

PHOTOSHOP FOR SURFACE DESIGN – ADJUSTING COLORS WITHOUT MAKING COLOR SEPARATION

Working with unlimited amount of colors:

You can use unlimited amount of colors in **digital prints**

Unlimited amount of colors could be used also, if company buying the design would do the color separation themselves.

You can also begin the work and make the repeat on a computer using unlimited amount of colors, even if you are going to separate the colors later. This suites for example for painterly designs.

Working with unlimited amount of colors: In **Edit -> Preferences -> General**, change **Image Interpolation** to e.g. **Bicubic Automatic**. When using tools, you can have **Anti-alias** ticked. You can also adjust values like **Feather**, draw with **soft-edged** brush or use stamp, filters etc.

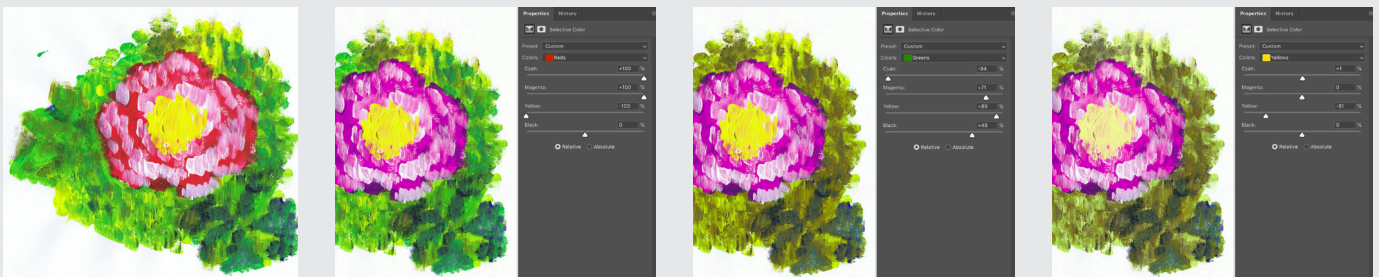
Changing colors in multicolored image

There are many possibilities in Photoshop to adjust colors of a multicolored image. Some tools work better for some designs, so try different tools if you are not happy with first!

When making the color changes with Adjustment Layers, the original coloring is kept safe.

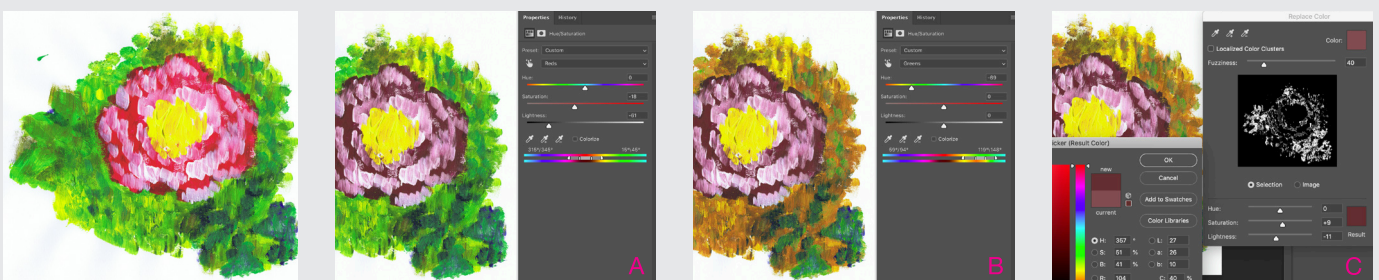
The following three Adjustment Layers suite for roughly changing the colors into right direction – tuning to exactly correct tones can be done later with other tools. Colors can be changed from the entire design, from separate layers or by creating a selection.

- Try: **Layer -> New Adjustment layer -> Selective Color**. This is maybe the most versatile of all Adjustment color tools. In Selective Color window, select first the tonal range you want to modify (yellows or neutrals for example) and blend the color by decreasing or increasing the amount of cyan, magenta, yellow or black in it. Relative creates more subtle adjustments than Absolute, so try them both.



