Emulsifiers and preservatives

If you’ve ever made your own vinaigrette, you’ll know that oil and water simply do not get along. After a short period, even the most vigorously shaken melanges will end up separating and forming two distinct components once again. So how is it possible for oils to peacefully co-exist with water in products like creams, lotions or even mayonnaise? The seemingly-impossible task of mixing oil and water is made easy thanks to emulsifiers.

What exactly is an emulsifier?

Emulsifiers are molecules that have two different ends:

- a hydrophilic end - water-loving - that forms chemical bonds with water but not with oils
- a hydrophobic end - water-hating - that forms chemical bonds with oils but not with water

The hydrophilic 'head' dissolves in the water and the hydrophobic 'tail' dissolves in the oil. In this way, the water and oil droplets become unable to separate out. The mixture formed is called an emulsion.

But aren’t emulsifiers synthetic?

Nature provides us with some effective emulsifiers. Think of mayonnaise, where the natural emulsifier in the egg yolk works to bind together the molecules of oil and the water molecules from the egg whites. This natural emulsifier called lecithin is usually also available from sources such as soybeans, milk, marine sources, rapeseed, cottonseed, and sunflower. Unfortunately, it doesn’t always perform consistently enough for commercially available cosmetics products.

The best emulsifiers for natural skin care products have up to now been derived from Coconut Oil and Palm Oil. More recently, Rapeseed has been used as a lot of this crop is grown in Europe. Our new BioGreen (Palm Free) Emulsifier is produced from Glucose extracted from wheat combined with fatty acids taken from Castor Beans. They are safe to work with and VE Emulsifier and MF Emulsifier are even used in the food industry, such as in the production of vegan ice cream in Scandinavia. Aromantic's VE Emulsifier is produced from Palm Oil and our MF Emulsifier is produced from Rapeseed.
and Palm Oil. It’s even possible to have organic emulsifiers! We first introduced Sucragel AOF Bio (Organic) in 2009 as “Cold Emulsifier (Organic)” - a world first in the cosmetics field.

How do I use an emulsifier in my products?

When making creams, lotions, or even just mixing a few drops of essential oils into a toner, a good quality emulsifier is required. The quantity of emulsifier that you need to use depends entirely on the recipe, as will the way in which you add it into your product.

For example, to solubilise essential oils for a room spray use at a 1:1 ratio of Emulsifan to Essential Oil. If using to solubilise essential oils in a water based toner, use at a ratio of 1% Emulsifan to 1% essential oils. Simply mix the emulsifier with the essential oils, then add water and 1% Preservative 12. Mix well.

When using BioGreen emulsifier, use 1-5% in your recipe. It can be added during stage 1 (fat stage) or stage 2 (water stage) of making your product. We have found that when BioGreen Emulsifier (Palm Free) is added to stage 1 (the fat stage) it gives a slightly different feeling to the final product, making it feel denser, however this does not affect the superb absorption rate of the final product.

A little note about preservatives...

In recent years, the use of preservatives in food and cosmetics has been a very controversial subject. Preservatives are however essential if you want to prevent your products from expiring too quickly. Many talk about using vitamins as preservatives but this is wrong; vitamins are antioxidants that stop products from going rancid but they don’t affect and stop the growth of bacteria and fungi.

Cosmetic products are an ideal breeding ground for bacteria, fungi and mould. This growth is often invisible to the naked eye at first but can cause skin irritation and infection if these products were then to be applied to your skin.

A preservative works to prevent the bacteria or fungi present in a product from multiplying. A face cream, for example, will stay safe to use for 1-2 weeks if it’s kept in the fridge, but adding a small amount of preservative will extend its shelf life by 1.5 to 2 years.

For those of you who wish to make your own products to sell, it is important to use a preservative so that your products are safe to use for your clients.

When to use a preservative

If your homemade cosmetic product does not contain any water, such as an oil blend, ointment or balm, it is not always necessary to use a preservative. Storing these products in appropriate containers and keeping them in a cool, dark place will help ensure that they do not go rancid too quickly. It is also advised to add vitamin E (Tocopherol) to these waterless products as the antioxidant will help prevent the product from going rancid.

Whenever your product contains water, it is important to use a preservative to prevent the growth of bacteria, fungi and mould which thrive in cosmetic products.

Which preservative to use

Not all preservatives are made equal! For example, Preservative Eco is an excellent preservative that works with a wide range of pH levels, but should not be used with products containing clays or Emulsifan. Preservative 12 is a slightly milder preservative but should not be used in products containing detergents or a large quantity of active ingredients.
It’s important to check the compatibility of all your ingredients. You’ll find detailed descriptions for all of our products in our online store which will clearly tell you if an ingredient is unsuitable to be mixed with a certain preservative. We also have lots of specially formulated recipes on our website that are available at any time!

Other ways to help preserve your products

- Firstly, make sure that when you make your products, your hands as well as your equipment and containers are fully sterilised. You can use denatured alcohol in a spray bottle to quickly and easily sterilise your material.
- When storing your products, try to keep as much as possible in a cool, dark environment and use opaque, airtight containers to store them in. This will help prevent contamination and slow down the growth of micro-organisms that will ruin your product.
- Make sure you label your products properly, especially if making in large batches or to sell afterwards. Be cautious of the best-before dates on your raw materials (but remember, using a preservative extends best-before dates by 1.5 – 2 years!)

Here’s an example recipe for a moisturising face and body cream that will produce a professional-standard cosmetic product.

**Moisturising Face & Body Cream**

**Fat Stage (above 75°C)**
- 2% Cocoa Butter
- 3% Macadamia Nut Oil
- 7% Apricot Kernel Oil
- 3% Thistle Oil
- 2.5% VE Emulsifier
- 2% Cetearyl Alcohol

**Water Stage (above 75°C)**
- 4.5% MF Emulsifier
- 69% Boiling Spring Water
- 2% Glycerine

**Third Stage (below 40°C)**
- 1% Preservative 12 or Eco
- 1% Vitamin E Simulated Natural
- 2% NFF Complex
- 1% Essential Oils of your choice

Total 100%
Method for Making Creams

Heat the Fat Stage ingredients in a double boiler until above 75°C. There is no need to use a whisk at this stage.

Boil the Spring Water in a kettle, measure out what is needed and add the MF Emulsifier and other Water Stage ingredients. Swap the bowls over in the double boiler.

Pour the Fat Stage into the Water Stage in a thin, steady stream, while continuously whisking the mixture from side to side. Keep the heat high in the double boiler and stir for 5 minutes. Ensure the temperature stays above 75°C.

Take the bowl off the heat and put into a pan of cold water to speed up the cooling down. Keep stirring all the time. The mixture becomes a cream and will reach its thickest consistency when it has cooled down to room temperature.

When the temperature is below 40°C you can remove the bowl from the pan of cold water and add the Stage 3 Ingredients. If adding Lactic Acid, be very careful as too much will make the cream go runny and could irritate the skin.

Pour the Cream into jars and label.