

A PRACTICAL GUIDE TO EXPOSURE + COLOR

Film in artificial light

When one extra stop helps.

What it cannot fix. How filters change the exposure.

**01 WEAK RECORD**

Shadow detail suffers

**02 EXTRA EXPOSURE**

More detail; still warm

**03 80A + COMPENSATION**

More neutral color

Daylight-balanced color negative film under tungsten light.

01 / FILM HAS A COLOR BALANCE

The emulsion does not change white balance.

Color film is designed for a reference illuminant. The ISO dial changes the meter reading, not the film's color balance.

3200 K

TUNGSTEN BALANCE

A common reference for tungsten-balanced film.

5500 K

DAYLIGHT BALANCE

Approximate reference for daylight-balanced film.

Daylight film + tungsten illumination = a warm positive image. Whites often reproduce yellow-orange unless corrected in the camera, printing, or scanning.

Tungsten light supplies relatively little blue compared with daylight. One color record can be weak even when the negative looks reasonably dense overall. A meter reading is not a measurement of each film layer.

Extra exposure changes quantity.

A conversion filter changes the spectral balance.

Not all artificial light is tungsten. Household bulbs can be warmer than 3200 K. LEDs and fluorescent lamps can have uneven spectra; equal Kelvin ratings do not guarantee equal color rendering. Flash and daylight-balanced lights do not automatically need this treatment.

02 / LEARN TO READ THE NEGATIVE

Thin versus fuller density

On a light table, “thin” means a weak, transparent image above the orange base. It does not mean the plastic is physically thinner.

**THIN / WEAK IMAGE**

Little separation from the base.
Shadow information may be missing.

**FULLER / STRONGER IMAGE**

More distinct image density.
Useful tonal separation is the goal.

Read the tones in reverse. Bright flowers and the white pitcher appear dark on the negative. Dark cloth and room shadows appear lighter. Compare image detail, not just the orange border.

An extra stop can improve a marginal exposure in artificial light; it does not guarantee ideal density. A thin negative can also result from metering or processing problems.

Illustrative negative simulations; not actual film scans or a calibrated density comparison.

03 / FROM NEGATIVE TO PRINT

Density and color are separate problems.

**WEAK EXPOSURE**

The shadow record is weak. Lifting the result can reveal muddy tones and conspicuous grain.

**+1 STOP, NO FILTER**

The negative can record more shadow detail. The tungsten cast remains in an uncorrected positive.

**80A, COMPENSATED**

Color moves toward neutral, with exposure increased to account for the filter's light loss.

In the enlarger: a thin negative passes more light, so the same printing exposure makes a darker print. Reducing printing time corrects brightness, but cannot recover missing shadow texture. Color filtration cannot restore information that was never recorded.

Illustrative positives, with no final neutralization of the warm versions. Not a measured one-stop comparison.

04 / PAY FOR THE FILTER FIRST

The two-stop filter is a separate adjustment.

An 80A blue conversion filter is intended for daylight film under about 3200 K tungsten light. It subtracts excess warm light; it does not add blue light. Assume a two-stop loss for this example.

2 stops for the filter

+ 1 optional extra stop for indoor light = 3 stops total

Example: Unfiltered reading at ISO 400: 1/125 sec at f/4.
Keep f/4 fixed and change the shutter speed:

SETUP	SHUTTER	INTERPRETATION
No filter / baseline	1/250	Meter reading
No filter / +1 stop	1/125	More exposure, still warm
80A / no compensation	1/250	Filter costs needed light
80A / +2 stops	1/60	Filter loss compensated
80A / +3 stops	1/30	Filter + extra-stop margin

External meter: PORTRA 400 at EI 100 accounts for Kodak's 80A recommendation; EI 50 adds a further stop. Do not apply the same factor twice.

TTL meter: the meter generally sees the filter loss. Do not automatically add another two stops. Colored filters can affect meter accuracy; check the manual and test.

05 / MAKE A TEST YOU CAN TRUST

A repeatable field method

01 Meter the subject

Use an incident reading at the subject or a careful reflected reading. Keep bright bulbs from misleading the meter.

02 Decide on the color

Preserve the tungsten warmth, correct during printing/scanning, or use a suitable filter for the actual light source.

03 Bracket the exposure

Compare baseline and +1 stop. With a filter, compensate for its light loss first. Include a neutral object and textured shadows.

04 Process and compare

Use normal development. Ask for consistent output brightness and specify which scans should retain the warm cast.

More exposure is not push processing. Keep normal development for this test. If shutter speeds become slow, consider a tripod, subject motion, depth of field, and the film's reciprocity guidance.

Sources and further reading

Kodak Alaris • PORTRA 400 technical data, E-4050 (2025)

Kodak • The Essential Reference Guide for Filmmakers

Tiffen • Film Enhancement Guide (80-series filters)

Kodak • Exploring the Color Image