- OR: **Layer -> New Adjustment layer -> Hue/Saturation**. Adjust Hue, Saturation and/or Lightness in Adjustment window to change the colors. You can adjust all the colors in design, or e.g. only blue or magenta tones. (A, B)

Replace Color is a suitable tool for tuning the colors into exactly right tones. It does not suite well for changing the colors completely. Replace color cannot be found in Adjustment layers list and you will need to merge Adjustment layers used before using Replace Color. In **Image -> Adjustment -> Replace Color** select first the color range to be modified. Add more tones in selection with Add to sample Eye dropper (+). Increase Fuzziness to expand selection. To change the selected tones into the exactly right tone, click Result-swatch. (C)



Try also other Adjustment tools either in **Image -> Adjustment**, or in **Layer -> New Adjustment Layer**.

To create duotone look for digital print design, use Gradient Map Adjustment Layer. **Do Layer -> New Adjustment Layer -> Gradient Map**. Click the color bar to edit the gradient. Gradient colors can be changed to match exact color swatches by double clicking the color stops. It's also possible to add another color stop within the gradient and to create multicolored gradients as well.

For more precise working, copy similar colors on separate layers. You could e.g. make a layer for green tones and another for red tones in the design. These layers could also be used for making a detailed color separation.

Making color layers

You can use many tools to make layers, and also combine different tools. Try for example:

- Use **Magic Wand to copy** (Layer → New Layer via copy, Ctrl + J) similar colors to their own layers (Adjust Tolerance)
- OR: Use **Select → Color Range** to select similar colors. Add more tones in selection with Add to Sample Eye dropper (+). You can also increase Fuzziness to expand selection. This function will make a lot of feathering, edges of the selection will be transparent.
- OR: **Do Layer → New Adjustment Layer → Threshold** for selecting darkest/lightest colors. Convert the shades you want to select, into black, and others into white (or vice versa). Then select all black in the layer. Go to original layer, keep the selection to make a new layer via copy (Ctrl + J). Delete Threshold Adjustment layer, it was only for making selection.
- OR: **Do Layer → New Adjustment Layer → Black & White** for selecting pure colors. Convert the colors you want to select, into black, and others into white. Then select all black or white in the layer. Go to original layer, keep the selection to make a new layer via copy (Ctrl + J). Delete Black & White Adjustment layer, it was only for making selection.

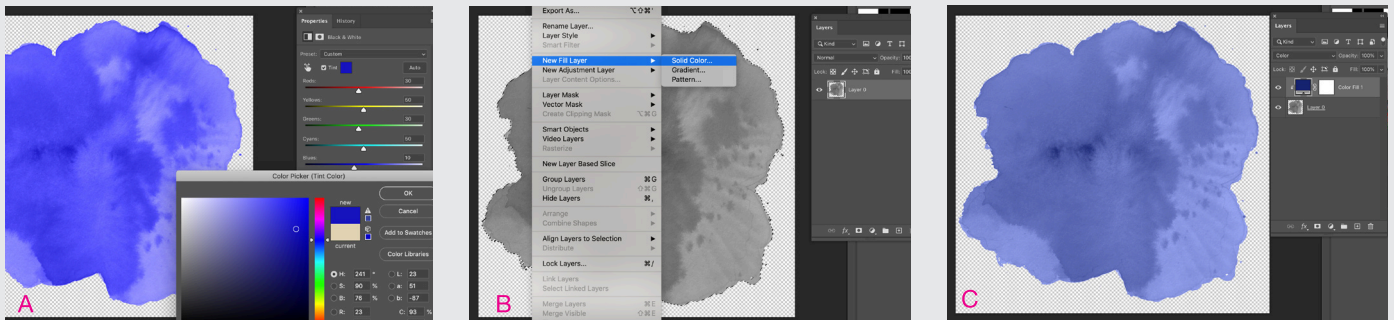
After making color layers, make the original layer invisible. Does the layered design look like original? If not, make at least some of the layers again or copy new material on existing layers. Now you can adjust colors in each layer separately.

Adding monochromatic tone to an image

One option is to use only one tone in one color layer or even one tone in a whole design.

Do **Layer → New Adjustment Layer → Black & White**. In the first window that opens click ok (check that **Use Previous Layer to Create Clipping Mask** is selected). In Adjustment window, define how the image will be desaturated – which colors will be converted into darker and which into lighter tones of gray. Tick **Tint**. Click the color swatch next to it, and select a color for tint. If the result is too light, adjust the desaturation. Try presets like Darker, or Maximum black, or even drag all color sliders into the left, dark end of them. (A)

OR: Do **Layer → New Fill Layer → Solid Color**. (B) (Before this, desaturate the image: Image → Adjustment → desaturate, or use Black and White - Adjustment Layer to do this). In the first window that opens click ok (check that **Use Previous Layer to Create Clipping Mask** is selected). In the second, select color. Color now covers the image entirely. **Change Blending Mode of Fill Layer into Color**. (C) To change the color of Fill layer, double click the symbol of color in Layers panel.



