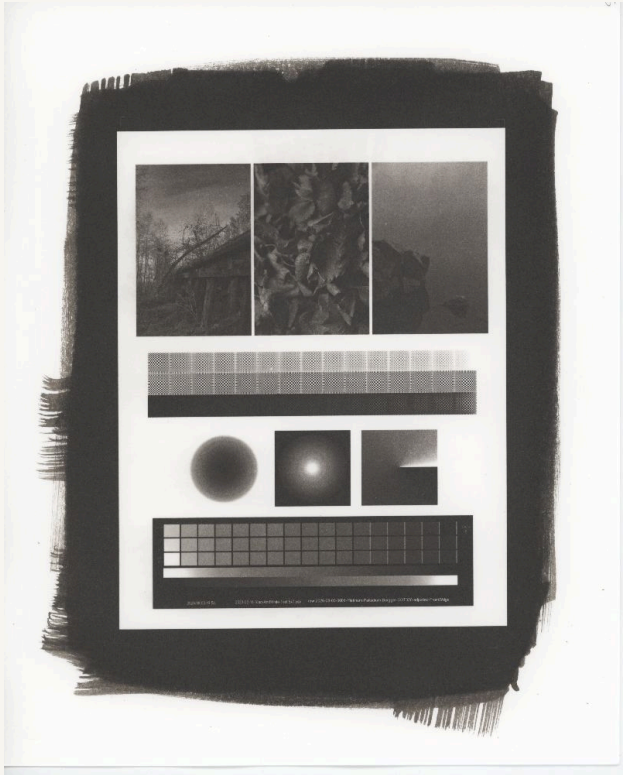


paper white → max black — dashed = Aug 3 series mean

`curve Aug 3 · from wedge` `D50 1.024`

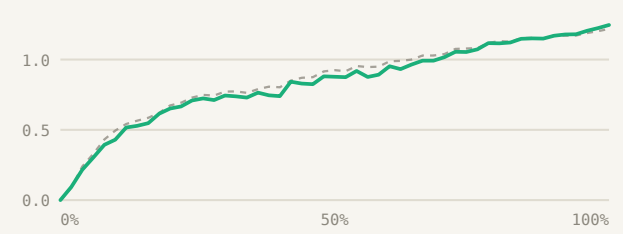
`Δ vs June curve +0.009` `highlight load 0.71`

The bottom of the second series — same mix as 0007, different negative. It lands within 0.009 of the June-curve sheet, which says something useful: at the soft end of the series the print is so shouldered that the choice of correction curve barely registers. Its highlight load of 0.71 is the second highest measured anywhere.



2026-08-03-0006

Grade 2 · 25% B · Aug 3 FromWdge

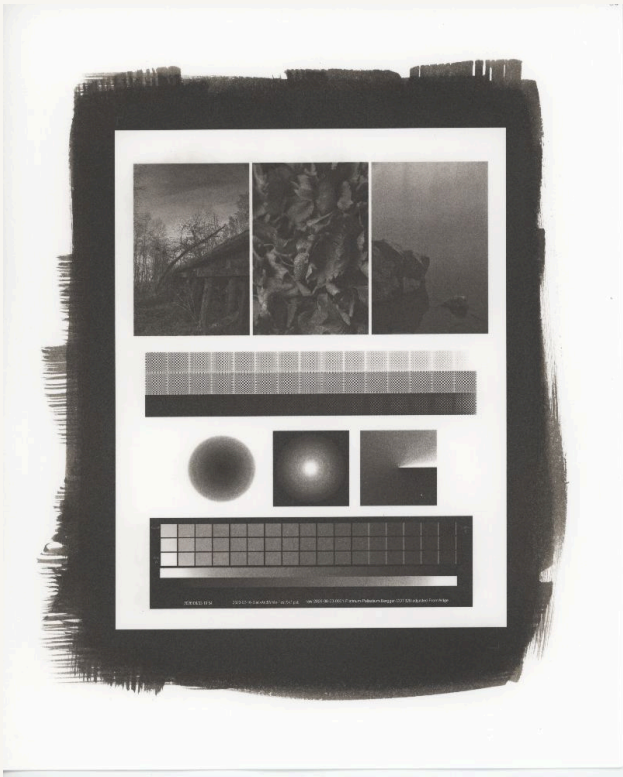


paper white → max black — dashed = Aug 3 series mean

`curve Aug 3 · from wedge` `D50 0.856`

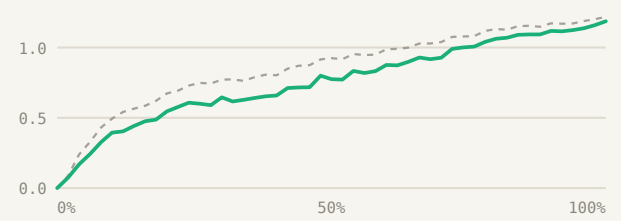
`Δ vs June curve −0.125` `vertical grad. +0.025`

The largest curve-to-curve gap in the study: 0.125 lighter in the mid-tones than the June-curve sheet at the identical chlorate fraction, which is most of a grade step. This is the clearest single argument for never comparing sheets across curves — the middle of the series is exactly where the negative has the most room to move the reading. It also carries one of the strongest vertical gradients in the session.



2026-08-03-0003

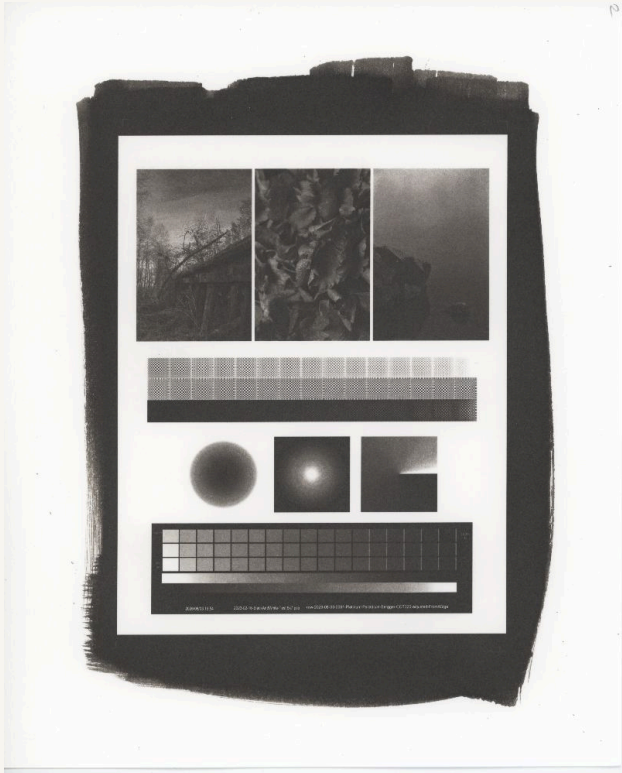
Grade 5 · 50% B · Aug 3 FromWdge



paper white → max black dashed = Aug 3 series mean

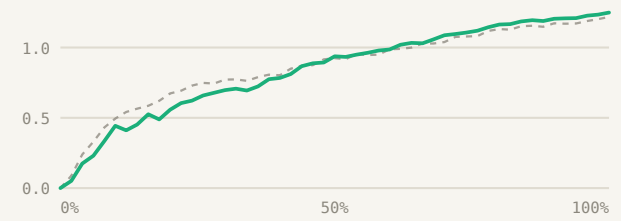
curve **Aug 3 · from wedge** | Dmax **1.176** | D50 **0.765** | highlight load **0.50**

The 50% mix of the second series, and the smoothest sheet of the three half-chlorate prints at the tile level. Note the highlight load: 0.36 on the June curve, 0.42 on the hand-adjusted variant, 0.50 here. Three sheets of one mix on one day, and the spread comes almost entirely from which negative went into the frame.



