



BUFFERS FOR THE RUMEN IN FORM

Rumen buffers and alkalisers are indispensable in many situations for dairy cows with highly concentrated (energy) rations. For many years only sodium bicarbonate has been used for this purpose. The administration of multi-component buffers with the addition of magnesium oxide significantly improves the rumen environment and helps restore normal milk fat levels, dairy performance, health and welfare.

Products with buffer function

After a dairy cow receives a high cereal feed or high energy-diet, the rumen pH may drop to its lowest level very quickly for up to 4-6 hours. The supplemental buffer must dissolve in the rumen environment before it can act and reduce acidity. For rapid neutralization of rumen acids, MgO must be rapidly soluble as a buffer. Research has shown that various sources of MgO are not equally effective at adjusting rumen pH. Multi-component buffers cannot be formulated solely by magnesium content. For best performance, multi-component buffers should contain 2/3 of sodium bicarbonate and 1/3 of magnesium oxide, in proportion 2:1.

Premix PUFR

- Mineral feed for cattle
- Multi-component buffer containing pHix-up.
- Modern and dynamic solution of rumen acidity.
- Contains: calcium carbonate, sodium bicarbonate, sodium chloride, magnesium oxide (pHix-up), clinoptilolite.
- Dosage: 100-300 g per head per day or as recommended by the nutritionist.

pHix-up

pHix-up (feed material) is modified MgO, which has 3 times higher buffer capacity than sodium bicarbonate. pHix-up affects rumen pH as early as 2 hours after feed intake and is effective for more than 6 hours. Thanks to higher efficiency and thus lower consumption, the farm can save up to 1/3 of the funds otherwise invested in sodium bicarbonate. pHix-up is a more economical and modern alternative.

Effective management of acidosis risk



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What is buffer?

Buffers in cattle feed rations, especially in dairy cows, are special supplements that neutralize excess acid in their digestive tract. Commercial buffers complement the natural buffers that are present in saliva, helping to overcome the harmful effects of high acid production in the rumen environment.

How buffer works

Technically, buffers and alkalisers differ. Buffer maintains acid level or pH only in a very narrow range when the acid level increases slightly. An example is the commonly used sodium bicarbonate. The alkaliser raises the rumen pH directly in proportion to the amount of acid produced. MgO is a typical representative of an alkaliser. Solubility of various sources of MgO in rumen environment primarily determines their bioavailability and usefulness.

Both buffers and alkalisers are together very important for neutralizing excessive acidity in the rumen environment and in common practice they are called identically – buffers.

Why use buffer

Increasing milk yield and economic efficiency of primary milk production leads to increased concentrate doses and high feed energy rations. These rations contain a high proportion of easily fermentable starch, resulting in high rumen acid production and consequently acidosis. Also, low-fiber rations shorten chewing times, reducing saliva production, which naturally buffers the rumen environment.

ACIDOSIS

Acidosis is essentially a rumen fermentation mismatch that leads to a decrease in the rumen pH for several hours a day. Acidosis is caused by accumulation of rumen acids resulting from the fermentation of a significant amount of carbohydrate (starch or sugar) and causes the depletion of alkaline blood and animal tissue reserves (Brassard et al., 2002). Subclinical acidosis occurs mainly in cereal – rich diet or based on corn silage, but can also be seen in grazing grasses with a high content of simple sugars.

Too high acidity in the rumen can reduce TMR dry matter intake, reduce digestibility, reduce milk production and milk fat content. Increased rumen acidity also threatens cow health. It is a kind of open gate for other diseases. Rumen acidosis may cause fatty liver syndrome, liver abscesses, rumen rot and laminitis. As a result, acidosis increases production costs. If there is a problem with increased rumen acidity, feeding the buffer is a very good safeguard.

When to use buffer

situations in which supplementary buffer feeding is economically beneficial and worth considering:

- **feed rations with high corn content** – low dry matter, high content of soluble carbohydrates and low pH. These factors together with reduced salivary secretion can significantly increase rumen acidity.
- **low fiber diet** – lower fiber reduces rumination and chewing, resulting in reduced feed intake and reduced milk fat content.
- **feeding rations with short chop** – leads to a shortening of chewing time and decrease in the digestibility of fiber in the rumen. Buffers will help maintain feed intake and digestibility.
- **highly concentrated rations** – high starch levels can be fermented very quickly and lead to acidosis.
- **early lactation / high performance** – buffers help to manage the transition to highly concentrated rations after calving. In this period the highest risk of acidosis exists.
- **heat stress** – heat stress can reduce dry matter intake and thus affect the electrolyte balance. Buffers can restore feed intake and reduce electrolyte loss.
- **low milk fat content** – a number of research studies have confirmed that inclusion of a buffer leads to a backward increase in milk fat content.

in form on the farm



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