

GSACC - 17 JULY 2025

DIGITAL FILM SIMULATIONS

IN-CAMERA JPG CREATION

WHAT IS FILM MODE AND WHY USE IT?

- Goal - Reproduce the look and "feel" of film photography using modern digital cameras without post-processing

WHY?

- Popularity of "retro" look in photography
- Getting "back to the basics" of photography
- Exploring a new genre and look for your craft
- Less post-production work

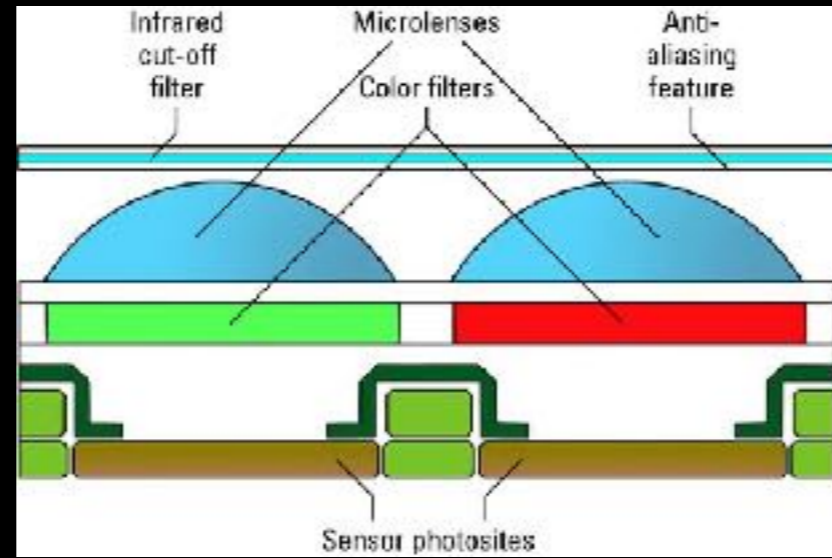
Most digital cameras these days have a feature often known as a film simulation mode that allows you to take control over the color of your images, even when shooting raw files. These film simulation modes are designed to boost colors and range in their scope from an overall lift in saturation to targeting specific tones, such as blues and greens.

MANY MODERN CAMERAS OFFER IT

- Canon calls it Picture Styles
 - Nikon calls it Picture Control
 - Olympus calls it Picture Mode
 - Sony calls it Creative Style
 - Fujifilm calls it Film Simulation
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- In general terms, these are “program modes” for the camera’s computer. They are a group of settings that are pre-programed into the camera.

Fuji sort of pioneered the concept, using their color science to create sensor and processing capabilities to mimic their large catalog of film stocks from the past.

THE DIGITAL CAMERA SENSOR



The effect of film simulations basically creates a “look” to the photo outside of what the default programming of the sensor provides. Most cameras use versions of Bayer RGB filters. Fuji created its own X-Trans custom pattern sensor technology.

