

## **Creams and Lotions – Basic Tips**

Creams and Lotions are emulsions that are basically made from water-soluble ingredients, oil-soluble ingredients, and an emulsifier(s). Generally speaking, there are three primary factors that will make an emulsion (lotions/creams):

- 1) Emulsifier (chemical energy)
- 2) Temperature (heat energy)
- 3) Mixing (mechanical energy)

When emulsions fail, it is often due to one of these factors....incorrect or not enough emulsifier....heat too low.....not enough mixing.

The water-soluble ingredients go into the “water phase” and the oil soluble ingredients go into the “oil phase”. Since oil and water don’t mix on their own, something is needed to “bind” the two phases together to form an emulsion. These ingredients are called emulsifiers. There are many choices for emulsifiers, as well as, other variables that will determine which to use. A popular, effective, and easy to use ingredient is called Emulsifying Wax NF. There are many “ewax” blends on the market, but only one Emulsifying Wax NF. Ewax is a generic term and there will be variation in the types of ewax--different chemicals are used. But basically all the emulsifying waxes have an emulsifier or two and a fatty alcohol or two--the key ingredients to form an emulsion. We call these self-emulsifying because with only water, heat and mixing we can make an emulsion. Almost everyone will add luscious oils or butters and other ingredients to make a lovely lotion or cream, but an emulsion will form without the extra ingredients. The self-emulsifier is kind of an instant lotion-maker and is somewhat like the popular instant cake mixes. In other words, add a couple of ingredients, some heat and mixing and voila! Emulsifying Wax NF will give you an oil-in-water emulsion. This means that the oil droplets are surrounded by water droplets and your cream will not have a greasy feel. If you want your cream to have a greasy feel, similar to some of the cold creams on the market, then you may want to use a beeswax/borax combo as your emulsifiers. Most people prefer the feel of a moisturizing, but non-greasy cream and choose to use something like the Emulsifying Wax NF. Other self-emulsifiers include NatraMulse and BTMS-Conditioning Emulsifier.

Emulsifying Wax NF is part of your “oil phase.” To make the two phases bind together, you must heat both phases separately to about 80C or 176F. Then you will add the two phases together and mix well (I use a stick blender). After the mix has cooled to about 50C or 122F or less, a preservative is added to prevent your cream from growing bacteria or mold-this is added during the “Cool-down Phase”.

Several different preservatives are available that will protect your product from microbial growth. We recommend Liquid Germall Plus and LiquaPar Optima. These preservatives are both manufactured by ISP Sutton.

<http://www.ispcorp.com/products/preservatives/index.html>

A chelating agent will help the preservative be more effective. We recommend using Tetrasodium EDTA or Disodium EDTA. These are added to the water phase.

We also recommend using an antioxidant such as the Coviox T-50 mixed tocopherols in any oils or formulations that have the potential for oxidation (to become rancid). The mixed tocopherols are a form of Vitamin E that is especially created to protect against rancidity. Not all forms of Vitamin E will work this way. In addition to simple oil, water, and emulsifier, you can add many other ingredients that will thicken and add body to the emulsion...things like fatty alcohols, fatty acids, gels, starches, etc. These ingredients are the primary players in the emulsion.

Then other players come into the picture...ingredients that will enhance the product in various ways. From here, the possibilities are endless---humectants to increase moisture retention, EFA's and antioxidants to reduce damage from free radical scavengers and provide nutrients to the skin, special emollients to improve the feel and application of the product, fragrance, etc.

Even though recipes can be made using fluid or volume measurements, this is not an accurate way to make cosmetics and toiletries. Formulations should be calculated by percentages and weight. If your formulation is calculated by percentages, then you can convert it to whatever quantities that you need and still keep the same proportions.

For example: **Basic Cream Formulation**

Oil Phase: total oils and butters = 16.5%

Water Phase: total water, water-soluble extracts, etc. = 83.0%

Cool-down Phase : Liquid Germall Plus Preservative = 0.5%

Total Formulation: 100%

To Make 500 grams of Cream:

Oil Phase: 16.5% divided by 100 = 0.165 x 500 = 82.5 grams

Water Phase: 83.0% divided by 100 = 0.83 x 500 = 415 grams

Preservative: 0.5% divided by 100 = 0.005 x 500 = 2.5 grams

Total Formulation: 100.0% = 500 grams

Or to calculate by ounces by weight:

**One ounce by weight is equal to approximately 28.35 grams**

Oil Phase: 2.9 ounces (weight) = 16.5%

Water Phase: 14.6 ounces (weight) = 83.0%

Preservative: .09 ounces (weight) = 0.5%

Total Formulation: 17.6 ounces (weight) = 100%

**Basic equipment** needed to make cream, lotion, or other cosmetics could include the following:

Stainless steel pot

Stainless steel utensils for stirring

Pyrex measuring cups in different sizes

Candy Thermometer

Stick Blender

Digital Scale that measures to 0.1 grams

Bleach solution or alcohol for disinfecting countertops, etc.

If you have started making products using fluid/dry measurement (ie. tsp., cup, tbs.) now may be the time to move to the next level! A suggestion would be to begin weighing these quantities as a “bridge” to begin using weight and percentages for your calculations.

Good luck and most importantly, have fun!