Surfactants in Cosmetics

Nature's Garden
Wholesale Candle & Soap Supplies

Have you ever tried to wash dirty dishes equipped only with a sponge and water? This can be quite a feat. You will notice that it takes a lot more time and elbow grease to get the job done.

Wondering why this is? The answer as you will notice right away is that the dish soap is missing.

Did you know that the most eminent surfactant in existence is soap?

Surfactants seem to always get the bad rap. Many people associate surfactants as bad ingredients to have in your recipes, but truth be told, this statement is not true! Yes, SLS (Sodium Lauryl Sulfate) is a surfactant, and it can be more irritating to your skin than other surfactants, but is it as bad as what you read in the media lately?

It is an urban myth that Sodium Lauryl Sulfate causes cancer. Read the truth for yourself. In fact, many of the surfactants that will be listed in this class are derived from a natural source and they work to improve the integrity and performance of your cosmetic formulations.

Surfactants work with various liquids and substances; including oil and water. Much like that of the role of the emulsifiers, surfactants have a hydrophilic (water-loving) head, and a lipophilic (oil-loving) tail. In fact, emulsifiers are surfactants, and surfactants are vital to the industry of bath and body products too. They comprise the largest category of cosmetic chemicals, and seem to have an endless list of cleansing capabilities.

So, needless to say, there is quite a variety to select from when seeking the perfect surfactant for your recipes.

The main qualifier in deciding which surfactant to use is all based upon the benefit that each surfactant provides. Just like cold process soaping or any homemade bath and body products, the components that you choose to use in your recipes have a direct beneficial affect on the skin when the recipe is transformed into a finished product.

Therefore, when selecting which surfactant to use; it is just as equally important as to what you are looking to achieve in your finished product. Each surfactant has key functions in which it will excel and equivocally each will also have other functions where it will be lacking.

The term surfactant is actually a combination of its meaning: surface acting agent. Let's look at it again: ***surfactant = SURFace ACTing AgeNT.*** But the term surfactant is not always the one that everyone sticks with. It seems that surfactants have several names that all become applicable depending on the role of the surfactant in a specific recipe.

For example, in recipes where foam is the finished product, the surfactant used may be referred to as foaming agents. Surfactants used in body recipes, can even be termed as detergents or soaps. Or, in the example of shaving creams, surfactants are considered lubricants because they protect the skin from irritation and the razor's sharp edge while still allowing the removal of all of the unwanted hairs.

Everything that a surfactant does occurs at the surface levels of the liquids. The biggest role that a surfactant has is the capability to lower the surface tension of a liquid. The reaction which then occurs is the conversing of the liquid (with the lower surface tension) and the additional substance. To break this down in simpler terms; a surfactant has the power to change the properties of a substance. This process is known as adsorption. **The term adsorption means:** the gathering of gas or liquid in a condensed layer on the surface. This condensed layer creates a film which is why the surface tension is lowered. There are four different categories of classification for surfactants based on their interfaces and charges. They are**: Anionic, Nonionic, Cationic, and Amphoteric.**

Education is always a powerful thing, and it is not necessary to completely know the ins and outs of everything surfactants. But, you will want to have a general idea of each group of surfactants and how they play a role in your finished product. This is especially true if you are looking to accomplish a "made from scratch" recipe.

It is also beneficial to know a few other things about surfactants too. This would include information like why the surfactants are grouped or classified together or how/if surfactants work with additional groups of surfactants in a collaborate manner.

Spoiler alert: Not all surfactants play nice with one another!

Anionic surfactants

are considered to be the go to surfactant for many formulations. This group of surfactants is also the most commonly used among foaming product productions, like shampoos or body washes.

The reasoning for this is because the anionic surfactant's primary functions are creating high foam, high cleansing, and high washing capabilities in a finished product.

Anionic surfactants have a negatively charged water-loving head. Anionic surfactants work very well in recipes which have a reaction between a chemical (like lye) and fatty acids or alcohols (like animal lard or vegetable based oils). Hand processed soap, whether it is CP, CPOP, or HP, are all examples of anionic surfactants. Other examples of anionic surfactants are Sodium sulfates, Ammonium sulfates, sulfosuccinates, sarcosines, sarcosinates, isethionates, and taurates.

One of the drawbacks of using an anionic surfactant relates to skin sensitivity. Due the high foaming, cleansing, and washing capabilities, skin irritations can occur. It is for this reason that if you are looking to create a handmade recipe it is best to choose another category of surfactants, or balance the anionic surfactants with amphoteric surfactants.

Amphoteric surfactants

are the go with the flow surfactants. They have the possibility to either have a positive or negative charge. Their charge is all based on the pH or alkalinity of your finished product. Hence the amphi prefix.

When an amphoteric surfactant is used in a recipe where the end result of a finished product has a lower pH, the amphoteric surfactant takes on a more conditioning and nourishing role. On the other hand, when an amphoteric surfactant is used in a recipe

Where there is a higher pH in the end product, it resembles more of an anionic surfactant with high foaming and cleansing capabilities. Neither option is necessarily bad; they are just on two different planes of the beneficial skin aspects.

