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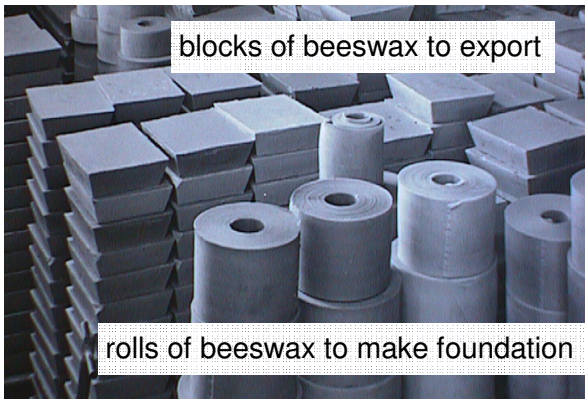
Beeswax

Beeswax is a unique, natural product produced by bees to make the cells they use to store honey and raise brood. Beekeepers accumulate beeswax in various forms as they work their bees and extract honey. Beeswax is a valuable and useful by-product of beekeeping and so knowing how to handle it is an essential beekeeping skill.

Beeswax is a natural wax secreted from the bodies of worker bees. The wax is actually produced from 8 wax glands under the abdomen. Like most other tasks in the hive, wax production is age related and is one stage in the bee's life cycle. Wax is usually produced by bees up to 17 days of age. When producing wax, bees hang motionless in long clusters and the tiny scales of wax appear from their wax glands. The bees scrape the scales off with their mandibles and shape the soft wax into comb.

The cost to the colony of producing beeswax is considerable. Studies show that bees must consume about 8.4 kilos of honey to produce 1 kilo of wax. This cost in both honey and bee energy is probably why the shape of honeycomb is one of the most efficient known. Engineers agree that the hexagonal "honeycomb" shape uses the least material to store the greatest weight and volume of honey.


blocks of beeswax to export

rolls of beeswax to make foundation

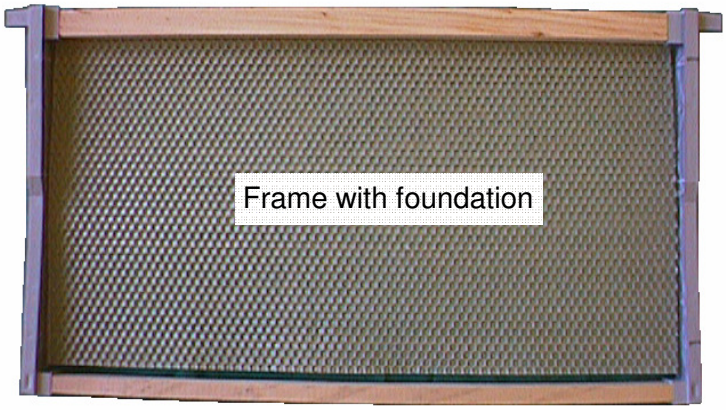
If you are particularly interested in the scientific side of beeswax, an excellent, probably the definitive, textbook on the subject is "Beeswax " by Coggshall and Morse.

Beekeepers accumulate beeswax from various sources including cappings, old combs and slum gum.

Foundation

Foundation is a sheet of pure beeswax with the hexagonal honeycomb cell pattern pressed into it. The bees are very particular and the cell size must be exact or they will tear down the foundation and use the wax to build their own comb. Frames with foundation are used to ensure the bees build straight even combs which can be taken out to check the cells for disease and also to extract the honey.

Full sheets of foundation are good value. Some beekeepers use just a starter strip about 5 cm (2”) wide across the top of the frame and let the bees build the rest themselves. Bees need to eat a lot of honey to build wax and so there is less honey for you. With starter strips the bees often do not build nice straight, strong combs. They tend to build a crosshatch of bits between frames which then need to be cut to remove the frames creating a sticky mess.


Frame with foundation

Replace foundation regularly to keep the cell size accurate and the combs straight and strong.

