Calcium and Magnesium fertilizers

- Calcium nitrate
- Calcium nitrate derivatives
- Magnesium nitrate
- Magnesium nitrate derivatives
- Magnesium sulphate

High quality water soluble fertilizers for fertigation, soilless technique and foliar application
Introduction

Yield and crop quality are recognized as the most important plant production criteria for farmers and growers. Thus, well balanced nutrition program based on high quality fast-acting fertilizers applied according to plant demands and local soil/water conditions ensures not only high yield but also its quality which meets customer and market requirements. Therefore, use of efficient, water soluble sources of those nutrients such as
- Calcium nitrate
- Magnesium nitrate
- Magnesium sulphates

is necessary to supply plants with calcium, magnesium and sulphur at the level responding to current plant demands. All those nutrients as well as nitrogen in nitrate form play important role in plant metabolism and crop production.

Benefits

Benefits of N-NO₃ to plants:
- always available to plants
- easy taken-up by plants
- quick response of plants to soil and foliar application
- enhances uptake of positively charged cations like Ca, K, Mg
- non toxic in plant cells
- enhances stress-resistance
- improving tolerance against high temperature
- no soil acidification effect after soil application

Benefits of Ca to plants:
- enhances crop quality
- enhances cell wall strength
- improves water management
- improves post harvest storage ability of fruit and vegetables
- enhances tolerance to fungi infection
- enhances plant resistance to stress conditions

Benefits of Mg to plants:
- important part of chlorophyll
- inhibits uptake of N-NH₄ (ammonium form)
- improves transfer of energy within the plant
- controls protein synthesis and cell structure

Benefits of S to plants:
- enhances cell wall structure
- synthesis of proteins
- participates in a number of physiological processes
Products

ADOB offers high quality water soluble range of calcium and magnesium speciality fertilizers for agriculture and horticulture production. The most important properties such as:
- full solubility in water with no residues
- low impurities concentration (phosphate, iron, fluorine)
- low ammonium (N-NH₄) concentration (0.7%)

make those products easy and convenient to use – ideal for fertigation, use in soilless technique and foliar application.

Calcium nitrate and its derivatives

The new range of products totally soluble in water. Recommended especially for use in fertigation systems, soilless technique and foliar application. The most efficient source of plant available calcium.

Table 1. Chemical composition of Calcium nitrate and its derivatives

<table>
<thead>
<tr>
<th>products</th>
<th>CaO (%)</th>
<th>N_total (%)</th>
<th>N-NO₃ (%)</th>
<th>N-NH₄ (%)</th>
<th>MgO (%)</th>
<th>B (%)</th>
<th>Fe (%)</th>
<th>Cu (%)</th>
<th>Zn (%)</th>
<th>Mn (%)</th>
<th>Mo (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CALCIUM NITRATE Ca(NO₃)₂ x 2.5 H₂O</td>
<td>27.50</td>
<td>15.20</td>
<td>14.50</td>
<td>0.70</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CALCIPLUS**</td>
<td>26.50</td>
<td>14.60</td>
<td>13.90</td>
<td>0.70</td>
<td>0.03</td>
<td>0.07</td>
<td>0.01</td>
<td>0.03</td>
<td>0.04</td>
<td>0.04</td>
<td>0.004</td>
</tr>
<tr>
<td>CALCIBOR</td>
<td>27.00</td>
<td>15.10</td>
<td>14.30</td>
<td>0.80</td>
<td></td>
<td>0.20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CALMAG</td>
<td>16.50</td>
<td>13.50</td>
<td>13.10</td>
<td>0.40</td>
<td>6.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CALMAG+Fe</td>
<td>16.20</td>
<td>13.50</td>
<td>13.10</td>
<td>0.40</td>
<td>6.00</td>
<td>0.10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CALMAG+Zn</td>
<td>16.20</td>
<td>13.50</td>
<td>13.10</td>
<td>0.40</td>
<td>6.00</td>
<td>0.20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Ca concentration = CaOx0.726
** All micronutrient cations chelated with biodegradable agent IDHA

