

ProSid™ MI

Making a difference
in grain preservation



Feed additives that give key benefits

- ➔ Strong effect against mould growth
- ➔ Prevent mycotoxin building
- ➔ Good distribution in feed and raw materials
- ➔ Preserve full nutritional value of your feed
- ➔ Contribute to a highly profitable production

Highly effective mould inhibitors for feed

The safety and integrity of stored grain is of high importance for the food and feed supply. Microbial- and mould contamination in particular, are related to a loss of dry matter, valuable nutrients and the formation of mycotoxins which can seriously affect metabolic processes and consequently the performance of farm animals.

Bacterial Contamination

In general the bacteria that can be found on grain are non-pathogenic. Nevertheless, contamination with bacterial pathogens such as *Salmonella*, *Escherichia Coli* and *Bacillus Cereus* does occur. Normally this is an indication that birds or rodents have contaminated the grain. Important is that higher moisture levels are associated with higher levels of pathogenic bacteria in the outer grain layers. Therefore the problems that are seen with contaminated grain are often related to processed grain fractions, mainly used as raw materials for animal feed production.

Mould growth

Moulds can grow both on the field and in the storage silo. Mould growth in grains may cause serious changes to the feed in addition to the formation of mycotoxins. The growth of fungi may cause a significant reduction of nutrient value of both starch and protein fractions and it also encourages the infestation of the grain by mites and insects, which causes a further loss of valuable nutrients.



Mycotoxin Development

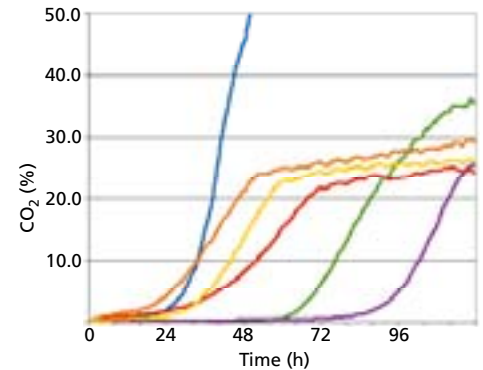
Mycotoxin development may occur pre-harvest especially during wet spells of the growing season. Due to the conditions that can be found in the grain storage silo it happens very often that high moisture spots are being formed. Normally, moulds are not growing at a relative humidity lower than 60. However, the formation of high moisture spots causes the relative humidity to rise to 65-70 %, which opens the way for mould growth.

Moulds that start the deterioration process in stored grain are introduced onto the grain by contact with the surface of the storage silo, transport vehicles or dust. Due to the growth of the first settlers the micro-environment establishes higher temperatures and water activity, which stimulates the growth of more dangerous, mycotoxin producing moulds.

Mycotoxins can cause farm animals severe physiological problems such as diminished fertility, lack of appetite and even damage to the internal organs.

Mould Inhibition

Perstorp has developed a test procedure in which we test all our products for their ability to stop mould growth. Our method is based on the production of CO₂ by the micro-organisms that grow on grain or any other raw material that is being used in compound feed production. The CO₂ production curve is fitted by the Gompertz curve ($Y=a.e^{b.e^{-ct}}$), and the relative preservation time in an environment in which mould growth is stimulated by increased moisture and temperature levels is then calculated for all of our products.



Raw materials differ in their properties to enable mould growth.

As shown above, research conducted by Perstorp has clearly shown that various raw materials are in more or lesser extent vulnerable to mould growth. As a result of this we are able to give you a more reliable advice on how to treat your raw materials in the best way.

ProSid™ MI mould inhibitors offer you a broad range of products that gives you the right tools to fight mould related problems:

- ➔ ProSid™ MI products are developed to fight both bacterial and fungal contamination
- ➔ ProSid™ MI products are also available in non corrosive form
- ➔ Some ProSid™ MI products contain Surfactants to increase efficacy
- ➔ For the best result ProSid™ MI products are thoroughly tested on various raw materials, by using our sophisticated laboratory equipment
- ➔ ProSid™ MI products can always supply you with the right solution for your requirements



User Guide

- 1) For the use of highly effective ProSid™ MI products it is recommended to apply low pH resistant paint or plastic film to the walls and floor of the storage facility.
 - ➔ Adapt nozzle position to the auger rotation (auger angle 45 °)
 - ➔ Operate auger at 75 % of full capacity
 - ➔ Make sure that dose rate is the same at all application areas
 - ➔ Nozzles must be cleaned with hot water after they have been used
 - 2) Before the harvest starts the farmer needs to take the following measures:
 - ➔ Clean storage facility thoroughly
 - ➔ Make sure that the storage facility is free of insects and rodents
 - 3) Check whether all the equipment is working properly:
 - ➔ Be aware that you first calibrate your equipment before you start using it
 - ➔ Make sure that the minimum distance between last nozzle and end of grain auger is 3m
 - 4) Application during harvest:
 - ➔ Check prior to harvest the moisture content of the grain
 - ➔ Set dose rate of ProSid™ MI according to moisture level and the required storage time
 - ➔ Do not change the dose rate during harvest
 - ➔ Make sure that the grain is loosened up regularly
 - ➔ Check whether all the grain has been treated properly by taking samples regularly
 - 5) During storage:
 - ➔ Check that the temperature of the stored grain is stable on a regular basis (once a week), make sure that you take samples from all over the heap or silo.
- If the temperature of the stored grain is rising you need to act immediately by adding at least 1 kg of the used preservative on the stored grain.





Your Winning Formula

The Perstorp Group is the world leader in several sectors of the specialty chemicals market. Few chemical companies in the world can rival its 130 years of success. Today we have a rich performance culture distilled from our long history and extensive knowledge in the chemical industry. That culture and knowledge base enables us to produce Winning Formulas for a wide variety of industries and applications.

Our products are used in the aerospace, marine, coatings, chemicals, plastics, engineering and construction industries. They can also be found in automotive, agricultural feed, food, packaging, textile, paper and electronics applications.

Our production plants are strategically located in Europe, North America and Asia and are supplemented by sales offices in all major markets. We can offer you fast regional support and a flexible attitude to suit your business needs.

If you want a partner for feed additives who can offer you focused innovation to enhance your product or application, which is delivered reliably and responsibly, look no further. We have a winning formula waiting for you.