EXPOSURE® 3

Taking the digital out of digital photography

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Table of Contents

Introduction

Welcome

Exposure is a plug-in for Photoshop and Lightroom that makes digital images look like they were shot on film. With Exposure, you can imitate the look of a film stock, such as Velvia, apply special effects like selenium/sepia toning, or do some basic image enhancement. Exposure consists of two filters: Color Film and Black and White film. The Color Film filter works on RGB images. The Black and White Film filter can be used on RGB images or Grayscale images. Both filters work with 8 or 16 bits/channel images.

Within Photoshop, Exposure can be used in Photoshop actions, making it easy to modify multiple images in a single operation. The Exposure filters will function as a Smart Filter, which means that it can be applied non-destructively on Smart Object Layers in Photoshop CS3 or later. Read the description of Smart Filters in your Photoshop documentation for more information.

Within Lightroom, Exposure can be run on a single image or multiple images in batch mode by selecting multiple images from Lightroom. Please refer to the section **Running Exposure from Lightroom** for more information on getting started.

What's New

- **Full 64-bit Compatibility.** Exposure 3 will run under 64-bit versions of Photoshop on both Windows and Macintosh platforms. Note, this includes Photoshop CS4 and later on Windows and Photoshop CS5 and later on the Macintosh.
- **Lightroom Support.** Exposure 3 will run as a Lightroom plug-in (External Editor) and does not require Photoshop to be installed.
- **User Interface.** The user interface has been completely redesigned for Exposure 3. The preview image is smoother and supports more zoom levels. You can now use the mouse scroll wheel to zoom in and out. Also, the display is updated progressively so that the experience is more interactive.
- **Settings**. Many new settings have been added to both filters:
    - **Color Film:** Slide film (Agfachrome 1000 RS), Vintage Film (Autochrome and Old Kodachrome), Cinema (Bleach Bypass and Technicolor), Fading (a number of new film stocks), Lo-Fi (toy camera settings) and Vignette
    - **Black and White Film:** Films (Agfa APX 25, Kodak Panatomic-X and Kodak Technical Pan), Color Toning (a number of new variations), Lo-Fi (toy camera), and Vignette
- **Effects.** An "Age" tab has been added that simulates effects for vignette, dust and scratches. The "Focus" tab has an additional slider for "Lens Warp" to simulate toy camera lenses.

Installation (same for both Macintosh and Windows)

Shut down your graphics host program (usually Photoshop).

Run the installer found on the CD or that you downloaded.

You may be asked to enter the username and password of an account with administrator privileges. If you don't have administrator privileges, talk to your IT gal or consult your Mac OS or Windows manual.

After the license agreement screen, you will see a list of compatible graphics programs on your computer. Choose one and click OK. If you want to install into another graphics program, run the installer again.

Running Exposure from Lightroom

Exposure 3 works great with Adobe Lightroom. It does not require Photoshop to work with Lightroom and even supports batch processing. To get the latest Lightroom installation info and to see a video on using Exposure in Lightroom, visit our web site at the link below.

www.alienskin.com/exposure/lightroom.aspx

Activation

Exposure 3 has an activation system that works just like the one in Photoshop. Until Exposure is activated, periodically it will ask you to activate. Activation is a very quick and easy process in which Exposure lets our activation server know that your license code is in use. This only needs to be done once. Exposure does not talk to our activation server again after it has been activated. No personal information is sent other than the license code.

You can use Exposure for up to 30 days without activating. After that, Exposure will stop working until you activate it.

You can have Exposure activated on up to two computers at once, so you can have it on both your laptop and desktop computers. If you ever get rid of your computer, don't forget to deactivate Exposure first! You can do that by going to the menu entry Help>Deactivate. Then you can activate Exposure on a new computer.

How to Use This Manual

The **User Interface** chapter explains how to preview effects, apply them, and work with settings. To get the most out of Exposure, be sure to read this chapter. We have a lot of cool features that may not be obvious.

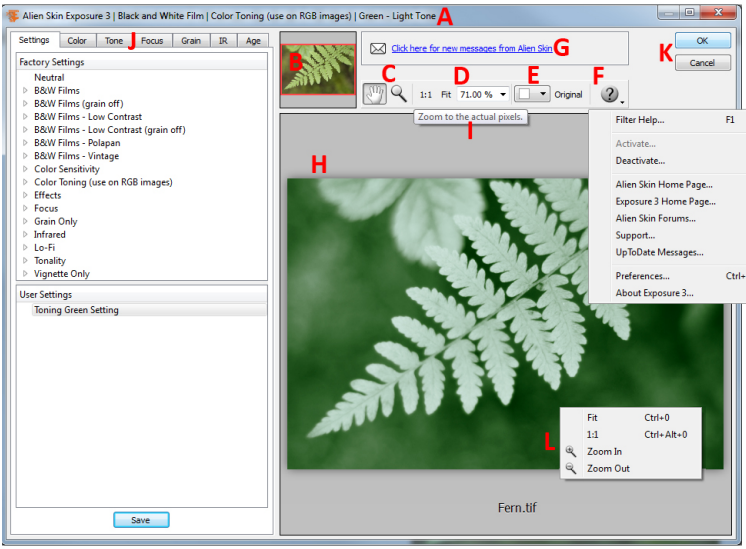
The **Factory Settings** chapter gives advice on when to use the zillions of settings that come with Exposure. Background on how the settings were created is in the **Settings Discussion** chapter.

The remaining chapters are devoted to tabs in the user interface. The **Color** tabs of the **Color Film** and **Black and White Film** filters are different, so there are two **Color** chapters.

User Interface Overview

The next few sections explain every control in the Exposure user interface. Screenshots may be from a Macintosh or Windows computer, whichever was handy at the time. All the gizmos are in the same places and behave the same way on both platforms. They are just more shiny on the Mac.

Below is a screen shot of the Exposure user interface with the **Settings Tab** selected.



The Filter Window

A: TITLE BAR

The title bar displays the currently selected setting (see the **Settings Tab** chapter).

B: NAVIGATION THUMBNAIL

Click and drag the movable red box to quickly move the preview around your image.

C: PREVIEW TOOLS (ONLY ONE AT A TIME IS ACTIVE)

Click the hand to enable the **Move Tool**. Then click and drag in the preview to move around the image.

Click the magnifying glass to enable the **Zoom Tool**. Then you can click in the preview window to zoom in. Option+click (Macintosh) or Alt+click (Windows) to zoom out. Double-clicking the magnifying glass resets the preview window to 100% magnification. While in zoom mode, holding down the Spacebar temporarily switches to the Move Tool. Many of the same

shortcut keys that Photoshop uses to navigate a preview window work in Exposure too.

D: ZOOM LEVEL CONTROLS

Click the **1:1** button to quickly view the actual pixels of the image unzoomed.

Click the **Fit** button to fit the preview in the current window.

The current zoom level is displayed next to the fit button. You can select a different zoom level from the dropdown list.

