

## 1. Q: What is Apiguard?

**A:** Apiguard is thymol in a slow-release gel used to control varroa mites in honeybee colonies. Apiguard is a product suitable for use in organic farming in the European Union.

## 2. Q: How do I apply Apiguard?

**A:** See Vita's instructions on or with the product.

If you are using Apiguard in 50g (1.76 ounce) trays: peel back the lid of the tray and place, gel side up on top of the brood frames. Make sure to leave enough space for the bees to get into the tray (use a spacer [an eke] or preferably an empty super on top of the brood chamber). Close the hive. After 2 weeks repeat with a second tray and leave in place for 2-4 weeks. The ideal treatment period is 6 weeks in total.

If you are using the Apiguard 3 kg (6.6 lb) tub: stir the tub well and use the syringe to apply 50g Apiguard onto the dosing tray provided. Repeat after 2 weeks and leave in place for a further 2-4 weeks. The ideal treatment period is 6 weeks in total.

If you are using the Apiguard 25g (0.88 oz) sachet: cut one end of the sachet and squeeze onto the dosing tray provided.

At average temperatures above 25°C/77°F, a treatment using 2 x 25g (2 x 0.88 oz) or 3 x 25g (3 x 0.88 oz) Apiguard can be used effectively. A fourth dose of 25g (0.88 oz) gel can be applied at these temperatures, where mite infestations persist.

## 3. Q: What is the best time of day to apply Apiguard?

**A:** Apiguard can be applied at any time of day but for best results treat colonies in the late afternoon or evening when the temperature is lower, and the bees are in, or returning to, the hive. If the Apiguard can be applied when it is cooler, the rate of sublimation of the gel and the activity of the bee colony is lower and the bees will become accustomed to the odour more readily than if the product is applied at the hottest part of the day, when the bees are most active.

## 4. Q: Can I use Apiguard with a brood and a half or a double brood?

**A:** Yes, but bear in mind that the level of mite control may be slightly lower than with a single brood chamber as the number of bees that need to receive treatment is higher. Most bees, brood and varroa will usually be in the lower brood chamber, so place the Apiguard on top of the brood frames of the lower chamber and put the second brood chamber on top (so that the Apiguard is between the two brood boxes). Repeat after 2 weeks, following Point 2 above.

## 5. Q: At what time of the year should I use Apiguard?

**A:** Apiguard is best applied in summer or autumn, outside the period of honey flow. The external temperature should be above approximately 15°C (60°F), which means that the colony is active. Distribution of the Apiguard gel depends on the bees transporting it around the hive during the process of hive cleaning and this activity increases as the external temperature rises. Application during nectar flows should be avoided in case the honey becomes tainted.

## **6. Q: Can Apiguard be used in springtime?**

**A:** Apiguard can be used in springtime, if necessary, provided the daily temperature is high enough. However, it is not the best time to apply the product. Thymol, which is the active ingredient in Apiguard, can sometimes make the queen stop egg-laying for a short period and that is not ideal in early spring – the colony needs to be growing. If the mite infestation is high in spring then it is safer to use Apiguard rather than let the mites reproduce further, but otherwise treatment is best left until the summer.

## **7. Q: Should I use Apiguard when supers are on the hive?**

**A:** It is preferable to remove supers before treating with Apiguard. Apiguard may taint honey in supers, but it is unlikely, especially if the honey stores are sealed. Apiguard may taint the brood wax, and low traces may reach the wax of the supers. If you do use Apiguard when supers are in place, make sure that the Apiguard is positioned immediately above the brood nest and that the bees have enough room to get into the tray and to walk through the gel. Honey collected during Apiguard treatment can be fed back to the bees.

## **8. Q: Can I feed my colonies whilst using Apiguard?**

**A:** Yes. Trials suggest that feeding with a protein patty during Apiguard treatment encourages the bees up to the gel and increases their cleaning activities, improving the treatment efficacy.

## **9. Q: The first dose is supposed to be left on for 2 weeks, but I've noticed that the gel disappears after only a few days; do I need to put on another dose straight away?**

**A:** No, the speed at which the gel disappears depends on the temperature and on the behaviour of the individual colony. It can take from 2 to 10 days for Apiguard to be removed from the tray/dosing tray. The gel will reduce as vapour is given off and as the bees detect the “foreign material” and try to remove it. At high temperatures the vapours are stronger. The bees will find the gel and try to clean it up quickly. Strong colonies generally work faster than smaller or weaker ones. At lower temperatures, the gel vaporises more slowly. The workers do not detect it as readily and they do not remove it as quickly.

