

PREPARATION, CARE AND USE OF POLYSTYRENE HIVES

INTRODUCTION

Plastic beehives have been used in Europe for at least 30 years, where they have proved both durable and effective, so much so that today in Denmark virtually 99% of all new hives sold are made of plastic, either expanded polystyrene or polyurethane. The position is similar in many other Northern European countries, particularly Germany and the other Scandinavian countries. In total there are over half a million plastic hives in use in Europe today, which is testament to their effectiveness and durability. The plastic hives we sell are made from high density expanded polystyrene. Although this is chemically identical to the polystyrene foam used in packaging, it has a much harder surface and is substantially stronger.

PAINTING THE HIVE

Before being taken into use it is essential the hive components are painted. This prevents the growth of algae on the outside of the hive, deterioration by UV and in the case of the feeder is required for sealing and ease of cleaning. We recommend the floor and roof are fully painted on all surfaces but the brood chamber and supers need only be painted on the outside. Ideally two coats of paint should be applied, though one will suffice. The feeder requires additional painting on the inside, where the syrup sits. At least 3 coats are required otherwise the syrup will soak into the feeder and mould etc., will continue to grow even after you have washed it out. The interior "walk-way" the bees climb up through does not need painting but the surface the bees walk down to reach the syrup benefits from a light roughening with fine sandpaper to help the bees grip. If you have strong fingers the hard plastic edges can be slid off prior to painting for a neater finish. Water based exterior smooth masonry paint is recommended for all surfaces other than the inside of the feeder. This is quick drying and easily applied with a 4" wide fleece roller and a ½" brush for the fiddly bits. Dulux Woodland Pearl No 1 is an excellent very matt green that suits the hives well. Cuprinol Garden Shades can also be used although it is not as hard wearing as the masonry paint. There is a school of thought that supports painting the hive components different colours so the bees can recognize their own hive better, but unless you have a large number of hives in the apiary this would not be economic. For the interior of the feeder we recommend four coats of gloss white paint or the same number of coats of the paint used for the outside of the hive. Roughen the surface down which the bees climb to reach the syrup with fine sanding paper after the last coat. Alternatively, apply an extra coat to this surface only and sprinkle dry sand on it. You do not need to paint the interior surface the bees ascend - it would be pretty hard to reach in any case.

You can spray the hives but unless you have a very powerful spray gun you will probably need to add a great deal of thinners and several coats will be required. The masonry paints can be applied with industrial grade airless spray guns. Domestic airless guns are unsuitable as the paint is too thick.

You may if you wish fully paint the hives, i.e. both internal and external surfaces. If you do this, to ensure the painted surfaces do not stick together (which can happen even when the paint appears fully dry) apply a very thin coat of petroleum jelly to the top of each component where it comes into contact with the part above. Petroleum jelly is also very useful where the frames sit to reduce the amount of propolis deposited by the bees and aid cleaning.

ASSEMBLING THE HIVES

The hard plastic edges will normally come fitted but if they are supplied loose they can be slid into position. The four parts of the full depth and shallow supers are easily assembled. This is best done on a smooth, flat surface. Carpet is ideal as it will reduce the risk of damage if you drop one of the components. Select two ends (with the hard plastic edges) and two longer sides and ensure the words "Bee Box" all face the same way. Push the ends one at a time into a long side, ensuring the tenons slide evenly into the mortises. If you make a mistake and need to remove an end, stand on the long side and pull the end while gently moving it from side to side.

After two ends have been fitted to a long side check everything is facing the right way and then with the long side flat on the floor and the ends sticking upwards push the second long side downwards. No great force is required. If you find you need to exert excessive force check you are assembling the items correctly. No adhesive is required but waterproof PVA can be used if desired.

INTRODUCING BEES ON BS NATIONAL FRAMES - TO FULL DEPTH HIVES

If you obtain your bees as a nucleus they may arrive on BS National frames. This is not a problem as it is very easy to convert BS National frames to fit into a Langstroth. Our conversion kit consists of 5 Langstroth Top Bars, 10 Side Fillers and some Nylon Ties to hold everything together. Leave the nucleus on the site chosen for the hive for 24 hours then move it to one side and replace with your new hive. Start by carefully lifting an outer National frame (ideally without the queen) from the nucleus and lay the Langstroth top bar on top of it, ensuring it is placed centrally with an equal overhang at each edge. There are marks on the top bar to guide you but adjustment is easy up until the tie is fully tightened. Place a side filler on the end of the National frame and fix it to the Langstroth top bar with a tie. Ensure

the hole is nearest the frame sidebar otherwise the filler will not press correctly against the National side bar . Pull the tie fairly tight and do the same at the other end. Check everything is central and tighten the tie further with pliers and then cut off the surplus. For subsequent frames it helps if you shake off most of the bees into the new hive before conversion. More detailed instructions come with the conversion kit. The kit also works with Smith frames but the gap that would have been filled with the longer lug of a National frame should be filled with a suitable piece of scrap wood.

