



## BEE PAINT

Water based paint for beehives

Tested and verified by the Apiculture Department of Agricultural University of Athens

8.23

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02 - 2017



### Description

High quality water based acrylic enamel. Based on self-cross linking resins with excellent performance and great resistance. Tested and verified by the Apiculture Department of Agricultural University of Athens (AUA) considered as an ideal material for the painting and maintaining of wooden beehives used in beekeeping.

### Purpose of Use

The product is an excellent choice for painting new beehives and for the maintenance of already painted ones. According to the study results the product was tested under real conditions from the Agricultural University and showed outstanding results since there was no negative impact on adult worker bees, the brood or the queen. The lack of direct and indirect toxicity makes it a great choice for that use. It outclasses traditional beehive coating systems because of the ease of application, the reduced time of work completion, the reduced total labor costs and better environmental performance.

### Product Characteristics

- > New technology hydrophobic self cross linking acrylic resins.
- > High resistance to weather conditions.
- > Tested by the Apiculture Department of Agricultural University of Athens.
- > High penetration in wooden surfaces.
- > Lack of toxicity for the population of bees.
- > The use of a special primer is not required.
- > High adhesion.
- > Easy and speed of application and maintenance.
- > High resistance to humidity.
- > Water based with reduced VOC emissions.
- > Does not create paint film, so it is not peeled off.

### Shades

Available in white and three shades yellow, green and blue, based on the instructions of the Agricultural University of Athens about the shades that bee can discern.

YELLOW

GREEN

BLUE

### Coverage

16 - 18 m<sup>2</sup>/lt per coat. (The coverage may deviate depending on the painting method and surface absorptivity).  
The coverage for finished new surface is 5 - 6 m<sup>2</sup>/lt  
(3 coats are required, see instructions at the recommended systems).

Packing:  
0,75lt



Bases:  
—



Stir well  
before use



Coverage:  
16 - 18m<sup>2</sup>/lt



Drying time:  
1/2 - 1 hour (touch dry)



Application:  
With roller



Application:  
With brush



## Recommended Paint Systems

The product outclasses conventional systems since it does not require special primer before application (the same used as a primer). The short drying time allows you to make up to 4 coats in one day. These two main features make the system extremely fast, easy and economical for the end user.

| New surfaces | Product   | Coats   |
|--------------|-----------|---|
| Primer       | Bee Paint | 1 coat thinned with water at a percentage up to 20-25% by volume. |
| Final coat   | Bee Paint | 2 coats thinned with water at a percentage up to 5-6% by volume.  |
| Old surfaces |           |   |
| Final coat   | Bee Paint | 2 coats thinned with water at a percentage up to 5-6% by volume.  |

**Packing:**  
0,75lt



**Bases:**  
—



Stir well  
before use



**Coverage:**  
16 - 18m<sup>2</sup>/lt



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1/2 - 1 hour (touch dry)



**Application:**  
With roller



**Application:**  
With brush



## Instructions and application conditions - Surface preparation - maintenance

Apply with roller or brush with a time interval of two hours between the coats. The application is carried out at ambient temperature from 12°C to 30°C and maximum relative humidity up to 75%. Do not apply when there is a possibility of rain for the next 48 hours. Stir well the content of the container. Then thin the product with the desired water quantity. Allow to stand for 5 minutes. The product may be used right after.

### Surface preparation

A key element of the long life of painted beehives is the use of high quality wood, the correct preparation of the beehive and the painting under the product instructions. The surfaces to be painted must be dry, free of grease, salts and impurities. On new surfaces rub with a sandpaper No. 150 to remove impurities and to improve the adhesion of the product. Clean immediately with a dry cloth or vacuum cleaner. If it is necessary you may putty any anomaly with glue mixture mixed with fine sawdust, which you can obtain from the factory of beehives. After puttying, rub again with fine sandpaper (No 150) and clean it well with a dry cloth or vacuum cleaner. Then follow the painting procedure described in the recommended paint systems. On already painted surfaces must first rub with sandpaper No.120 or No.150 based on the quality of the old paint (when we have old alkyd enamel we use No. 120 while on old water-based enamel paints we use No. 150). After that, we follow the same procedure as in new surfaces i.e. cleaning, puttying, cleaning and final painting according to the painting procedure described in the recommended paint systems.

### Maintenance

After painting, it is wise to check regularly the beehive. If you find problematic spots you have to fix them immediately as they are still minor. It is suggested a yearly inspection to identify problems and repair. Every 3 years can be recoated to maintain the hive in excellent condition. With proper work, regular inspections and timely repainting the beehive will remain in excellent condition for many years and the hive will be healthy and productive.

## Test Results by the Apiculture Department of the Agricultural University

**Packing:**  
0,75lt



### Experimental procedure

Special "cages" for bees were built from cell manufacturing wood of scale 20x20x20 cm with strainer and plastic diaphragm for better control and removal of losses.

Bees fed with a mixture of honey and powdered sugar, sugar syrup 1: 1 and pollen substitute.

In each experimental cage were mixed bees from various frames of brood and honey in order to exist bees of all ages. Then in each cage were placed about 40 g of bees (350-400 bees) by volumetric dosing.

