Wax from coconut oil

Kumaravel S,

Development Officer, Coconut Development Board, Kochi -11

Coconut oil is widely used as hair oil, massage oil, cooking oil, lubricant, oil blends for fuels, cosmetics and medicine industries, etc. But only few know that wax can also be produced from coconut oil.

Waxes find applications in a wide range of sectors like packaging, coatings, cosmetics, food, adhesives, inks, castings, crayons, chewing gum, polishes and candles. Paraffin wax is the largely used wax type, which is derived from petroleum, coal or oil shale. Most commercially available candles are made from paraffin wax. Bee wax is one of the main products of the apiculture sector. Camel milk wax is also available in the market. Besides, soyabean oil, palm oil, coconut oil, apricot oil, rice bran oil, etc. are also used for making wax.

Wax from vegetable oils is manufactured through a process of hydrogenation, to extend the shelflife and help maintain its solid texture in warm temperatures. Hydrogenation is the process to change the physical characteristics of natural fats and oils. Hydrogenation of vegetable oils/fatty acids involves the addition of hydrogen, in the presence of a Nickel catalyst, to the carbon-carbon double bonds present in the fatty acid chains.

The difference between a wax and oil is that a wax remains solid at room temperature while an oil liquefies. Given its tendency to melt at room temperature, coconut oil is not a wax. Coconut oil has the natural sweet taste of coconut and contains 92% of saturated fatty acids (in the form of triglycerides), most of them (about 70%) are lower chain saturated fatty acids known as medium chain fatty acids (MCFAs). Hydrogenation in coconut oil means that in high heat, hydrogen atoms are added to the coconut oil to turn its small amount of unsaturated fat components into saturated fats. Hydrogenation is a means of converting the Liquid Fats to Plastic Fats or, in other words, reducing the Iodine value by reducing the double bonds in the fatty acid chain. Hydrogenation increases the melt point substantially from 75^{o} F to 100^{o} F.

Coconut wax and other natural waxes

Coconut wax is colorless and odorless. It is considered as one of the best and healthiest types of wax to make candles because candles made from coconut wax burn the cleanest compared to other types of wax. It produces less soot unlike other types of wax. Coconut candle waxes are perfect for those who enjoy using their candles for aromatherapy. It

has a superior scent throw which means you can produce long lasting and strongly scented candles using this wax. Throw means that when the candle is lit, a strong boost of scent is filled in the room in a short space of time, which later spreads the entire house.

The coconut wax candles burn slower than other wax and it can blend perfectly with other natural, harder waxes. Coconut wax candle is eco-friendly due to its non-toxic and cleaner burning quality, as it does not emit smoke and is soot-free.

The most popular natural waxes used by candle industry are soy wax, paraffin wax and palm wax. Affordability, availability, ability to hold scent and physical appearance or the finish it gives to the candle are the major factors considered by the candle makers in choosing the type of wax.

Soy wax made from soybean oil, is having good burning quality, produces minimum soot and is also cheap. But it is reported to look crumbly and has a more subtle scent. It is commonly used to make container candles and is usually blended with other types of wax. Paraffin wax, derived from petroleum, is relatively cheaper and comes in different melting points which is suitable for making various types of candles like pillars, container candles, etc.. Paraffin wax candles are stated to hold a stronger scent but burn quickly. Palm wax, obtained from palm oil, is a very firm and almost brittle kind of wax and suitable for pillar and votive type of candles. The burn quality is rated similar to paraffin wax. Palm wax has high contraction which makes its demolding easy. Palm wax creates features such as feathers and crystals when it is allowed to cool slowly. It has the highest melt point of 180°F (82°C).

Wax Blends:

'Wax blends' refer to mixture of two or more wax types for the combined advantages of the types used. Coconut wax is blended with other natural vegetable waxes to bring up the melt point further to avoid any 'liquefying' issues. Similarly, coconut wax can be blended with palm wax to create candles with good burning quality and throw. Blends are normally labelled according to the majority type of the wax. For example, if the candle is made of minimum 51% coconut wax, then it is labelled as 'Coconut blend'.

Bees wax, which is a very common natural wax for candle making, is harder with high melt point (144-149°F (62-65°C) and is a pillar type wax without any additives. However it generally requires larger, square braid wicks in order to get a large enough flame to produce a proper candle. Hence, coconut oil, with a melting point of 77°F, is added to help soften the bees wax for container candles.

Paraffin wax has a melting point of 115-142°F (46-61°C). It is the best preferred wax by the candle makers as it has the best throws of all waxes. It also holds the colours well, without fading. However, it has a low melting point and also burns quickly.

The smooth and silky soy wax is preferred for its affordability, all natural appeal and is best suited for hand crafts. It's melting point is 113-127°F (45-53°C). But, few reports mention that the colour holding capacity, slight odour, frosting, sink holes and cracks are its drawbacks.

Coconut blend waxes (melting point 124-127°F (51- 53°C)) are the mixture of coconut wax, soy wax as well as small quantity of coconut oil. This will have a consistency between coconut oil and soy wax. The coconut wax blends generally have good colour and fragrance holding capacity and well suited for creating a natural and sustainable wax for candle making.

Coconut wax, is a 100 % natural product. It is almost the coconut oil, gone through only hydrogenation, unlike several chemical & physical processes used for making paraffin wax from crude oil. Hence, coconut wax is packed with vitamins, minerals and anti-oxidants that moisturizes skin, hair and nails, giving them a youthful, vibrant look. It also reduces blemishes on the skin and even skin tone. In view of this, besides candle making, coconut wax can also be used in a range of safe skin and hair products like skin moisturizer, nail enhancer, makeup remover, hair moisturizer, eye dark circle remover, foundation, hair remover, etc.

The market for coconut wax exists in the US and European countries. Though no much data about the production, manufacturers, exports, and other details of coconut wax is available; from the ecommerce sites, it is understood that coconut wax manufacturing and trading is taking place in India also. Chunks, cubes, pellets, granules, flakes and gel wax are the major grades of coconut waxes available all over the world. However, it may be noted that all 'coconut candle' search results from the internet, may not be lead to coconut wax, and the 'coconut' prefixed to 'candle' may also mention about the 'coconut shell' which is used as the container for any type of wax candle.

As per the ICC Statistical Year Book, 2019, India is the world leader in coconut production. The major part of the coconut oil produced in India is utilized as raw coconut oil itself for cooking, toiletries, medicaments and cosmetic industries. Converting coconut oil to coconut wax is yet another avenue in value addition of coconut. Further this may find place in the aggressively expanding vegan market too.

Though coconut wax is a bit expensive than other natural waxes, with its rich colors and fantastic aroma, coconut wax candles are undoubtedly worth it. Its longevity and clean-burning are outstanding. However, as far as India is concerned, the focus may be ensured for edible oil industry followed by medicaments, toiletries & cosmetics, later for these minor and miscellaneous products.

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