How to Color Cold Process Soap

By Amanda Gail
Let’s talk about…

- What colorants are available to soap makers.
- How to use them in your soap.
- How to read and understand a colorants INCI.
- Troubleshooting

Before we get started, let’s go over some terms.
Color Fading

- Light (both natural and indoor) can cause certain colorants to fade.
- This is important as you pick out packaging or set up at outdoor craft shows.
- If you use colorants that tend to fade, you might want to package your soaps in boxes or fully wrap so that light does not fade your colorful soap.
Some colorants will migrate in soap.

Imagine that you create a layered soap, blue soap on top of white soap. If you used a colorant that migrates, the white layer will absorb some blue colorant and you won’t be left with a crisp layered soap.

This can also affect swirls. You might create a soap with a crisp swirl using different colors. When you come back to it a day or week later, the swirls have bled into each other, creating a muddied soap.
pH Sensitivity

- Cold process soap has a high pH.
- Sometimes the high pH can change colors completely or it can fade colors to where it looks like you didn’t add color at all.
- Imagine pouring a beautiful purple soap, only to wake up in the morning and it is a puke green color.
Usage Rate

- The usage rate is how much of a colorant you can use in cold process soap.

- **PPO**: PPO stands for *per pound of oil*. 
Mineral Pigments: Oxides and Ultramarines

- **Colors produced:** Iron oxides produce shades of red, orange, brown and black. Chromium oxide produces shades of green and teal.

- **Color fading:** Oxides are not light sensitive.

- **Color bleed/migration:** Oxides will not bleed (between layers or swirls) in soap, though can bleed onto a washcloth or color lather if too much is used.

- **pH sensitivity:** Oxides are not effected by the high pH of soap.

- **Natural or synthetic:** Oxides are synthetic, though they are “nature identical”, meaning they have the same molecular makeup as the once mined pigment from the earth.

- **Usage rate:** 1 teaspoon per pound of soapmaking oils. Use less for a lighter color.
Oxides Available to Soapmakers

- Make sure that the oxides you purchase are suitable for cosmetic use. There are commercial-use oxides, which are not as pure—or—powdered enough for cosmetic use. Here are some oxides that you’ll find from suppliers.
  - Yellow Oxide
  - Red Oxide
  - Black Oxide
  - Brown Oxide
  - Chromium (Green) Oxide
  - Hydrated Chromium (Teal Green) Oxide
Ultramarines

- **Colors produced:** Shades of pink, blue and purple.

- **Color fading:** Ultramarines are not light sensitive.

- **Color bleed/migration:** Ultramarines will not bleed (between layers or swirls) in soap, though can bleed onto a washcloth or color lather if too much is used.

- **pH sensitivity:** Ultramarines are not effected by the high pH of soap.

- **Natural or synthetic:** Oxides are synthetic, though they are “nature identical”, meaning they have the same molecular makeup as the once mined pigment from the earth.

- **Usage rate:** 1 teaspoon per pound of soapmaking oils. Use less for a lighter color.
Ultramarines Available to Soapmakers

Make sure that the ultramarines you purchase are suitable for cosmetic use. There are commercial-use ultramarines that are not as pure—or—powdered enough for cosmetic use. Here are some ultramarines that you’ll find from suppliers.

- Ultramarine Blue
- Ultramarine Violet
- Ultramarine Pink
- Ultramarine Purple
Supplier Modifications for Use (Oxides and Ultramarines)

- **Liquid Pigment** - You will find that some suppliers sell liquid pigment for ease of use. This is simply pigment in glycerin. You can purchase the powders and create your own liquid pigment.

- **Soap Color Bars** - Some suppliers also sell pigment color bars. These are simply pigment in melt and pour soap and should not be used for cold process soap.
Make Your Own Liquid Pigment

- Creating your own liquid pigment is as easy as mixing pigment with vegetable glycerin or a light soapmaking oil, such as sunflower. I like to use the ratio of 1:2 (pigment:glycerin) when premixing my colorants.
How do Oxides and Ultramarines Color Soap?

- Oxides and ultramarines color soap by suspension of their particles.
- Unlike dyes (which dissolve) they simply disperse throughout the soap mixture.
- Oxides and ultramarines like to clump. They are hard to mix and disperse by hand.
- The use of a stick blender or mini-mixer helps to disperse the pigment.
Mixing Chromium (Green) Oxide

Left – By hand
Right – Stick Blender
When do you add them to your soap?

- If you are making a **single colored soap**, you can add them to the oils before pouring in the lye solution.

- If you are making a **swirled soap**, you can add each color to thinly traced soap. I personally add the pigment dry in a scoop on top of the surface. I then place my stick blender right on top of the scoop of colorant, push down and pulse quickly.
- Ultramarine Violet
- Hydrated Chromium (Teal Green) Oxide
- Chromium (Green) Oxide
- Ultramarine Blue
- Yellow Oxide
- Brown Oxide
- Brick Red Oxide
Mica

- Mica is what gives cosmetics, paint and other products sparkle.