PHOTOSHOP FOR SURFACE DESIGN – COLOR SEPARATION AND INDEXED COLORS

Working with reduced amount of colors:

For most common textile and surface design production methods (screen printing on fabric, paper or ceramics, woven and knit fabrics), you need to use limited amount of colors

Working with reduced amount of colors in Photoshop: When possible, work in **Indexed Color -mode**. Often it's not, because layers, filters. etc. cannot be used in Indexed color -Mode.

If it's not possible to work in Index Color -mode, use usually RGB-Mode. Adjust how Photoshop treats the image when scaling and transforming: In **Edit → Preferences → General**, change **Image Interpolation to Nearest Neighbor**. If you change color spaces during the work, then **untick Use Dither in Edit → Color Settings**. When using selection and drawing tools, **never tick Anti-alias and put zero in functions like Feather or Dither**. When drawing, **use hard edged pencil** instead of soft edged brush.

Prepare the design for color reduction

Before color reduction, consider if you want the design to be neat and clean with solid color areas, or if you want to keep it structured and painterly. When clean result is desired, various tools could be used to smooth the design before color reduction:

- **Small amount of blurring can be used for smoothing the design**, e.g **Surface, Smart or Gaussian blur** (0,5 -1 px). (2A) Surface Blur blurs only the surface, preserving outlines. Blurring can help you for example to reduce the structure of the paper from the sketch. Note, that if you want to use the structure as an effect, you of course do not need to blur it.
- Increasing contrast can also help in similar way. Do e.g: **Image -> Adjustment -> Levels** or **Image -> Adjustment -> Curves**
- Also some of the **filters** can help to clean the design for color reduction. They could be used e.g. to clean a pencil drawing into neat lines or a painting into neat color areas. Try e.g. **Filter -> Filter Gallery -> Sketch: Graphic or Stamp**, or -> **Artistic: Watercolor, Dry Brush** or **Cutout**. Also **Image -> Adjustment -> Posterize** can be used.
- Save the progress file with a new name before color separation.

Separate colors by converting the image into Indexed Colors

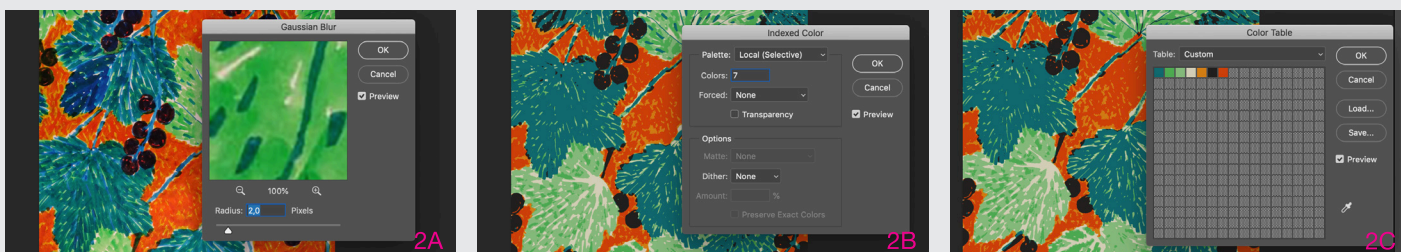
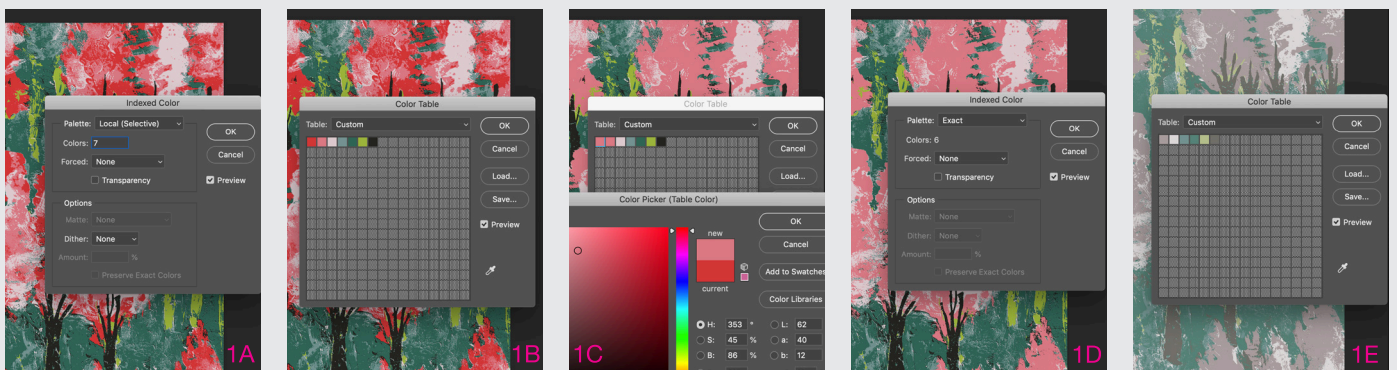
Do: **Image -> Mode -> Indexed Colors**. (1A, 2B) About the appearing window:

