



## Coating Powder



Element	Quantity
Elemental Manganese (Mn)	13% minimum

This is the level of Manganese quoted as an element not as an oxide or any other compound.

### Level of Chelation

Precipitation Point pH 12

Volume of 0.5M NaOH to precipitate 1% solution – 29ml

Completely water soluble

### Particle Size Distribution

Volume weighted mean – 74 microns

50% under 37 microns

### Appearance

Pale pink, off-white powder

### Bulk Density

0.76 g/cm<sup>3</sup>

### Packing

20kg PE lined steel pails

## Field Cereal Crop Application Guide Rates

(As a coating on NPK or for each foliar application)

For each foliar application:	
Maintenance Rate	0.2-0.3kg/ha
Moderate Deficiency	0.3-1.1kg/ha
Severe Deficiency	>1.1kg/ha

The application rate will vary depending on the crop and application regime and you may for example prefer half applications and apply double the guide amount for each application.

We recommend you perform tissue tests to determine the optimum application rate and optimise your costs.

As with all S-Chelate products, the ingredients are food or feed grade and as long as they are used at the guide rates are completely safe to use on all crops.

This is a single, straight element product but we can offer customised multi-component formulated systems to suit your requirements. Please see the case studies on the website for the result achieved with our S-Chelate M<sup>2</sup> element system which incorporates S-Chelate Mn synergistically with S-Chelate Mg.

As a guide dissolve the above amounts in 200 litres of water to apply over one hectare. However, the guide application quantities are easily soluble in smaller volumes of water or can be dissolved in larger volumes as long as there is sufficient stirring to ensure it has diffused evenly throughout the mixing tank in the greater volume of water.

## Application Timing

**Preventive:** Apply at early stage after establishment of the seedlings, at 4-6 leaves stage.

**Remedial:** Start at first sign of micronutrient deficiency; apply 2 additional sprays at 10-15 day intervals.

## Under-Cover, Controlled Growing Systems

**S-Chelate Mn** is ideal for use in drip fertigation polytunnel fruit growing systems where their pH range can overcome the locking up of nutrients which can be caused by growing media like coconut coir.

**S-Chelate Mn** is perfect for use in vegetable and herb hydroponic systems where the pH range tolerates other chemicals like hydrogen peroxide used to control pathogens in this intensive, high volume growing environment.

## Product Features

**S-Chelate Mn** has a unique chelate chemistry that transports this important element into the plant with remarkable effectiveness.

**S-Chelate Mn** is bioavailable in a much broader-than-normal range of pH and soil conditions such as in contact with clay, carbonates, phosphates, organic matter and other elements in the soil that seek to tie up and make secondary elements and micronutrients insoluble.

This wide pH tolerance is equally useful in controlled growing systems like horticultural drip fertigation polytunnel systems where media like coconut coir can tie up micronutrients like iron and copper and hydroponic systems where tolerance to chemicals like hydrogen peroxide is needed which may be used to prevent pathogens from developing in this highly intensive growing environment.

Chelation is defined as the capacity to hold the metal ion in solution above the precipitation point of the non-chelated ion and the Level of Chelation measurement is your assurance of the performance of our product which will and up to independent assessment.

This is the backbone of the performance of this technology resulting in markedly lower application rates than for non-chelated products because so much more of the metal ion will stay in solution and reach the plant tissues as has been shown repeatedly by yield and quality improvements alongside parallel tissue analysis.

## There are two ways this works:

### 1) In the growing medium

Protecting the vulnerable cationic metal ions from being tied up and allowing them to reach and be absorbed by the root hairs.

### 2) In the plant

Carrying them in a more biologically compatible way to the regions of the plant where they are needed. Chlorophyll is a chelate structure so the plant's phloem system recognises S-Chelates as organic molecules with familiar structures, enabling them to be transported and assimilated more readily than traditional unchelated mineral salts.

**S-Chelate Coating Powders** are made in the UK using a unique, specially developed and crop safe and environmentally friendly chelation technology. This technology can be demonstrated to out-perform traditional chelation (such as EDTA) and for providing important secondary and trace element nutrition in a protected, constant and extraordinarily effective manner.

**S-Chelate Coating Powders** coat and then cling to NPK granular fertilizers in such a way as to deliver a targeted nutrition straight to the plant. Nutrition is absorbed into the plant through the roots and is targeted in such a way that the elements are subsequently found in tissue samples of the plants instead of being wasted on surrounding soil. This enhanced nutritional bioavailability results in healthier plants, increased yields, and larger fruits and vegetables.

## Foliar Application

**S-Chelate Coating Powders** have a second important function - they are water soluble and can be dissolved for use as liquids for spray, drip, and fertigation and are compatible with most liquid fertilizers, herbicides, insecticides, and fungicides. As a precaution please perform jar test before mixing with other agrichemicals.

Guide application rates produce very dilute solutions of 0.2-2% but due to using conditions varying widely we always recommend trialling before adopting widely and cannot accept liability for damage or underperformance.

## Example of Manganese Deficiency

**Manganese** (Mn) is an essential plant mineral nutrient, playing a key role in several physiological processes, particularly photosynthesis. Manganese deficiency is a widespread problem, most often occurring in sandy soils, organic soils with a pH above 6 and heavily weathered, tropical soils. It is typically worsened by cool and wet conditions (Alloway 2008). Numerous crop species have been reported to show high susceptibility to Mn deficiency in soils, or a very positive response to Mn fertilization, including cereal crops (wheat, barley and oats), legumes (common beans, peas and soybean), stone fruits (apples, cherries and peaches), palm crops, citrus, potatoes, sugar beets and canola, among others. The impact of Mn deficiencies on these crops includes reduced dry matter production and yield, weaker structural resistance against pathogens and a reduced tolerance to drought and heat stress.

Manganese has a relatively low phloem mobility in plants, and as a result, typical leaf symptoms of Mn deficiency first develop in younger leaves. The critical concentration for Mn deficiency is generally below 20 ppm dry weight in fully expanded, young leaves. In the case of dicots, Mn deficiency first results in pale mottled leaves, followed by typical interveinal chlorosis. Under severe Mn deficiency dicots may also develop a number of brownish spots. In cereals, Mn deficiency can cause pale green or yellow patches in younger leaves. This condition is known as grey speck, and is characterized by necrotic spots that form in older leaves



Manganese deficiency symptoms in corn and wheat (Pictures: IPNI).

## Foliar Application

S-Chelate Coating Powders are compatible with most liquid fertilizers, herbicides, insecticides, and fungicides, however, as a precaution please perform a jar test before mixing with other agrichemicals.

Guide application rates produce very dilute solutions of 0.2-2% but due to using conditions varying widely we always recommend trialling before adopting widely and cannot accept liability for damage or underperformance.

**Please contact us or our agents for technical support.**

**Achieve greater yields with Super Bioavailable S-Chelate™ Technology**

**Chemistry not Mystery**

**Made in the UK**

## Get in touch

**Visit our website**

**[www.alignchemical.com](http://www.alignchemical.com)**

**Tel: +44 (0)1494 728458**

**Mobile: +44 (0)7787 587489**

**Email: [barry.langdon@alignchemical.com](mailto:barry.langdon@alignchemical.com)**