

Product Information sheet

EM® Agriton System.

Sustainable agriculture for profitable farming

Ostrea Sea Shell powder

The Advantages of feeding Ostrea Sea Shell chalk compared to lime or sodium bicarbonate

Ostrea Crushed Sea Shell flour is a source of chalk derived from natural shell banks in the North Sea. The shells are dried and then ground to a powder. Sea-shell chalk is a rich source of calcium carbonate (96.1 %) with a minimal water content. The dry matter percentage is 99.5 %.

Analysis results:

Calcium	44	%
Ash	99.44	%
Arsenic	9.7	mg/kg
Cadmium	0.02	mg/kg
Mercury	0.04	mg/kg
Lead	1.8	mg/kg
Fluoride	51	mg/kg
Sodium	5000	mg/kg
Potassium	150	mg/kg
Magnesium	450	mg/kg
Zinc	18	mg/kg
Manganese	55	mg/kg
Cobalt	16	mg/kg
Selenium	< 0.1	mg/kg
Chloride	1130	mg/kg
Phosphate	12	mg/kg
Sulfur	470	mg/kg
Copper	12	mg/kg
Iron	4400	mg/kg

It is often claimed that Sodium Bicarbonate (Na_2CO_3) has a better neutralising effect on acidosis occurring in the rumen of the cow, than Calcium Bicarbonate (CaCO_3).

We consider this claim to be incorrect!

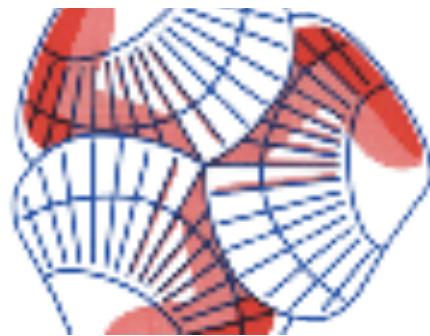
So how does this product actually work in the rumen of the cow?

From a chemical view point it is important to understand what causes acidosis in the rumen.

Cause and symptoms of rumen acidosis.

Rumen acidosis is a common metabolic disorder which has a significant effect on milk production.

Two types of acidosis are reported



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in the field: *acute* and *subacute*. Acute acidosis is less common but more severe. Affected animals are depressed, off-feed, have an elevated heart rate, diarrhea and may die. Cows experiencing subacute rumen acidosis have mild diarrhea, lower dry matter intake and hemorrhages in the hoof. Rumen pH drops below 6 and remains low for several hours.

Volatile fatty acid (VFA) patterns shift to higher levels of propionic acid with an acetic:propionic ratio less than 2.2:1. Diagnosing subclinical acidosis in the field is a challenge. The following signs can be useful, but can vary and be caused by other factors :

- Cows experiencing laminitis and foot problems, especially first lactation and fresh cows.

- Cows fed more than 6 pounds of concentrate dry matter per meal.
- Increasing concentrate intake after calving faster than 1.5 pounds per day.
- Shifting dry cows to a high concentrate TMR after calving without a transition ration.
- Individual cows one full fat test point below the herd average (for example, cows below 2.6 when the herd averages 3.6 percent milk fat).
- Individual cows having milk protein tests > 0.4 percentage point higher than milk fat test (for example, a cow with a 2.7% milk fat test and a 3.2% milk protein test).
- Milk fat test returns to normal when buffer is added to the ration.
- Cows crave or selectively consume coarse long forage (straw or grass hay).
- Manure appears loose or watery.
- Hoof surfaces have horizontal ridges or lines.
- Less than half of the cows are chewing their cuds.

The main cause of acidosis is **acetic acid**. This acid is the most common **fatty acid** in the rumen. Research shows that 1 mol calcium carbonate efficiently binds with 2 mols of acetic acid.

This is twice the capacity of sodium bicarbonate which only binds to 1 mol acetic acid.

Because the molecular weight of calcium carbonate higher is than that of sodium bicarbonate the amount of calcium carbonate required to obtain the neutralising effect in the rumen is less.

Neutralising the acetic acid in the rumen is not the only benefit when feeding calcium carbonate. The calcium carbonate also fulfills the **calcium requirements** the animal needs, by acting as a by-product. The calcium is absorbed by the animal over a period of time which contributes to overall animal health.

In comparison with sodium bicarbonate, sodium is the by-product and which is less essential in the animal's nutrition.

Feeding

- Lactating cows - 100 grams per day.
- Calves - 50 grams per day.

The advantage of feeding calcium carbonate is two fold.

Ostrea Sea Shell powder has the same acid binding properties as calcium and lime making the feeding requirement amounts equal.

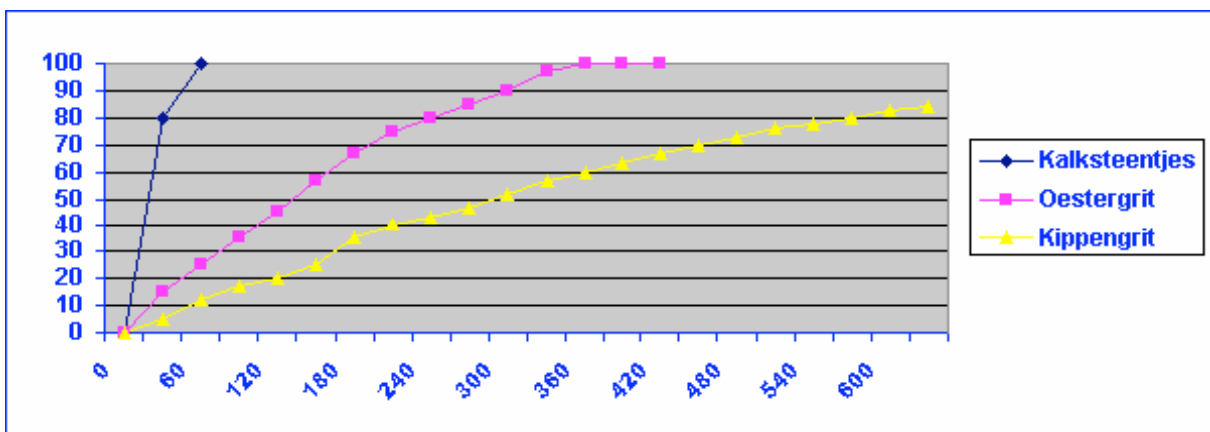
So where is the important difference making the choice for Ostrea Sea Shell powder

Specific qualities of Ostrea Sea-Shell powder.

- ✓ A natural source of essential spoor and micro-elements for animal husbandry.
- ✓ Rich in calcium
- ✓ Good absorption
- ✓ Improves health of animals:
- ✓ Reduced afterbirth problems
- ✓ Improved gait.
- ✓ Healthier hoofs.
- ✓ Prevents Acidosis
- ✓ Improved Ca/P balance in feeding-stuffs

Soil Preparation

- ✓ Spread 500 kg Ostrea Seashell chalk once every 3 years.



Nature has provided the correct balance of trace elements !