INTRODUCING BEES TO THE 4004 MEDIUM BODIED HIVE AND SUBSEQUENT MANAGEMENT

By far the simplest way to introduce bees to a medium bodied hive is through a shook swarm. This can be carried out between late March and until about the end of June and is our recommended method at this time of year when transferring an established colony. Feed the bees with 1:1 sugar syrup afterwards. The colony will grow strongly and will usually out-strip a colony that has not been shook swarmed, especially if the operation is carried out early in the year.

Alternatively, if you already have Langstroth hives (wooden or poly) then simply remove any supers to another hive if possible and put two medium bodies onto the hive filled with frames and foundation topped off with the new polystyrene roof. If there were supers on the original hive and no other hive to move them to replace the supers above a queen excluder between the medium bodies and the roof. Once the bees have drawn out the foundation in the medium bodies the queen should start laying in the medium bodies. Insert a queen excluder above the old hive body and under the new medium bodies and once the brood in the old hive has emerged transfer the new medium bodies with queen and new brood to the polystyrene floor.

If you are starting from scratch the bees may come on Langstroth full depth or National frames in a nucleus. A nucleus is not really strong enough for a shook swarm so carry out the procedure as described in the Full Depth section above if the National frames need converting and then proceed as follows.

Half fill the lowest medium depth hive body with frames of foundation and then do the same to the next level. Push the frames to the same side, leaving a 5 frame gap down the opposite side. This is the gap into which the full depth frames, or converted National frames are gently lowered. Add the roof (and ideally our full width rapid feeder) and leave the bees to get used to their new home. There will be a large gap under the full depth frames but this does not matter.

When the time comes for the first inspection gently lift off the roof and place it inverted by the side of the hive. Onto the roof place the 2 additional empty medium bodies which came with the hive (this is why we supply 4 bodies for this hive - the two extra are required for the first inspections). Start the inspection by lifting the outermost full depth frame which after checking should be lowered into the 2 empty medium bodies on the roof. Continue until all the full depth frames are in the spare hive bodies on the roof then continue the inspection of the medium depth frames in the upper of the two hive bodies on the floor. It is helpful to avoid chilling the brood if the 5 full depth frames are covered by a cloth or spare roof whilst the medium frames are being inspected. When the upper brood body has been inspected pick it up and place it on the two bodies with the full depth frames and complete the inspection of the lowest tier of the hive. To reassemble the hive reverse the procedure, replace the second tier hive body and then replace the full depth frames one at a time. At all times ensure the frames stay in the same order.

After a few weeks the bees should have drawn out much of the foundation in the medium frames, especially if they have been fed as we strongly recommend. During this period if the queen is found on a medium frame with brood stop inspecting and prepare to rearrange the hive for the final step before the full depth frames are removed. Place the two lower hive bodies to one side, either on a spare roof or a sheet. It does not matter if their order is reversed, i.e. put the top one down first and then put the lowest one on top of it. It is essential while doing this to ensure the queen remains on her frame in one of these hive bodies.

Onto the floor, which now has no hive bodies on it place the two spare hive bodies containing the full depth frames and then add the queen excluder. Then replace the two medium bodies with the queen, filling the gaps left by the full depth frames with new medium frames with foundation. As a variation, especially if the queen has only just started to lay in the medium frames, the frames from both bodies can be combined into one hive body and either the roof replaced directly, giving a three tier hive, or the fourth hive body is filled with frames of foundation and placed on top. The aim is to have the full depth frames on their own in two otherwise empty hive bodies below the queen excluder. Above the queen excluder is the queen in either one or two medium hive bodies with drawn foundation and brood.

Whichever method is used, after about 3 weeks the brood on the full depth frames will have emerged and the frames can be disposed of and the hive returned to 2 medium bodies. Before this happens you can bruise any sealed honey cappings on the full depth frames and the bees should take it up into the hive. You will not need full depth frames again. As the colony expands, add the second brood chamber if not already in place. Later, add the queen excluder and the first super and watch the bees bring in your first honey crop!