2026-08-04-0002

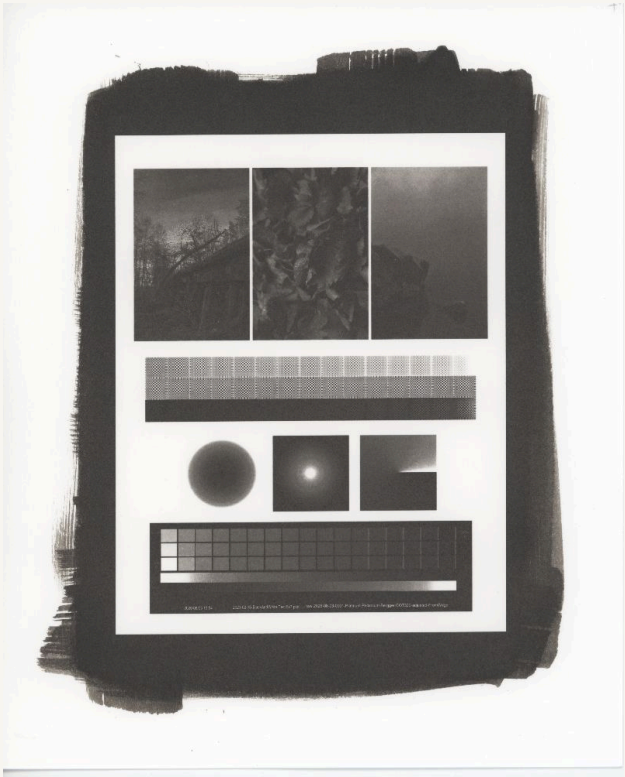
Grade 7 · 75% B · Aug 3 FromWdge



paper white → max black dashed = Aug 3 series mean

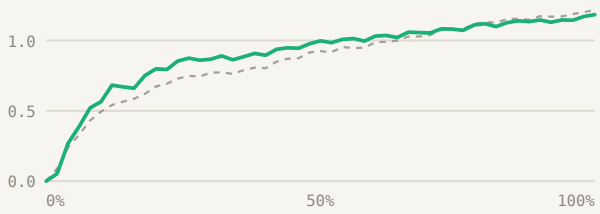
curve **Aug 3 · from wedge** | D50 **0.907** | Δ vs June curve **−0.026** | vertical grad. **−0.010**

Reads within 0.026 of the June-curve sheet at the same chlorate fraction, so the loss of contrast above half strength survives a complete change of negative — it is not an artefact of one curve. It is also the only sheet in the session whose vertical gradient runs the other way, with the top marginally denser than the bottom.



2026-08-04-0004

Grade 9 · 100% B · Aug 3 FromWdge



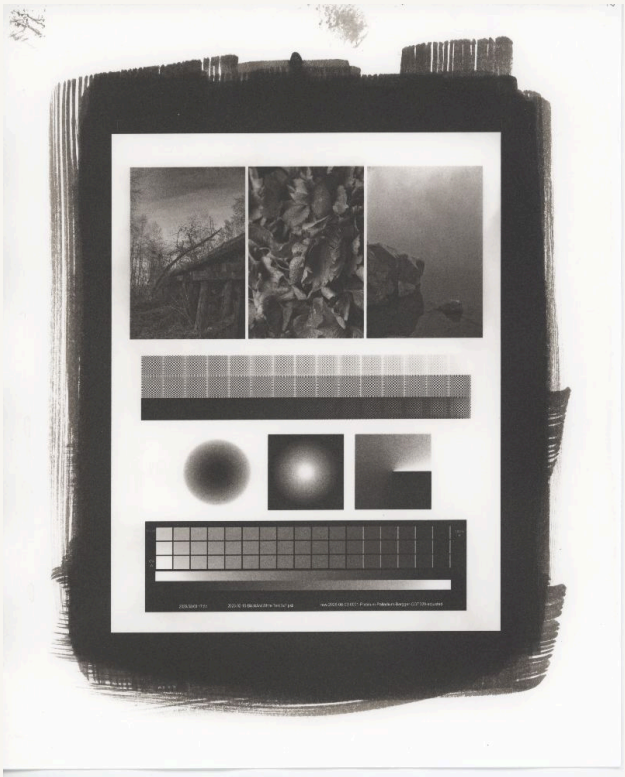
paper white → max black dashed = Aug 3 series mean

curve **Aug 3 · from wedge** | Dmax **1.174** | highlight load **0.71** | jitter **4.40**

Agrees with the June-curve sheet at the same mix to 0.006, so the collapse at maximum chlorate is a property of the chemistry and the exposure, not of one negative. It is also the roughest sheet of the session and holds the lowest Dmax in the study — the one place where heavy chlorate does show its classic cost.

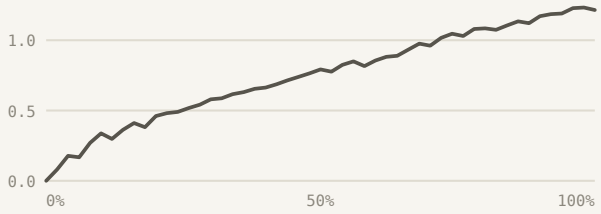
Unpaired — Aug 3 curve, hand-adjusted

One sheet on a curve nothing else used. It belongs to neither series.