E: SPLIT SCREEN PREVIEW

The split screen feature shows the original image in half of the preview. The entries in the Split Screen menu specify the orientation of the split line or simply turn it off.

F:CONFIGURATION AND HELP OPTIONS

Clicking the help icon will reveal a number of configuration and help options.

Filter Help: Filter Help will bring up the PDF Manual (this document). You may also press F1 (Windows) or ⌘-/ (Macintosh).

There are other entries that go to the following places on our Web site:

- **Video Tutorials**
- **Exposure Web Page**
- **Alien Skin Software's Home Page**
- **Online Forums**
- **Support Knowledgebase**
- UpToDate Messages

You can Activate or Deactivate the locally installed copy of Exposure.

See the **Activation** section earlier in this document for more information.

See the **Preferences** section for more information on preferences.

G: UPTODATE MESSAGE INDICATOR

When you see this visual cue, you have a new message from Alien Skin Software. Click here to open a web page containing the message. UpToDate messages are usually announcements of updates, new products, or our monthly newsletter. You can set the frequency that UpToDate checks for messages or turn it completely off in the **Preferences dialog**.

H: PREVIEW AREA

Preview the effect on your image here. Resize the filter window to make the preview area larger or smaller.

I: TOOLTIP HELP

Whenever you move your cursor over a user interface element, a short description appears as a tooltip.

J: TABS

The **Settings Tab** lets you quickly select a preset or one of your saved custom settings. Click the Basic tab to see more controls for this filter. In some filters, there may be other tabs present. You can click on each one to see more controls.

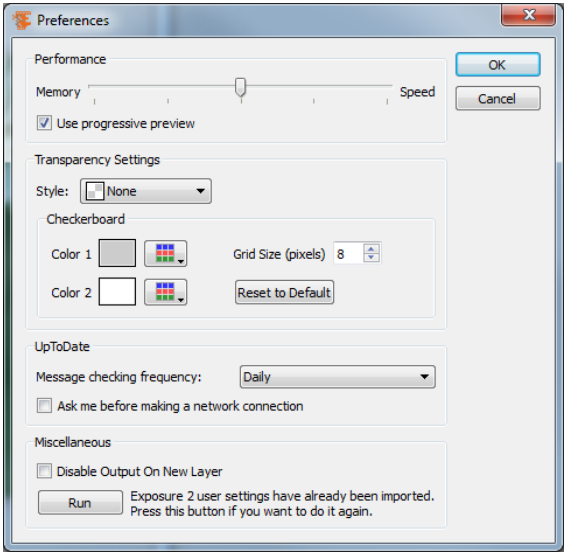
K: OK AND CANCEL

Clicking the OK button applies the filter with the current settings. Clicking Cancel closes the filter window without applying the effect. The **Enter** key is the same as clicking OK and **Escape** is the same as clicking Cancel.

L: PREVIEW OPTIONS

Right-clicking in the Preview Area will reveal some zooming options.

Preferences



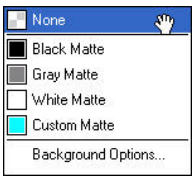
You can get to the preferences dialog through the Configuration and Help button or by typing **⌘+K** (Macintosh) or **Ctrl+K** (Windows).

UpToDate

Here you can set the frequency at which the **UpToDate** system checks for messages from Alien Skin Software. The **UpToDate** system informs you about the latest Alien Skin Software products, special offers, software updates and other news. When a new message is ready, a button will appear at the top of the user interface labeled "Click here for new messages from Alien Skin."

Preview Background

If you use layers with transparency, you can set the color or pattern that is drawn to represent transparent pixels in the preview. To select the default Photoshop-style grid as your preview background, select None in the Preview Background drop-down list box.



Favor Memory or Speed

If Exposure runs out of memory, try moving this slider toward the **Memory** side. Then restart Photoshop and you may find that the problem goes away. If you are using images over 4 mega-pixels, then you may get a mild speed boost by moving the slider toward the **Speed** side.

Use Progressive Preview

You can enable/disable progressive rendering. The filter should still be interruptible when turned off but the preview will not show the low resolution preview.

Disable Output On New Layer

Most of the time, the capability to render Exposure's output to a new layer is handy. This can be done by turning on the checkbox on the **Color Tab** named "Create Output In New Layer Above Current." However, that feature is not compatible with Photoshop Smart Objects. If you use Photoshop Smart Objects, it is useful to turn this feature off in the Preferences dialog.

Run Settings Converter

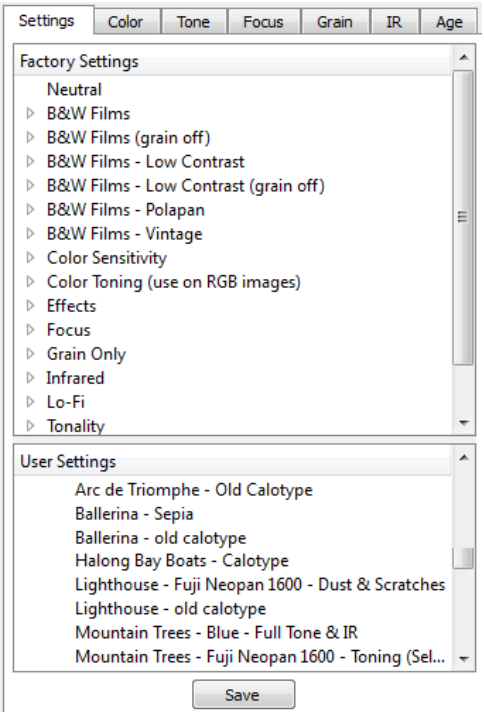
Press "Run" to re-run the settings converter. This will convert and copy any Exposure 2 user settings into the Exposure 3 framework. If a setting already exists it will not overwrite it.

Keyboard Shortcuts

SHORTCUT FUNCTION	MACINTOSH	WINDOWS
Navigate to Next Control	Tab	Tab
Navigate to Previous Control	Shift+Tab	Shift+Tab
OK	Return	Enter
Cancel	Escape	Escape
Undo	⌘+Z	Ctrl+Z
Redo	⌘+Y	Ctrl+Y
Cut	⌘+X	Ctrl+X
Copy	⌘+C	Ctrl+C
Paste	⌘+V	Ctrl+V
Zoom In	⌘++*	Ctrl++
Zoom Out	⌘+-	Ctrl+ -
Actual Pixels	Option+⌘+Zero	Alt+Ctrl+Zero
Fit on Screen	⌘+Zero	Ctrl+Zero
Load Factory Default Setting	⌘+R	F5
Load Last Used Setting	⌘+L	Ctrl+L
Save Setting	⌘+S	Ctrl+S
Switch to Move Tool (hand)	H	H
Switch to Zoom Tool	Z	Z
Preview Move (with zoom enabled)	Space Bar+Drag	Space Bar+Drag
Zoom In (with zoom enabled)	Mouse Click	Left Mouse Click
Zoom In (with move enabled)	⌘+Click	Ctrl+Click
Zoom Out	Option + Mouse Click	Alt + Mouse Click
Drag preview (with zoom enabled) – also displays original image	Hold spacebar while dragging	Hold spacebar while dragging
Zoom to Actual Pixels	Double-click Zoom Tool	Double-click Zoom Tool
Increase/Decrease Slider by 1	Up/Down Arrow	Up/Down Arrow
Increase/Decrease Slider by 10	Shift+Up/Down Arrow	Shift+Up/Down Arrow
RGB curve on Color Film Tone Tab	Option+2	Ctrl+2
Red curve on Color Film Tone Tab	Option+3	Ctrl+3
Green curve on Color Film Tone Tab	Option+4	Ctrl+4
Blue curve on Color Film Tone Tab	Option+5	Ctrl+5
Previous Setting	,	,
Next Setting	.	.
Open Manual	⌘+/	F1
Open Preferences Dialog	⌘+K	Ctrl+K