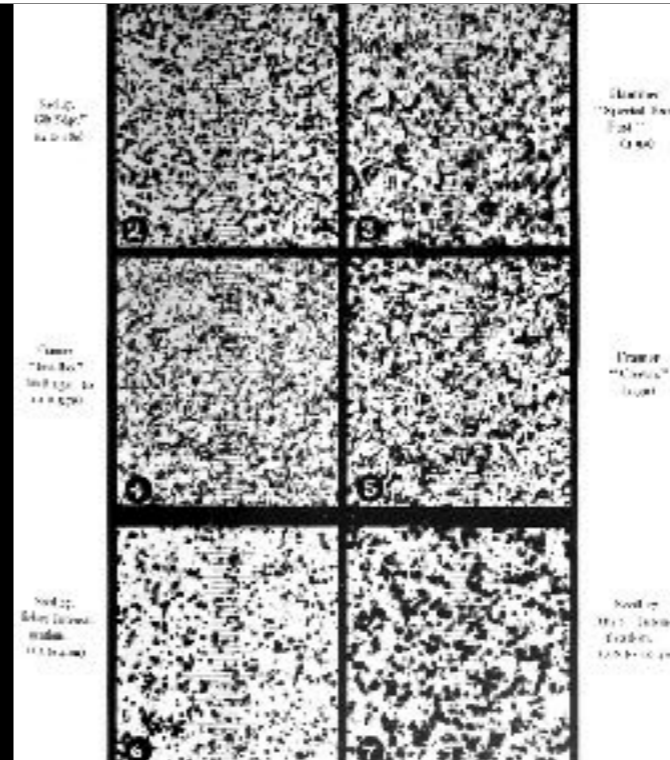
PIXELS AND BIT DEPTH

- Pixels
 - microscopic array of sensors that respond to different wavelengths of light
- Bit Depth
 - How responsive the pixel is to light (eg. 10 bits can have a range of 2^{10} , or 1,024 values)
- Multiply the megapixels of the camera sensor by the bit depth to get the range of colors available to your camera
- Digital sensors use pixels but actual film uses bits of chemical compounds.

Higher bit depth for a camera processor allows for higher ISO range. BTW, the human eye can detect 1M shades of color...

Film "Grain" and ISO

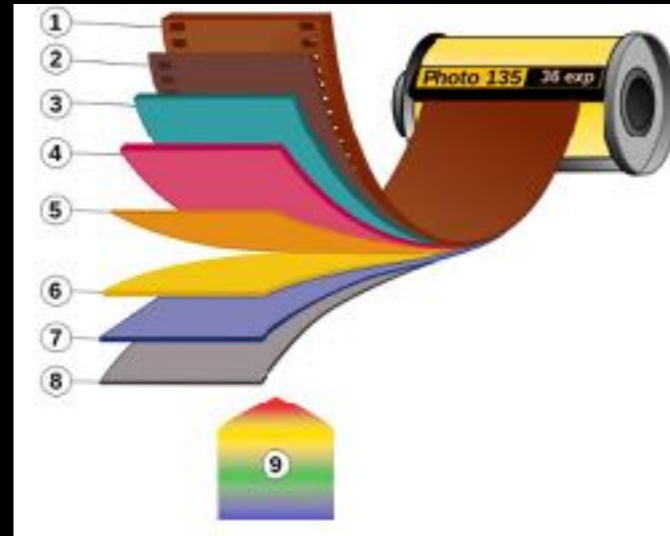
- The lower the ISO the more detail and less "grain" in the final product
- Higher ISO film is "grainier" to capture more light
- In digital, higher ISO settings result in more "noise"



In the film era, the ability of film to respond to light was rated as DIN, ASA, or ISO. ISO is more or less standard reference now.

COLOR FILM

- Light sensitive chemicals applied to the film base
- Different combinations are sensitive to different wavelengths of light
- Manufacturers spent many decades perfecting their proprietary chemical formulas



Just a note - film stock degrades over time and can't reproduce their original colors past their expiration date

A HANDFUL OF POPULAR FILM TYPES

1. Kodak Portra Professional
2. Ilford HP5 Plus
3. Fujifilm Fujicolor Superia X-tra
4. Kodak UltraMax
5. Kodak Ektar
6. Kodak Tri-X 400TX Professional
7. Fujifilm Fujicolor C200
8. Kodak Gold 200

Formulas Have Changed Over The Years And Many Film Types Are No Longer Manufactured

What was your favorite?

FUJIFILM FILM SIMULATIONS (IN CAMERA)

- Provia
- Velvia
- Astia
- Classic Chrome
- Pro Neg. Hi
- Pro Neg. Std
- Acros
- Monochrome
- Eterna
- Eterna Bleach Bypass
- Classic Negative
- Nostalgic Negative

Fujifilm is the only film manufacturer who switched over to digital cameras. Over the generations of their cameras, they have gradually added more and more simulations in camera.