2026-08-03-0002

Grade 5 · 50% B · Aug 3 hand-adjusted



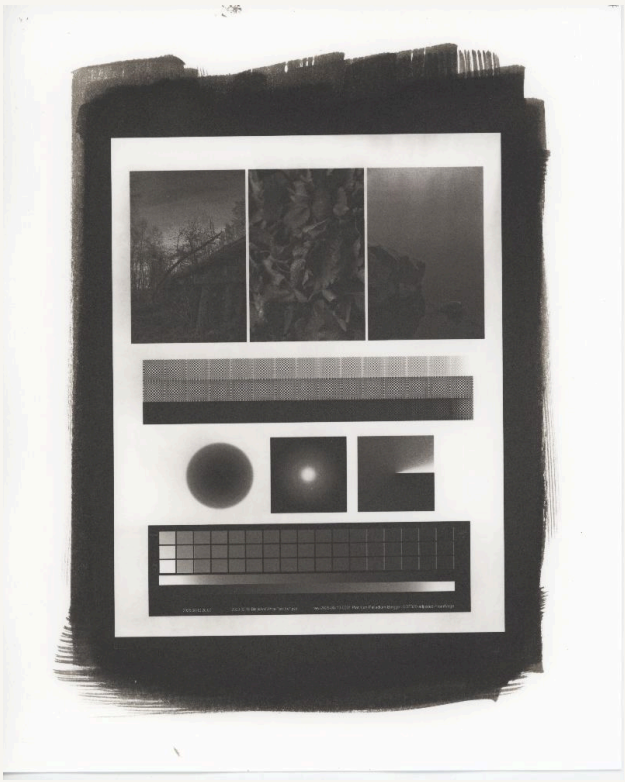
paper white → max black — no series mean

curve **Aug 3 · hand** | Dmax **1.226** | D50 **0.773** | jitter **4.06**

The only sheet printed with the hand-adjusted variant of the August 3rd curve, so it belongs to neither series and stands alone. Heavier coating than the other two half-chlorate sheets — the brush border is nearly opaque and overlaps itself along the left edge — and a scatter of dark specks sits on the top edge of the paper above the coating, outside the printed area. Roughest of the three at the tile level.

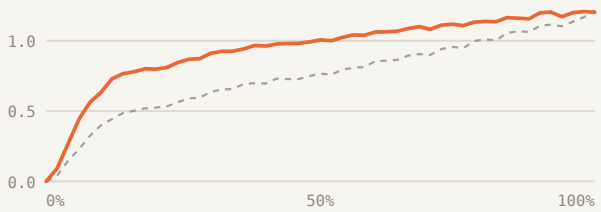
Series 3 — Aug 10 curve, from wedge

The third series, and the only one whose 50% mix has two sheets. Two of these carry physical defects.



2026-08-10-0004

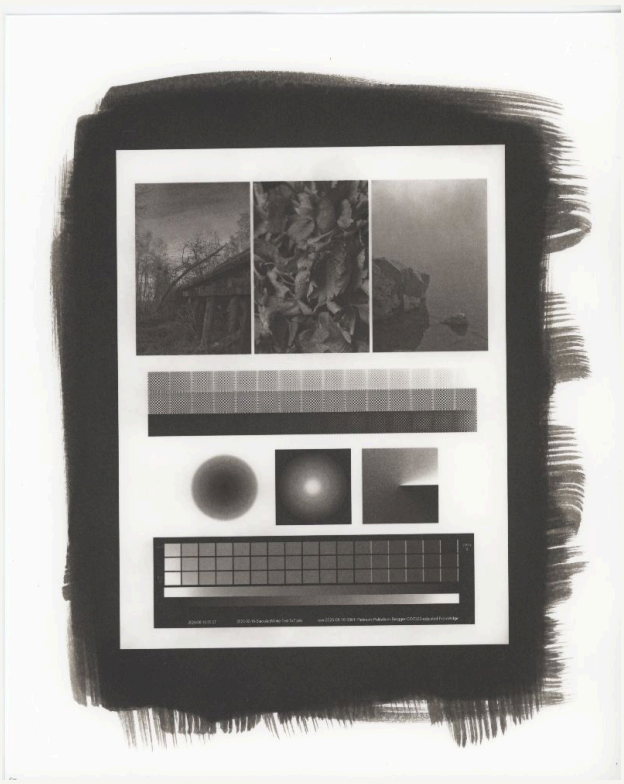
Grade 0 · 0% B · Aug 10 FromWdge



paper white → max black — dashed = Aug 10 series mean

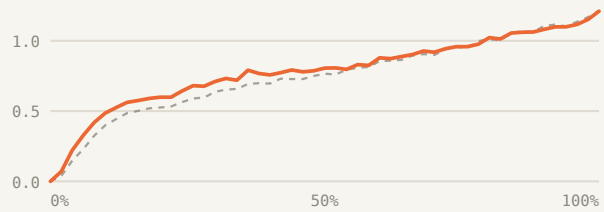
curve **Aug 10 · from wedge** | highlight load **0.73** | shape **0.29** | D50 **1.009**

The bottom of the third series, and the highest highlight load measured anywhere: nearly three quarters of the tonal range is gone by the 25% step. In the wedge crop the tiles stop separating around the seventh column and the remaining ten are one flat grey. The softest print in the study, and it looks it.



2026-08-10-0003

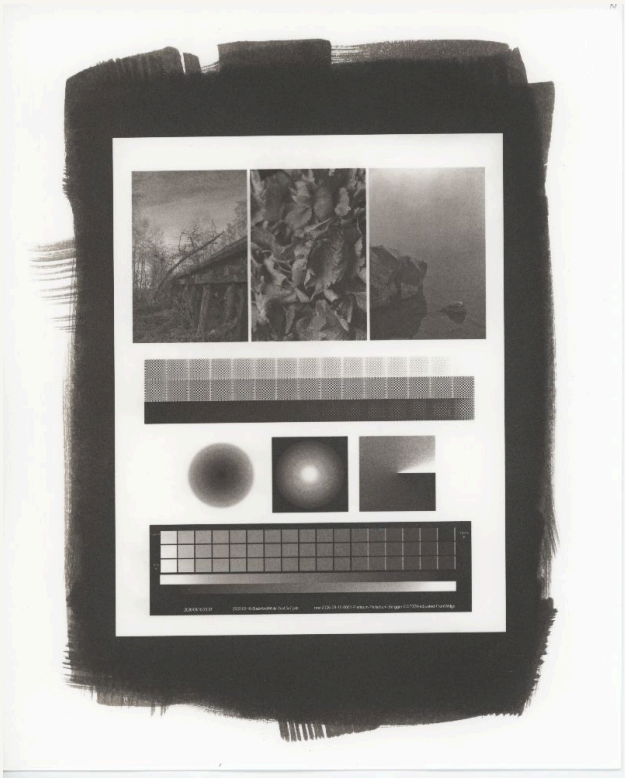
Grade 2 · 25% B · Aug 10 FromWdge · scanned upside-down



paper white → max black — dashed = Aug 10 series mean

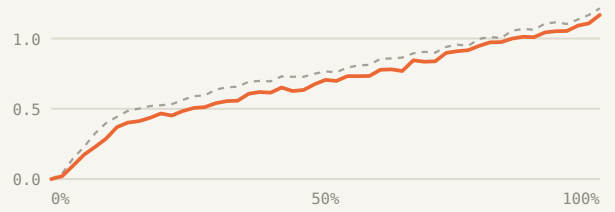
curve **Aug 10 · from wedge** | D50 **0.806** | shape **0.61** | rotation **180°**

This sheet went onto the scanner glass upside-down and its measurement file carries a 180° rotation flag; read the scan without applying it and the tile values come out as noise. Rotated, it behaves normally. It is also an accidental experiment: even though the sheet met the glass the other way up, its vertical gradient still points the same direction as every other print — and the scanner's own field, measured from the bare paper margins of all 21 scans, is flat to 0.002 along that axis. The gradient belongs to the sheet.