* Use Shift+⌘++ in 64-bit Photoshop CS5.
This is a bug in Photoshop that Adobe is aware of and will eventually fix.

Settings Tab



The **Settings Tab** lets you create, manage, and share your favorite settings. There are two lists on the **Settings Tab**. The top list contains factory settings. Factory settings are supplied with the product and can't be changed. The bottom list contains user settings, which are settings you can create yourself.

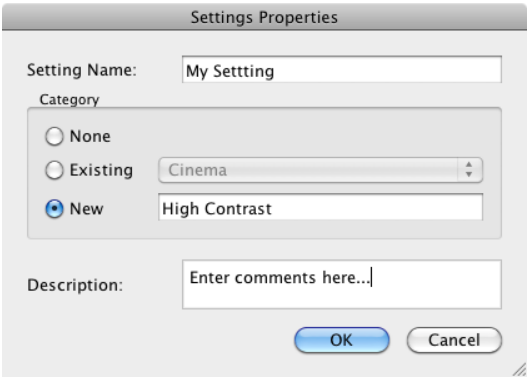
LOADING SETTINGS

Simply click on a setting to move all the controls to the values saved in that setting.

SAVING SETTINGS

To save a setting, first adjust the sliders and other filter controls to your satisfaction. Then, click the **Save Button** at the bottom of the **Settings Tab**. You can also save a setting by pressing ⌘+S (Macintosh) or Ctrl+S (Windows). The Settings Properties dialog box will appear. There you can

specify the name, category, and description. The description will appear as hover help when you hold the mouse over the setting name in the User Settings area.



Modifying Settings

To modify the control values in a setting, move the controls and then save the setting with the same name. This is easy because the Settings Properties dialog is always filled out with the most recently loaded setting name.

You can also right-click (Windows) or Control-click (Macintosh) on a setting to rename, delete, export, or e-mail it.

Settings Upgrade

If you are an Exposure 2 user, Exposure 3 will automatically import your Exposure 2 user settings the first time you run any filter. You can also manually activate the settings upgrade process from the Preferences dialog.

Resetting Settings to Neutral

Every filter has a **Neutral** setting. Clicking this setting resets the current filter parameters. You can also press the **F5** (Windows) or **⌘+R** (Macintosh) key to reset the filter.

Settings Discussion

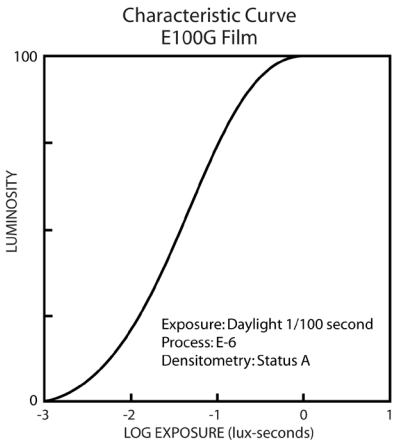
How We Did It

To imitate film stocks that were available during creation of Exposure, we did test shoots with the film and with a Canon EOS-1Ds Mark II digital camera. We shot a special chart, as well as scenes including flesh tones and colorful natural objects under controlled lighting. The digital photos were processed through the Adobe Camera Raw plug-in with default settings. We then measured differences between the film and digital images using custom software we created. This enabled us to create settings that mimic the look of these film stocks.

Most of the film settings control warming/cooling (or sometimes filter color), saturation (for color films), RGB sensitivity (for black and white films), a curve in the Tone tab, and grain parameters. We chose to leave black and white colorization and focus controls alone in the basic film settings. Those controls are more for special effects or for you manipulate yourself.

For film stocks that were discontinued years go, like GAF 500 and Kodak EES, we obtained archival photos and experimented until our settings closely matched the images.

Tone Curves

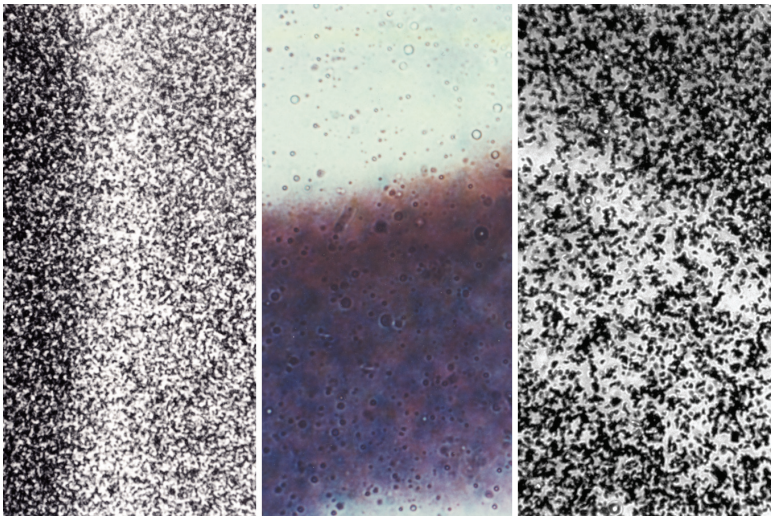


Compared to digital sensors, film has a less linear response to light. Below is a characteristic curve for a film stock.

If this curve were a straight line, the response would be perfectly linear, and the film would reproduce a perfectly realistic image within that brightness range. Whenever the curve is shallower than 45°, contrast is lowered. Areas steeper than 45° designate increased contrast. This S-shaped curve would increase contrast in midtones, block up shadows, and blow out highlights. Expect to see varying amounts of these effects from all of the settings based on real film stocks. If these effects bother you, simply reset the curve in the Tone tab after loading the settings.

Grain

The Grain tab is the most unique part of Exposure. We put film grain under a microscope, literally. There we found that real grain can be larger than one pixel, has subtle color characteristics, and often appears with different strengths in the highlights, midtones, and shadows. Below are some examples of our microscope photos. As you might expect, the higher speed film has larger grains.



Above are photomicrographs that we took while studying film grain. From left to right they are Kodak TRI-X 400, Fuji Velvia 100, and Ilford Delta 3200.