FILM "RECIPES"

- Most modern cameras have adjustments in their program modes to allow customization
- By selecting a base picture mode (or creative style, etc.) and then modifying it, the photographer can create a "recipe" to get close to the desired film simulation
- Depending on the camera make and model, these settings can be saved for routine use.
- Film Simulations are recorded as JPEG files (not to the Raw file)

SIDE BAR ON JPEG VS. RAW

- Many photographers prefer RAW format so that they can apply edits to a (less) processed image.
- JPEG is a method for compressing an image file by removing redundant information from the image.
- Every edit of a JPEG (without saving to a new file) degrades the image even further.

It's complicated, but basically, the computer software takes out repeating pixel values and inserts a "count" of those values. So the "blue" values from a blue sky might just have something like "repeat blue 450 times"

DIGITAL TO FILM CONVERSION

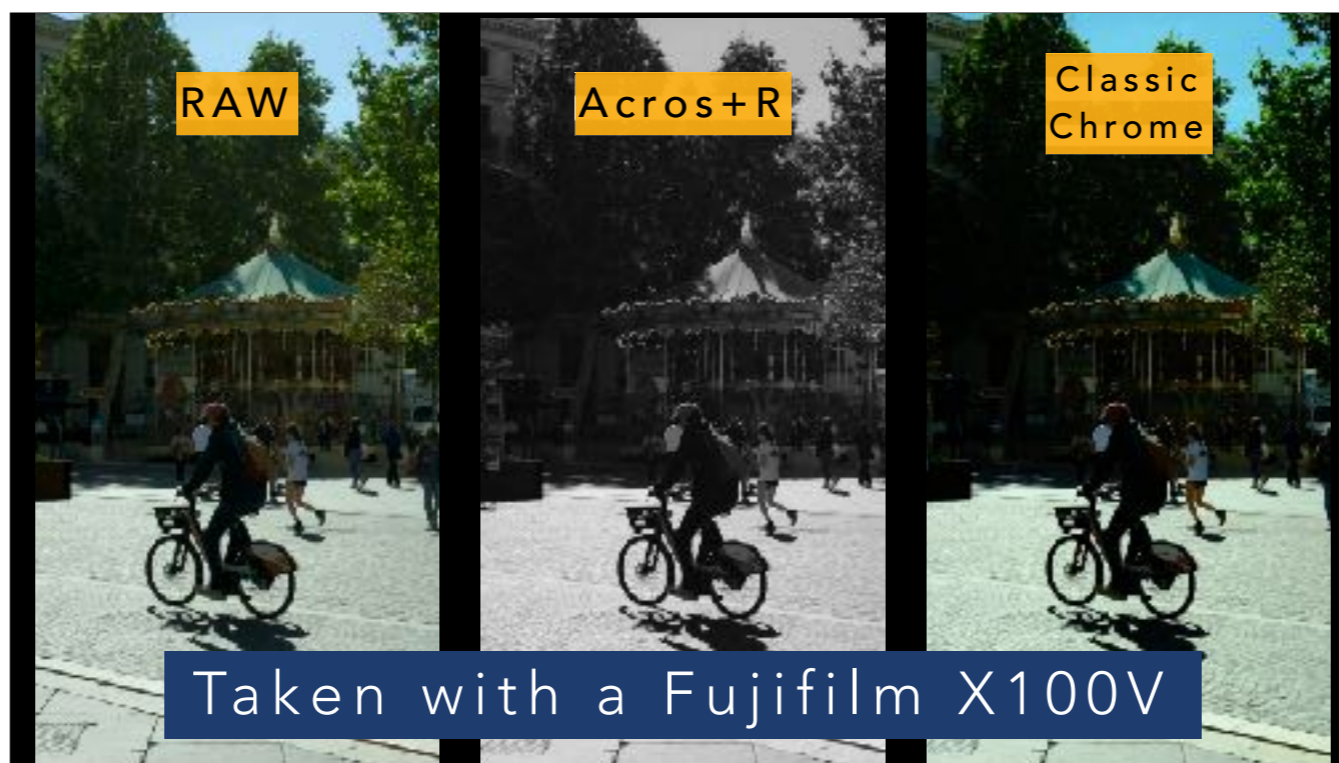
- The goal is to achieve the color or black and white reproduction that was (is) available in various film stocks.

