BEE PAINT

Water based paint for beehives-Tested and verified by the Apiculture Department of Agricultural University of Athens

05.2025 V.02

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.

Stir well before use

Coverage:
16-18 m²/lt

Drying time:
Between 1/2 to 1 hour

Thinning
Thin with water up to 20-25% by volume

Paint:
Roller

Paint:
Brush

Product Characteristics

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

Packaging:
0,75lt

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**

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Technical Specifications

V.O.C	80gr/lt (Maximum Volatile Organic Compounds content ready for use).
Specific Gravity	1,28 ± 0,02 gr/cm3 (ISO 2811).
Viscosity	75 - 80 K.U ., 25°C (ASTM D562).
Performance	16 - 18 m^2/lt depending on the surface absorptivity and the application method.
Thinning	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.
Application	Apply with roller or brush with a time interval of two hours between the coats.
Drying	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). The final strength of the material develops after at least three days.
Recoating	Repaint after 2 hrs, depending on weather conditions. (The drying time might be elongated according to temperature and humidity conditions)

ACCORDING TO 2004/42/EK

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

Storage

Storage indoors to avoid exposure to high or low surfaces and high humidity conditions. Avoid sources of heat, radiation, static electricity, and storage near food. Keep container tightly closed. After opening can use product in a short period of time. Close the can well.

Safety Instructions- Prevention of environmental harming

Minimize paint wastage by estimating how much paint you will need. Recover unused paint for reuse. Reuse of paint can effectively minimize the products life cycle environmental impact. Clean tools with water and soap. Do not put residual paint down the kitchen sink or toilet or into a waste bin. Empty cans with paint residues should be handled the same way and disposed according to local Regulations. You should ask for advice for the local government section responsible for the collection and disposal of waste. Ask for advice from an authorized body for waste recovery. Wear protective gloves and googles/ Do not eat, drink when handling the product. Wash wand with suitable cleaning products. Keep out of reach of children. Always read the can label before use. **For further information ask for the Safety Data Sheet of the product.**

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Recommended application systems

Interior/ Exterior walls

- **New / Already painted hives**

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.

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

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Recommended application systems

Instructions and application conditions	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.

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Berling Paints

Test Results by the Apiculture Department of the Agricultural University

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

Bee losses were observed after the 5th day according to 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
Total	19	18	23	19	17	18	16	18	15	17	16	19
79					69					67		

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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.

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