Getting Ready – Adobe Camera Raw

Our film settings were developed using Raw images processed through Adobe Camera Raw using its default setting. If you use the ACR automatic setting your results will come out higher contrast. If you set all the ACR sliders to zero, your results will come out lower contrast.

Generally you will get more predictable and attractive results if you always treat your input images the same way. Moderately low contrast before entering Exposure is recommended.

Factory Settings

Factory settings can be found in the far left tab in the user interface at the top. Factory settings are broken into groups. This chapter gives some guidance on the most commonly used settings groups and describes a few of the more interesting specific settings. This is not a comprehensive list.

Color Film

CINEMA

Bleach Bypass

Bleach Bypass is a film processing technique used in movies and still photography that involves skipping the bleaching step during film processing. The look is typically desaturated with high contrast and boosted highlights although there are many variations depending on whether the bleach process is completely skipped or partially and also depending on the film type.

Technicolor Process 2 (2-Strip)

An early version of the Technicolor process using a subtractive two-color system (green and red).

Technicolor Process 4

The classic 3 color Technicolor system used in early color movies.

SLIDE FILMS

Slide films tend to be high contrast and many of them are high color saturation too. Slide settings are most often used to punch up dull low contrast photos. Some slides also have a slight color cast, Kodak generally being warmer and Fuji being cooler.

Here are a few of the most commonly used slide settings.

Fuji Velvia

All the Velvia's are high saturation and contrast. 100F is the mildest and 50 is the most over the top. These are primarily used in nature scenes with colorful plant life. Human skin tones can become quite unnatural with these films. Velvia 50 is no longer commercially available.

Kodak Ektachrome EES

This long extinct film has slightly muted colors and noticeable grain. Some photographers preferred EES for portraits. Kodachrome 200 is another grainy film sometimes used for portraits.

GAF 500

This extremely grainy film was discontinued in 1977. It can give your photo a retro gritty look.

PRINT FILMS

Print films tend to have lower color saturation than slide films and many of them have lower contrast too. These films are most often used for scenes containing people, such as weddings, portraits, and fashion.

Kodak Portra 160NC and Fuji Pro 160S

These films are the lowest contrast and color saturation of the slide films. In portraits they produce the most subdued natural skin tones. They provide the most detail in shadows.

VINTAGE FILMS

Autochrome

Autochrome is an early color process introduced in 1907. The image is created by combining layers of dyed potato starch grains on a glass plate. The look is extremely grainy and the colors are faded.

Kodachrome 35mm (1936-1962)

The classic Kodachrome slide film produced from the 1930's to the early 1960's. Colors were vibrant and skin often took on a warm, brownish tone.

Kodachrome II (1962-1974)

The Kodachrome K-12 process popular in the 1960's and 1970's.

LO-FI

All of the settings in this category are typical of toy cameras. There is heavy blurring, variations in exposure and vignetting.

GRAIN

All the settings in this group just add grain without doing any other manipulations. Results range from subtle to ridiculous.

Add detail

These settings add subtle amounts of grain to shadows, highlights, or both. In a photo with completely flat shadows or highlights, this is a way to add a little detail so the picture doesn't seem so artificial.

FOCUS

These settings perform a variety of blurring and sharpening operations.

Glamour Shot

These settings perform the "Vaseline on the lens" effect seen in so many mall glamour shot photos. If you use a subtle version, this is a way to make wrinkles and blemishes a little less obvious.

TONALITY

These settings mostly consist of curves in the Tone tab. The effects are generally manipulations of brightness and contrast.

Shadow Recovery

When you've lost almost all the detail in your shadows, try these settings. Try the Narrow flavor first and progress toward Broad.

CROSS PROCESSING

Cross processing is development of slide film in print film chemicals or vice versa. This usually increases contrast and creates bizarre color shifts. The results are pretty unpredictable, so we supplied many variations of these settings.

Print Film (generic), Agfa Optima, Kodak Royal Gold
These settings tend to have cyan or bluish casts.

Slide Film (generic), Fuji Provia
These settings are very high contrast and have sharpening turned on.

Black and White Film

See the **Color Film** section above for information on the Focus, Grain, and Tonality settings.

BLACK AND WHITE FILMS

All black and white films except Agfa Scala are print films. The process of creating a black and white print offers a huge amount of flexibility in manipulating everything from contrast to grain to sharpness. As a result, the black and white film settings we provide are just a starting point. Don't be afraid to crank up the grain on TRI-X 400 so it looks like you remember and save your own version. Here are a few of the more interesting films.

Agfa Scala
This recently discontinued film was the only black and white slide film. It provides more detail throughout the tonal range, especially shadows, than most of the other black and white films.

Kodak TRI-X 400
This medium speed film has noticeable grain that many photographers love. Try using the Push slider in the Grain tab to get the look of a photographer dealing with low light conditions.

Kodak T-MAX P3200
This is the grainiest film in the list. If you want an artistic gritty look, try this one.

COLOR SENSITIVITY

These settings show off Exposure's ability to adjust the way a color image is converted to black and white. Fiddle with the Red, Green, Blue sliders in the Color tab to see the wide range of results you can get. These settings show some common channel weights.

Mostly Red
This is the most common channel weighting throughout the factory settings in Black and White Film. It makes human skin brighter. Other weightings sometimes make people look dull.

COLOR TONING

These are simulations of the difficult color toning processes done in dark rooms. These settings are a good introduction to the controls at the bottom of the Color tab.

Selenium - Warm/Cool

This is a popular setting for showing multiple toning colors. Shadows are warm (brown) and highlights are slightly cool (blue).

INFRARED

Exposure 2 has vastly improved infrared film simulation that can look spectacular. These settings are mostly using sliders in the IR tab and Tone tab.

These settings can be finicky because they require a very high quality input image (from Raw format is best) that has a lot of blues and greens. If you use a JPEG image, you may end up with blocky artifacts. It's worth the effort though, because the results can be ethereal and beautiful.

Kodak HIE

This is the infrared film that everyone remembers. HIE is the one that most intensely brightens plants (greens), darkens skies (blues), and has a glow around bright areas (halation).

Fog

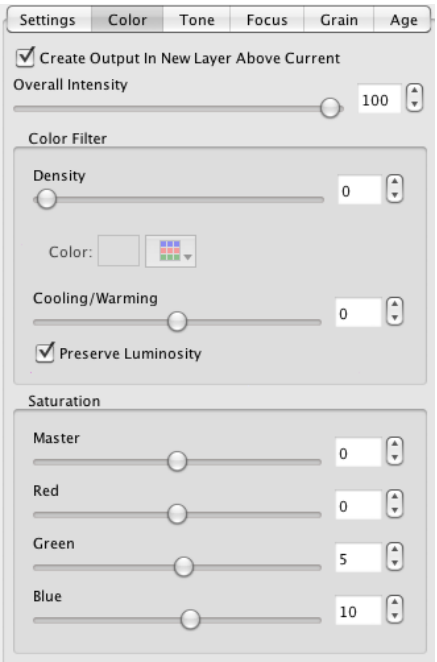
If you just want the glow around bright areas, but don't want to simulate the "wood effect" of brightened plants, try these settings. They are similar to the Focus/Glamour Shots effects, but only have a glow around bright objects.

