

Quick Guide To Emulsifiers

What Is An Emulsifier?

An [emulsifier](#) is any ingredient that helps mix unlike ingredients such as oil and water, and keep them from separating. In baking, eggs act this way, and in cosmetics you get emulsifying waxes and other types of emulsifiers that will blend oils and aqueous ingredients into creams, lotions and other wonderful products.

There are two types of emulsifiers, to match the two types of emulsions: oil-in-water (O/W) and water-in-oil (W/O). Oil in water emulsions have smaller amounts of oils in a larger amount of water, so they are water based and typically feel lighter on the skin. Water in oil emulsions have small amounts of water in a large amount of oil, and they feel heavier on the skin. Depending on which type of emulsion you want to make, you will need the corresponding emulsifier.

Why Do I Need An Emulsifier?

Have you ever tried to mix oil and water? They don't play nicely and will always try to separate from each other. When you are formulating you will need an emulsifier whenever you are trying to make products which contain both water/aqueous ingredients and oils in order to blend the two together into an emulsion. If you don't use an emulsifier you will be left with a sloppy mixture that separates and you won't be able to create lovely creams and lotions.

What Is The Difference Between An Emulsifier And A Solubiliser?

An emulsifier acts to bind water and oil in creams, lotions and other typically 'thicker' products. A solubiliser is very similar to an emulsifier except it works in very liquid and watery formulations where small amounts of oils or essential oils need to be dissolved, such as sprays and mists. Solubilisers by default will all be O/W emulsifiers and will work in O/W formulations.

If you are confused about whether to use an emulsifier or solubiliser, think about whether it will be an O/W or W/O emulsion and whether it is liquid/aqueous based such as a spray or whether it is a cream type product.

If it is O/W and very liquid you will most likely require a [solubiliser](#) to dissolve small amounts of oils in the water.

If it is W/O, you will definitely require an [emulsifier](#).

What Different Emulsifiers Are Available To Me?

For O/W Emulsions

[Eco E wax](#): an ECOCERT approved vegetable-derived emulsifying wax for oil-in-water emulsions. It is soluble in oils and will need to be melted to work with.

Eco E wax may be made from various ingredients but our is made from glyceryl stearate.

Usage: generally 4-10% of formulation, up to 20% of the oils amount, added to the heated oil phase.

Tips: Eco E wax and Polawax can usually be substituted for one another.

[Polawax](#): a vegetable-derived emulsifying wax for oil-in-water emulsions. It is soluble in oils and will need to be melted to work with.

Polawax may be made from various ingredients but our is made from cetearyl alcohol and PEG-20 stearate.

Usage: 20% of your oils amount, added to the heated oil phase.

Tips: Eco E wax and Polawax can usually be substituted for one another.

[Olive M 300](#): a liquid emulsifier that is soluble in both oil and water, it softens the skin too. Great in aqueous based formulas to add a little oil in order to make them more moisturising. It can also help solubilise essential oils. In oil based formulas, it boosts rinse-off: eg. in a bath/shower oil or a product that you would like to self-emulsify with water.

Made up of olive oil PEG-7 esters.

Usage: 1-84%

Weakness: you cannot substitute Olive M 300 with anything else.

[Olive M 1000](#): is a PEG-free, ECOCERT and COSMOS certified emulsifying wax for oil-in-water emulsions. It comes in large, flat white flakes, and is made from cetearyl olivate and sorbitan olivate, both derived from olives. It makes a really luscious, thick emulsion.

Usage: 2-8%, added to the oil phase. 5% for a serum; 6% for a light cream or lotion; 8% for a cream.

Weakness: it can 'soap': turn white on application when rubbed in.

Tips: you cannot use other Olive M's in place of Olive M 1000, although you can use other emulsifying waxes such as Polawax or Eco E wax as a substitute for Olive M 1000.

For W/O Emulsions

[Soy lecithin](#): water-in-oil emulsifier that is miscible in oils. Lecithin is most commonly used as a co-emulsifier alongside other more powerful emulsifiers

Usage: 0.5–5% added to the oil phase.

[Olive M 300](#): a liquid emulsifier that is soluble in both oil and water, it softens the skin too. Great in aqueous based formulas to add a little oil in order to make them more moisturising. It can also help solubilise essential oils. In oil based formulas, it boosts rinse-off: eg. in a bath/shower oil or a product that you would like to self-emulsify with water.

Made up of olive oil PEG-7 esters.

Usage: 1–84%

Weakness: you cannot substitute Olive M 300 with anything else.

[Olive M 900](#): is a PEG-free, ECOCERT and COSMOS certified emulsifying wax composed of sorbitan olivate, a derivative of olive oil.

For water-in-oil emulsions.

Usage:

- 5 – 7.5% in W/O emulsions and foundations as the sole emulsifier
- 1 – 10% as a powder dispersant or lipogel agent
- 1 – 3% as a functional lipid
- 1 – 2% as an O/W co-emulsifier
- 2 – 3% as a W/O co-emulsifier

Ingredients like surfactants, vegetable cetyl alcohol, cetostearyl alcohol and stearic acid also have emulsifying properties, but are not emulsifiers on their own.

How To Use An Emulsifier

As a general rule of thumb, emulsifiers are used at 20% of the oil phase. Therefore the more oil included in your formulation, the more emulsifier you will need to use. The rule of thumb may vary depending on the emulsifier, the type of product you are making and properties you want the product to have, however.

For example, a typical lotion may use 5–10% emulsifying wax, 10–20% oils and around 75% water. But you can use less or more emulsifier, oils and water to achieve lotions and creams with different feels and textures.

Emulsifiers will most frequently need to be melted and they are usually incorporated into the oil phase of your formula. Bear in mind that some may be liquid and therefore will not require melting, and some may be miscible in your water phase; just check which emulsifier you are using.

Emulsifier Cheat Sheet

Here are some basic ingredient ratios, including roughly how much emulsifier to use. There is room for customisation as always.

Facial lotion:

80% water/water based

4% humectant

10% liquid oil

2% thickener (this is not always required)

4% emulsifier

1-2% preservative

Hand cream:

70% water

2% humectant

15% liquid oil

5% solid oil (butter)

2% thickener (this is not always required)

6% emulsifier

1-2% preservative

Body butter:

60% water

3% humectant

12% liquid oil

15% solid oil (butter)

3% thickener (not always required_

7% emulsifier

1-2% preservative

Barrier cream:

60% water

3% humectant

15% liquid oil

5% solid oil (butter)

5% wax

3% thickener

7% emulsifier

1-2% preservative

Is Beeswax An Emulsifier?

No! Please don't use beeswax or a vegan plant wax in place of an emulsifying wax, it will not work in the same way. Not every ingredient with the word wax in it will be an emulsifying wax.

Do Emulsifiers Expire?

Most emulsifiers can easily last 2-5 years when stored correctly.

If I Use An Emulsifier Will I Still Need A Preservative?

Yes because an emulsifier does not have any preservative properties. Anytime you include water/aqueous ingredients in your formulas, you will require a preservative. For further reading on the topic of preservatives check out our [Quick Guide To Preservatives](#).