

No 158: Feed and Feed Material Preservation

Preservation and Conditioning of Feed Materials and Compound Feed

Fylax Forte HC

Summary

- Fylax Forte HC is a high concentration blend of buffered organic acids with a strong anti-microbial effect at low dosage levels, available in liquid or dry version
- New production technology is used to produce activated propionates which form micelles and are more effective at increasing the porosity of the mould cell membranes
- The anti-microbial efficacy is 60% higher than pure ammonium propionate
- By preventing the formation of moulds, the occurrence of mycotoxins is subsequently reduced
- Contains added surfactants to improve conditioning of grains and pulses before rolling

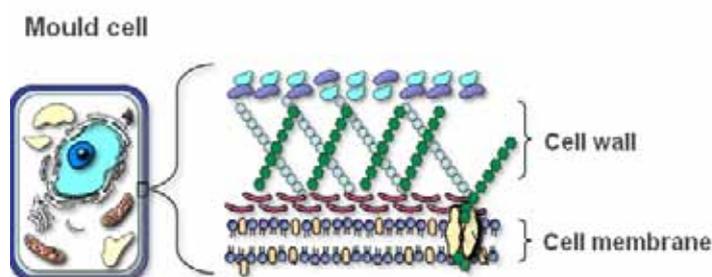
Moulds present in feed materials can negatively affect feeding quality as nutrient levels and palatability deteriorate. Depending on the environmental conditions at harvest or during storage, moulds may produce mycotoxins which pose a serious threat to animal health. Even low mycotoxin levels can result in sub-clinical health problems and reduced productivity. Treating feed materials with a mould inhibitor is therefore an important consideration. Fylax Forte HC can be used effectively in these situations to reduce

mould growth whilst also maintaining the nutritive value of feed materials and compound feed.

What is Fylax Forte HC?

Fylax Forte HC is a highly effective concentrated mould inhibitor, combining a range of powerful organic acids and their salts with added surfactants. New production technology is used in the manufacturing process to activate propionates which form micelles to effectively destabilise the cell membrane (Figure 1). This is a crucial mechanism to allow the organic acids to enter through the mould cell wall, reducing the internal cell pH which effectively leads to cell death.

Figure 1. The structure of mould cell wall.

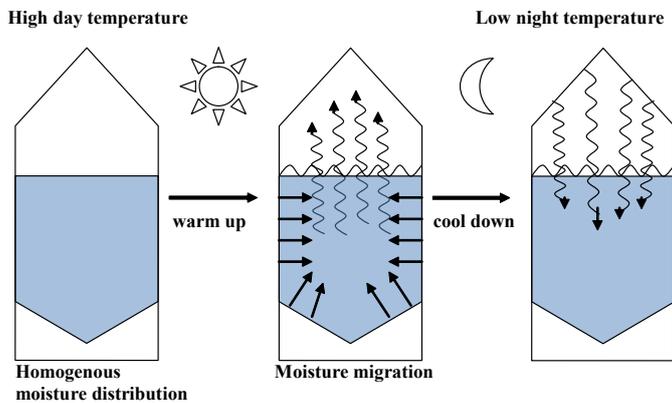


Benefits of Surfactants

When free water is present during storage of grains or compound feed, moisture migration can occur which is influenced by the daily temperatures as shown in Figure 2. This accumulation of free water in combination with adequate nutrients and temperature can provide the ideal conditions for mould growth.

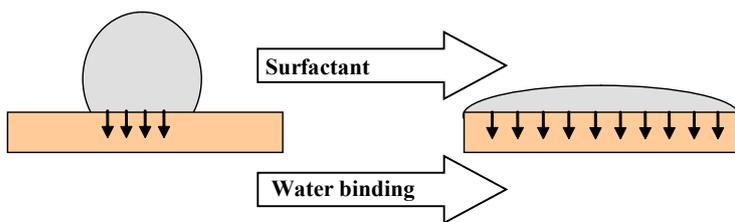
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Figure 2. The effect of daily temperatures on moisture migration during storage of grain or compound feed in silos.



In the liquid version of Fylax Forte HC surfactants are included to help bind free water (Figure 3). In this way, Fylax Forte HC Liquid prevents the creation of zones of high moisture that are conducive to mould growth.