LO-FI

All of the settings in this category are typical of toy cameras. There is heavy blurring, variations in exposure and vignetting.

Color Film – Color Tab

This chapter describes the **Color** tab of the **Color Film** filter. This tab controls color casts and saturation. The **Color** tab of the **Black and White Film** filter is very different. Therefore, we cover it in the next chapter.



The Color tab for the Color Film filter.

Filter Color and Filter Density

Use these controls to simulate adding a colored filter to the lens of the camera. This alters the hue of the scene. The farther the Filter Color is from white the stronger the effect will be. Increasing Filter Density also increases the filtering effect. Use these controls for odd color casts. If you simply want to warm or cool the scene then use the slider below.

Warming/Cooling

Changing the light temperature of a scene is the most commonly needed type of color filtering. Warm scenes appear more yellow, cool scenes more blue. Move this slider to the right to warm the photo or to the left to cool it.

The top third of this photo has been cooled. The bottom third has been warmed.

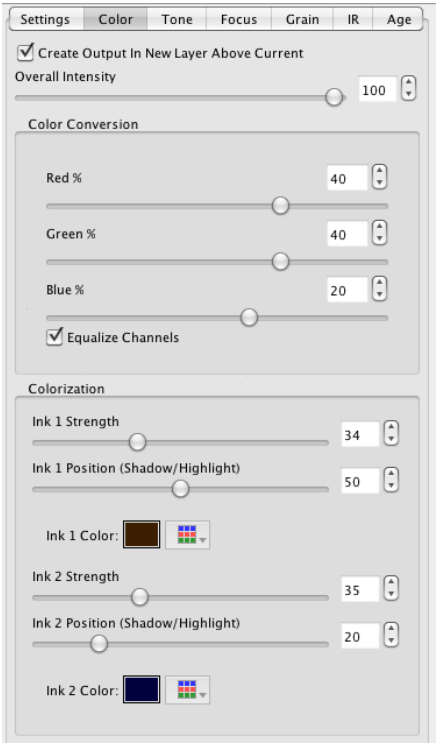
Preserve Luminosity

Enable this option to ensure sure that the filtering operations do not darken your photo. When this option is off, color filtering is more physically accurate. **Preserve Luminosity** affects both the **Filter Color** and **Warming/Cooling** features.

In the right half of this photo, blue and green were reduced, making the red car stand out.

Black and White Film – Color Tab

This chapter describes the **Color** tab of the **Black and White Film** filter. This tab controls the conversion of color images to black and white, as well as colorization. The **Color** tab of the **Color Film** filter is described in the previous chapter.



The Color tab for the Black and White Film filter.

Color Conversion – Red, Green, Blue

The **Red**, **Green**, and **Blue** sliders control how much each color channel affects the final black and white photo. In a portrait, the blue channel can be downplayed to de-emphasize wrinkles and blemishes. You can use these sliders to simulate a color filter over the lens of the camera. For instance, a deep red filter will make skies darker, as in the example. If your photo is in Grayscale mode then these controls will be disabled.

Here setting the RGB values to 100/0/0 simulates a red filter. Note the darkened sky and brightened car body.

These sliders also go down to -100%. While this is not physically realistic, it can be used to increase contrast. When simulating infrared film, a negative value for **Blue** will make the sky very dark.

Equalize Channels

When this option is enabled, the **Red**, **Green**, and **Blue** sliders add up to 100%. This is useful for ensuring that your photo is roughly the same brightness as your original.

Colorization –Ink Color, Strength, Position

The ink controls at the bottom of this tab are for creative effects like sepia or selenium toning. For each ink, you can set its color, how much the ink shows up, and where it appears in the brightness range of your photo. Think of the **Ink Position** slider as a gradient from shadows on the left to highlights on the right. Ink colors appear much stronger when placed in the shadows versus the highlights.

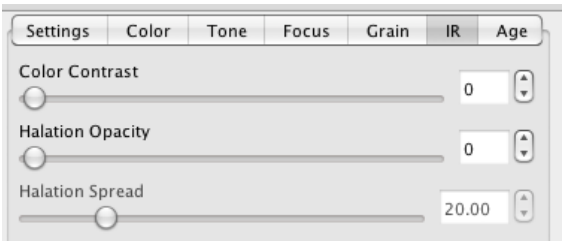
The left photo simulates selenium toning, the right sepia toning.

Black and White Film – Infrared Tab

The IR tab is only available in the **Black and White Film** filter. This tab controls special effects that simulate infrared film. It is of course impossible to exactly simulate infrared film since your input image does not have infrared information recorded in it. However, you can get pretty close with these sliders.

Images containing blue skies, blue water, and green plants will give the most dramatic results.

Warning: You should start with a high quality image, preferably from Raw format. The Color Contrast feature will enhance noise and compression artifacts in JPEG images. Saving a JPEG image in another format will not get around the fact that it contains compression artifacts.



The IR tab for the Black and White filter.

Color Contrast

Increasing this slider darkens blues and brightens greens. Skies and water are usually dark in infrared images, while plants are usually bright. This is sometimes called the "wood effect". If this slider makes noise or compression artifacts (blocks) visible in your image, decrease the slider or start with an image saved in a lossless format, like Raw.

Halation Opacity

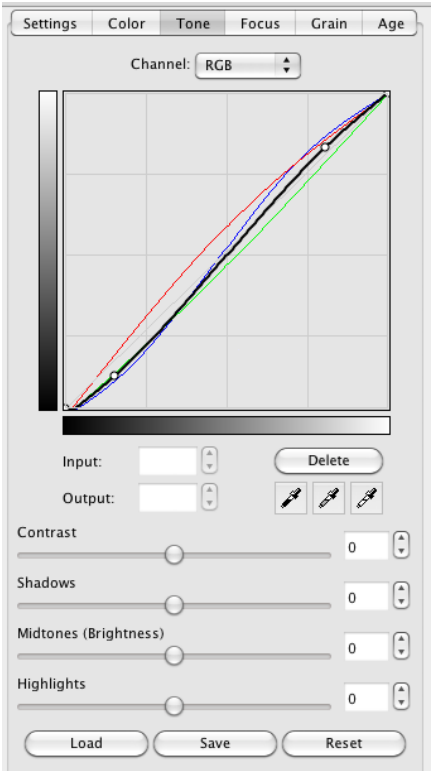
Halation is a glow around bright objects. It comes from light passing through the film and bouncing off the camera back. Most film has an anti-halation backing, but the most well known infrared film, Kodak HIE, does not. This slider controls how solid the glow appears.

Halation Spread

Increasing this slider makes the halation glow appear around more parts of your image. It also makes the glow spread farther.

