

INTERMARK



PROMOTOR EKOLOGII

PRZEDSIĘBIORSTWO TECHNICZNO - HANDLOWE

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PRODUCT SPECIFICATION

Product name: HALODROB- Halloysite based product for Poultry Red Mite control

CAS Number: 1332-58-7

Chemical formula: $\text{Al}_2\text{Si}_2\text{O}_5(\text{OH})_4 \cdot 2\text{H}_2\text{O}$

Formula weight: 294,19 g/mol

Appearance (Color): beige

Appearance (Form) : powder

BHT Surface Area : 65 m²/g

Bulk density : 650-750 kg/m³

pH : 6,5-7,5

Moisture: 10%

Composition: mixture of halloysite nanotubes and nanoplatelets

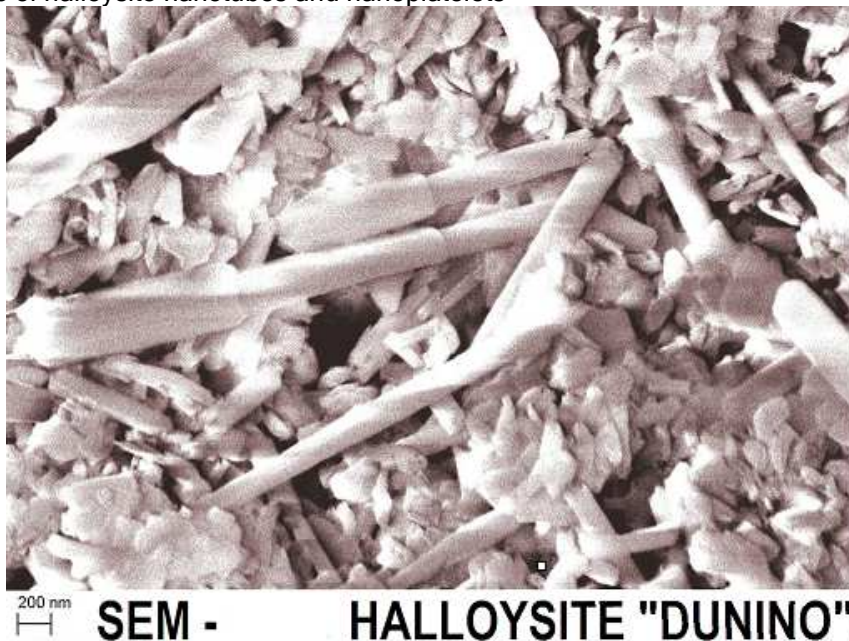


Fig.1 Microscopic SEM view of the Halloysite Dunino

Dimensions of nanoparticles:

nanotubes:

diameter: 30-100 nanometers ; length : 0,5 -2 mikrometers

nanoplatelets:

length/ width : 100-300 nanometers; thickness : 1-5 nanometers

Supplier : PTH Intermark , Poland

Chemical composition:

Al_2O_3 - 34 +/- 1%;

SiO_2 - 37 +/- 1%,

Fe_2O_3 - 21 +/- 1%,

TiO_2 - 2,5 +/- 1%,

CaO - 0,5% +/-0,1%

K_2O - 0,07+/- 0,01%

Na_2O -0,02%+/- 0,01%

SO_3 - 0,05+/-0,02%

Cl <0,01%

LOI - 14,2%

PTH Intermark warrants, that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. For further inquiries, please contact PTH Intermark. Purchaser must determine the suitability of the product for its particular use.

Application:

Poultry red mite (PRM) is a pervasive and dangerous threat to almost all poultry farms; they can hinder production, harbour disease and even kill birds if they get out of control.

PRM can feed on up to 5% of a bird's blood over a single night, making them an obvious cause of stress and anaemia, leading to lower immunity and eventually higher mortality.

PRM has a worldwide distribution and it constitutes a serious problem for the European and American egg-laying industry where the average prevalence is 80% with some countries reaching a prevalence higher than 90% of the farms affected. PRM infestation is associated with severe economic losses in the poultry and egg production industry, also causing health and welfare issues in the poultry. Additionally, the PRM has shown to be a vector for multiple pathogenic viruses and bacteria.

Control of poultry red mite (PRM) has traditionally relied upon use of synthetic pesticides that specifically target mites - otherwise known as acaricides.

However, in Europe there are currently very few chemical acaricides available for use, as many have been withdrawn due to consumer and poultry safety regulations. Resistance to chemical products has also been widely reported, which means that relying on stand-alone chemical treatments is no longer satisfactory.

Halodrob is a non-chemical, natural mineral-based product consisting only of processed rare mineral - halloysite from the Mine Dunino (Southern Poland, one of few mines of this mineral in world and only one in Europe).

Halloysite is also strongly hydrophilic and absorbs easily the liquids from all adjacent surfaces. Halloysite is a safe natural biocompatible nanomaterial, does not harm to the environment, is widely used in cosmetics, medicine and as a fodder additive for all kinds of animals. In normal environment conditions it does not change its structure and properties.

Halodrob is not a biocide because it acts only on the physical and mechanical principle.

On poultry farms against insects like red mite it is used in powder form that is sprayed mechanically.

It was tested by Polish National Veterinary Research Institute (Państwowy Instytut Weterynarii) in Puławy (Poland) as an effective product for treating poultry mite infestations.

The investigations confirmed that the product eliminates the red mite population by physical or mechanical action in following ways:

- o clogging the breathing ways (spiracles)
- o clogging the hypostome and chelicerae (blood suction organs s. Fig.2)
- o clogging the leg joints, caruncle and claws (moving organs)
- o damaging the waxy cuticle on the mite's surface and absorbing the water from the mite's body what causes the dehydration and their death.
- o by the proper application after the contact with Halodrob 97,6% of red mite population dies during first 24 hours, the rest in next days.

It is recommended to reuse the product after 7-10 days in order to reduce the population of newly born insects.

It is entirely safe for both owners and the birds. It is non-toxic and inert product completely pesticide free for treating poultry mite infestations. It can be applied in powder form directly on cages, birds and their bedding. It targets full grown and gestating mites and their eggs. Properly used provides long-time protection from future infestations. When using Halodrob, no withdrawal period is required for birds and eggs.

In contrast to diatomaceous earth and silica Halodrob has high sorption capacity and easily adheres to both the surface of the poultry house and the body of the red mites and their eggs.

The product can be used preventively throughout the whole production period.



Fig. 2 Poultry Red Mite - hypostome and chelicerae (blood suction organs) clogged by Halodrob.
The insect cannot move, nourish or reproduce.



Fig. 3 Spraying Halodrob powder on the henhouse surfaces



Fig. 4 Henhouse shelves covered correctly by Halodrob



Fig. 5 STIHL SR 450 – professional Halodrob sprayer

For large poultry houses, it is recommended to use professional spraying equipment, e.g. STIHL SR 450 (Fig.5). It is ideal for distributing solid powder compounds. This backpack sprayer/duster converts dusting applications without any special tools or additional equipment. It's easy to use and provides excellent control over product feed and distribution and air speed.