Even if the gel seems to have disappeared after only a few days there is no need to apply a second treatment until 2 weeks have passed. The thymol, although not in the tray, is active throughout the colony during this time having been carried around by the housecleaning bees.

## **10. Q: It takes longer for the gel in the second dose to disappear; why is this?**

**A:** The second dose usually lasts longer in the trays because the bees have become more accustomed to the odour of thymol in the hive by this time. The cleaning behaviour is not as pronounced as for the initial introduction.

## **11. Q: After 2 weeks there is still some Apiguard left in the tray or on the dosing card. What is happening and what should I do?**

**A:** Sometimes as the gel dries, the bees lose interest in it. It can look like a crust of sugar crystals. When using a 50g aluminium tray, stir the crust with a hive tool to reactivate the remaining gel. Alternatively, the remainder could be spread onto a flat surface (e.g. card, no larger than about 10 cm x 10 cm / 4" x 4"). If there is only a small amount of gel remaining, smear it over a smaller area on the top of the brood frames. This is active Apiguard and will be removed by the bees, which will further help in the control of mites. Do not sprinkle or spread dry thymol crystals thinly over a wide area; this will make the thymol vaporise very quickly and may disturb the bees.

**12. Q: The first dose has been on for 2 weeks, now the second dose should be put on for 2 to 4 weeks. What if I have a honey flow in this time?**

**A:** If you expect a honey flow, do not treat unless absolutely necessary. If it is essential to treat before a late-season flow, apply one dose of Apiguard and remove any residual material before installing supers. The second dose should be applied immediately after the honey flow. This regime may possibly not be as effective as two successive applications of Apiguard but will help keep mite levels down.

**13. Q: Why is the mite drop in the first few days after applying Apiguard much lower than when using Apistan?**

**A:** Apistan (and other pyrethroid-based treatments) are fast-acting and the active ingredient is quickly spread throughout the hive by contact with the bees causing a very rapid initial mite-fall that is noticeable within the first 24 hours. Apiguard works more slowly as the bees take time to spread the gel and its vapours throughout the hive, so the immediate mite drop may not always be so high as with synthetic pyrethroid treatments, but the effects of Apiguard build up throughout the course of the treatment.

**14. Q: It's very hot where my hives are but the colonies need treating; is it safe to use Apiguard in these conditions?**

**A:** At temperatures above 25°C (77°F) it is possible to use a half-dose of Apiguard and get a very good mite kill. Use 2 doses of 25 g (2 x 0.88 oz) Apiguard, one week apart, instead of 2 x 50 g (2 x 1.76 oz) at two weeks apart. A third 25 g dose is sometimes used after the second week where mite infestations are high. In some countries Apiguard is now available in 25 g (0.88 oz) sachets.

When it is very hot, the thymol sublimes faster from the gel and the bees are more active moving the Apiguard around. Both these factors increase the effectiveness of the treatment and less product is needed. Make sure the hive entrance is not restricted, allowing thymol vapour to escape. Good ventilation is essential in these conditions.

**15. Q: The bees are forming a beard at the entrance to the colony; does this mean the Apiguard is harming them?**

**A:** Bees often form a beard when it's too hot inside the hive. However, they do this sometimes in hot conditions when Apiguard is first introduced to the hive as they are not used to the vapour that can build up quickly in hot conditions. This behaviour is usually temporary, and the bees will go back into the hive. It is rare for the bees to abscond.

**16. Q: I have applied Apiguard recently and my bees are very agitated. Some brood has been thrown out of the colony. What should I do?**

**A:** When applying Apiguard, check that the dose corresponds to the size of the hive; small hives (five or fewer frames of brood) need half the dose. Ensure that the hive is well ventilated and that entrances are unblocked, where possible. Some bees are more sensitive to thymol than others, especially more hygienic strains. The bees will clean any foreign matter, including the Apiguard gel, from the hive. Although uncommon, sometimes hygienic bees do not recognise brood (possibly being masked by the thymol odour) and will remove a small area. If this is observed, remove the Apiguard from the hive and feed the colony. If brood removal has been a problem, use a non-thymol-based treatment, such as Apistan, where available as follow-up.

**17. Q: I want to treat nucleus colonies with Apiguard. What dose should I use?**

**A:** To treat nuclei or small/weak colonies treat with only 1 x 25 g (1 x 0.88 oz) Apiguard – no more than this. For smaller nuclei reduce this to half again (1 x 12.5 g / 1 x 0.44 oz). Small (e.g. less than 5 frames) or weak colonies may not tolerate a 50 g (1.76 oz) Apiguard dose and brood may be removed by the workers. If brood removal is seen, remove the product from the colony and feed. Make sure that nuclei are well-ventilated during Apiguard treatment.