- Mica comes in tiny flakes; the bigger the flake, the more surface area for light to reflect, which creates more sparkle.

- If the INCI of a mica colorant lists *Mica*, it is naturally mined mica.

- If the INCI lists *Synthetic Fluorphlogopite* or *Synthetic Amethystogopite*, the mica is lab created.

- I haven’t run across many synthetic types of mica from soap suppliers.

- Mica is colored using either dye or mineral pigments.
Mica + Dye

- **Colors produced:** A rainbow of colors.
- **Color fading:** Mica + Dye can fade.
- **Color bleed/migration:** Mica + Dye can bleed and migrate in your soap.
- **pH sensitivity:** Mica + Dye can be sensitive to the high pH of soap and morph or change color.
- **Natural or synthetic:** Mica is natural. Synthetic Fluorphlogopite is synthetic. Dyes are synthetic.
- **Usage rate:** 1 teaspoon per pound of soapmaking oils. Use less for a lighter color.
Mica + Mineral Pigment

- **Colors produced:** A rainbow of colors.

- **Color fading:** Mica + Mineral Pigment are not light sensitive and do not fade.

- **Color bleed/migration:** Mica + Mineral Pigment will not bleed (between layers or swirls) in soap, though can bleed onto a washcloth or color lather if too much is used.

- **pH sensitivity:** Mica + Mineral Pigment is not effected by the high pH of soap.

- **Natural or synthetic:** Mica is natural. Synthetic Fluorphlogopite is synthetic. Mineral pigments are synthetic, though they are “nature identical”, meaning they have the same molecular makeup as the once mined pigment from the earth.

- **Usage rate:** 1 teaspoon per pound of soapmaking oils. Use less for a lighter color.
How Does Mica Color Soap?

- Mica colors soap by suspension of their particles. Unlike dyes (which dissolve), they simply disperse throughout the soap mixture.

- If a mica contains a dye, the dye can dissolve (this creates color bleed).

- Mica doesn’t clump as badly as oxides and ultramarines and can usually be stirred in by hand when added to thinly traced soap.

- The use of a stick blender or mini-mixer helps to disperse the mica.
When Do You Add Mica to Your Soap?

- If you are making a **single colored soap**, you can add mica to the oils before pouring in the lye solution.

- If you are making a **swirled soap**, you can add each color to emulsified or thinly traced soap.
Usage Rates for Cold Process Soap

- 1 teaspoon per pound of soapmaking oils. Use less if you desire a lighter color and use more if you desire a darker, more saturated color.
Cosmetic Pigments

- Cosmetic pigments are a category of colorants that are blends of FD&C/D&C dyes, sometimes, mineral pigments, and plastic coatings (copolymer).

- These are typically neons and ultra-bright colorants.
The plastic coating does three things:

- It makes the colorant solvent resistant. This means that it can be used in nail polish, which is quite popular these days.

- It makes it heat resistant. So if your soap goes through gel phase, it won’t affect the colorant.

- It makes it non-bleeding and non-morphing. Dyes are notorious for bleeding and for morphing in the high pH environment of cold process soap. By coating the dyes with copolymer, the do not bleed or morph.
Radiant Plum (Bramble Berry)

- Bis(Glycidoxyphenyl)propane / Bisaminomethylnorbornane copolymer, Aluminum Hydroxide (CI 77002), Ext D&C Violet No. 2 (CI 60730), D&C Red No. 28 (CI 45410)
Reborn Purple (TKB)

- Bis (Glycidoxyphenyl) propane / Bisaminomethyl-norbornane Copolymer, Aluminum Hydroxide, Red 28 (C.I. 45410), Violet 2 Ext (C.I. 60730)
Look for words such as:

- Copolymer
- Polyester -3
Cosmetic Pigments

- **Colors produced:** A rainbow of colors.

- **Color fading:** Cosmetic pigments are typically not light sensitive because of the plastic coating.

- **Color bleed/migration:** Cosmetic pigments will typically not bleed (between layers or swirls) in soap because of the plastic coating, though can bleed onto a washcloth or color lather if too much is used.

- **pH sensitivity:** Cosmetic pigments are not effected by the high pH of soap.

- **Natural or synthetic:** Cosmetic pigments are synthetic.

- **Usage rate:** 1 teaspoon per pound of soapmaking oils. Use less for a lighter color.
Creating Your Own Liquid Pigment

- These work best if you pre-mix your colorants with glycerin.
- I like to use the ratio of 1:2 (cosmetic pigment:glycerin) when premixing my colorants.
How Do Cosmetic Pigments Color Soap?