How to put foundation into frames is described in our pamphlet “How to”. Bees prefer fresh foundation so buy what you need to use now and do not put it into the frames until just before you are going to use it. Foundation needs to be stored in a dry, coolish place (not necessarily the fridge), and well sealed to protect it from wax moth. It is also rather fragile so make sure it doesn’t get squashed or dented. When you do need to buy some foundation, save yourself money and bring in your beeswax and we will exchange it at our milling rate for foundation. See our catalogue.

Comb with honey still in it

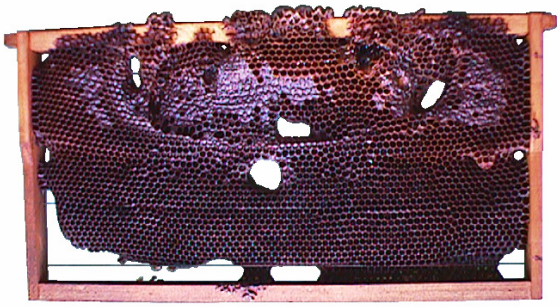
All those lovely bits from under the lid and off the sides of frames, are delightful if eaten as is on the spot. You can certainly chew the wax to get out all the honey. If you swallow the wax it will not hurt you, but your body cannot digest wax and it just passes through your system.

Cappings

Cappings Bag

First drain out all the possible honey. To do this you need a simple strainer in an insect proof container (a large plastic bag is good). Give it the occasional stir. Cappings honey is usually very choice so it is well worth the time and effort to get all you can. There will certainly be some honey left in with the wax but recovering this last little bit is quite difficult. Because of the risk of spreading disease it is not advisable to feed it back to bees.

If you prefer to get all your extracting and honey done at one time use a cappings bag in your extractor. This is a mesh bag, the size and shape of a frame. You scoop the cappings in, close the top and place it in your extractor like a frame. Normal extracting will remove most of the honey so again you are left with fairly dry cappings ready to be melted.



Old comb in need of replacing

Old combs

Combs do eventually reach the end of their useful life. Each bee egg hatches into a larva, spins a cocoon, turns into a pupa and then hatches into a bee and leaves its pupal skin inside the cell. After many, many generations of brood, all these skins and other debris affect the size of the cell and therefore the size of the emerging bee. At this time the combs need to be replaced. Even combs used exclusively for honey production eventually need replacing because of the dirt of innumerable bee feet. The wax from discarded frames can certainly be recovered.

Slum

This is the dark sticky residue beekeepers scrape off the tops of their frames and edges of their boxes. It is a mixture of wax, propolis and dirt. Bees use it as a glue to stick down the frames and fill in the cracks in their hives. Slum does contain a considerable quantity of wax and is certainly worth treating to recover that wax.

Wax Recovery

For the small beekeeper, there are 2 ways to recover the beeswax from your cappings, old combs and slum gum - the “the solar wax melter” method and the “pot of hot water over the stove” method. Both are efficient and not too difficult to do. Obviously you will recover more and cleaner beeswax from cappings than from old comb and slum, but all sources will give you some beeswax.

“Solar Wax Melter” Method

A solar wax melter is simply a glass topped box set on a slant. The beekeeper puts his cappings, old combs and slum gum on the grid in the bottom to be melted by the heat of the sun. As the wax melts, it runs down into a collecting tray at the bottom, from which the beekeeper recovers it in block form, ready for sale. The dirt and other residue stays in the body of the melter to be cleaned out later. The only real cost in this method is the initial cost of the melter. At present we sell a solar wax melter for around $200.00 but anyone reasonably handy with a hammer could probably make one. Sun power is free.

There are a couple of problems. You cannot be in a hurry, a solar wax melter just doesn’t work on cloudy or rainy days. (Painting the solar wax melter black will make it more efficient.) It is also preferable to get the wax out after it has melted the first time. It does the wax no good to sit there for days and days getting re-melted each day.

