natural soaps

what are they?

They are soaps without the added preservatives, parabens, surfactants and other assorted nasties commonly found in the commercial soaps sold in supermarkets (where of course, we'd urge you not to shop), apart from the lye (sodium hydroxide or caustic soda) that is necessary in the soap-making process. Natural soaps are made largely from various plant oils, although animal fats can be used too.

The chemistry of soap: saponification is the chemical reaction involved in making soap. An acid (the oil or fat) reacts with an alkali, or base (the lye) to form a salt (the soap – not table salt, but a chemical salt nonetheless). Soap works in two ways. First, soap molecules are long chains with a water-loving end and a water-repelling end. The water-repelling ends push up through the surface of water droplets (to try and get away from the water), and the combined effect of millions of soap molecules pushing through the water's surface is to break the usual surface tension of water and allow it to spread, and 'wet' the objects to be cleaned more. Secondly, the water-repelling ends of the molecules attract dirt, and the water-loving end pulls the molecule into suspension in water. After rinsing, the soap molecules and the dirt are washed away.

The soap-making process: the simplest process is re-batching, or 'melt & pour'. A basic soap base is melted down, and ingredients are added to give scent and colour. This is actually personalising soap rather than making it. There are two main processes for really making soap:

- Cold process: the only heat required is to initially melt any hard oils. The reaction itself generates its own heat, and takes up to 48 hours.

Finished soap bars.

Two ways of cutting the finished soap into bars.

- Hot process: the ingredients and methods are the same as for the cold process, but external heat is used to complete saponification – e.g. using a slow cooker for a few hours.

Liquid soaps are made in a similar way to the hot process, but with potassium hydroxide instead of sodium hydroxide (as it has a 'looser' molecular structure, and therefore produces a liquid, rather than a solid soap).

Various botanicals (plants / herbs) and essential oils can be added for different fragrances and properties.

History: 4,500-year-old Mesopotamian clay tablets have been found describing the use of soap with textiles, and through the ages there have been lots of different recipes for soaps using fats and alkalis. Prior to the use of modern chemicals however, wood ash was used as the alkali rather than lye – but because the composition of wood ash isn't standard, the results would have been very unpredictable. Recipes could easily have produced soaps that were too caustic or not caustic enough, resulting in damage to skin, or rancid soaps. In the Middle Ages, Castille soap (made from olive oil) spread from Spain and began to replace the old wood ash / animal fat soaps. Synthetic detergent bars arrived in the 20th century, and now there is a trend away from synthetics towards natural, traditional soaps – a trend we enthusiastically support.

what are the benefits?

Benefits for your skin: you know that you're putting natural, gentle, moisturising materials on your skin. Commercial soaps tend to contain products from the petrochemical industry (which strip your skin of its natural oils), propylene glycol instead of real glycerine, and other synthetic agents that cause the excessive foaming that manufacturers try to persuade us is a good thing via TV advertising. Typical commercial soaps also include a range of chemicals from Triclosan and diethanolamine to sodium laureth sulphate that can potentially cause damage to the immune system, disrupt the endocrine system and impair fertility. Avoid.

Different oils, botanicals and essential oils have different properties. For example, castor oil is good for the scalp; cedarwood essential oil is good for oily skin; and benzoin essential oil is good for sensitive skin. You can tailor your soap for the properties you want.

Environmental benefits: if you make your own soap, you can include home-grown, organic ingredients that require no transport, and you don't need any packaging. You can refill existing bottles with liquid soaps or shampoos, or make shampoo bars.

You can also leave out the palm oil. Almost all commercial soap contains palm oil, from plantations that require massive tropical deforestation and / or a change of land use away from vital food crops (sometimes even if the packaging says that it's from sustainable sources). The cold process is more environmentally-friendly than the hot process, as heat (and therefore energy) input is not required.

Pouring soap mix into a mould.

what can I do?

Make sure you only buy natural soaps, or learn to make your own (via books, courses or online course - below). You can buy / make soaps for washing your body, hair, laundry, floors or pets. Plus some soaps can be used for shaving, as they contain cosmetic clays that add 'slip', to allow a razor to glide over the skin.

Making soaps: accurate measurement is vital – there are various recipes to follow. The process is safe as long as you follow precautions when handling caustic soda – wear goggles and gloves, and have some vinegar to hand, to neutralise the alkali in case of spillage.

You can buy oils, equipment and other ingredients, and you can buy or make your own essential oils. You can find local ingredients such as vegetables, herbs, oats, goat's milk or honey, or you can produce your own. Some oils can be obtained locally too, such as rapeseed; and to reduce ingredient miles, choose European oils such as sunflower, grapeseed and olive rather than tropical oils. Getting the combination of right is important – e.g. although coconut oil is an excellent cleanser, it dries the skin, and would usually only constitute part of a mix.

After the soap-making processes (previous page), pour into moulds and allow to set; take out the next day and cut into bars; then store on a shelf at room temperature, with plenty of ventilation, and allow them to dry out for up to 4 weeks.

Selling soaps: if you're going to sell your soaps, you need to comply with EU cosmetic legislation, notify Trading Standards and be covered by product liability insurance. More details of soap-making processes, plus recipes and regulations covering the sale of soaps can be found in Lowimpact.org's book, *Make your own Natural Soaps*. and our online course (below).

resources

- see lowimpact.org/natural-soaps for more info, courses, links & books, including:
- Maxine Clarke, *Make your own Natural Soaps*
- Kelly Cable*, Natural Soapmaking for Beginners*
- Melinda Coss, *the Handmade Soap Book*
- lowimpact.org/online-course-natural-soaps/ – online course
- gcstm.co.uk - Guild of Craft Soap Makers
- soapguild.org – Handcrafted Soapmakers' Guild