Table 2. Selected physical properties of Calcium nitrate and its derivatives

<table>
<thead>
<tr>
<th>products</th>
<th>appearence</th>
<th>colour</th>
<th>bulk density kg/l</th>
<th>solubility g/l at 20°C</th>
<th>insoluble parts %</th>
<th>pH of 1% solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>CALCIUM NITRATE Ca(NO₃)₂ x 2.5 H₂O</td>
<td>flakes</td>
<td>white</td>
<td>0.95</td>
<td>2000</td>
<td>&lt;0.01</td>
<td>6.0–6.5</td>
</tr>
<tr>
<td>CALCIPLUS**</td>
<td>flakes</td>
<td>greenish</td>
<td>0.95</td>
<td>2000</td>
<td>&lt;0.01</td>
<td>5.5–6.0</td>
</tr>
<tr>
<td>CALCIBOR</td>
<td>flakes</td>
<td>white/yellowish</td>
<td>0.95</td>
<td>2000</td>
<td>&lt;0.01</td>
<td>6.0–6.5</td>
</tr>
<tr>
<td>CALMAG</td>
<td>flakes</td>
<td>white/yellowish</td>
<td>0.90</td>
<td>2200</td>
<td>&lt;0.01</td>
<td>6.0–6.5</td>
</tr>
<tr>
<td>CALMAG+Fe</td>
<td>flakes</td>
<td>yellowish</td>
<td>0.90</td>
<td>2200</td>
<td>&lt;0.01</td>
<td>6.0–6.5</td>
</tr>
<tr>
<td>CALMAG+Zn</td>
<td>flakes</td>
<td>greenish/yellowish</td>
<td>0.90</td>
<td>2200</td>
<td>&lt;0.01</td>
<td>6.0–6.5</td>
</tr>
</tbody>
</table>

PACKING OPTIONS: products available in 25 kg bags on palets.
Magnesium nitrate and its derivatives

The new range of products fully soluble in water. Recommended especially for use in fertigation systems and soilless technique. Excellent source of plant available magnesium.

Table 3. Chemical composition of Magnesium nitrate and its derivatives

<table>
<thead>
<tr>
<th>products</th>
<th>MgO</th>
<th>N-NO₃</th>
<th>B</th>
<th>Zn</th>
<th>Cu</th>
<th>Mn</th>
<th>Mo</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAGNESIUM NITRATE Mg(NO₃)₂ x 6 H₂O</td>
<td>15.60%</td>
<td>10.50%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAGZIN</td>
<td>14.20%</td>
<td>10.30%</td>
<td>1.00%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAGBORON</td>
<td>15.50%</td>
<td>10.80%</td>
<td>0.20%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAGPLUS</td>
<td>15.00%</td>
<td>10.50%</td>
<td>0.05%</td>
<td>0.05%</td>
<td>0.02%</td>
<td>0.08%</td>
<td>0.01%</td>
</tr>
</tbody>
</table>

* Mg concentration = MgOx0.609

** All micronutrient cations chelated with biodegradable agent IDHA

Table 4. Selected physical properties of Magnesium nitrate and its derivatives

<table>
<thead>
<tr>
<th>products</th>
<th>appearence</th>
<th>colour</th>
<th>bulk density kg/l</th>
<th>solubility g/l at 20°C</th>
<th>insoluble parts %</th>
<th>pH of 1% solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAGNESIUM NITRATE Mg(NO₃)₂ x 6 H₂O</td>
<td>flakes</td>
<td>white</td>
<td>0.80</td>
<td>2250</td>
<td>&lt;0.01</td>
<td>5.5-6.0</td>
</tr>
<tr>
<td>MAGZIN</td>
<td>flakes</td>
<td>yellowish/white</td>
<td>0.80</td>
<td>2500</td>
<td>&lt;0.01</td>
<td>5.5-6.0</td>
</tr>
<tr>
<td>MAGBORON</td>
<td>flakes</td>
<td>white</td>
<td>0.80</td>
<td>2250</td>
<td>&lt;0.01</td>
<td>5.5-6.0</td>
</tr>
<tr>
<td>MAGPLUS</td>
<td>flakes</td>
<td>white/yellowish</td>
<td>0.80</td>
<td>2500</td>
<td>&lt;0.01</td>
<td>5.5-6.0</td>
</tr>
</tbody>
</table>

