EVAPORATOR PROFESSIONAL
Long-term evaporator for formic acid for varroosis treatment
Art. no. 30020
Operating Instructions

Please follow these operating instructions exactly since only then a successful treatment can be guaranteed!

PLEASE NOTE: The manufacturer assumes no liability for damages resulting from failure to observe these instructions!

The use of the evaporator is at your own risk!

Before using formic acid in concentrations greater than 60%, observe the local regulations ("Imminent Danger"). When using formic acid in concentrations greater than 60%, use a U-Wick one size smaller and fill the bottle with only ¾ of the amount listed in the table below.

Check the contents of the packaging for completeness before using the evaporator. A package contains a total of two evaporators.

<table>
<thead>
<tr>
<th>Name/Description</th>
<th>Order No.</th>
<th>Scope of Supply</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Operating Instructions</td>
<td>1</td>
<td>screw-on unit</td>
<td>31035</td>
<td>2</td>
</tr>
<tr>
<td>tray</td>
<td>30023</td>
<td>clasp</td>
<td>31033</td>
<td>4</td>
</tr>
<tr>
<td>bottle</td>
<td>31003</td>
<td>fleece cloth (blue)</td>
<td>30017</td>
<td>2</td>
</tr>
<tr>
<td>stand bracket</td>
<td>31034</td>
<td>U-wicks</td>
<td>30010</td>
<td>1</td>
</tr>
<tr>
<td>wick holder</td>
<td>30022</td>
<td>(2 pieces each of U-wick small, medium, large)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>lid</td>
<td>31012</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The NASSHEINER Evaporator is a long-term evaporator for the continuous evaporation of formic acid 60% ad us. vet, for the treatment of varroosis (Varroa destructor) of the honey bee (Apis mellifera). The NASSHEINER EVaporator, together with formic acid 60% ad us. vet., is a bee drug approved in Germany (published in Federal Law Gazette No. 31, dated July 11, 2000). The high effectiveness of the NASSHEINER Evaporator has been proven in numerous scientific studies - for further information, consult our website. The long-term treatment with formic acid ensures the successful treatment of Varroa mites even in the already sealed brood.

Areas of Application:
Varroa mite (Varroa destructor) of the honey bee (Apis mellifera).

Counter Indications
Do not use during honey yield. Use only after the last honey harvest of the year. The waiting time to the next honey harvest is naturally ensured by hibernation. No treatment may take place in the spring.

Functional Principle of the Evaporator
The vertical wick sucks in the formic acid and transports it downwards onto the fleece cloth (horizontal wick) via the U-shaped leg, where it drops off and evaporates. The perforated foot ensures that the two wicks are not touching (preventing capillarity effects). In this way an almost constant volume flow of formic acid is transported and evaporated. The spot on the fleece cloth will be larger or smaller, depending on temperature and humidity. The evaporation surface regulates itself automatically.

Transport and dripping of a relatively constant acid stream through the vertical wick onto the fleece cloth. The wicks do not touch in order to prevent capillary effects.

The acid forms a wet spot on the fleece. Its size adjusts automatically to the evaporation conditions.

Caution is advised when using the formic acid treatment:
1. Always wear protective gloves, goggles, plastic apron, and plastic boots when filling the bottle as well as when inserting it into the bee colony.
2. Only fill the evaporator outdoors.
3. Keep a bucket of water close by.
4. Keep formic acid out of reach of children.
5. The solution causes burns, do not inhale vapor.
6. If substance gets in contact with eyes, rinse eye with plenty of water and consult a doctor.
7. Immediately consult a doctor in the event of an accident or if feeling unwell.

Set-up and assembly of the evaporator

U-wick made from special fleece - the different width of the longer leg determines the daily evaporation quantity (3 sizes are included)

Lid to close the pre-filled bottle for transport to the hive and collection container.

The evaporator is suitable for use from +10°C to +35°C.

The evaporator is safe during transport as long as it does not fall or break.

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Conditions for a successful treatment:
1. Minimum treatment duration of 10-14 days must be followed. Otherwise the acid would not work across a complete brood cycle! Treatment across a longer period, however, is not harmful.
2. Close the lattice floor during treatment with the appropriate plates and foam pads for ventilation.
4. Regular opening of the entrance hole according to the hive's size.
5. Hives in a windy location are not ideal. Therefore:
   - turn the entrance hole away from the main wind direction
   - or use a hedge or fence as wind break.
6. Observe mite infestation during treatment:
   If the mite infestation does not drop significantly after 14 days of treatment (e.g. due to reinvasion from a neighboring hive), then treatment must be extended or repeated after a short break.
7. Only use stainless steel screws, nails, and wire for long-term use for frames and hives.

Treatment Process
1. At the apiary: Fill bottle with formic acid 60% ad us. vet. as per table:

<table>
<thead>
<tr>
<th>Colony size / hive type</th>
<th>Daily doses</th>
<th>Filling / Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-8 honey-combs / nuc</td>
<td>15 ml /20% (acid weak)</td>
<td>180 ml</td>
</tr>
<tr>
<td>Langstroth/ Zander: One chamber</td>
<td>20 ml /20% (acid weak)</td>
<td>240 ml</td>
</tr>
<tr>
<td>Dadant / Langstroth / Zander: 2 chambers</td>
<td>25 ml /20% (acid weak)</td>
<td>290 ml (fill completely)</td>
</tr>
</tbody>
</table>

In certain areas, the application of 85% formic acid (FA) is permitted (e.g. "Imminent Danger"). If that is the case, it is recommended to use of 85% FA for the last treatment in fall. (see table on page 2).