2026-08-10-0002

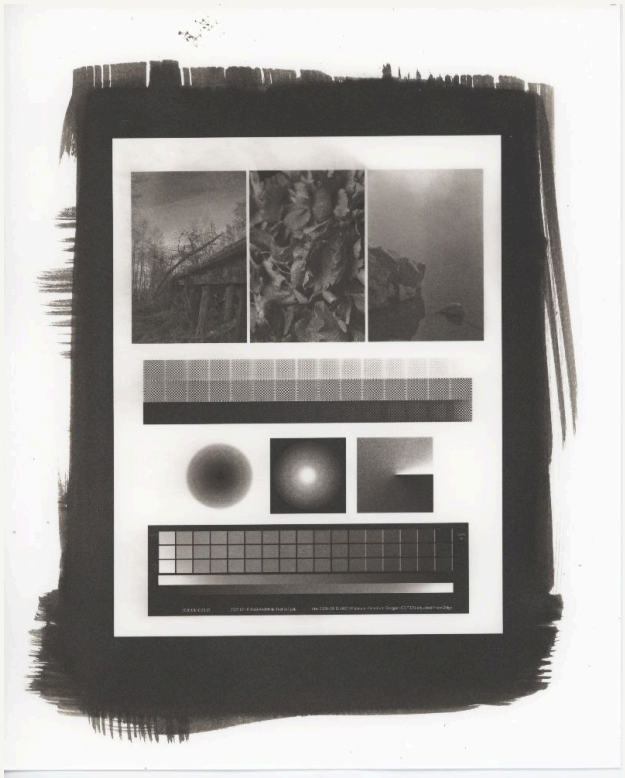
Grade 5 · 50% B · Aug 10 FromWdge



paper white → max black dashed = Aug 10 series mean

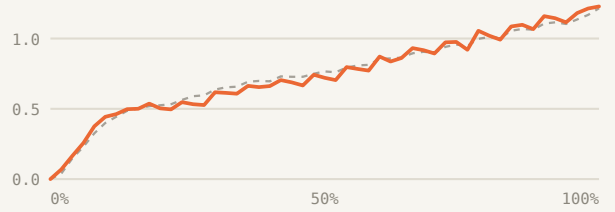
`curve Aug 10 · from wedge` `Dmax 1.149` `D50 0.682` `highlight load 0.44`

The first sheet printed through the new curve, and the reference the rest of 20260810 is read against. Lowest Dmax of the session at 1.149, but the most open mid-tones of any aged-developer half-chlorate sheet on any curve. Its own repeat a week later, 2026-08-17-0001, came in at 0.737 — one of the study's two same-condition pairs, and both of them drift the same way.



2026-08-17-0001

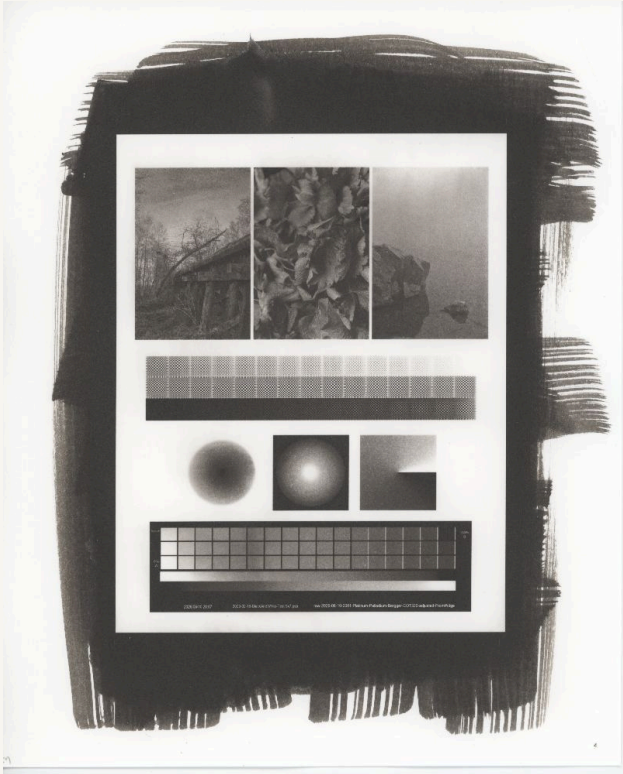
Grade 5 · 50% B · Aug 10 FromWdge · worst gradient



paper white → max black dashed = Aug 10 series mean

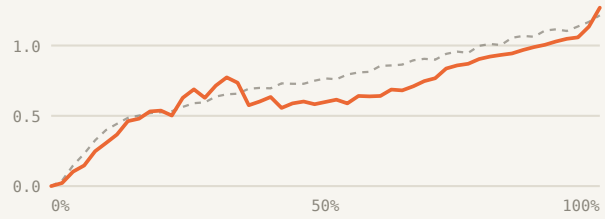
`curve Aug 10 · from wedge` `vertical grad. +0.050` `Dmax 1.222` `D50 0.737`

Carries the worst vertical gradient in the study — three times the median, with the bottom row of wedge tiles reading half a stop denser than the top. Everything else about the sheet is unremarkable, and that is what identifies it: a coating or illumination fault, not a chemistry one. It is also one of the study's two genuine repeats — the same mix and negative as 2026-08-10-0002, a week apart — and it lands 0.055 denser in the mid-tones, the same direction as the June-curve pair drifted.



2026-08-17-0002

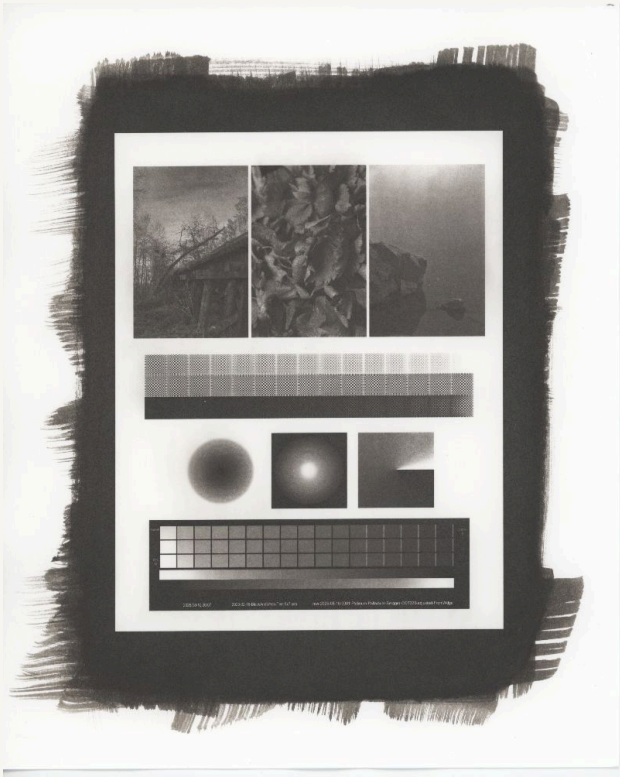
Grade 7 · 75% B · Aug 10 FromWdge · banded