PACKING OPTIONS: products available in 25 kg bags on palets.
Magnesium sulphate

- **heptahydrate**
- **trihydrate**

Group of fertilizers containing fully water soluble products recommended for fertigation, use in soilless technique and foliar application. The most efficient source of magnesium to plants applied through the root system and foliar application.

Table 5. Chemical composition of Magnesium sulphates

<table>
<thead>
<tr>
<th>products</th>
<th>MgO</th>
<th>Mg</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAGNESIUM SULPHATE HEPTAHYDRATE MgSO(_4) \times 7\ H_2\O</td>
<td>16,30%</td>
<td>9,70%</td>
<td>13,00%</td>
</tr>
<tr>
<td>MAGNESIUM SULPHATE TRHYDRATE MgSO(_4) \times 3\ H_2\O</td>
<td>23,10%</td>
<td>13,90%</td>
<td>18,40%</td>
</tr>
</tbody>
</table>

Table 6. Selected physical properties of Magnesium sulphates

<table>
<thead>
<tr>
<th>products</th>
<th>appearence</th>
<th>colour</th>
<th>bulk density kg/l</th>
<th>solubility g/l at 20°C</th>
<th>insoluble parts %</th>
<th>pH of 1% solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>MgSO(_4) \times 7\ H_2\O</td>
<td>cristalls</td>
<td>white</td>
<td>900,0</td>
<td>710</td>
<td>&lt;0,01</td>
<td>5,5–6,5</td>
</tr>
<tr>
<td>MgSO(_4) \times 3\ H_2\O</td>
<td>cristalls</td>
<td>white</td>
<td>500,0</td>
<td>600</td>
<td>&lt;0,01</td>
<td>6,0–6,5</td>
</tr>
</tbody>
</table>

PACKING OPTIONS: products available in 25 kg bags on palets.
Fertilizers offered by ADOB

STRAIGHT SOLUBLE GRADE FERTILIZERS

**CALCIUM NITRATE AND DERIVATIVES**
- Calcium nitrate
- Calmag
- Calmag Fe
- Calmag Zn
- Calciplus
- Calcibor

**MAGNESIUM NITRATE AND DERIVATIVES**
- Magnesium nitrate
- Magboron
- Magzinc
- Magplus
- Magnesium sulphate

**MULTICOMPONENT MACROELEMENT FERTILIZERS WITH MICROELEMENTS**

**LIQUID FOLIAR APPLIED**
- Azosol® 36 Extra
- Azosol® 34
- Azosol® 6-12-6
- Azosol® 12-4-6+S+amino

**LIQUID FOR ROW PLACEMENT**
- ADOB® SB-2
- ADOB® MA
- ADOB® PO
- ADOB® OR

**CRISTALLINE WATER SOLUBLE NPKs WITH MICRO FOR FOLIAR APPLICATION AND FERTIGATION**
- NPK Foliar 18+18+18+micro
- NPK Foliar 4+12+38+micro
- NPK Foliar 10+40+8+micro
- NPK Foliar 4+12+38+micro

**MICROELEMENT FERTILIZERS**

**STANDARD EDTA CHELATES**
- Fe EDTA
- Mn EDTA
- Zn EDTA
- Cu EDTA
- EDTA compounds and blends

**BIODEGRADABLE IDHA CHELATES**
- Fe IDHA
- Mn IDHA
- Zn IDHA
- Cu IDHA
- IDHA compounds and blends

**DTPA CHELATES**
- Fe DTPA

**HBED CHELATES**
- Fe HBED

**OTHER MICROELEMENT FERTILIZERS**
- ADOB® Mn
- ADOB® Zn
- ADOB® Mo
- ADOB® B
- ADOB® Cu
- ADOB® Fe

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