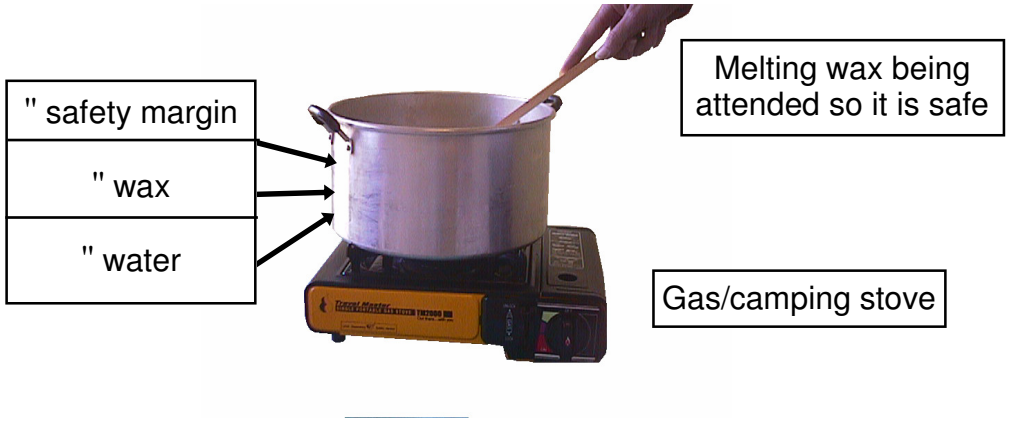
With those two reservations a solar wax melter is an extremely easy to use and efficient method of recovering beeswax. Please don’t put frames in it though, as it can get very, very hot inside the melter and your frames could twist and warp. Every beekeeper, large or small, should have a solar melter out the back of his shed, into which he puts all those scraps of wax which would otherwise go to waste or feed the wax moths.

“Pot of Hot Water Over the Stove” Method

The other way to recover beeswax is to heat your cappings, old comb and slum gum over hot water. To do this you need a controllable source of heat such as a camping stove. (Doing this job on the kitchen stove is justifiable grounds for divorce.) On to this you put an old tin or saucepan. Many beekeepers buy a pot of suitable size from the flea market and keep it especially for this purpose. (The pot will never be fit for anything else again.)

Fill your container 1/3 full of water and 1/3 full of wax, leaving the top 1/3 empty. **Do not fill more than this**; the empty 1/3 is your safety margin. Heat gradually until the water gets hot and melts the wax. It is **NOT**, repeat **NOT**, necessary to boil the water. Beeswax melts at 64ºC and so it is not necessary for the water to boil to melt the wax - it just needs to get hot.

While the wax is melting give it an occasional stir and after the wax has been melted remove the container from the heat and wrap it up well. The idea of the insulation is to let the whole thing cool down as slowly as possible so the wax floats to the top and the dirt sinks through the water to the bottom. After it is all cold, lift the block of wax off the top. There will still be some dirt adhering to the bottom. Scrape off the worst of this and dig it into your garden. Worms love it. Don’t be too fussy, there is still some wax in the dirt which a commercial process such as ours can recover. Most commercial processes are slightly more sophisticated using a combination of heat, pressure and filtration, but the basic principle is still the same.



Heating something as burnable as wax needs special care and attention. **Do not leave the wax unattended,** not for any length of time nor for any reason. Wax is totally impartial. It will boil over, burn, or burst into flames on anyone, even you.

Preparing Beeswax For Shows

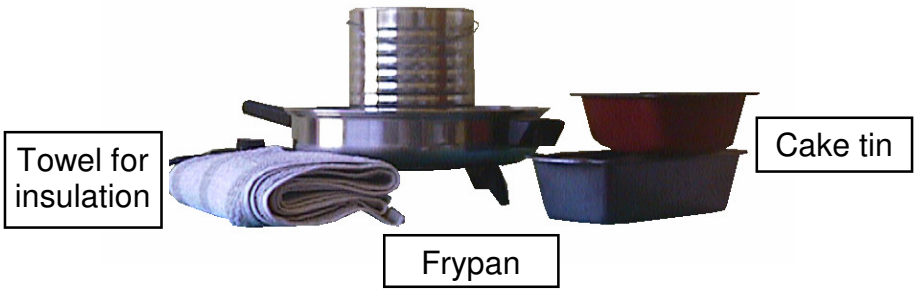
The cleaning and presentation of wax for shows is not difficult, it just requires time, care, patience and attention to detail.