IN GENERAL...

- Various film types are simulated by adjusting saturation, highlights, contrast, etc.
- Film "grain" is often simulated through Clarity and Noise settings.

Back to our main topic. Simulating a type of film requires some research into the look and feel of the original film and then using the camera's settings to develop a recipe. It's basically writing a computer program.

SOME EXAMPLES



"L&P Classic Chrome" for CANON

- White Balance: Fluorescent H (A 0, G 0)
- Contrast +2
- Sharpness -1
- Saturation -2
- Red -2
- Green -2
- Blue -2
- Skin Tone -1

<https://lensnpaws.blogspot.com/2023/11/classic-chrome-film-look-recipe-for.html>



"Aged Analog" for NIKON Z

On the settings menu
PICTURE CONTROL -
CREATIVE PICTURE CONTROL

- Picture Control: Denim
- Saturation: -2.00
- Effect Level: 80
- Active D-Lighting: Low
- Quick Sharp: 0.00
- High ISO NR: Low
- Sharpening: +2.00
- White Balance: Direct Sunlight
- Mid-Range Sharpening: +1.00
- WB Adjust: A4.0 G0.50
- Clarity: -2.00
- ISO: up to 3200
- Contrast: +1.00

<https://fujixweekly.com/2022/07/03/11-nikon-z-film-simulation-recipes/>



"Kodachrome 64 Profile" for OLYMPUS

- Picture Mode: Muted (See this video)
- Grain Effect: Set the max ISO to ISO1600
- Color Chrome: Use the Color Creator (See this article)
- White Balance "Daylight": (A 0) and (G -7)
- Highlight: +2
- Shadow: -3
- Midtones: -2 (Adjust between -1 to -2)
- Gradation: Normal
- Color: -1 (RGB)
- Sharpness: +1
- Noise Reduction: None
- Clarity: Can be added in Workspace (Enhanced Raw File)
- Auto ISO up to ISO2000 (fixed)
- Exposure Compensation: 0 to +2/3 EV

<https://myolympusomd.blogspot.com/2019/03/a-practical-guide-to-olympus-color.html>



"Classic Chrome" for SONY

- Use the "IN" Creative Look
- Contrast +9
- Highlights -9
- Shadows -9
- Fade +1
- Saturation -2
- Sharpness 0
- Sharpness Range 0
- Clarity 0

<https://www.samuelmallory.com/blog/fuji-film-emulations-for-sony-cameras>



KODACHROME 64 for FUJI X-Trans VI

- Classic Chrome
- Dynamic Range: DR200
- Highlight: 0
- Shadow: 0
- Color: +2
- Noise Reduction: -4
- Sharpening: +1
- Clarity: +3
- Grain Effect: Weak, Small
- Color Chrome Effect: Strong
- Color Chrome Effect Blue: Weak
- White Balance: Daylight, +2 Red & -5 Blue
- ISO: Auto, up to ISO 6400
- Exposure Compensation: 0 to +2/3 (typically)

<https://fujixweekly.com/fujifilm-x-trans-iv-recipes/>



SOME ONLINE RESOURCES

- Fuji X Weekly - Mostly Fuji related film recipes but other cameras have been added
 - <https://fujixweekly.com/>
- Canon Picture Style - Canon Global
 - <https://global.canon/en/imaging/picturestyle/file/index.html>
- Nikon Picture Control
 - <https://www.nikonusa.com/learn-and-explore/c/tips-and-techniques/picture-controls-power-inside-your-nikon-camera>
- Sony Film Simulations
 - <https://www.samuelmallory.com/blog/fuji-film-emulations-for-sony-cameras>
- Camera Profiles - Simulations for multiple manufacturers (for purchase)
 - <https://www.camera-profiles.com/film-inspired-picture-styles>

DISCUSSION?