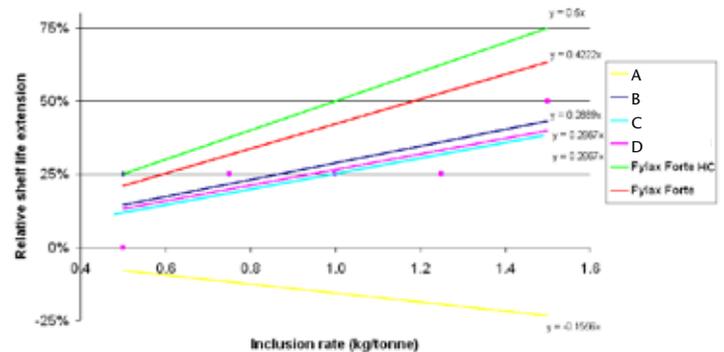
Figure 3. Surfactants reduce water surface tension to increase the water binding capacity.



Efficacy for Shelf Life Extension

Fylax Forte HC has a high mould inhibitory effect at low application levels. A comparison has been made between application levels and the relative shelf life extension of Fylax Forte HC with competitor products in Figure 4.

Figure 4. The effect of Fylax Forte HC dose level on shelf life extension, a comparison between commercially available products.



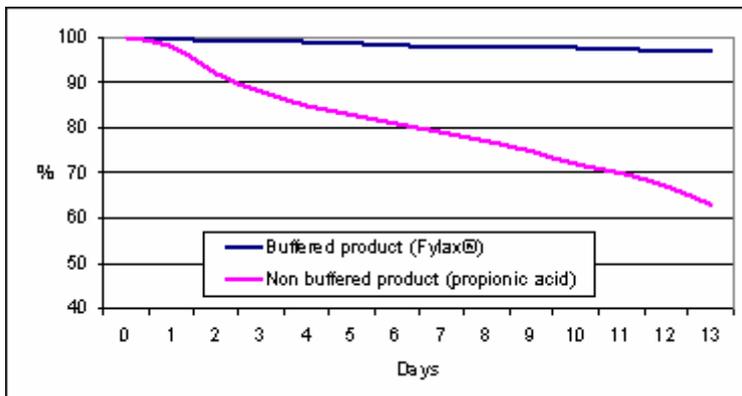
The application level of Fylax Forte HC is 40 and 50% lower than other mould inhibitor products to achieve the same shelf life extension, making it a cost effective alternative.

Grain Conditioning

Fylax Forte HC Liquid can be made into a diluted solution and applied to whole grains and pulses to increase moisture levels with the aim of improving the quality of the rolled product. As an example, a 10% concentration solution of Fylax Forte HC Liquid + water can be successfully added to whole grains 12 – 24 hours prior to rolling. This will effectively condition the grain reducing the proportion of dust and shattered grains. The surfactants play a crucial role in the application process by reducing water surface tension allowing the organic acids to be absorbed into the grain providing an important and evenly dispersed mould inhibitory effect. Unlike non buffered organic acids, Fylax Forte HC Liquid will not evaporate (Figure 5) and is also non-corrosive.

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Figure 5. A comparison between the percentage evaporation occurring with Fylax Forte HC Liquid and non buffered propionic acid.



The typical application level of Fylax Forte HC for feed materials and compound feed to extend shelf life is given in Table 1. For compound feed due regard must also be given to vitamin content at the expiry date when extending the shelf life. For grain and pulse conditioning the typical application levels are given in Table 2. The application level is dependent upon both the initial moisture level of the feed material and the target moisture level of the end product.

Table 1. Typical application levels to extend shelf life for up to 6 months.

Feed material and moisture content	Fylax Forte HC SP (dry)/T	Fylax Forte HC Liquid/T
Compound feed and raw materials up to 13% moisture	0.5 – 1 kg	0.35 – 0.75 L
Raw materials, moisture content 13 – 16%	1 – 2.5 kg	0.75 – 1.9 L
Raw materials, moisture content 16 – 20%	2.5 – 4 kg	1.9 – 3.75 L

Table 2. Typical application levels for feed material conditioning.

Feed material and moisture content	Fylax Forte HC Liquid / T Fylax Forte HC Liquid : Water
Grains and pulses 12 – 13% moisture	3 L : 30L
Grains and pulses 11 – 12% moisture	5L : 50L

Fylax Forte HC SP can be included into vitamin and mineral premixes.

A 10% concentration solution of Fylax Forte HC Liquid : Water is typical. Although this may need to be adjusted depending on the initial moisture level and the moisture increase required.



Further information can be obtained from the Frank Wright Trow Nutrition technical department on 01335 341102.

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