- Although I cannot find the exact answer, I suspect that cosmetic pigments color soap by suspension of their particles.

- They do contain dyes, but since they are coated with plastics, the dyes do not dissolve and tint the mixture (hence, no color bleed).

- Cosmetic pigments clump worse than many other colorants.

- The use of a stick blender or mini-mixer helps to disperse the pigment. **Make a liquid pigment (instructions above) to make dispersion easier.**
When do you add them to your soap?

- If you are making a single colored soap, you can add them to the oils before pouring in the lye solution.
- If you are making a swirled soap, you can add each color to thinly traced soap.
Usage Rates for Cold Process Soap

- **Dry pigment** - 1 teaspoon per pound of soapmaking oils. Use less if you desire a lighter color.

- **Liquid Pigment** - 3 teaspoons per pound of soapmaking oils.
Dyes & Lakes

- Dyes (FD&C or D&C) and lakes (dye + metallic salt) can be used to color soap.

- These are personally my least favorite type of colorant to use because they tend to bleed and morph in cold process soap.

- However, dyes coated with polymer (see Cosmetic Pigments above) are great in cold process soap.
How do you know that you are dealing with a dye or lake?

- (Powder) *Crafters Choice™ Bath Bomb Blue Powder Color (WSP)* - Blue 1 Lake

- (Liquid) *Brilliant Blue LabColor (Bramble Berry)* - Water, Blue 1, Optiphen ND
Dyes & Lakes

- **Colors produced:** A rainbow of colors.

- **Color fading:** Dyes and Lakes are color sensitive and can fade.

- **Color bleed/migration:** Dyes and Lakes will bleed (between layers or swirls) in soap and can bleed onto a washcloth or color lather if too much is used.

- **pH sensitivity:** Dyes and Lakes are effected by the high pH of soap and can morph.

- **Natural or synthetic:** Dyes and Lakes are synthetic.

- **Usage rate:** 1/4 teaspoon per pound of soapmaking oils. Use less for a lighter color.
How do Dyes and Lakes Color Soap?

- Dyes color soap by dissolving in the soap and binding with the soap particles.

- Lakes are made by combining dyes with salts to make insoluble compounds, therefore lakes color soap by dispersion of their particles.

- Powdered dyes and lakes easily clump and speckle if added directly to soap.
**WARNING:** I wanted to include information about dyes and lakes because they are available for soapmakers from suppliers.

I do not personally use dyes and lakes. They can be super messy (in powder form) and are finicky in soap.

Dyes and lakes are great for melt & pour soap and other bath products such as bath salts and bath bombs where you want the colorant to completely dissolve in the bath water.
Cosmetic Clays
Herbs and Spices
Mixing Custom Colors

- You can expand your color collection by mixing colorants, especially by mixing colorants with either white or black to lighten or darken.
  - 1/2 tsp Voodoo Mica (Mad Oils) + 1/2 tsp White Mica PPO
  - 1 tsp Voodoo Mica PPO
  - 1/2 tsp Voodoo Mica + 1/4 tsp Charcoal PPO
- 1/4 tsp Mermaid Blue Mica (Bramble Berry) + 1/2 tsp White Mica PPO
- 1 tsp Mermaid Blue Mica PPO
- 1/4 tsp Mermaid Blue Mica + 1/4 tsp Charcoal PPO
Remember the color wheel?

- Yellow + Blue = Green
- Red + Blue = Violet
- Red + Yellow = Orange
- When mixing colors, don’t be afraid to experiment!
Fragrance Oils, Essential Oils and Color

- Fragrance oils and essential oils can affect your colorants.
- If a fragrance oil or essential is tinted it can change the outcome of your color.
The soap on the left is colored with teal green oxide. On the right is a soap colored with teal green oxide and scented with orange essential oil.
Fragrance Oils Containing Vanilla

- Fragrance oils that contain vanilla will turn your soap shades of cream to brown depending on the amount.

- Most suppliers will have the vanilla percentage available in the product description and will mention that it will turn your soap brown.

- When you’re shopping for fragrance oils and you come across Vanilla Bean, Warm Sugar, Pink Sugar, Buttercream Cupcake, Coconut...just be aware that these will probably turn your soap cream to brown.

- There are products called vanilla color stabilizers that you can purchase from soap suppliers. They are typically for melt and pour soap and do not work in cold process soap. (4-6 months and your soap will turn brown anyways.)
Goat Milk and Color

- When soaping with goat milk (powder or fresh), your soap will usually turn out cream in color. This can affect the colorants that you’re using.
Base Oils and Color

olive oil
refined avocado oil
soybean oil
hempseed oil
cococonut oil
babassu oil
castor oil
rice bran oil
www.lovinsoap.com/alabama