Just 12g of soluble Magnesium from Mag12

- Provides a highly soluble source of magnesium in the rumen
- Boosts milk butterfat content
- Reduces scouring associated with traditional magnesium sources
- 99% soluble in the rumen
- Approved for conventional and organic farming systems
**Soluble Magnesium Source**

**Mag**12 is based on a breakthrough in magnesium delivery systems. A natural source of minerals, **Mag**12 shows unique solubility properties with 99% magnesium available in the rumen. Other magnesium oxide sources typically show only 7-23% solubility in the rumen.

**Boosting Performance**

Using **Mag**12 in place of calcined magnesite leads to better performance of dairy cows. Trials carried out at SRUC, Scotland showed that milk butterfat and protein were improved when **Mag**12 was used, compared to calcined magnesite.

**No Irritating Side Effects**

Conventional magnesium sources are poorly absorbed and survive to the hind gut where they can cause irritation. **Mag**12 is absorbed in the rumen, leaving no irritating residues.

In the adult dairy or beef animal, Magnesium is absorbed from the rumen and reticulum. There is almost no absorption past this point. This means that Magnesium absorption depends entirely on whether magnesium can solubilise in the rumen fluid. Clearly, magnesium sources need to be soluble at the pH of the rumen if they are to be available to the animal.

Magnesium oxide is often the mineral of choice to provide Magnesium to beef and dairy animals. But a survey of commonly available Magnesium oxide sources has shown that the solubility of typical oxides can be very poor; as low as six and a half percent in the rumen, and even better quality magnesium oxides show relatively poor solubility.

### Magnesium Solubility (%)

<table>
<thead>
<tr>
<th>Origin</th>
<th>Rumen / reticulum</th>
<th>Lower gut</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magox</td>
<td>22.6</td>
<td>51.1</td>
<td>73.7</td>
</tr>
<tr>
<td>Chinese</td>
<td>11.7</td>
<td>48.2</td>
<td>59.9</td>
</tr>
<tr>
<td>Turkish</td>
<td>14.6</td>
<td>45.1</td>
<td>59.7</td>
</tr>
<tr>
<td>Spanish</td>
<td>14.5</td>
<td>33.8</td>
<td>48.3</td>
</tr>
<tr>
<td>BayMag</td>
<td>14.2</td>
<td>33.2</td>
<td>47.2</td>
</tr>
<tr>
<td>Greek #1</td>
<td>7.6</td>
<td>33.4</td>
<td>41</td>
</tr>
<tr>
<td>Greek #2</td>
<td>6.5</td>
<td>30.7</td>
<td>37.2</td>
</tr>
</tbody>
</table>

**Magnesium release**

<table>
<thead>
<tr>
<th>% of total magnesium</th>
<th>&lt;2 hours</th>
<th>&lt;8 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>86%</td>
<td>99.2%</td>
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</tbody>
</table>

**Buffering Effect**

**Mag**12 has been tested in a rumen simulation study by Alimetrics (Finland). This type of test uses incubation in glass test tubes in a controlled environment. In this study, mixed forage and concentrate together with either **Mag**12 or sodium bicarbonate for comparison were used incubated with fresh rumen fluid from a dairy cow and artificial saliva.

A high energy and a low energy diet were used.
Simulated rumen pH after 6 hours' incubation with Mag12

The figure shows the change in pH after 6 hours of fermentation. There was a dose response to increasing levels of both Mag12 and sodium bicarbonate, with bicarbonate having marginally higher pH levels at 6 hours but at double the dose. Higher pH values were seen with the low energy diet.

Preventing milk fat depression

The pH of the rumen of cows at grass can be less than 5.2, and, according to work carried out at University College Dublin, this can be a critical factor in milk fat depression. To test whether Mag12 would be effective in preventing milk fat depression through its pH buffering properties, an on-farm trial was carried out at SRUC, Scotland.

The trial used 30 Holstein - Friesian cows in early lactation, split into 2 balanced groups. They were grazed as one group and were milked 3 times a day. One group received magnesium from conventional minerals (60g/h/d Calcined Magnesite) and the other group received 12 g/head/day magnesium from Mag12 (100g Mag12/head/day). The results are shown in the table.

Just 12g of magnesium from Mag12 each day is enough to boost milk butterfat content
For more information on Mag12 please contact:

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