Tone Tab

Both the **Color Film** and **Black and White Film** filters have a **Tone** tab. The **Tone** tab includes a curve editor along with some sliders we added to make common tasks quick and easy. Use the **Tone** tab to address issues like contrast, brightness, shadows, and highlights.



The Tone tab for the Color Film filter.

Curve Editor

The curve editor displays how input brightness is converted to output brightness. The horizontal axis represents input brightness, and the vertical axis represents output brightness. By default, black is in the bottom left corner and white in the upper right corner. If you prefer to think in terms of density rather than brightness, you may want to flip the curve. To do that, click anywhere in the gradients on the left or bottom of the curve.

CHANNEL POP-UP MENU

The **Color Film** curve editor has separate curves for the red, green, blue, and RGB channels. Changes made to the curve editor or the sliders below it affect only the selected channel. The RGB curve affects all channels and is applied after the individual channel curves. Switch between these curves using the **Channel** pop-up menu at the top of the **Tone** tab.

The **Black and White Film** curve editor has just a single gray curve and does not include a pop-up menu.

EDITING CONTROL POINTS

Changing contrast, brightness, shadows, and highlights involves adding, moving, and removing control points in the curve editor. To add a control point to the curve, click anywhere there isn't already a point. To move a control point, simply click on it and drag it while the mouse button is down. To be more precise, select a control point by clicking on it and then edit the numbers in the **Input** and **Output** text boxes. To delete a control point, drag it out of the curve area. You can also select it and then click on the **Delete** button.

Black/White/Gray Points

Use the three eyedropper buttons to easily set the black, white, and gray points of your photo. These can quickly expand the dynamic range of your photo or remove a color cast. After you click one of these buttons, the cursor becomes an eyedropper. Click anywhere in the preview to select a color. Note that the color selected will come from the original photo, not from the filtered version.

BLACK POINT

To select the black point, click on the leftmost of the three eyedropper buttons and then click on the blackest part of your image in the preview. This will set the leftmost control point in the individual Red, Green, and Blue curves. The point you selected will become pure black after filtering.

WHITE POINT

To select the white point, click on the rightmost of the three eyedropper buttons and then click on the whitest part of your image in the preview. This will set the rightmost control point in the individual Red, Green, and Blue curves. The point you selected will become pure white after filtering.

GRAY POINT

The gray point eyedropper tool is designed to help remove a color cast and is only enabled in the **Color Film** filter. To select a gray point, click on the middle eyedropper button and then click on a pixel of your image that should be any shade of neutral gray. This will set a middle control point in

the individual Red, Green, and Blue curves. The point you selected will become neutral gray and any color cast it had will be removed. All other non-white and non-black pixels in the image are adjusted accordingly.

In the top of this photo, a color cast was removed using the gray point tool.

The Sliders

Many people are scared of the curve editor found in Photoshop. Therefore, we provide four sliders that perform the most commonly needed curve transformations. When you move one of these sliders, a blue transformed copy of the curve is displayed in the curve editor. This blue curve is the one that affects your photo.

CONTRAST

Increasing this slider brightens highlights and darkens shadows. Increasing contrast will usually make a photo more dramatic at the expense of detail in highlights and shadows. In some cases, you may be able to recover detail in photos that have harsh shadows or highlights by decreasing contrast.

SHADOW

This slider brightens or darkens only the shadows. If your shadows are blocked up, you might be able to recover some detail by increasing this slider.

MIDTONE

This slider brightens or darkens the image, having its strongest effect in the midtones. The result is similar to gamma correction, but is not quite as harsh.

HIGHLIGHT

This slider brightens or darkens only the highlights. If your highlights are blown out, you might be able to recover some detail by decreasing this slider.

The Buttons

Editing curves can be a lot of work, and a complicated curve is tedious to reproduce. So we thought you might want an easy way to save and load curves. In addition, we have provided a way to reset the parameters of the **Tone** tab.

SAVE

The **Save** button brings up a standard file saving window that lets you save your curve to a file. For the **Color Film** filter, the curves for all of the channels are saved together in one file.

LOAD

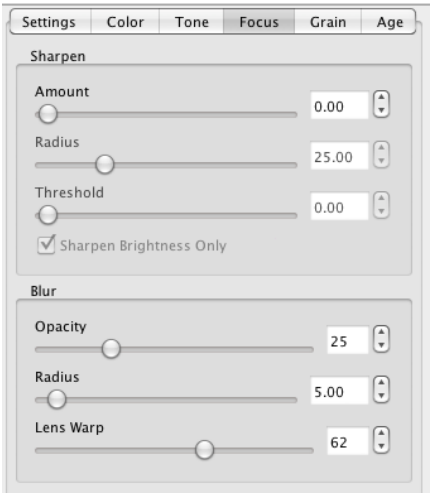
The **Load** button brings up a standard file loading window that lets you replace your curve with one from a file. For the **Color Film** filter, the curves for all of the channels are loaded together.

RESET

To reset all the controls in the **Tone** tab to their default positions, press the **Reset** button. This will result in a curve that does not alter the photo. Note that in the **Color Film** filter, the **Reset** button resets the curves for all of the channels.

Focus Tab

The **Focus** tab contains controls for sharpening and blurring.



The Focus tab for the Color Film filter. The Sharpen Brightness Only checkbox is only present in the Color Film filter.

Sharpening

First a word of warning about sharpening. Oversharpening quickly makes a photo look artificial. As a general rule, we suggest that you reduce sharpening until it is not immediately apparent that the photo was sharpened. When your photo will be printed by a process that causes blurring, you may need to sharpen to a point that looks strong on the screen but will look appropriate in print.

SHARPEN AMOUNT

This slider controls the overall strength of the sharpening. Typical usage is a value less than 30. Generally a larger **Sharpen Radius** will require an even lower value for **Sharpen Amount**.

SHARPEN RADIUS

This value determines the size of features that are most affected by sharpening. You should generally use as small of a radius as you can. Try a value of 20 and keep increasing the radius until you start to see sharpening.

This slider is not measured in pixels. The sharpening radius is proportional to image size, so the same slider value should look the same on a 6 Megapixel image as it does on a 22 Megapixel image.

SHARPEN THRESHOLD

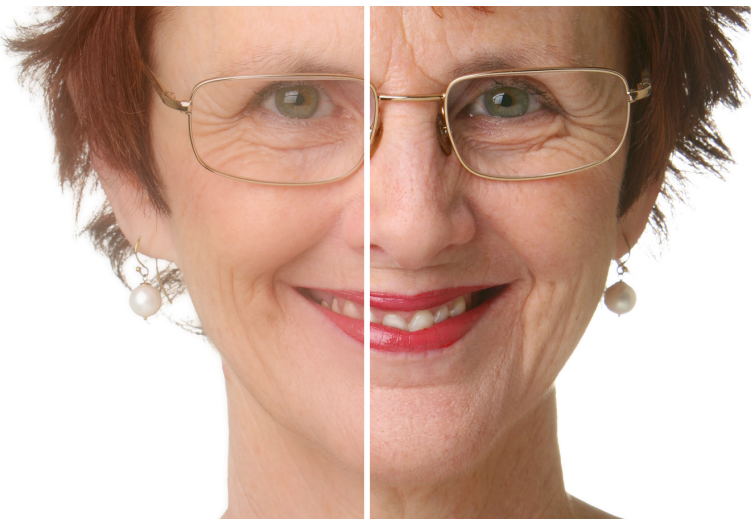
This control restricts the sharpening to areas with strong edges. Increasing this slider leaves smoother areas unaffected. Most people find this control a little esoteric. If you like your tools simple, then just leave this at zero, and you'll be fine.

