Promin conditions the rumen and allows it to work more efficiently. Promin is manufactured from calcareous red seaweed, which is harvested from clean, unpolluted waters off the coasts of Ireland and Iceland. It is a pure source of bio-available minerals deposited within its structure by the sea, especially calcium and magnesium. Release of these minerals in an acidic environment effectively controls rumen pH. Thanks to its unique honeycombed physical structure and large surface area, Promin breaks down slowly in the cow – conditioning the rumen and neutralising significantly more acid, over a longer period, than many conventional buffers. As Promin breaks down it releases highly bio-available calcium and magnesium to the cow.

**Promin in the lactating cow**
- Better neutralisation of rumen acid
- Excellent source of bio-available minerals
- Improves fibre digestion
- Boosts milk yield and quality

**Promin in the dry cow**
- Allows increased concentrate feeding close to calving
- Excellent source of bio-available minerals
- Reduces the risk of metabolic disorders
- Conditions the rumen for lactation

**Recommendations for Use:**

**Dairy cows (Lactation)**
50g-80g/cow/day

**Dairy Cows (Dry cow transition)**
50g/cow/day

**Beef Cattle (Feedlots):**
25g-50g/cow/day

**Sheep & Goats (Feedlots):**
0.5% of compound feed

Note:
1. Diet acidity should be taken into consideration when determining rate of inclusion. The more acidic the diet, the higher the inclusion.
2. In the event of the diet acidity not being apparent include at 80g/cow/day and reduce to level of acidosis control.
3. During periods of high summer temperatures (heat stress) increase inclusion rates by 20%.

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Conditioning the Rumen in Lactation

Failure to maintain a consistent rumen pH in high yielding dairy cows may result in metabolic disorders and reduced production performance. Increasing energy supply through increased use of concentrates or rapidly fermentable fibre can plunge the rumen into acidosis, at which level lactic acid starts to accumulate and volatile fatty acid (VFA) production is compromised. This results in a very inefficient rumen.

To optimise both milk yield and quality, it is important to minimise the amount of time rumen pH drops below 5.5. This will lead to increased volatile fatty acid production and improved rumen efficiency.

How does Promin condition the rumen?

1. By holding the rumen pH between 5.5 and 6.2:

   - The balance of volatile fatty acid production is crucial to rumen efficiency and optimum milk production.
   - Feeding Promin at between 80-100g/cow/day maintains the VFA ratio while increasing volatile fatty acid production leading to optimum rumen efficiency and milk production.

2. By increasing total volatile fatty acids:

   - The effect of conditioning the rumen with Promin (100g/cow/day) was compared with a buffering agent, sodium bicarbonate (160g/cow/day) and a control (see graph bottom left).
   - The graph demonstrates clearly that the Promin treatment minimised the amount of time the pH spent below 5.5, resulting in a much more efficient rumen leading to greater milk production:

<table>
<thead>
<tr>
<th>Effect of Promin on volatile fatty acid production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promin (g/day)</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>100</td>
</tr>
<tr>
<td>80-100</td>
</tr>
<tr>
<td>50</td>
</tr>
</tbody>
</table>

3. By providing a bio-available source of calcium and magnesium:

   - Certain minerals are utilised by bacteria within the rumen and others (e.g. magnesium) are absorbed directly through the rumen wall. It is therefore essential that these minerals are in a soluble form at rumen pH. The calcium and magnesium in Promin are totally bio-available and can be readily absorbed through the rumen wall or utilised by the bacteria to improve rumen efficiency.

### Promin and the Close Up Dry Cow Diet

The management of the post-calving negative energy gap starts in the close-up dry cow diet by feeding increased levels of concentrate.

Reducing the negative energy gap improves milk sustainability, as well as allowing the cow to gain weight for better fertility. Unfortunately, by increasing concentrate levels during transition the cow runs the risk of increased incidence of sub-acute ruminal acidosis and metabolic disorders.

How does Promin help reduce the negative energy gap post-calving?

Promin has a neutral loading, eliminating any causes of imbalances within the diet allowing:

- Increased consumption of concentrates pre-calving
- Reduced incidence of sub-acute ruminal acidosis and metabolic disorders
The balance of volatile fatty acid production is crucial to rumen efficiency and optimum milk production. The production of propionate needs to be maximised with an optimum amount of acetate still being produced. Feeding Promin at between 80-100g/cow/day maintains the VFA ratio while increasing volatile fatty acid production leading to optimum rumen efficiency and milk production.

**Conditioning the Rumen in Lactation**

Failure to maintain a consistent rumen pH in high yielding dairy cows may result in metabolic disorders and reduced production performance. Increasing energy supply through increased use of concentrates or rapidly fermentable fibre can plunge the rumen into acidosis, at which level lactic acid starts to accumulate and volatile fatty acid (VFA) production is compromised. This results in a very inefficient rumen.

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### How does Promin condition the rumen?