Running the colony on two medium bodies gives you the opportunity to try reversing them as a swarm prevention measure. In about April or early May as the weather warms and the oil seed rape comes into flower, swap the two lower hive bodies around making sure if there is an arch of honey, particularly on the upper body the cappings are bruised with the hive tool to encourage the bees to remove it and create more laying space for the queen. Avoid having a large arch of honey between the two brood chambers.

There is nothing to stop you adding more medium bodies below the queen excluder or even dispensing with the queen excluder altogether and simply letting the queen lay up as many hive bodies as she requires. This is a Danish beekeeping trick.

Apart from less lifting the big advantage of having the same size frames in all hive bodies is you should always, after your first honey crop, have a supply of drawn comb suitable for making increase, relieving congestion in the brood chamber or simply to replace older comb to reduce the risk of disease.

USING YOUR PLASTIC HIVE

In use, leave out the varroa tray all year round, except for short periods of monitoring mite levels. This recommendation has been proven in Scotland where several hundred polystyrene hives suffered negligible winter losses following this regime. Bees are not killed by cold (they will cluster to keep warm) but confined, damp conditions are ideal breeding grounds for disease. In summer leaving out the tray allows improved ventilation to the hive which should reduce swarming induced by over-heating. If housing a swam replace the varroa tray for the first few days to ensure the hive is as dark as possible to help the bees settle down. Then remove it to aid ventilation. In cold areas the varroa tray can also be replaced in the early spring to aid build-up.

Always use "J" type hive tool for lifting the frames, particularly the first one. This tool presses down on another frame in order to lift out a frame, thus avoiding any danger of damaging the hive.

The plastic queen excluders are best reversed after each inspection i.e. turned upside down. This will prevent them developing a set due to the warmth of the hive softening the plastic.

The hives are best cleaned with a solution of washing soda, made up as directed on the packet. This will dissolve propolis and clean off any dirt etc. Do not attempt to remove propolis with a hive tool though wax can be removed by careful scraping. We recommend purchasing one of the large plastic double handled buckets obtainable from Builders' Merchants and some DIY stores as domestic sinks are too small for the hive components. This will also allow you to do the cleaning outside. A Plasterer's Bucket is even better as it is much larger but these take up more storage space and are more expensive.

Sterilisation of the hive can be carried out with a solution of household bleach, again made up as directed on the bottle. However, the best sterilisation treatment is Virkon S, obtainable from farm suppliers and some vets. Wear suitable protective equipment, including eye protection. You can obtain elbow length rubber gloves from Farm Suppliers which are an excellent way of protecting your arms. We advise against using a brush due to the danger of flicking the bleach towards your face. A disposable washing up cloth is best. Thoroughly wash the hive after cleaning or sterilisation with cold water and preferably with a hose fitted with a spray or sprinkler - not a jet. Do not use a power washer as it will damage the surface of the plastic, although a power washer can be used to clean the plastic queen excluder.

CLEANING AND STERILISATION

The hives are best cleaned with a solution of washing soda, made up as directed on the packet. This will dissolve propolis and clean off any dirt etc. Be careful trying to remove propolis and wax with the hive tool. We recommend purchasing one of the large plastic double handled buckets obtainable from Builders' Merchants and some DIY stores as domestic sinks are too small for the hive components. This will also allow you to do the cleaning outside. A Plasterer's Bucket is even better as it is much larger but these take up more storage space and are more expensive. Sterilisation of the hive can be carried out with a solution of household bleach, again made up as directed on the bottle. However, the best sterilisation treatment is Virkon S, obtainable from farm suppliers and some vets. Wear suitable protective equipment, including eye protection. You can obtain elbow length rubber gloves from Farm Suppliers which are an excellent way of protecting your arms. We advise against using a brush due to the danger of flicking the bleach towards your face. A disposable washing up cloth is best. Thoroughly wash the hive after cleaning or sterilisation with cold water and preferably with a hose fitted with a spray or sprinkler - not a jet. Do not use a power washer as it will damage the surface of the plastic, although a power washer can be used to clean the plastic queen excluder.

Virkon S will not kill AFB spores but a strong solution of bleach will. However, AFB is thankfully extremely rare so for general cleaning we recommend Virkon S over bleach as it is easier and safer to use.