

BEESWAX

Beeswax is a natural wax produced in the bee hive of honey bees of the genus *Apis*. It is produced by the (female) worker honeybees. The wax is secreted from wax glands on the underside of the bee's abdomen and is molded into six-sided cells which are filled with honey, then capped with more wax. The wax of honeycomb is nearly white, but becomes progressively more yellow or brown by incorporation of pollen oils and propolis. The wax scales are about 3 millimetres (0.12 in) across and 0.1 millimetres (0.0039 in) thick, and about 1100 are required to make a gram of wax. When honey is harvested, the top layer of wax that covers the cells, or the cappings, must be removed from each hexagon-shaped cell. Typically, for a honey bee keeper, 10 pounds of honey yields 1 pound of wax.

Western honey bees use the beeswax to build honeycomb cells in which their young are raised and honey and pollen are stored. For the wax-making bees to secrete wax, the ambient temperature in the hive has to be 33 to 36 °C (91 to 97 °F). To produce their wax, bees must consume about eight times as much honey by mass. It is estimated that bees fly 150,000 miles, roughly six times around the earth, to yield one pound of beeswax (530,000 km/kg). When beekeepers extract the honey, they cut off the wax caps from each honeycomb cell with an uncapping knife or machine. Its color varies from nearly white to brownish, but most often a shade of yellow, depending on purity and the type of flowers gathered by the bees. Wax from the brood comb of the honey bee hive tends to be darker than wax from the honeycomb. Impurities accumulate more quickly in the brood comb. Due to the impurities, the wax has to be rendered before further use. The leftovers are called slumgum.

Beeswax has been used since ancient times; traces of it were found in the paintings in the Lascaux cave and in Egyptian mummies. Egyptians used it in shipbuilding as well. In the Roman period, beeswax was used as waterproofing agent for painted walls and as a medium for the Fayum mummy portraits. Nations subjugated by Rome sometimes paid tribute or taxes in beeswax. In the Middle Ages beeswax was considered valuable enough to become a form of currency. It was also used in bow making.

Beeswax was ancient man's first plastic, and for thousands of years has been used as a modeling material, to create sculpture and jewelry molds for use in the lost-wax casting process, or *Cire perdue*. Lost-wax casting of metals, practised by ancient Greeks and Romans, involved coating of a wax model with plaster, melting the wax out of the resulting mould and filling the space with molten metal. The technique is still used today by jewellers, goldsmiths and sculptors, in dentistry and even in the industrial manufacture of complex components by investment casting of metals. The Romans sent messages on hinged pairs of wooden writing tablets coated with beeswax, the message being written into the smooth wax surface using a stylus. After it had been read the message could be erased, and a reply written and returned.

Beeswax works well in cosmetic products because of the wax esters that exist in both beeswax and human skin and it is these compounds which help to bind and emulsify ointments, lipsticks and lotions. As a natural hydrating ingredient that increases essential moisture in SKIN, it is commonly found in hand and body creams that help retain natural skin moisture and in the relief of itching from sensitive skin. Beeswax has an irritation potential of zero, and a comedogenicity rating of 0 - 2, which means that when formulated and used correctly in cosmetic formulations, beeswax will not cause a problem or clog the pores, but brings a host of very positive attributes, such as general healing and softening, as an antiseptic, and an emollient to cosmetic products.

In foaming cosmetics such as skin and body detergents, beeswax improves skin compatibility and reduces the aggressive properties of surfactants, while in shampoos and hair conditioners it improves the condition and the manageability of the hair. Even after processing, it still remains a biologically active product, retaining some anti-bacterial properties and also contains some vitamin A, which is necessary for normal cell development. In folk medicine beeswax was used as an antiseptic for wound healing and beeswax ear candles were used for ear wax removal. They are believed to be able to heal ear infection and improve hearing by removing the wax inside the ear.

Listed below are some of the many reasons Beeswax is used in cosmetics:

- It is easily incorporated in water and oil emulsions
- It is an excellent emollient and support for moisturizers
- It gives skin protective action of a non-occlusive type
- It gives good "body" (consistency) to emulsions, oil and gels
- It reinforces the action of detergents
- It increases the protective action of sunscreens
- Its elasticity and plasticity improve product efficacy by allowing thinner films and
- It provides greater permanence on skin and lip surfaces
- It does not provoke allergic reactions
- It is compatible with many cosmetic ingredients

Beeswax is very frequently used in the following cosmetic applications:

- cleansing creams
- cold creams and lotions
- emollient and barrier creams
- depilatories
- lipsticks - protective sticks in general
- nail creams
- sun protection products
- eye and face make up
- foundation creams

The melting point for Beeswax is approximately 140 to 150 Degrees F. Beeswax should only be melted in an approved electric wax melter, crock pot, microwave oven, or double boiler. Do not melt beeswax in a pan directly on a stove under direct heat. Beeswax is mildly flammable and will catch fire if the wax comes in direct contact with a flame

The largest problem in getting good quality beeswax in the world today is pollution. Because of the high density of population in Europe, we cannot get organic honey from here, we have to get organic honey from either Africa, Australia or New Zealand. Another big problem is the Varroa Mite, which has now spread worldwide. It can only reproduce in a honey bee colony. It weakens the bees and spreads a DNA virus such as the Deformed Wing Virus to the bee. A significant mite infestation will lead to the death of the honey bee colony. Varroa mite infestations may be contributing to what is known as Colony Collapse Disorder, which is threatening agriculture production in the USA. Without the pollination work of the bees, we would starve.

People with bee allergies should not use beeswax as it could cause interactions.