Punch™

ANITOX®
SECURITY THROUGH SCIENCE™

Powerful protection against mold

Reducing the risk of mycotoxin formation, protecting feed values and extending product life

Punch 'at a glance'

Punch inhibits mold growth and sporulation in feed and grains to:

- ✔ Reduce risk of mycotoxin production
- ✔ Protect feed nutrient value from mold degradation
- ✔ Improve performance & maintain palatability

Livestock fed rations free of mold exhibit:

- \+ IMPROVED feed conversion rates
- \+ IMPROVED live weight gain
- \+ LOWER morbidity and mortality
- \+ REDUCED risk of infection from bacteria/viruses

Punch prevents mold growth and mycotoxin formation in feed and feed ingredients to protect feed values and extend product life. Specially formulated for feed treatment, Punch is non-corrosive and free from contaminants harmful to human and animal health.

- **Inhibit mold growth and sporulation:** Punch exhibits a wide anti-fungal spectrum including *Aspergillus, Penicillium, Fusarium, Trichoderma, Alternaria, Cladosporium, Helminthosporium, Verticillium, Candida, Saccharomyces, Rhizopus* and *Chaetomium*.
- **Prevent mycotoxins:** Punch prevents mycotoxin formation including aflatoxin, trichothecenes, ochratoxin, zearalenone and fumonisins. These toxins present a significant risk to animal health, impacting on the immune system and increasing morbidity and mortality rates. At sub-clinical levels mycotoxins impair performance, reducing growth and conversion rates.
- **Protect nutritional values:** Punch prevents mold spores from growing and protects the vitamin, amino acid, energy and fat content of feeds and feed ingredients.
- **Maintain feed palatability:** Punch maintains feed quality and prevents growth of molds that cause caking, heating, and darkening of grains and finished feeds, all of which reduce feed palatability by affecting odor and taste. Punch is a high quality mold inhibitor offering the highest possible concentration of buffered propionic acid.

Punch has a neutral pH of 6.9 to 7.1 and is non-caustic and non-corrosive to mild steel and galvanized metal. Punch has low volatility, remaining effective in feed for longer. It is stable during pelletization, with more than 99% efficacy at pelletizing temperatures of 175-205°F/79-96°C. Its ingredients are widely approved for use in feed for most animal species. No residues – ingredients are GRAS for any animal species; no withdrawal period.

APPLICATION AND MONITORING

Punch is an essential part of any mycotoxin HACCP program. Use Punch as part of a mold management strategy which includes practices such as:

- selection of low moisture ingredients
- shortening manufacture-to-consumption windows
- use of clean feed distribution systems in mills and on farm

Punch can be added to grain or feed. For application to grain, it would be treated going into the silo. If the mill has a grain screener, it should be added after that. Punch is monitored, serviced and supported by Anitox engineers, laboratory analysis services and feed milling technologists. The point at which liquid application is made depends upon the design of the processing equipment.

RATES OF APPLICATION

- 500g/MT is recommended when moisture content is below 15% and when feed or grain is consumed within 4 to 6 weeks.
- 1kg/MT is recommended when moisture content is between 15% to 17%, when feed or grain is manufactured and fed in hot, humid climates and stored for up to 6 to 8 weeks, or when feed contains molasses and the climate is hot.
- 1.5kg/MT is recommended when moisture content is between 17% to 18%, when there is a severe mold problem, or when weather or shipping conditions are expected to cause severe moisture migration.

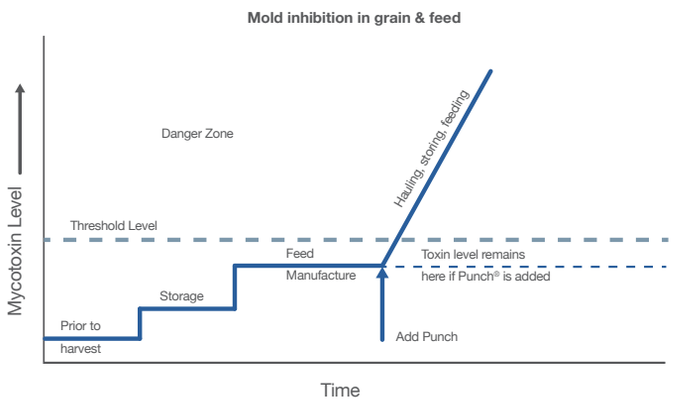
Note: Rates can be reduced after a few weeks of monitoring the mixer, trucks, tanks and troughs to check they are free of moldy feed.