paper white → max black dashed = Aug 10 series mean

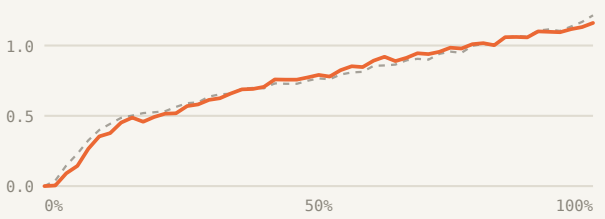
`curve` **`Aug 10 · from wedge`** `banding` **`0.026`** `D50` **`0.590`** `status` **`void`**

A visible tonal step between the sixth and seventh columns of the wedge, twice the banding scatter of anything else. It drags the measured mid-tone down to 0.590 and would corrupt the series' 75% mix, so the number is treated as void and the 75% mix rests on 2026-08-18-0001 instead. Keep the sheet as a reference picture of what a coating streak looks like in this measurement.



2026-08-18-0001

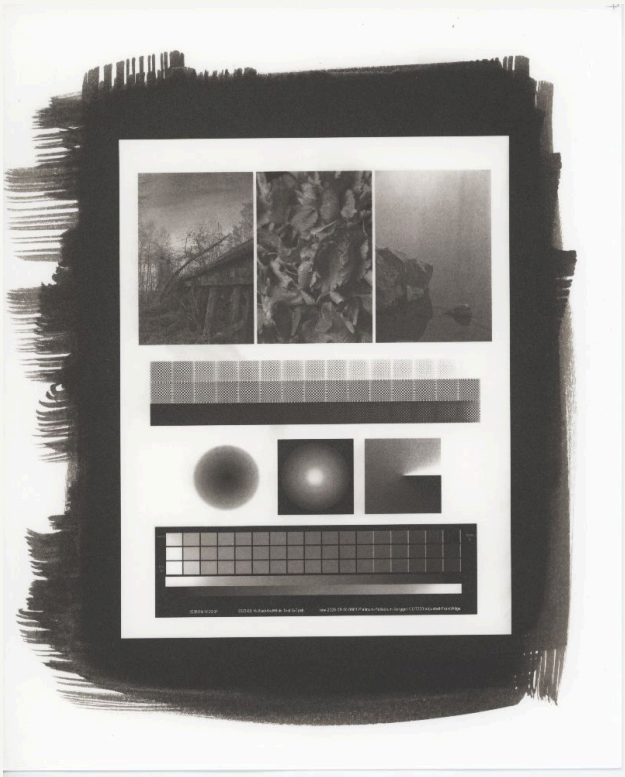
Grade 7 · 75% B · Aug 10 FromWdge



paper white → max black dashed = Aug 10 series mean

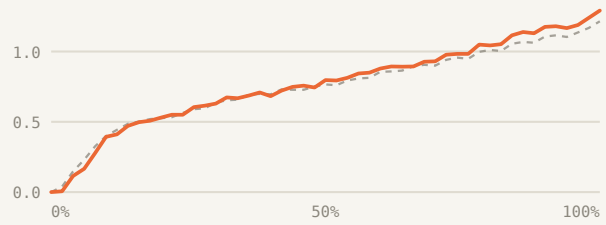
`curve` **`Aug 10 · from wedge`** `D50` **`0.794`** `shape` **`0.43`** `Dmax` **`1.154`**

Reasonable and unremarkable, which is exactly why it matters — with 08-17-0002 voided, this is the sheet the third series' 75% mix has to rest on. A single sheet carrying a whole mix is thin evidence and worth repeating.



2026-08-17-0003

Grade 9 · 100% B · Aug 10 FromWdge



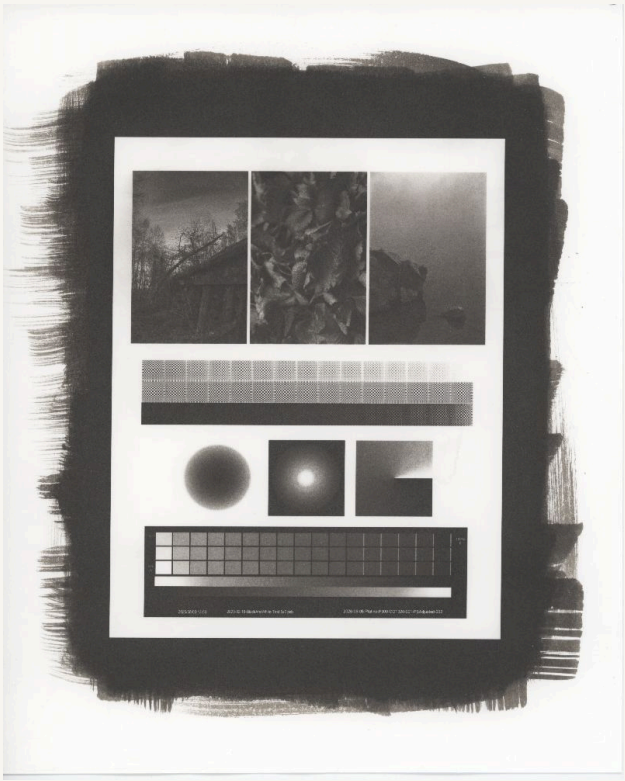
paper white → max black dashed = Aug 10 series mean

curve **Aug 10 · from wedge** | Dmax **1.270** | shape **0.66** | D50 **0.780**

The best-behaved high-chlorate sheet anywhere in the study: the highest Dmax measured, and a shape index of 0.66 against 0.18 and 0.22 for the same mix on the two August 3rd series. The reversal above half strength is still there — 0.66 is down from 0.82 at 50% B — but it is a fraction of the size. Whatever amplifies it, it is not the chlorate alone.

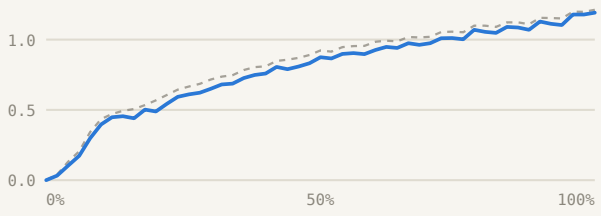
June curve again — one week on

2026-08-10-0001: the half-chlorate mix of series 1 repeated a week later on the same negative, then measured to build the Aug 10 curve. Scanned twice — right after dryer-drying, and again 21 hours later after the standard air dry. Both reports name the June curve; kept out of the series average because of the week between it and the rest.