SHARPEN BRIGHTNESS ONLY

When this option is enabled, only the brightness of a color photo is sharpened. The hue is unaffected. This reduces obvious color halos and other artifacts. To be honest, we haven't found a situation where we would turn this off. This feature is present only in the **Color Film** filter.

Blurring

Why would anyone want a blurry photo? A very slight blur can reduce the harshness of a digital photo or reduce the effects of oversharpening. Most of the time, however, a simple Gaussian Blur adds little to a photo. If that blur is very transparent, the result is that familiar, hazy glow found in glamour portraits. This effect is great for making wrinkles and blemishes less obvious.



The left half of this image was blurred to reduce the appearance of wrinkles.

BLUR OPACITY

For a very subtle effect, try values less than 20%. Your subject may not realize that you softened the photo. For an obvious effect, like the photos made at the mall, crank **Blur Opacity** up to 70%.

A more subtle blur gives the right half of this image an artistic look.

BLUR RADIUS

Like **Blur Opacity**, increasing the reach of the blur will make your effect more obvious. A very high radius will make a photo hazy and lower contrast.

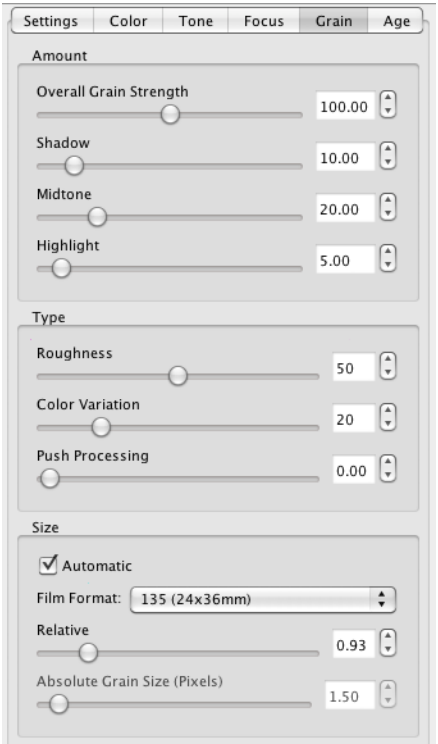
This slider is not measured in pixels. The blur radius is proportional to image size, so the same slider value should look the same on a 6 Megapixel image as it does on a 22 Megapixel image.

LENS WARP

Lens Warp simulates the distortion a lens may create on the edges of the image. When low (or turned off), the blur is evenly distributed in the image. When high, the center of the image is in focus but the edges are blurry. The amount of blur is dependent on the other blurring sliders.

Grain Tab

The **Grain** tab adds realistic grain to selected tonal ranges of your photo.

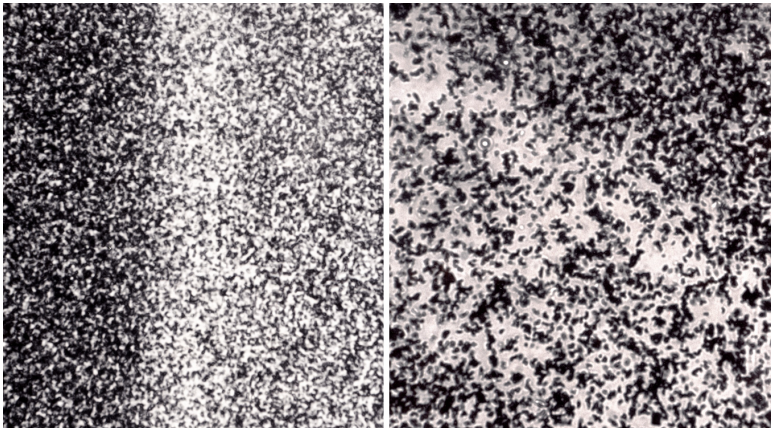


The Grain tab for the Color Film filter. The Color Variation slider is only present in the Color Film filter.

Background

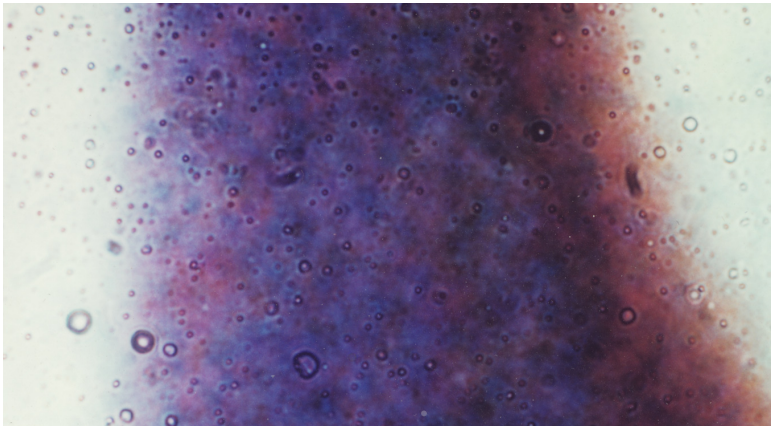
Real film grain is nothing like the noise feature in today's image editors. Real grain appears selectively in different tonal ranges, is not square like a pixel, and has subtle color variation. We studied grain in archival photos, did test shoots, and used microscopes to examine the structure of film grain. With that knowledge we created a grain generator that is sophisticated and very realistic.

Below are some photomicrographs of some of the films we examined. Notice the irregular shape and random spacing of the grains. You would never blow up an image enough to see this level of detail, but these variations cause the effect we call grain.



Kodak TRI-X is on the left. Ilford Delta 3200 is on the right. The graininess of the high-speed film is very apparent.

Below, a photomicrograph of Fuji Velvia 100 shows why modern color slide films have very little grain. Ignore the bubbles. Those are part of a protective layer above the pigment. During development the silver grains were replaced by clouds of pigment. These clouds do not have a sharp edge like the grains in the black and white examples. The result is much less noticeable grain.



In Fuji Velvia 100, the edges of the grain are barely apparent. This is why modern slide films have very little grain.

Overall Grain Strength

This slider gives you an easy way to turn grain completely off, weaken it, or strengthen it. When Overall Grain Strength is zero, most of the other grain controls are disabled.