Punch achieves 93% mold control at 500g/MT, rising to 96% control at 1kg/MT and 98% control at 1.5kg/MT. Anitox engineers and feed technologists will help you determine the correct application rate for your operation. Rates range from 500g to 1.5kg/MT of feed or grain.

Science behind Punch

Punch inhibits mold growth and prevents sporulation.

Punch enters the mold cell, decreasing cellular pH level, halting mold cell functionality and preventing further growth and reproduction. Normally, feed moisture levels above 12% must be avoided when storing feed for more that 2-3 days. By adding Punch to the feed it allows for feed to be produced at a higher moisture content or stored for longer periods of time.



PUNCH IS EFFECTIVE FOR LONGER

In trials, Punch demonstrated the longest duration of control against mold (*Aspergillus parasiticus* and *Aspergillus flavus*) than alternatives.

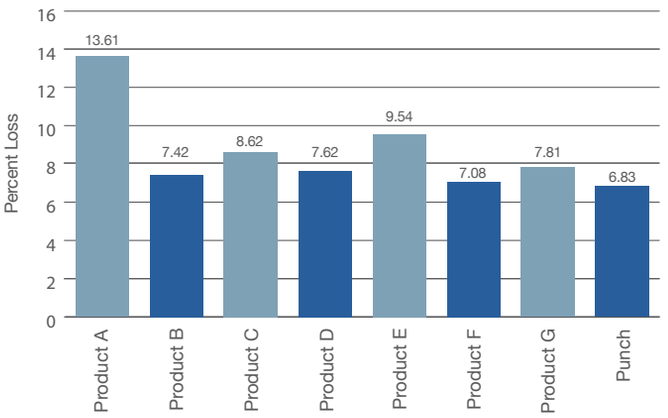
Mold-free storage time (weeks) for corn stored at approximately 27°C

Chemical applied	0.5kg/MT Application rate			1kg/MT Application rate		
	18% moisture	20% moisture	22% moisture	18% moisture	20% moisture	22% moisture
None	less than one week			less than one week		
*Potassium sorbate	2	1	1	3	2	1
*Sorbic acid	7	2	1	12	5	1
Calcium propionate	1	4	0	1	10	10
Sodium propionate	17+	5	3	17+	17+	17+
Acetic acid (glacial)	17+	17+	7	17+	17+	12
Punch	17+	17+	17+	17+	17+	17+

Source: Anitox laboratory, USA.

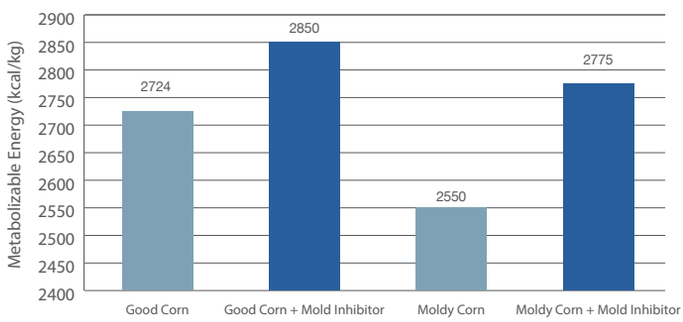
PUNCH IS SIGNIFICANTLY LESS CORROSIVE

In comparative trials Punch was the most non-corrosive of all commercially available mold inhibitors when tested on galvanized metal and mild steel.



Source: Anitox laboratory, USA. Galvanized metal trial.

PUNCH PREVENTS NUTRIENT DEGRADATION BY MOLDS



Source: Bell et al, 1987.

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