PHOTOLAB CHEAT SHEET

Sensor

Each photosite records only **one colour**. **Bayer pattern** 2 : 1 : 1 – twice as many green as red or blue (green contributes most to how bright we see); missing colours from the neighbours: **demosaicing**. Fujifilm X-Trans: all three colours on every row and column.

6000 × 4000 px = 24 million: 12 M green, 6 M red, 6 M blue.

RAW or JPEG?

	JPEG	RAW
content	processed in camera, compressed	unprocessed sensor data
bit depth	8 bit = 256 levels	12 or 14 bit
editing	destructive · small file	non-destructive · much larger
format	universal (since 1992)	maker's own (Nikon: NEF); DNG = ISO standard

Bit depth: n bit = 2^n levels

BIT	PER CHANNEL	R × G × B
8 (JPEG)	256	≈ 16.8 million
12 (RAW)	4,096	≈ 68.7 billion
14 (RAW)	16,384	≈ 4.4 trillion

More bits = finer steps. A sky pushed hard in an 8-bit JPEG can show banding.

ISO, noise, dynamic range

- ISO = signal gain: double it ⟶ half the light for the same exposure. Price: noise – luminance (grainy), colour (specks); judge at 100 % or more.
- ISO 15739:2023: dynamic range = saturation ÷ smallest signal with signal-to-temporal-noise ratio ≥ 1 · 4,096 : 1 = 2^{12} = 12 stops.
- Raw is linear (gamma 1.0). 14 bit: top stop 8,192–16,383 (half of all levels), then 4,096, 2,048 … 7th from the top: 128.

Editing order (darktable)

1. Lens correction first ⟶ exposure (mid-grey) ⟶ black / white points ⟶ contrast ⟶ saturation.
2. Corrections: noise, straightening, removing objects.
3. Creative last: crop, dodge / burn, B&W, colour grading. Non-destructive: edits in an .XMP sidecar.

Histogram & basic sliders (Lightroom Classic)

Spike at an end: clipping. Clipping preview: blacks **blue**, whites **red** (Alt / Option while dragging: per channel).

Exposure	overall, in steps equivalent to f-stops
Contrast	mainly the midtones
Highlights / Shadows	down / up to recover detail
Whites / Blacks	where it clips to pure white / black

Tone curve & masks

- Input across, output up; 45° line = no change. **Steeper = more contrast** ⟶ S-curve: midtone contrast. Bottom shadows, top highlights.
- Capture One: black / white points with Levels, then the curve; Luma curve: contrast without more saturation.
- Masks: brush, linear / radial gradient, colour / luminance range – add, subtract, intersect. Subject, Sky, Background, Objects, People: "backed by Artificial Intelligence" (Adobe).

Sharpening (Lightroom Classic)

Three phases (Fraser/Schewe): capture ⟶ creative ⟶ output. Creates no new detail, cannot be undone. Judge at 100 % or more.

Amount	strength; 0 = off
Radius	size of the details; fine detail ⟶ lower
Detail	low = edges, high = textures
Masking	0 = all equally, 100 = mostly strongest edges

Export (Lightroom Classic)

JPEG (quality 0–100), TIFF, PSD, PNG, DNG … · 8 or 16 bit · sRGB, Adobe RGB, ProPhoto RGB · output sharpening Screen / Matte / Glossy, Low / Standard / High – Standard is fine in most cases (Adobe) · "Remove Location Info" strips GPS.

Colour spaces

sRGB	web – export in it to share online
Adobe RGB (1998)	print – printable cyans, blues sRGB can't define
ProPhoto RGB	editing – holds all colours cameras capture

sRGB / Adobe RGB: of the three primaries only green differs (0.30, 0.60 / 0.21, 0.71); both D65.

Print size

`inches = pixels ÷ ppi · cm = inches × 2.54`

6000 × 4000 px	INCHES	CM
300 ppi	20 × 13.3	50.8 × 33.9
360 ppi	16.7 × 11.1	42.3 × 28.2

Epson: 300–360, depending on viewing; Adobe: 180–480 ppi (inkjet).

Monitor: calibrate, then profile

Instrument + usually software. ICC: clean, warm up ≈ 15 min, no room or sunlight on the screen; recalibrating ≈ every 6 months is often enough (Adobe: monthly or so).

TARGET (sources differ)	WHITE	cd/m²	GAMMA
ICC Adobe RGB reference	D65	160	2.2
ICC soft proof (ISO 3664)	D50	160	–
EIZO "Photography"	5500 K	100	2.2
EIZO "Printing"	5000 K	80	2.2
EIZO "Web Contents"	6500 K	80	2.2

Soft proof: on-screen preview of the print via profiles – best with a custom printer-and-paper profile.

Sources: RED · darktable 5.6 manual · Fujifilm · Nikon (RAW/JPEG, NEF, ISO) · Adobe Camera Raw, Lightroom Classic & Photoshop help · Capture One · Fraser/Schewe (2009) · ISO 15739, 12234-4 · IEC 61966-2-1 · Adobe RGB (1998) · ICC display calibration · EIZO · Epson. Details: adubta-music.de/fotolabor.html