- **Select -> Palette: Local Perceptual** (takes in color palette main colors human eye can see in the image)
OR **Local Selective** (same as Perceptual, but combined with web colors)
OR **Local Adaptive** (counts all colors in image and takes in color palette the ones that appear most often)
OR **Palette: Exact**, if you already have exactly the desired amount of colors in the image.
OR **Palette: Custom** for separating the colors directly into Custom colors. Click Load to load your swatches. (Note: This method works well, if you adjust the colors close to your custom color palette prior to color separation.)
Select as much colors as needed for the design to look good (usually less than 20). You can reduce the amount still later on.
Select usually: **Forced: None** (For black and white sketch you could select Forced: Black and white)
- Dither: noise or diffusion would make fine pixel mesh on the edges of color areas (instead of neat and clean edges) If that is not wanted, select: **Dither: None**
- Ticking Transparency makes a transparent background behind the image and adds transparent to one color. (When you clear or erase part of the image, you will see the transparent background underneath). **Usually untick Transparency**

After reducing the colors open: **Image -> Mode -> Color Table**, (1B, 2C). You can now change very similar colors to exactly same colors: Click a color, and select new from the design (1C) (or color palette). You can select several colors at once, if they are next to each other in color table.

If you would find it easier, you could of course also change the colors using **Magic Wand** and **Edit -> Fill**, or Paint Bucket

Change design to RGB-mode (Image -> Mode -> RGB), and then back to Indexed Color -mode (Image -> Mode -> Indexed colors). Photoshop should now suggest the right amount of colors (Exact ->) (1D). Note that if Transparency is ticked, then that increases the amount of colors by one. You should usually end up with 2-8 colors.



Some tools for working with colors in the design:

Cleaning the design: You may have undesired stray dots of colors somewhere in the design. **Select all of that color with Magic Wand. Now you can paint over the stray dots without affecting other colors in the design.** OR **Select the area with stray dots using e.g. Lasso, Quick Mask or Object Selection Tool. Take Magic Wand, and use it in Intersect with Selection -mode. Select the stray dots inside the selection with Magic Wand. Do Edit -> Fill, and fill with the desired color.**

Expanding the color area (e.g. if some lines in the design are too narrow): Select the color with **Magic Wand**. Do **Select -> Modify -> Expand, 1 pixel or more. Fill the area with color: Edit -> Fill -> Use color.**

Cleaning large areas in this manner can be time consuming. It would be most often faster to adjust the design before color reduction using e.g. filters. **Keep the original version without color separation saved** so you can always go back to it to make the color separation again.

Swatch libraries

To open a custom Swatch library, **click the upper right corner of the Swatches-panel -> Import Swatches.**

You can create and save new swatch libraries from the Swatches-panel by **clicking the upper right corner of the Swatches-panel -> Export Swatches for Exchange** (.ase files can be opened both in Photoshop and in Illustrator).