**18. Q: I used Apiguard in the spring and my colony seems very small, why?**

**A:** It could be that the queen stopped egg laying for a short while. This doesn't often happen but, if it does, it is a temporary effect only. She will resume egg-laying when the thymol odour is dissipating, after around 3 weeks, with no damage to the colony or to the queen.

**19. Q: What mite control level will I get by treating with Apiguard?**

**A:** Apiguard often gives results as good as those obtained previously with “chemical” treatments but a lower efficacy should be generally expected, somewhere between 85-95% varroa control. The average we have recorded after thousands of hive treatments is 93%. Apiguard works better the warmer it is, up to 40°C (104°F) – see also question 14. Despite the slightly variable efficacy, Apiguard is still an ideal rotation treatment for use in Integrated Pest Management.

**20. Q: Why should I use Apiguard if it doesn't work as well as some other treatments?**

**A:** Strains of Varroa mite resistant to pyrethroids and amidines (such as Amitraz) exist in many areas. Treatments with these active ingredients may not be effective in those areas so another type of treatment needs to be used. Apiguard works in a different way to pyrethroids and amidines and will kill mites that are resistant to these chemicals. Where resistant mites are not already established it is a good idea to “rotate” treatments with active ingredients of different chemical class (e.g. between pyrethroids and Apiguard). Apiguard is an effective alternative treatment, authorised as a veterinary medicine for use on honeybees in many countries. Apiguard is a product suitable for use in organic farming in the European Union.

**21. Q: Can I use Apiguard and Apistan at the same time?**

**A:** This is not often necessary. However, where average daily temperatures are too low for Apiguard to be fully effective and there is an element of resistance to the active ingredient of Apistan, studies have shown that using Apiguard, subsequently followed by Apistan can give highly effective varroa control.

**22. Q: Are varroa mites resistant to thymol?**

**A:** At the moment, no. Pyrethroids, amidines (such as amitraz) and other “traditional” pesticides kill their targets by acting on specific nervous channels in the mite or insect and it is relatively simple for the mite or insect to change its physiology slightly (over a number of years) so that it is no longer affected by the nerve agent. Thymol acts in a very different way. As a protein denaturant it disrupts cell membranes and affects all cellular processes. It is a very general mode of action rather than being highly specific. It should be more difficult for the varroa mite to change all of its body functions to become resistant to thymol. Vita is monitoring mite populations in Europe and we have found no thymol resistance yet. In order to reduce the risk of thymol resistance arising, it is advisable to alternate the type of treatment used, season by season.

**23. Q: Can I use Apiguard with open mesh floors?**

**A:** Thymol vapours are heavier than air and with an open floor it would be expected that much of the value of the treatment may be lost. However, there is no clear evidence if this in fact happens. We advise beekeepers to close up open mesh floors or to insert the varroa-collecting tray during the Apiguard treatment and open them again afterwards, but this is a matter of choice. Do not close up hive entrances during treatment.

**24. Q: Why is Apiguard a gel? Can't I just use thymol?**

**A:** Thymol is an effective pesticide but when applied as raw crystals or in dry formulations it can be difficult and hazardous to use, and the mite control levels will be variable. In cold conditions, the thymol crystals do not vaporise quickly enough, and mites are not controlled. In hot conditions, conversely, thymol crystals will vaporise too quickly, shocking the bees into absconding and often killing bee brood. This is why Apiguard was developed in a gel, to give a slow-release system for the thymol, allowing bees to acclimatise to a low thymol concentration before gradually building up to a mite-lethal level.

Bees will typically attempt to remove the gel from the colony. The gel is particulate so that the bees can pick it up but as these house-cleaning bees are taking the gel to the hive entrance to throw out, the thymol is being distributed throughout the colony. When used as directed, the Apiguard gel is safe for honeybees and brood.

**25. Q: How do I store the Apiguard?**

**A:** Apiguard should be kept out of direct sun and heat and ideally stored at temperatures lower than 30°C (86°F). The gel will start to separate into solid and liquid phases at around 38°C (100.4°F) and even with stirring the gel may not regain its original quality once this has happened. The results obtained with separated gel cannot be guaranteed.

Therefore, do not keep Apiguard in the back of a beekeeping car or truck in hot conditions for any longer than is necessary. Keep the product below 30°C (86°F) in transport where possible and in storage.

**26. Q: Where can I find out more information?**

**A:** For any more information about Apiguard, please see [www.vitabeehealth.com](http://www.vitabeehealth.com). You can also get in touch with your local distributor – their contact details are listed on the website.