There were three groups A, B and C, and 4 replicates for each group so as to allow statistical processing of results.

**Group A:** unpainted.

**Group B:** exterior paint according to instructions.

**Group C:** interior paint.

Placement of the bees took place on 18/04/2016 and stayed for 10 days until 28/04/2016.

Losses were counted daily and were removed from the cages. The cages were placed in a room with controlled conditions with 28°C temperature and relative humidity of 65%, almost the same conditions as those of the beehives.

**Bases:**



Stir well  
before use



**Coverage:**  
16 - 18m<sup>2</sup>/lt



**Drying time:**  
1/2 - 1 hour (touch dry)



### Results

Bee losses were observed after the 5th day according to the Table 1.

| Number of bees recorded during 10 days in cages categories |           |           |           |           |           |           |           |           |           |           |           |           |
|--|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Day  | A1        | A2        | A3        | A4        | B1        | B2        | B3        | B4        | C1        | C2        | C3        | C4        |
| 1  | 1         | 0         | 2         | 0         | 1         | 0         | 0         | 1         | 0         | 0         | 1         | 0         |
| 2  | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         |
| 3  | 1         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 1         | 0         | 0         | 0         |
| 4  | 2         | 2         | 1         | 1         | 1         | 1         | 2         | 1         | 0         | 1         | 0         | 2         |
| 5  | 0         | 0         | 0         | 2         | 3         | 0         | 0         | 0         | 1         | 0         | 0         | 0         |
| 6  | 0         | 3         | 4         | 6         | 0         | 4         | 2         | 3         | 2         | 3         | 3         | 4         |
| 7  | 5         | 4         | 4         | 3         | 4         | 5         | 3         | 2         | 3         | 4         | 1         | 2         |
| 8  | 5         | 3         | 4         | 3         | 4         | 4         | 3         | 3         | 3         | 4         | 3         | 4         |
| 9  | 1         | 1         | 3         | 3         | 2         | 1         | 2         | 3         | 1         | 1         | 2         | 1         |
| 10   | 4         | 5         | 5         | 1         | 2         | 3         | 4         | 5         | 4         | 4         | 6         | 6         |
| <b>Total.</b>  | <b>19</b> | <b>18</b> | <b>23</b> | <b>19</b> | <b>17</b> | <b>18</b> | <b>16</b> | <b>18</b> | <b>15</b> | <b>17</b> | <b>16</b> | <b>19</b> |
|  | 79        |           |           |           | 69        |           |           |           | 67        |           |           |           |

**Application:**  
With roller



**Application:**  
With brush



### Conclusions

*From all the above there seems no immediate toxicity (group C) or indirect toxicity (group B) to bees because of the paint since at (group A) there were more losses. The death of bees is due to natural mortality because of the conditions and stress from their stay in the cages.*

## Technical Characteristics

|                         |  |
|-------------------------|--|
| <b>Specific Gravity</b> | 1,28 ± 0,02 gr/cm <sup>3</sup> (ISO 2811).   |
| <b>Viscosity</b>        | 75 - 80 K.U. (ASTM D562).  |
| <b>pH</b>               | 8,4 ± 0,2.   |
| <b>Total solids</b>     | 52 ± 1.  |
| <b>Coverage</b>         | 16 - 18 m <sup>2</sup> /lt depending on the surface absorptivity and the application method.   |
| <b>Drying time</b>      | Touch dry from 1/2 to 1 hour depending on the weather conditions. Through drying after at least 24 hours (These times may be elongated depending on the temperature and humidity). <b>The final strength of the material develops after at least three days.</b> |
| <b>Recoating</b>        | After 2 hours.   |
| <b>Solvent</b>          | Water.   |
| <b>Thinning</b>         | Thin with water up to 20-25% by volume if it is the first coating (as a primer) and up to 5-6% by volume as topcoat.   |

**Packing:**  
0,75lt



**Bases:**  
—



Stir well  
before use



**Coverage:**  
16 - 18m<sup>2</sup>/lt



**Drying time:**  
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## ACCORDING TO THE 2004/42 / EC

Phase II, Subcategory e, Interior-exterior varnishes VOC limit value = 130gr/lt, Maximum VOC value = 80 gr/lt (ready to use product).

## Storage

Keep cans air-tight sealed and protect from frost. For long-term storage the product is best kept indoors in order to avoid its exposure to very low or very high temperatures as well as high humidity conditions. Avoid keeping cans in which the product has been already diluted.

## Cautions-Environmental Effect Prevention - ADR

Empty cans and paint residues must be destroyed in accordance with applicable laws and local regulations.

For more information, ask for the Safety Data Sheet for this product.

Keep the workplace well ventilated during the application process, wear protective gloves and glasses.

Product is not classified as dangerous at transportation according to ADR regulation.

*All the above information is based on laboratory tests and long-term experience of the company's scientific personnel. Product quality is guaranteed by our operational system, which is based on the requirements of ISO 9001 and ISO 14001 Standards and EMAS Regulation. As producers we don't take any responsibility for any damage that may be caused in cases that the product hasn't been used for the appropriate application and according to the application instructions.*

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