

Beeswax has been used as a raw material for ages. It is long-burning but difficult to work with it. Beeswax is a natural wax produced in the bee hive of honey bees of the genus *Apis*. Worker bees (the females) have eight wax-producing mirror glands on the inner sides of the sternites (the ventral shield or plate of each segment of the body) on abdominal segments 4 to 7. The new wax scales are initially glass-clear and colourless, becoming opaque after mastication by the worker bee. 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.

Beeswax is a tough wax formed from a mixture of several compounds. Its main components are palmitate, palmitoleate, hydroxypalmitate and oleate esters of long-chain (30-32 carbons) aliphatic alcohols and other palmitates. Beeswax has a high melting point range, of 62 to 64 °C (144 to 147 °F). If beeswax is heated above 85 °C (185 °F) discoloration occurs.

Beeswax candles is naturally scented by the honey and nectar of flowers packed into the honeycombs and gives off a subtle fragrance as it burns. Beeswax candles burn brighter, longer, and cleaner than any other candle.

(Source: Wikipedia)

Tallow: is a rendered form of beef or mutton fat, processed from suet. It is solid at room temperature. Unlike suet, tallow can be stored for extended periods without the need for refrigeration to prevent decomposition, provided it is kept in an airtight container to prevent oxidation. Historically, it was used to make tallow candles, which were a cheaper alternative to wax candles. The composition of the fatty acids is typically as follows:

Saturated fatty acids:

- Palmitic acid: 26%
- Stearic acid: 14%
- Myristic acid: 3%

Monounsaturated fatty acids:

- Oleic acid: 47%
- Palmitoleic acid: 3%

Polyunsaturated fatty acids:

- Linoleic acid: 3%
- Linolenic acid: 1%

(Source: Wikipedia)

Paraffin wax: today, most candles are made from paraffin. Paraffin wax is mostly found as a white, odourless, tasteless, waxy solid, with a typical melting point between about 47 °C and 64 °C (117 °F to 147 °F). Paraffin wax refers to a mixture of alkanes that falls within the $20 \leq n \leq 40$ range; they are found in the solid state at room temperature and begin to enter the liquid phase past approximately 37 °C.

Paraffin is mostly synthesized from petroleum-derived compounds. Paraffin wax is separated from other element by distillation and the remains is cleaned and refined by costly process. Paraffin wax is used in pastille or powder form.

(Source: Wikipedia)

Stearin: $C_3H_5(O.C_{18}H_{33}O)_3$ is a triglyceride, a glyceryl ester of stearic acid, derived from animal fats created as a byproduct of processing beef. It can also be found in tropical plants such as palm. It is used as tallow in the manufacture of candles and soap. Stearin is usually added to paraffin wax to help compensate for some of the qualities that paraffin lacks.

(Source: Wikipedia)

In the Nineteenth century, a chemist named Michel Eugène Chevreul discovered that animal tallow (in this time still used to make candles) wasn't a single substance but a compound of two fatty acids, stearic acid oleic acid, combined with glycerin to form a neutral, non flammable substance. By removing glycerin from the tallow compound, Chevreul invented a new substance named stearin (from the Greek "*stear*", which means *tallow*).

(Source: How to make Candle)

Stearin is a white crystalline substance that is both a grainy and hard wax. It helps the wax to harden and it also makes the wax more opaque. Stearin also helps the paraffin burn slower and it helps the candle be shinier or more glossy.

(Source: candlewhiz.com)