

# Neuburg Siliceous Earth

## in pesticides

Author: Rainer Lüttich

Substantial amounts of SILLITIN are also used in pesticides (= plant protection agents). The Neuburg Siliceous Earth grades here serve as carriers for different powdered or liquid products. Pesticides are most frequently applied as spray mixtures; which means the powdered ingredient formulation is first stirred into water and finally sprayed. This application puts a number of requirements on the carrier substance, which SILLITIN, however, is able to meet.

**a) Fine grain size**

The efficiency of powdered or sprayable ingredients normally increases with a smaller particle size. The SILLITIN grades offer a positive answer, as confirmed by their grain structure.

**b) Grinding properties – absorptive capability**

After mixing all pertinent ingredients, pesticide formulations regularly are ground on high speed grinding aggregates (such as pin disk mills or air jet mills). The various SILLITIN grades, in contrast to some other mineral fillers, are distinguished by a fairly low abrasivity, which means the grinding units are not quickly damaged so that they can give longer service.

When working with low melting or paste-like ingredients, the heat generated during the grinding process can lead to jamming of the grinding units and, therefore, to problems for continued production. The SILLITIN grades, above all SILLITIN Z, compared with other natural minerals such as whiting or clay, are characterized by a relatively high absorptive power which allows problem free grinding steps. When working with highly concentrated formulations or liquid ingredients, the additional use of easily dispersed synthetic silicas is recommended.

**c) Floating capability**

For the usefulness and efficiency of pesticides, an important aspect is a long durability of the spray suspensions, i.e. the particles should remain floating in the water over as long periods of time as possible. The floating capability has been standardized by the World Health Organization (WHO). The SILLITIN grades in aqueous suspension offer an inherent floating capacity, according to the grade, of 60 to 90 %.

**d) Wettability**

For spray powders the wettability plays an important role for obtaining optimum properties. SILLITIN is easily wettable in water and boosts the efficiency of the conventional wetting and dispersing agents. In aqueous media the SILLITIN grades give a slightly acidic reaction. For the usefulness of a carrier material in pesticide formulations the interchanges with the ingredient are a very important aspect. The SILLITIN grades in this respect behave with absolute neutrality, which means they only have low reactivity and do not cause a decomposition of the active ingredients.

**Special Expressions from the Pesticides Field**

Explanation of some often used terms

**Ingredient:** Ingredient or active substance means the chemical part of a product which by itself exerts the efficiency towards the pest to be fought. Most pesticides do not consist of pure ingredients, but also contain accompanying additives. These are carrier substances (e.g., SILLITIN) and thinning agents and further substances which improve the bonding capability and dispersibility (e.g., wetting and dispersing agents).

### Terms concerning the efficiency of poisons:

Initial efficiency	=	efficiency at the beginning of the treatment
lasting effect	=	efficiency not only for a short term, but lasting over a prolonged period of time
incubating poison	=	substances which after eating take action in the stomach intestine, e.g., thallium or arsenic derivatives
inhalation poisons	=	substances which act via the respiration organs, e.g. hydrocyanic acid (HCN), carbon disulfide (CS <sub>2</sub> )
contact poison	=	poisons when touched, e.g., DDT
prophylactic or preventive action	=	preserving efficiency
curative efficiency	=	healing efficiency
selective efficiency	=	specially directed efficiency, e.g. killing weed, but preserving cereals
cumulative efficiency	=	accumulation of the poison when applied several times
tolerance value	=	authorized residue of ingredients on plants, fruits etc.
waiting time	=	waiting period between treatment and harvest

### Indication of the killing efficiency of agents:

acaricide	=	killing of acarids
bactericide	=	killing of bacteria
fungicide	=	killing of fungus
herbicide	=	killing of herbs (weed)
insecticide	=	killing of insects
molluskicide	=	killing of snails

SILLITIN is frequently used as a carrier in spray formulations.

Spray powders are used in suspension form which consists of the pesticide formulation and water. The solid particles are floating in the aqueous liquid.

Related to spray formulations is the term

Wettability:	=	the tendency of a liquid when applied to a solid surface, not to separate into individual ball-like drops, but to form a continuous film
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