PHOTOSHOP FOR SURFACE DESIGN – MAKING RASTERS, AND CONVERTING IMAGES TO BITMAP MODE

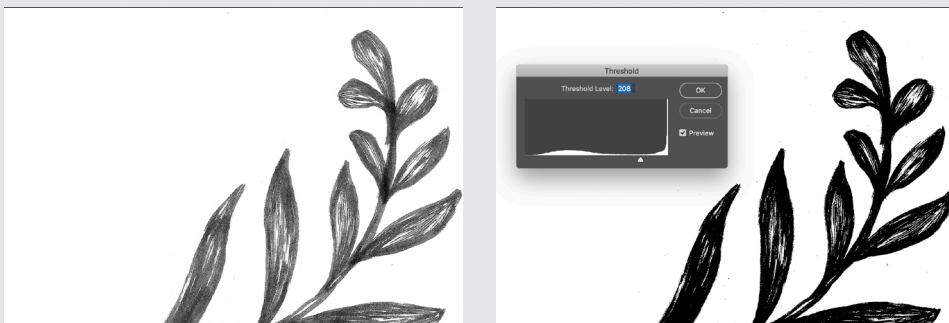
There's many tools in Photoshop for separating colors of a design into only black and white. These tools can be used for making a color separation for all monochromatic images. To use these tools for color images, convert the design first to grayscale. If there's several different tones of color in the design, start by separating each tone on its own layer. (See: Making color layers)

There's a color mode in Photoshop that can include only black and white, **Bitmap-mode**. These **black and white bitmaps can be used easily also in Illustrator.**

All methods in this hand-out suite for Grayscale-mode - First convert the sketch into Grayscale: Image -> Mode -> Grayscale

Basic method for separating colors into black and white:

- o Do **Image -> Adjustment -> Threshold**. Drag the slider to have more black or white in the image.



- o **To use file in Illustrator**, convert it in Bitmap-mode: **Image -> Mode -> Bitmap, use: 50% Threshold**

Two or more print colors

- o It would usually create a better result to print a painterly design with two or more tones. **To make two print colors, make 2 layers:** one for lighter color and one for darker color. First copy the design into a new layer.
- o Light (base) color: **Select downmost layer, do Image -> Adjustment -> Threshold**. Drag slider until almost all color is black
- o Dark (accent) color: **Select topmost layer and Threshold it**. Drag slider only until the darkest parts of image are black
- o Select all white in the layers and delete it. Select all black in layer and fill color in it. (The design could be later on converted to RGB-mode to enable adding also other colors than gray to it.)
- o You could also do Threshold in Adjustment - Layer. Layer -> New Adjustment Layer -> Threshold
- o **To use files in Illustrator**, save both layers as files and convert them into Bitmap-mode: **Image -> Mode -> Bitmap, use: 50% Threshold**

Adding a raster into design by converting to Bitmap

To still better preserve tonal, e.g. watercolor look of the sketch, you could use **raster**. You could use raster with just one print color, but with two tones the results are usually better. As described above, for two tones two layers are needed.

- **Use Image → Adjustment → Levels or Curves to adjust the image so, that areas that are supposed to be full color are black and areas that are supposed to be without color, are white (e.g. background).** (A) Little bit of blurring can be added to smooth the image.
- **Do Image → Mode → Bitmap. Select Method:**
 - 50% Threshold simply converts the darker pixels into black, and lighter pixels into white
 - All the other methods make some sort of dithering/halftoning:
 - **Diffusion dither** makes very fine pixel mesh: dense mesh for dark areas and loose mesh for light areas. With fine resolution (300 dpi) this fine mesh cannot usually be directly screen printed on textile. (40–150 dpi could be used for screen printing textiles) Freelance designer could still sometimes make the files using 300 dpi, and the customer could later convert the design into suitable quality according to their needs – or the design could be printed digitally (B,C)
 - **Halftone Screen** makes the basic dither: dots in diagonal lines. Dots will be large in dark areas and smaller in light areas. Halftone is commonly used in offset printing (newspapers, magazines...) and also in textile printing. You can specify the shape of dots, frequency (how many lines per inch = lpi) and the angle of lines. For best results, lpi - value should go evenly into the resolution of image. For example, if frequency would be 42 lpi, resolution could be 256 px/inch. If you print several half tone screens on top of each other, use different angles. To avoid moiré - effect, turn the angle e.g. 30 degrees more for each screen. Ellipse-shape is usually considered as best for textiles. For best results on halftone screen, the detailed parameters of base fabric and printing screen would be needed, and thus the best halftoning is usually done by the printing companies themselves or in collaboration with them. (D,E)
 - With **Custom Pattern** you can dither with any pattern. Structural grayscale patterns, with many shades of gray, usually function well. Try your own scanned structures or e.g. Photoshop's Artist Surface or Grayscale Paper -patterns. It would be always best to make your own patterns, because the repeats of photoshop patterns are small and blocky. You could use any simple, structured grayscale surface (with many shades of gray)
 - **Always when you use dithering, keep also the original grayscale version saved.** You might want to get back to it yourself, or the customer buying your design could want it!

