



# MAGNESIUM

## *The importance of Magnesium in plant nutrition* *Introduction to the SICO Magnesium program*

Magnesium is an essential element in plant growth, as the central core of the chlorophyll molecule in plant tissue. If Mg is deficient, the shortage of chlorophyll results in poor and stunted plant growth. Magnesium also helps to activate specific enzyme systems. Enzymes are complex substances that build, modify, or break down compounds as part of a plant's normal metabolism.

Magnesium Oxide and Magnesium Carbonate are suitable for the production of a range of magnesium containing fertilisers. An important application is the stabilisation of ammonium nitrate prills, where the Mg-source (MgO or  $\text{MgCO}_3$ ) reacts with nitric acid to produce magnesium nitrate. The latter is in turn incorporated at low amounts in the ammonium nitrate product to protect its structural integrity.

Another important application is the use of MgO powders in NPK type fertilisers to either increase the Mg nutritional value or to neutralize excess acidity in the production process.

Magnesium oxide is also commonly used for direct fertilisation of magnesium deficient soils. Sap International Corporation (SICO) offers several grades (powder and granular) for direct application, or as a component to various fertiliser formulations.

### Survey of the SICO general Magnesium fertilisers range :

- SICO-CARBOMAG Granular Magnesium Carbonate min. 42.73 resp. 44% MgO, Origin: China
  - Magnesium Chloride (47%  $\text{MgCl}_2$ )
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- Sico-Magnit Gran: Magnesium Nitrate hexahydrate granular 0.5-3 mm, min. 98% - 10.8% N + 15.4% MgO, Origin: China
  - Sico-Magnit prills: Magnesium Nitrate hexahydrate, 10.8% N + 15.4% MgO, Origin: China
  - Sico-Magnit crystals: Magnesium Nitrate hexahydrate white crystals, 10.7% N + 15% MgO, Origin: China
  - Sico-Magnit flakes: Magnesium Nitrate flakes, 10.6% N + 15% MgO, Origin: China
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- Sico-MAG 16: Magnesium Sulphate heptahydrate min. 16% MgO + 12.5% S (in 5 different grades)
    - Grade I min. 99% purity, wet
    - Grade II min. 99% purity, dry, free flowing, 0.1-1 mm
    - Grade III = our **TOPSELLER**: min. 99.5% purity, dry, free flowing, 1-3 mm or 2-4 mm
    - Grade IV min. 99.5% purity, dry, free flowing, 0.1-1 mm or 1-3 mm
    - Grade V min. 99% purity, granular and min. 99.5% purity, granular crystalline, unique size 3-5mm
  - Sico-MAG 23: Magnesium Sulphate trihydrate min. 22.5% MgO + 18% S (white powder or granular)
  - Sico-MAG 27: Magnesium Sulphate monohydrate min. 27% MgO + 22.5% S (white powder)
  - Sico-MAG 27 GRAN: Magnesium Sulphate monohydrate min. 27% MgO + 22.5% S (white granular)
  - Sico-MAG 32 Magnesium Sulphate anhydrous min. 32.8% MgO + 26% S (both powder and granular)
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- SICO-CalMagNit, Calcium Magnesium Nitrate (CMN) 13.6%N + 6% MgO + 16% CaO (Origin: China)
  - SICO-CalMagNit + CuB, Calcium Magnesium Nitrate (CMN) 13.6%N + 5% MgO + 17% CaO + Cu + B (Origin: China)
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- SICO-MAGCAL Flakes: Calcium Magnesium Nitrate flakes, 11% N + 11.5% MgO + 6.5% CaO, Origin: China
  - SICO-MAGCAL Granular: Calcium Magnesium Nitrate granular, 13% N + 6% MgO + 16% CaO + 0.3% B, Origin: China
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- SICO-MAGOX range of Magnesium Oxides

a) Origin China

- SICO-MAGOX 80: Magnesium Oxide 80% powder (200 mesh) or granular (0.3 – 2 mm)

- SICO-MAGOX 90P: Powder Magnesium Oxide 90% MgO

- SICO-MAGOX 65G: Granular Magnesium Oxide 65% MgO

b) Origin E.U.

- SICO-MAGOX -P78: Natural Caustic calcined magnesite min. 78% MgO powder

- SICO-MAGOX -G80: Natural Caustic calcined magnesite min. 80% MgO granular

- Sico-Kieserite fertilisers (both powder and granular and colored granular), Origin: EU and China

- Micro Top Magnesium Sulphate 15/31, 15% MgO + 31% SO<sub>3</sub> + 1% B + 1% Mn, Origin: EU

We have furthermore many SICO Specialty fertilisers/formulations with high MgO content, eg.

- SICO-MAGNIT-SOL SUPER Superior Mg nitrate solution 7% Nitric N + 10% MgO, Origin: EU

- POTMAG 30/10/17 granular, 30% K<sub>2</sub>O + 10% MgO + 44% SO<sub>3</sub> (SOP with Magnesium Salt with S), Origin: EU

- POTMAG 40/6/4/12.5 granular, 40% K<sub>2</sub>O + 6% MgO + 4% Na<sub>2</sub>O + 12.5 SO<sub>3</sub> (MOP with K, Mg, S + Na), Origin: EU

- SICO-KMS Natural Potassium Magnesium Sulphate 25% K<sub>2</sub>O + 11.6% MgO + 16% S (granular or powder), Origin: China

- Our range of SICOMAG based granular High-Tech fertilisers (with special properties), Origin: China

1) SICOMAG-DUO 35% MgO + 14% S in a single granule (2-4 mm) -> see sales rationale

2) SICOMAG-HI 50% MgO + 10% S in a single granule (2-4 mm)

3) SICOMAG+B 40% MgO + 11% B<sub>2</sub>O<sub>3</sub> in a single granule (2-4.5 mm)

4) SICOMAG+Cu

Type 1: 40% MgO + 5% Cu in a single granule (2-4 mm)

Type 2: 53% MgO + 0.9% Cu in a single granule (2-4 mm)

5) SICOMAG+Zn 40% MgO + 5% Zn in a single granule (2-4 mm)

6) SICOMAG+TE 40% MgO + Trace elements in a single granule (2-4 mm), constantly supplies Magnesium and trace elements during 6 months

7) SICOMAG-SKYHI 60% MgO in a single granule (2-4 mm), new generation magnesium fertiliser: natural, slow-release, anti-leaching -> see sales rationale