2026-08-10-0001 · force-dry scan

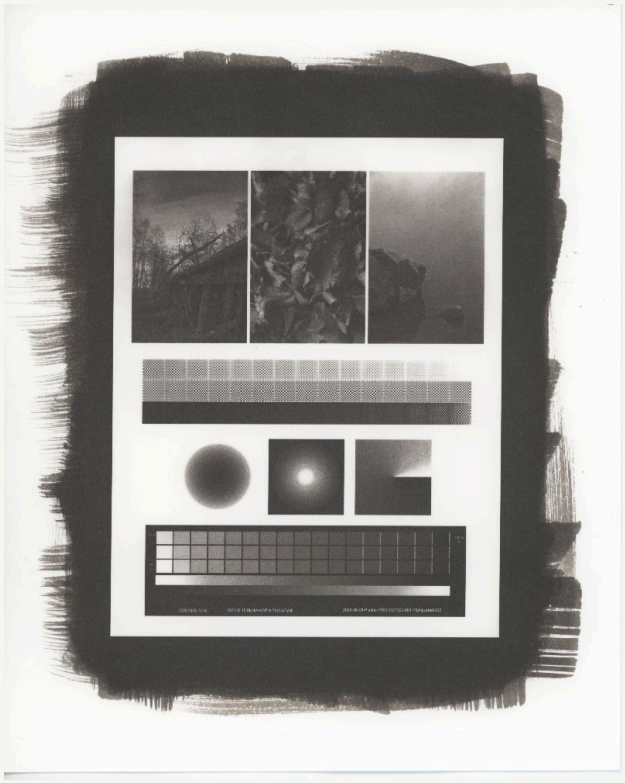
Grade 5 · 50% B · June curve · scanned right after dryer-drying



paper white → max black — dashed = June series mean

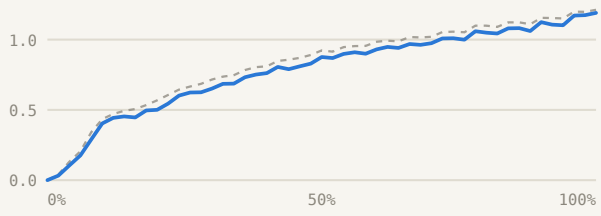
curve **June 8 curve** | Dmax **1.190** | D50 **0.852** | Δ vs 21 h later **0.002**

Not a second sheet — the same print as the scan beside it, scanned immediately after being force-dried with a dryer straight out of the wash. Every other print in these folders was left to air-dry for twenty-four hours or more before it went on the glass, so this pair is the one direct test of whether that matters.



2026-08-10-0001 · natural-dry scan

Grade 5 · 50% B · June curve · the same sheet, 21 hours later



paper white → max black — dashed = June series mean

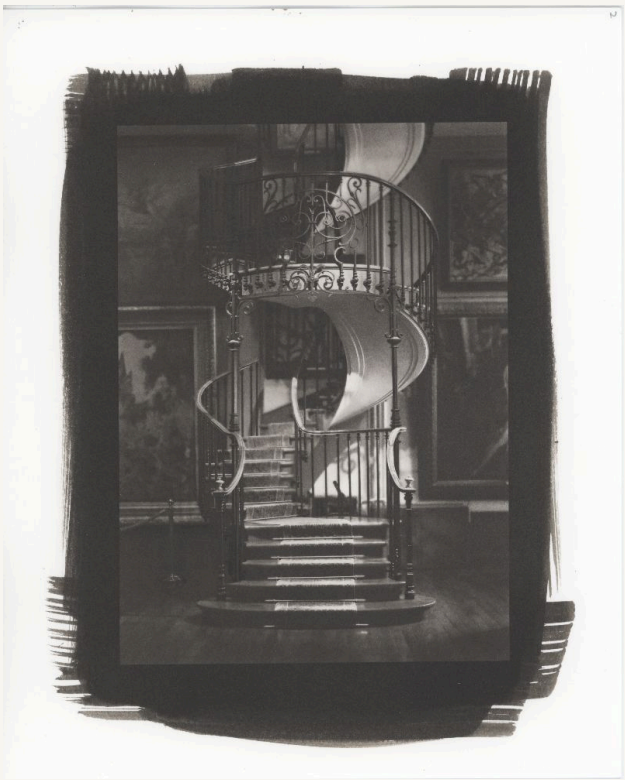
curve **June 8 curve** | D50 **0.854** | Δ vs 08-03-0001 **+0.124** | gap **20.8 h**

The same print again after a further twenty-one hours of air drying, lifted off the platen and laid down again for a second scan. Mid-tone 0.854 against 0.852, Dmax identical to three decimals, vertical gradient +0.022 against +0.024 — force-drying leaves the print where twenty-four hours of natural drying leaves it, with no residual dry-down, and the pair fixes the measurement floor at 0.002. The sheet matters for a second reason: its report — which did not exist when this post was first written — names the June curve, the same negative as

2026-08-03-0001, with the same half-chlorate mix, one week later. It reads 0.124 denser in the mid-tones. It was then measured to build the August 10th curve.

Pictorial print

No wedge, no numbers.



2026-08-17-0004

pictorial print · no wedge

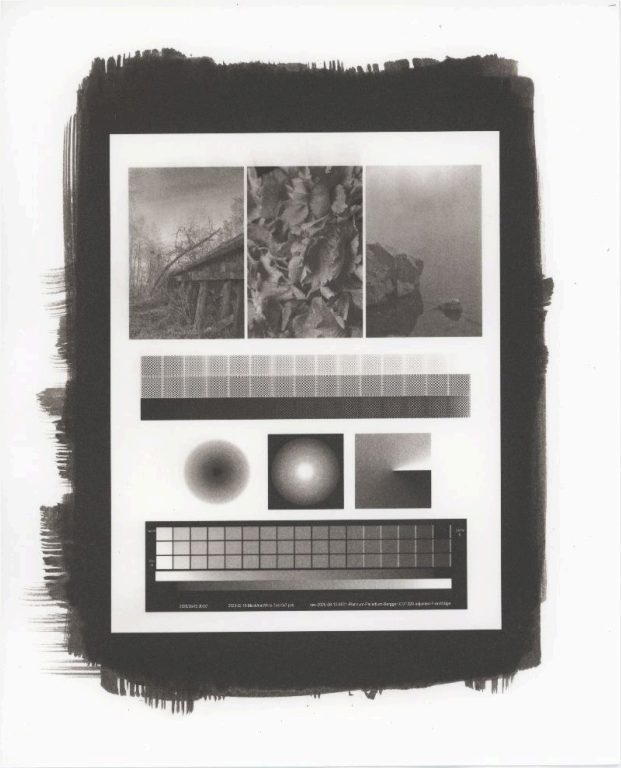
no step wedge on this sheet

`wedge` **none** `report` **none**

A pictorial print with no step wedge and no measurement file, so it contributes no numbers and no curve is on record for it. Included because it is the first appearance of the spiral staircase image that the 20260819 session goes on to print three more times — the point at which the project turns from calibration back to pictures.