Tonal Ranges – Shadow, Midtone, Highlight

The **Shadow**, **Midtone**, and **Highlight** sliders add grain selectively to the tonal ranges of a photo. Film tends to have more grain in midtones than in shadows and highlights.

Grain appears only in the midtones of the left half of this image, but in all the tonal ranges of the right.

Roughness

This slider controls how sharp grain edges appear. Low values make grains soft and provide smooth tonal changes throughout the grain. High values give grains sharp edges and make entire areas appear completely bright or completely dark.

Color Variation

This slider controls the amount of color variation the grain causes. We found that real grain is quite colorful, but you may want to tone it down for aesthetic reasons. This slider is only present in the **Color Film** filter.

Push Processing

Push processing is a film lab technique that compensates for underexposed film. Side effects are increased grain, increased contrast, and some loss of detail. You can use this slider for a grungy look.

Grain Size

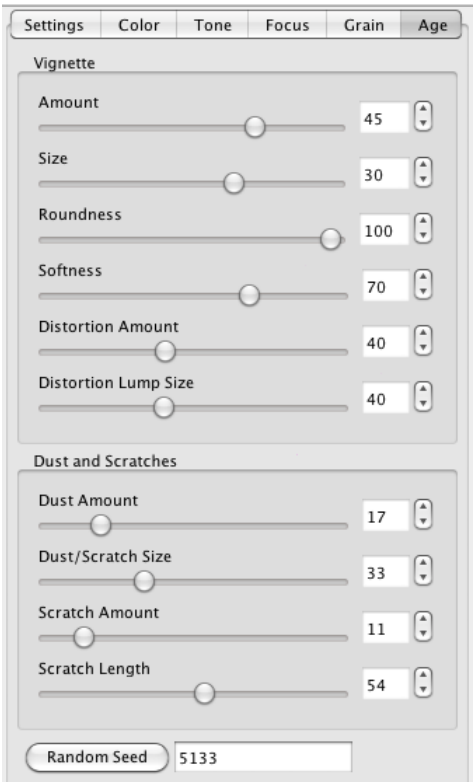
If you turn off Automatic Grain Size, you can directly control grain size in terms of pixels. That is how Exposure 1 worked and it is easy to understand grain size this way. However, in this approach your grain size does not increase when you go from working on 6 Megapixel images to 22 Megapixel images. The result is that the same grain applied to both images and both printed out at the same physical size results in the 22 Megapixel print having much smaller grain.

So, that's why all our factory settings have Automatic Grain Size turned on. In this mode, you specify the film format you are simulating and a relative grain size. Smaller format film produces larger grain, with 135 format giving the largest grain. A Relative Grain Size of 1.0 with a 3000 pixel high image (shortest side) simulating 135 format film gives grain of size 2.5 pixels. If the length of the image changes, the pixel size changes proportionally. That means that your 6 MP and 22 MP photos will have the same grain when printed at the same physical size.

There is one caveat to the automatic grain size system. Grain size will never get below 1.5 pixels. Below that size, grain becomes digital noise with no clumpy natural quality and that's just ugly. This means that images below about 3 Megapixels will usually be stuck at 1.5 pixel grain. Unless of course you grab the grain size slider and increase it. Feel free to take over!

Age Tab

The Age tab contains a number of effects for simulating an aged look.



Vignette

Photographic vignetting is the darkening (or brightening) of the corners of the image (see above & left). It can be caused by a number of reasons. Some unintended causes are mechanical vignetting which can occur if light is blocked for some reason such as by a filter or a lens hood and optical vignetting which is due to the lens. Both cause a darkening of the image on the corners and are often seen in old photos or images taken with a toy camera such as a Holga. Darkening and brightening vignettes can also be added intentionally to a photo in the darkroom. The controls in Exposure 3 will allow you to create a wide range of vignette effects.

Most presets have default parameters so you should be able to simply change the **Amount** of vignette to get the desired look. If you want to tweak the look though there are a number of controls:

AMOUNT

This slider controls the strength of the vignette. Negative values will add a white vignette while positive values add a black vignette. This is the first slider you should try to adjust how strong you want the vignette.

SIZE

This size slider controls the radius or width of the vignette. 0 is a good starting point because the vignette will typically fit in the image nicely. Negative values will shrink the vignette towards the center of the image and positive values will expand the radius of the vignette outside the image.

ROUNDNESS

The roundness slider controls the shape of the vignette. Starting at -100 (all the way to the left), the vignette will almost be a perfect rectangle. As you move towards 0, the shape will gradually turn into an ellipse that fits the dimensions of the image. For example, if the image is wider than high (landscape orientation), the shape will be a wide oval. As the roundness slider goes to 100, the shape goes towards a circle. The circle shape is typical of the vignetting cause by the lens or mechanical vignetting and used in many of the settings.

SOFTNESS

Softness affects the sharpness of the vignette edge. When set to 0 the vignette has a hard edge. Increasing feather will cause a softer edge transition.

DISTORTION AMOUNT

Increasing distortion will cause the shape of the vignette to be more irregular or less geometric. The next slider (Distortion Lump Size) will affect how this slider reacts.

DISTORTION LUMP SIZE

The distortion lump size will affect the look of the distortion. When the lump size is small, the vignette will have small irregularities. When lump size is larger, the distortion will be smoother.

Dust and Scratches

The Dust and Scratches sliders can be useful when you want to want to recreate the look of an old black and white photo, faded color photo or a Polaroid.

DUST AMOUNT

Adds black and white dust particles on top of the image for an aged look. As the slider increases the number of particles and opacity of the dust increases. The size of the particles is affected by the next slider (Dust/Scratch Size).

DUST/SCRATCH SIZE

The size and spacing of the dust particles or scratches.

SCRATCH AMOUNT

The number and opacity of the scratches.

SCRATCH LENGTH

The average length of the scratches.

RANDOM SEED

Controls the random elements of the vignette distortion, dust and scratches. Click it until you get a result you like.

For More Information...

The more we learn about photography, the more we realize that there is more to learn! The following books helped us immensely in the creation of this software. If you are a photography geek, these books should go on your wish list.

***The Manual of Photography*, Ninth Edition** (2003), by Ralph Jacobson, Sidney Ray, Geoffrey Attridge, and Norman Axford, Focal Press, first published 1890

If you really want to learn the science of photography, it doesn't get better than this book. The discussion of characteristic curves was valuable in understanding what to expect from our measurements of real film. Be forewarned, this book is full of math and chemistry and has nothing to do with creative topics.

The Photographer's Toning Book, Tim Rudman, Amphoto Books, 2002

This book inspired us to enhance our colorization feature. When we saw that we couldn't do some of the beautiful effects in this book, we beefed it up. The test strips in this book really helped a lot in developing this feature.

***Light and Film, Life Library of Photography*, Time Life Books**, 1970

Yeah, we thought that Time Life books were lame, too, until we saw this one. The gem in this book is Chapter 2, The Evolution of Film. There you can learn about the laborious early methods of photography. You even get to see a modern (well, 1970) guy use these methods and see what kind of results he gets.