There are usually 2 classes of wax, white wax and natural coloured wax. White wax is usually made from carefully collected white cappings perhaps helped along by spending some time in the solar wax melter being remelted each day. This is really sun bleaching. Do not attempt any form of chemical bleaching; most can be dangerous and can be readily detected in the wax. Natural coloured wax should be just the nice yellow, not too dark or pale.

Presentation is very important. You must have immaculately clean wax. Clean it with the “Pot of Hot Water” method 2 or 3 times using, on each occasion, only the top part of your melted wax. This gets rid of virtually all the little specks and impurities.

The mould itself is important. Each competition requires a block of a specific weight and shape. Make sure your mould conforms to the specifications. Cake tins are usually suitable moulds but make sure the tin has no imprint on the bottom. Some of the new non-stick cake tins are absolutely ideal. Your mould doesn’t need any sort of lubricant or grease; it will become a sticky coating on the outside of your wax. Poured correctly, once your wax is cold, it will just fall out of the mould.

To finally mould your wax block, melt the wax gently in a clean container sitting in a warm water bath. This is the one occasion when the wax is not melted with water in the same container. Once the wax is melted remove it from the heat. Now for the important part - allow the wax to cool as much as possible before pouring into the mould. The idea is to pour the wax into the mould while the wax is still liquid enough to pour but is as cool as possible, be careful not to slop any on the sides of the mould.



Once the mould is poured, insulate it as well as you can so it cools as slowly as possible. This helps ensure the top is smooth, level and uncracked, all very important parts of presentation. When the wax is totally cold, tip it gently out of the mould. As a finishing touch, polish your wax gently with a piece of silk just before the show.

The same technique is also used for all the fancy shaped moulds used in some shows. Despite every care, not every block will be successful, so always do your preparation of show wax well in advance to allow for failures.

Adulteration

Beeswax is a pure and unique product and it is not improved by the addition of anything else. Australian beeswax has a superb reputation world wide for being unadulterated and of very high quality. This is reflected in the price you receive when you sell your beeswax.

Occasionally we get some smart alec who thinks a few candles or a bit of tallow won't be noticed if mixed in with his beeswax. Don't believe it. We handle beeswax every day and are familiar with its smell and feel. So it is very rare for adulterated wax to get past our scales.

Look what an extra bit of insecticide in the meat did to our beef market in the USA a few years ago. A few get-rich-quick merchants could wreck the same havoc with our beeswax market if we are not all extremely vigilant.

If adulterated beeswax in the form of foundation gets into Australian beehives, our beeswax will no longer be pure. It will be impossible to sell overseas and the price will plummet. To help prevent this, check the foundation you buy is Australian made from Australian beeswax. If your supplier did not actually make the foundation, ask who did.

Uses for Beeswax

Some of the beeswax produced is certainly recycled back into foundation. The rest is sold for a wide variety of uses.

Cosmetics

Beeswax is a vital component in a whole range of cosmetics such as lipstick and eyeliner. It also makes a very good cold cream to remove make-up and soothe dry skin. Cold cream is very easy to make; we have a free instruction pamphlet. Please ask for it.

Furniture Polish

Beeswax polish has been used for years to give timber furniture a beautiful shine and nourish the wood. The polish is not difficult to make, but does require great care as some of the ingredients are flammable. We also have a free pamphlet for this.

Candles

Beeswax makes beautiful long burning candles. They can be made by melting the beeswax and pouring it into a mould or cutting and rolling sheets of foundation. We have a free instruction pamphlet for this method. **Pure** beeswax candles are still used by some churches, especially the orthodox ones, as part of their religious tradition.

Military Uses

Beeswax is necessary in the making of munitions, so considerable quantities are used by governments of all political leanings.

Miscellaneous Uses

Waterproofing material, waxing thread to make it stronger, sealing jams and pickles to exclude the air and give them a longer shelf life, Chinese herbal medicines, coating medicinal capsules, the mouth part of didgeridoos. The warmth of your mouth moulds the wax to the perfect airtight fit. Ancient Aboriginals probably used wax from native bees, but the honey bees' wax also does a good job.

We Guarantee
our goods to be entirely satisfactory, both in material and workmanship. Examine your equipment as soon as you receive it. If you are not satisfied with it please return it immediately, and we will either replace the goods or refund your money in full.