Amphoteric surfactants are the most docile of the surfactants. They are also the second most used surfactants in the industry. This is because when used alone, they are able to provide a gentle aspect to the nature of your end product. Adversely, when an amphoteric surfactant is coupled with an anionic surfactant, the amphoteric surfactant mellows the harshness of the anionic surfactants.

In fact, amphoteric surfactants can be used solo and in conjunction with any other of the surfactant groups. There adaptability is just one of the reasons why they are so widely used. Some examples of well know amphoteric surfactants are Coco Bentaine, Lauryl Bentaine, and Hydroxysultaines.

Cationic surfactants

are the opposite of anionic surfactants. They have a positively charged water-loving head. It is because of this positive charge that cationic surfactants can offer many skin loving, nourishing benefits to the skin and body. These surfactants are best used in recipes where foaming is not necessarily mandatory such as hair conditioners. Cationic surfactants alone do not allow for ample foaming capabilities. Cationic surfactants work well with 2 of the 3 remaining surfactant groups. Both amphoteric and nonionic surfactants will be compatible with cationic surfactants with no problems.

However, because of the opposing charge cationic (positive) and anionic (negative) surfactants will not combine.

Some common cationic surfactants used in bath and body recipes are your chlorides (Benzalkonium, Stearalkonium, and Centrimonium), Trimethyl Ammoniums, and Methyl Sulfates.

Nonionic surfactants have no foaming capabilities which is why this group of surfactants are rarely used as a recipe's main surfactant. Evident by the prefix non, these surfactants do not have a charge in their water-loving heads.

The end result of using a nonionic surfactant will allow for a finished product that has a very gentle cleansing ability. But, just because it doesn't foam, it doesn't mean it doesn’t cleanse.

Psychologically speaking, there is a direct mental correlation between foaming and cleansing. We as a race have somehow inherently made this connection. Whether it is a physical view of suds equating to cleanliness, or simply urban myths that have taken on a life of their own, the reality is; it could not be further from the truth.

Nonionic surfactants

or at least some of them, are ethoxylated. What this means is that the nonionic surfactants have had some reaction to the addition of ethylene oxide. With this reaction comes an even more water-loving head, almost as if it has been supercharged. This then makes nonionic surfactants (like Polysorbate 20) perfect solubilizers.

But, don't just disregard this category of surfactants yet. Nonionic surfactants can also be used in formulations to reduce irritants, due to their gentle cleansing ability. They also have the capability to be used as an emollient, softening or soothing skin.

Not to mention, these surfactants can be used to stabilize foam in recipes. Hold on to your seats though folks, because it gets a little better! Due to its lack of a charge, nonionic surfactants love every other category of surfactants; you can consider them the peacemakers!

Some common nonionic surfactants used in bath and body recipes are your Polysorbates, Emulsifying Wax NF, E-wax, Glyceryl Oleate, Glyceryl Stearate, ingredients with the prefix PEG, Ceteareths, Oleths, Sorbitans, Lauryl Glucoside, and Polyglycose.

In summary, surfactants are amazing little compounds found in many items we use every day like adhesives, bath gels, creams, lotions, frozen foods, chewing gum, inks, and fabric softeners; just to name a few!

There are four main applications of surfactants particularly in just bath and body recipes. They include: cleansing, solubility, emulsifying, and conditioning.

Some other additional aspects of surfactants to bath and body recipes include: the potential to increase stability of a product; certain surfactants can be used as thickening agents; due to the composition of a surfactant, some maintain anti-microbial elements and therefore can be used as preservatives; there are even some that have the capability to reduce irritation allowing for a milder product on the skin.

Interested in adding some surfactants to your recipes?

Below is a list of some commonly added surfactants to bath and body recipes:

sodium lauryl sulfate (can be derived from coconuts) Produces High Foam; easy to thicken. Strong Anionic Surfactant; can cause irritation
ammonium laureth sulfate (derived from coconuts) Produces High Foam; easy to thicken. Strong Anionic Surfactant; can cause irritation
disodium lauryl sulfosuccinate (derived from coconuts) Foaming agent, Mild Anionic Surfactant; gentle on the skin
Cocoamphocarboxyglycinate (derived from coconuts) Mild, Amphoteric
Surfactant decyl Polyglucoside (vegetable derived, used in baby shampoos for its gentleness)
cetearyl alcohol
stearyl alcohol
Cocamidopropyl Betaine (derived from coconut oil) Amphoteric Surfactant
Decyl Glucoside (derived from sugar)
Glyceryl Cocoate (derived from vegetables)

Sodium Cocoyl Isethionate (derived from coconuts)
Almond Glycerides (derived from vegetables)
Sodium Lauryl Sulphoacetate (much milder surfactant than SLS)
Sodium Lauroyl Sarcosinate (derived from vegetables and is a natural substitution for SLS)
sodium methyl cocoyl taurate (derived from coconut)
Sucrose Cocoate (derived from sugar) polysorbate 20 (vegetable derived)
polysorbate 80 (vegetable derived)

If you formulate your own cosmetics, please visit our customer suggestion page and let us know which surfactants you would like to see Natures Garden carry. We will be increasing our line of natural cosmetic supplies.

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