2. Transport the bottles to the hives - For this purpose, close the bottles securely and position them:

- In an enclosed, acid-resistant plastic box for safety reasons.

The use of the evaporator is at your own risk!
3. Push stand bracket over the bottle from behind until it snaps in.

4. Connect the screw-unit, final assembly of evaporator
   - wear protective gloves
   - turn outlet straight
   - watch for the catch and lug
   - firmly tighten the union nut on the bottle

Achtung: Montage muss in senkrechter Stellung erfolgen (siehe Bild)!

5. Spread fleece cloth in tray and affix it with the two clasps (insert into opening from the side)

6. Put assembled evaporator into tray by putting the stand bracket over the base in the tray

7. Important: Check tightness of the screw connection
   position the provided lid under the screw connection with the opening facing upwards and check for possible drips 24 hours later. If it drips, check position and fit of the outlet and retighten the union nut.

8. Selection of U-wick as per hive type

<table>
<thead>
<tr>
<th>Colony size / hive type</th>
<th>U-wick</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-9 honey-combs / nuc</td>
<td>Size 1 (small)</td>
</tr>
<tr>
<td>Langstroth/ Zander or similar:</td>
<td>Size 2 (medium)</td>
</tr>
<tr>
<td>one chamber</td>
<td></td>
</tr>
<tr>
<td>Dadant Langstroth/Zander or</td>
<td>Size 3 (large)</td>
</tr>
<tr>
<td>similar: two chambers</td>
<td></td>
</tr>
</tbody>
</table>

Put U-wick straight into outlet

9. Put wick holder over U-wick and the outlet until it engages

Make sure that the evaporator is upright and that the U-wick and the fleece cloth do not touch (approx. 2mm gap).

Attention: Never put the wick holder over a wet U-Wick

10. Place the evaporator unit onto the brood nest frame, then put on a feed or half frame.

    You can also put a varroa grid underneath, in order to prevent a bonding of the evaporator. This prevents the bees from getting into the evaporation space.

11. The evaporator remains in the beehive for at least 10-14 days.

12. After 2 days, check the amount of evaporation

    Check and calculate the daily evaporation amounts of formic acid according to the scale. Compare to required daily doses in the table on page 1. If necessary, correct by using a larger U-wick for more acid, or a smaller U-wick for less acid.

Please note:
The wick size is matched to the hive size. The daily evaporation rate can increase slightly (up to 50%) depending on the weather and the behavior of the bee colonies.

This increase in evaporation is not harmful to the bees, however.

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### Treatment concept throughout the year

<table>
<thead>
<tr>
<th>Period</th>
<th>Action</th>
<th>Additional information</th>
</tr>
</thead>
<tbody>
<tr>
<td>April - June</td>
<td>Hang drone frame next to the brood nest. Then regularly cut out the</td>
<td>This measure reduces varroa infestation significantly throughout summer.</td>
</tr>
<tr>
<td></td>
<td>freshly covered drone brood.</td>
<td></td>
</tr>
<tr>
<td>June</td>
<td>Mite control is recommended by counting the natural mite deaths on the varroa floor. From about June 20, count fallen mites twice for one week.</td>
<td></td>
</tr>
<tr>
<td>after the last honey harvest: mid July / August</td>
<td>first treatment with 60% formic acid:</td>
<td>Remove the last honeycomb and, if necessary, supply bee food, preferably at the same time. Do not restrict brood nest by premature supply of winter feed.</td>
</tr>
<tr>
<td></td>
<td>- set up evaporator on the brood nest</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- put reverse feeder super or empty super over it</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- close gridded floor</td>
<td></td>
</tr>
</tbody>
</table>

Attention: The evaporator is suitable for use from +10°C to +35°C.
Disregard the so-called “varroa forecast” since it only applied for outdated formic acid evaporation methods without automatic evaporation adjustment.

<table>
<thead>
<tr>
<th>Period</th>
<th>Action</th>
<th>Additional information</th>
</tr>
</thead>
<tbody>
<tr>
<td>September (4 weeks later)</td>
<td>second treatment with 60% formic acid</td>
<td></td>
</tr>
<tr>
<td>October (4 weeks later)</td>
<td>third treatment (“final mite removal”) with 85% formic acid</td>
<td>IF:</td>
</tr>
<tr>
<td></td>
<td>-&gt; highest daytime temperature &gt; 10°C!</td>
<td>- strong infestation is suspected</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- reinvasion (e.g. due to robbing)</td>
</tr>
</tbody>
</table>

When using higher concentrated FA (>60%) use a U-Wick one size smaller and fill 25% less acid into the bottle.

November  To check if treatment has been successful:
There should be no more than 1 dead mite per day. With successful “final mite removal” much better results should be achieved.

### Durability of the U-Wicks and Fleece Cloth

The U-wicks should last at least 1-2 years, i.e. up to six treatment cycles. They must not be linked, however. Always handle U-wicks with care! Do not put wick holder over wet U-wick! The durability of the fleece cloth depends heavily on the activity of the bees. It can be replaced easily.

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### The use of the evaporator is at your own risk!

### Additional Information

Please refer to the current information incl. FAQ list on the website of the manufacturer: [www.nassenheimer.com](http://www.nassenheimer.com)

Website of the inventor, Mr. Bruno Becker: [www.bienen-becker.de](http://www.bienen-becker.de)

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