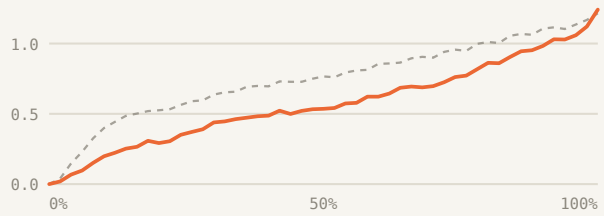
Fresh developer — Aug 10 curve

Same negative as series 3, so it can be read directly against that series' 50% mix.



2026-08-20-0001

Grade 5 · 50% B · Aug 10 FromWdge · fresh developer



paper white → max black — dashed = Aug 10 series mean

curve **Aug 10 · from wedge** | D50 **0.548** | shape **1.08** | Dmax **1.199**

First sheet out of a freshly mixed batch of ammonium citrate, printed through the same negative curve as the whole 20260810 series, so it is directly comparable to the two aged half-chlorate sheets. It is visibly the most open print in the study: highlight load 0.31, mid-tone 0.548, and the only wedge anywhere whose shadows separate faster than its highlights. Dmax is unchanged at 1.199, so this is redistribution rather than underexposure. In the wedge crop the tiles keep separating to about the fourteenth column — three or four columns further than any aged-developer sheet manages.

Pictorial prints

Three prints of one picture. No wedge, no numbers.

2026-08-20-0002

staircase · no wedge

no step wedge on this sheet

`wedge` **none**

The heaviest of the three staircase prints. The wall panels and the undersides of the treads close up into one tone, and the highlight running along the curved stringer barely separates from the wall behind it. No wedge on the sheet, so this reading is by eye against its two siblings rather than by measurement.

2026-08-20-0003

staircase · no wedge

no step wedge on this sheet

`wedge` **none**

Lighter and more open than 0002 — the wall panels read as texture rather than as a single tone, and the balustrade scrollwork begins to hold against the bright wall. The coating border is squarer and more evenly laid than on 0002, which is its own small piece of evidence about how the session was going.

2026-08-20-0004

staircase · full print report

no step wedge on this sheet

`mean error` **`0.042`** `max error` **`0.129`**

`warning` **`highlights clipped`**

The best of the three, and the only pictorial print in the folders carrying a full AltProcessDensitone report: mean error 0.042 against the linear aim, maximum 0.129, with a warning that the scan highlights are clipping — which turns out to be the display-referred reading again: in the linear data the only clipped pixels sit on the white document mat outside the sheet, and the paper itself tops out around 0.97. Note that this is the one report that has not been regenerated, so it still prints its endpoints under the old Dmax/Dmin naming. Its report names the Aug 10 FromWdge curve, the same negative as the wedge above. The scrollwork holds against the wall and the treads keep their sequence into the shadows. Note that the report's white and black points, 0.985 and 0.214, are display-referred tone values like every other figure the app prints — the same correction applies to them as to the wedge statistics.

NEXT

What the next session should test

01 **Bracket the exposure both ways at 75% and 100% chlorate**

8, 10, 12 and 16 minutes on one negative. The box is already at full power on every sheet in this study, so time is the only lever there is. Underexposure is ruled out — Dmax does not move with chlorate and the high-chlorate mixes shoulder early — so the question is no longer whether more light helps but whether *less* does: a shouldered shadow opens by coming off the ceiling, not by being pushed further into it. The rest of the grade analysis depends on the answer.

02 **Finish the density reading in the app**

The printed Density range is derived by sRGB-inverting the two endpoint readings, which lands 0.045 low on average and 0.26 low at the mid-tone if the same method is extended across the scale. Sampling the DNG's linear channel removes the assumption entirely and puts Mid-tone, the γ figures and the data table on the same scale as the density range.

03 **Put the curve name in the notes field, not only in the app**

The correction curve is the second half of every measurement, and right now it survives only in the report metadata — which is why the August 3rd folder reads as one series with bad repeatability instead of two clean ones. One line in the notes would make that recoverable from the sheet alone, without the report beside it. While the notes field is open: it is free text, echoed into the report verbatim, so `Full 12min` is the only record that exists of the exposure. Lamp intensity and minutes as separate fields would let the app sort sheets by exposure instead of leaving it to whoever reads the note.

04 **Label mixes by chlorate fraction, not by grade number**

The August 3rd sheets were originally written up a grade number high — A 0.4 / B 0.0 as "Grade 1" and A 0.3 / B 0.1 as "Grade 3", against "Grade 0" and "Grade 2" for the same mixes in August. The wedge files and reports have since been corrected, so the two sessions now agree. The deeper point stands: the 0–9 scale implies ten distinguishable steps where these measurements support three, and a label naming the chlorate fraction could not have drifted in the first place.

05 **Record developer age on every wedge**

Sheets developed since mixing, or litres used. Given that developer state moved the print by a full 25-point increment of chlorate, it belongs in the notes field next to exposure and dilution — and the linearisation curve should be measured after the developer has settled, not on the first sheet out of a fresh batch. Drying, by contrast, can come off the worry list: force-dried and air-dried readings of the same sheet agree to 0.002.

06 **Finish the rotation test on purpose**

2026-08-10-0003 went onto the scanner glass upside-down and still showed the gradient in the same direction, and the scanner's own field is flat along that axis — so the gradient is in the sheet. What is still open is whether it comes from the coating and drying or from the UV box. Two deliberate sheets, the second turned 180° in the *printing frame*, would settle that for good.

07 **Scan a reflection step tablet next to the print**

Everything here is *relative* density, because nothing in the frame has a known value. Lay a Kodak Q-13 or a Stouffer reflection scale on the glass beside the sheet, in the same scan, and two things follow at once: every number becomes absolute, and the scanner's own linearity is measured rather than assumed. It costs nothing per scan once the target is on the platen.

APPENDIX

Every wedge, every metric

Grouped by negative curve, then by chlorate fraction. Densities are relative log density against each sheet's own paper-white tile, computed from the linear scan data. Slopes are density per unit step, ×100.