1. **By holding the rumen pH between 5.5 and 6.2:**

   - **The importance of pH 5.5**
     
     University of Stellenbosch - South Africa (2006)

   - **Time spent below pH 5.5**
     
     Promin 3.5
     Sodium Bicarb 7.5
     Control 14

2. **By increasing total volatile fatty acids:**

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**Promin and the Close Up Dry Cow Diet**

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**How does Promin help reduce the negative energy gap post-calving?**

- Increased consumption of concentrates pre-calving
- Reduced incidence of sub-acute ruminal acidosis and metabolic disorders

**Management of the negative energy gap**

**Courtesy of the University of Illinois**

**Production trial results:**

<table>
<thead>
<tr>
<th>Promin (g/cow/day)</th>
<th>Acetate:Propionate Ratio</th>
<th>Total VFA (m.moles/litre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-20</td>
<td>25 : 1</td>
<td>80.85</td>
</tr>
<tr>
<td>80-100</td>
<td>25 : 1</td>
<td>120</td>
</tr>
<tr>
<td>&gt;150</td>
<td>33 : 1</td>
<td>190 and falling</td>
</tr>
</tbody>
</table>

**Effect of Promin on volatile fatty acid production**

<table>
<thead>
<tr>
<th>Calcium Release</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2 hours</td>
</tr>
<tr>
<td>Promin</td>
</tr>
<tr>
<td>Sodium Bicarb</td>
</tr>
<tr>
<td>Control</td>
</tr>
</tbody>
</table>

**Calcium**

- 56.71% of calcium is released within 2 hours.
- 74.57% of calcium is released within 24 hours.
- 87.16% of calcium is released within 48 hours.
- 95.96% of calcium is released within 60 hours.

**Magnesium Release**

<table>
<thead>
<tr>
<th>Magnesium Release</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2 hours</td>
</tr>
<tr>
<td>Promin</td>
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<tr>
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</tr>
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</tbody>
</table>

**How does Promin help reduce the negative energy gap post-calving?**

Promin has a neutral loading, eliminating any causes of imbalances within the diet allowing:

- Increased consumption of concentrates pre-calving
- Reduced incidence of sub-acute ruminal acidosis and metabolic disorders
The balance of volatile fatty acid production is crucial to rumen efficiency and optimum milk production.

Feeding Promin at between 80-100g/cow/day maintains the VFA ratio while increasing volatile fatty acid production leading to optimum rumen efficiency and milk production.

Conditioning the Rumen in Lactation

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How does Promin condition the rumen?

1. By holding the rumen pH between 5.5 and 6.2:

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The importance of pH 5.5

University of Stellenbosch - South Africa (2006)

The effect of conditioning the rumen with Promin (90g/cow/day) was compared with a buffering agent, sodium bicarbonate (180g/cow/day) and a control (see graph bottom left).

The graph demonstrates clearly that the Promin treatment minimised the amount of time the pH spent below 5.5, resulting in a much more efficient rumen leading to greater milk production.

2. By increasing total volatile fatty acids:

The production of propionate needs to be maximised with an optimum amount of acetate still being produced.

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3. By providing a bio-available source of calcium and magnesium:

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Production trial results:

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Total VFA (mmol/l)</th>
<th>Acetate:Propionate Ratio</th>
<th>Average Daily Milk Yield (kg)</th>
<th>4% FCM (kg)</th>
<th>Average Milk Fat (%)</th>
<th>Average Milk Protein (%)</th>
<th>Average Milk Lactose (%)</th>
<th>Milk Fat Yield (kg/d)</th>
<th>Milk Protein (kg/d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>120</td>
<td>2:1</td>
<td>27.6</td>
<td>26.9</td>
<td>4.2</td>
<td>3.4</td>
<td>4.6</td>
<td>1.06</td>
<td>0.93</td>
</tr>
<tr>
<td>Sodium Bicarb</td>
<td>7.5</td>
<td>2:1</td>
<td>31.8</td>
<td>32.8</td>
<td>4.2</td>
<td>3.4</td>
<td>4.6</td>
<td>1.33</td>
<td>1.09</td>
</tr>
<tr>
<td>Promin</td>
<td>4.2</td>
<td>3:1</td>
<td>29.1</td>
<td>29.9</td>
<td>4.0</td>
<td>3.3</td>
<td>4.5</td>
<td>1.22</td>
<td>1.08</td>
</tr>
</tbody>
</table>

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Effect of Promin on volatile fatty acid production

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Time spent below pH 5.5</th>
<th>Period of high substrate availability but low saliva flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promin</td>
<td>3.5</td>
<td>7.5</td>
</tr>
<tr>
<td>Sodium Bicarb</td>
<td>7.5</td>
<td>7.5</td>
</tr>
<tr>
<td>Control</td>
<td>14</td>
<td>14</td>
</tr>
</tbody>
</table>

Effect of Promin on calcium and magnesium release

Calcium Release

- 0-2 hours: 56.71% Calcium
- 2-4 hours: 74.57% Calcium
- 4-6 hours: 87.56% Calcium
- 6-8 hours: 100.00% Calcium

Magnesium Release

- 0-2 hours: 86.17% Magnesium
- 2-4 hours: 87.16% Magnesium
- 4-6 hours: 95.96% Magnesium
- 6-8 hours: 98.66% Magnesium

Management of the negative energy gap

Courtesy of the University of Illinois

Fresh Energy Gap Dry Matter Intake Close Up

Milk Production

How does Promin help reduce the negative energy gap post-calving?

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**Dairy cows (Lactation)**
50g-80g/cow/day

**Dairy Cows (Dry cow transition)**
50g/cow/day

**Beef Cattle (Feedlots):**
25g-50g/cow/day

**Sheep & Goats (Feedlots):**
0.5% of compound feed

Note:
1. Diet acidity should be taken into consideration when determining rate of inclusion. The more acidic the diet, the higher the inclusion.
2. In the event of the diet acidity not being apparent include at 80g/cow/day and reduce to level of acidosis control.
3. During periods of high summer temperatures (heat stress) increase inclusion rates by 20%.

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**Pure rumen conditioning with bio-available minerals**

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