SHEET	SESSION	CURVE	GRADE	B %	DMAX	D 25%	D 50%	D 75%	HI LOAD	SLOPE HI	SLOPE SH	SHAPE	ROW GRAD	BAND	JITTER
2026-08-03-0007	20260803	June 8	0	0	1.245	0.800	1.016	1.147	0.64	1.664	0.426	0.26	+0.009	0.010	1.84
2026-08-03-0005	20260803	June 8	2	25	1.207	0.763	0.980	1.105	0.63	1.636	0.374	0.23	+0.003	0.009	3.45
2026-08-03-0001	20260803	June 8	5	50	1.230	0.437	0.730	0.935	0.36	1.479	0.994	0.67	+0.014	0.010	2.25
2026-08-10-0001	20260810	June 8	5	50	1.190	0.601	0.854	1.014	0.51	1.618	0.574	0.35	+0.022	0.008	1.91
2026-08-10-0001-force-dry	20260810	June 8	5	50	1.190	0.597	0.852	1.017	0.50	1.601	0.600	0.37	+0.024	0.009	2.12
2026-08-04-0001	20260803	June 8	7	75	1.213	0.672	0.933	1.080	0.55	1.893	0.493	0.26	+0.020	0.007	3.03
2026-08-04-0003	20260803	June 8	9	100	1.199	0.716	0.979	1.127	0.60	2.024	0.370	0.18	+0.018	0.008	2.22
2026-08-03-0002	20260803	Aug 3 hand	5	50	1.226	0.511	0.773	1.025	0.42	1.383	0.960	0.69	+0.001	0.009	4.06
2026-08-03-0008	20260803	Aug 3 wdge	0	0	1.210	0.856	1.024	1.150	0.71	1.362	0.403	0.30	+0.018	0.009	2.20
2026-08-03-0006	20260803	Aug 3 wdge	2	25	1.238	0.694	0.856	1.068	0.56	1.498	0.724	0.48	+0.025	0.012	1.92
2026-08-03-0003	20260803	Aug 3 wdge	5	50	1.176	0.584	0.765	1.007	0.50	1.295	0.751	0.58	+0.016	0.009	1.71
2026-08-04-0002	20260803	Aug 3 wdge	7	75	1.237	0.628	0.907	1.117	0.51	1.580	0.619	0.39	-0.010	0.010	3.26
2026-08-04-0004	20260803	Aug 3 wdge	9	100	1.174	0.836	0.973	1.087	0.71	1.590	0.347	0.22	+0.023	0.009	4.40
2026-08-10-0004	20260810	Aug 10 wdge	0	0	1.198	0.871	1.009	1.114	0.73	1.470	0.432	0.29	+0.019	0.012	1.85
2026-08-10-0003	20260810	Aug 10 wdge	2	25	1.178	0.673	0.806	0.961	0.57	1.292	0.788	0.61	+0.009	0.015	2.15
2026-08-10-0002	20260810	Aug 10 wdge	5	50	1.149	0.509	0.682	0.912	0.44	1.322	0.863	0.65	+0.022	0.011	2.04
2026-08-17-0001	20260810	Aug 10 wdge	5	50	1.222	0.561	0.737	0.972	0.46	0.983	0.965	0.98	+0.050	0.014	2.47
2026-08-20-0001	20260819	Aug 10 wdge	5	50	1.199	0.375	0.548	0.777	0.31	1.214	1.306	1.08	+0.004	0.010	2.12
2026-08-17-0002 ▲	20260810	Aug 10 wdge	7	75	1.238	0.645	0.590	0.857	0.52	1.842	1.074	0.58	-0.009	0.026	3.74
2026-08-18-0001	20260810	Aug 10 wdge	7	75	1.154	0.565	0.794	0.983	0.49	1.539	0.654	0.43	+0.009	0.012	3.27
2026-08-17-0003	20260810	Aug 10 wdge	9	100	1.270	0.596	0.780	1.001	0.47	1.517	0.998	0.66	+0.004	0.010	3.75

Method, and what these numbers are not

Source. Report figures quoted here are read from the statistics block of each sheet's StepWedgeDensitone report. Every sheet was scanned on an Epson Perfection V850 at 300 dpi and saved as a raw DNG — an uncompressed 2400×3000 LinearRaw file, exactly 8×10 inches of platen. The tile values here are read straight out of that linear buffer, averaged over an 11-pixel radius at the same coordinates stored in the matching `.wdge` file, so the tile placement is the app's and only the sampling differs.

Density. $D = -\log_{10}(\text{linear} \div \text{linear at the paper-white tile})$, so the figures in the tables are density above the wedge's own lightest tile, not above bare paper. No black-level tag is present in these DNGs, so black is taken as zero. Any stray light in the scanner's optical path would raise the measured black and therefore *understate* density, which makes every density here a floor rather than a ceiling. See the scanner section for what is and is not established about the linearity underneath all of this.

The x-axis is not log exposure. Step value is the negative's input tone, already shaped by a Photoshop correction curve. Comparisons within one curve are valid because every sheet went through the same negative; comparisons against textbook H&D curves are not.

Curves and exclusions. Each sheet is assigned to a series by the correction curve named in its report's `Curve:` line, and no figure here averages across series. The two 2026-08-10-0001 files are one sheet scanned twice — once right after force-drying, once twenty-one hours later. Both reports name the June curve, so the sheet belongs to series 1, but it was made a week after the rest of that series and is therefore kept out of the mix average and shown separately. 2026-08-17-0002 carries a coating band that moves its mid-tone reading by more than a grade step and is treated as void.

Smoothing. Curve statistics are read off a 6th-order polynomial fit through all 51 points, so one bad tile cannot move them. Jitter, banding and the row gradient are computed on the raw, unsmoothed values.

Uniformity. The wedge is 17 columns × 3 rows, read column-major from the bottom left, so tiles 3n, 3n+1 and 3n+2 are physically stacked. The row term is orthogonal to the tonal trend and is estimated cleanly; the column term is confounded with it and is reported only as banding scatter after the trend and row terms are removed.

Exposure. `Full 12min` in the notes field is a UV box setting: full lamp power, twelve minutes. It is identical on all twenty-one wedge sheets, so exposure is a constant throughout this study rather than a variable, and the app passes the note through to the report without parsing it.

Grade to contrast agent. Grade 0 = A 0.4, B 0.0 (0% B) · Grade 2 = A 0.3, B 0.1 (25%) · Grade 5 = A 0.2, B 0.2 (50%) · Grade 7 = A 0.1, B 0.3 (75%) · Grade 9 = A 0.0, B 0.4 (100%). Solution C — the platinum salt, and the only source of image metal — is held at 0.45 throughout, so the grade changes the restrainer and nothing else.

Built from `2026-PlatinoType-GradeAnalysis` — 25 DNG scans, 21 wedge measurements and 22 reports, sessions 20260803, 20260810 and 20260819.

References

VueScan Manual, Output tab — Raw file: hamrick.com/vuescan/html/vuesc33.htm
Scanner density range, and why manufacturers' Dmax figures are not comparable: filmscanner.info/en/Dichte.html
Reported Dmax figures for matte platinum/palladium prints (practitioner measurements): photrio.com — Platinum Dmax
Restrainer described as slowing the exposure process to raise contrast: graceclassicphoto.com — Platinum Printmaking, ch. 4
Scanner metadata read directly from the DNG headers of all 25 files (Make, Model, Software, BitsPerSample, PhotometricInterpretation).

Set in Lora, Liberation Sans and DejaVu Sans Mono, standing in for the Spectral and IBM Plex families of the web edition.

MidtoneLab · August 2026