

GRANULOCK®

Specification Sheet

A technical information bulletin from Incitec Pivot Limited

A SuPreme fertiliser for grain growers



GRANULOCK® SuPreme Z™

Granulock® SuPreme Z™ starter fertiliser offers significant advantages to grain growers.

- It contains a very high concentration of phosphorus (22%), for efficiency in application.
- It offers a great nutrient balance, with nitrogen, phosphorus, sulfur and zinc, to cover a range of crop needs.
- It is a compound formulation, meaning all the nutrients are contained within each granule, for even distribution in the paddock.
- The nutrients are supplied in plant available forms, including water soluble zinc, for immediate uptake.
- It is based on MAP, making it less hygroscopic than DAP for easy storage and handling.

When these benefits matter, choose Granulock SuPreme Z for your crops.

Incitec Pivot

Because the land is your life.

Giving crops a solid start

Granulock SuPreme Z was developed as a result of research and development into Australian farmers' needs and product effectiveness.

Granulock SuPreme Z delivers a balanced compound of starter nutrients to help eliminate weak links from your nutritional program.

It is particularly important that plants have access to the right combination of readily available nutrients in the early stages of crop development to rapidly establish a robust root system.

Because of its high analysis and excellent quality, Granulock SuPreme Z can easily be blended with MAP, urea or Gran-Am[®] fertiliser to create blends that closely match the requirements of individual crops.

A number of popular blends are available (see table) and custom blends can be created to suit particular requirements.

An even spread at any rate

A carefully balanced combination of nutrients is compounded within every granule of Granulock SuPreme Z to allow growers to help achieve a uniform distribution of nutrients, even crop growth and high yield potential.

At lower rates of starter fertiliser, it becomes more and more difficult to distribute nutrients evenly to winter crops. This is particular the case with zinc, because only very small amounts are applied.

Granulock SuPreme Z allows growers to achieve a better distribution of zinc to crops than traditional zinc blends because it contains zinc within every granule.

For example, 40 kg/ha of Granulock SuPreme Z evenly applied at 25 cm row spacings generally provides one granule, and a point source of zinc, every 1.4 cm.

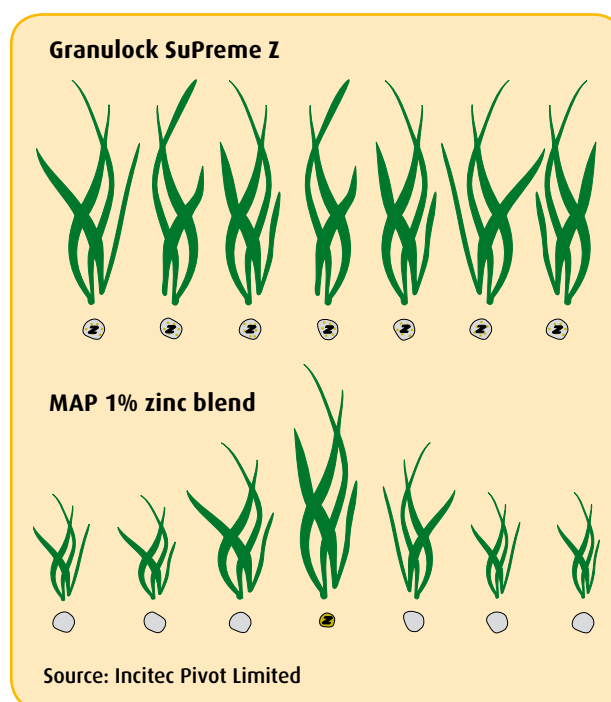
This still provides an excellent distribution of zinc, compared with a MAP 1% zinc blend (using zinc sulfate monohydrate). This fertiliser, applied under the same conditions and rate, would provide a zinc granule every 53 cm, as depicted in the diagram.

Analysis for Granulock SuPreme Z and blends

Fertiliser	N %	P %	S %	Zn %
Granulock SuPreme Z	11.0	21.8	4.0	1.00
SuPreme Z Lite*	10.5	21.9	2.8	0.50
SuPreme Z 13 S*	12.8	17.4	8.0	0.80
SuPreme Z 15 S*	14.7	13.1	12.0	0.60
SuPreme Z 20 S*	19.8	13.1	7.2	0.60
SuPreme Z 18*	18.0	17.4	3.2	0.80
SuPreme Z 22*	21.5	15.3	2.8	0.70
SuPreme Z 24*	23.3	14.2	2.6	0.65
SuPreme Z 25*	25.0	13.1	2.4	0.60
SuPreme Z 29*	28.5	10.9	2.0	0.50

Source: Incitec Pivot Limited

* These products are blends containing Granulock SuPreme Z.



This is a guide only where crops show yield response to zinc. Blended fertilisers containing small amounts of zinc may result in uneven crop yields.

Trial results, starter fertiliser comparisons

Figure 1: Borellan, NSW, 2006

Fertiliser and rate	Yield (t/ha)	Fertiliser cost (\$/ha)	Returns minus fertiliser costs (\$/ha)
Control – no starter fertiliser	0.47	0	\$165
Granulock SuPreme Z 80 kg/ha	1.01	\$108	\$246
MAP 80 kg/ha	0.82	\$103	\$184

Least significant difference (l.s.d.) 0.143 P = 0.001
Co-efficient of variation 10.1%

Source: Incitec Pivot Limited

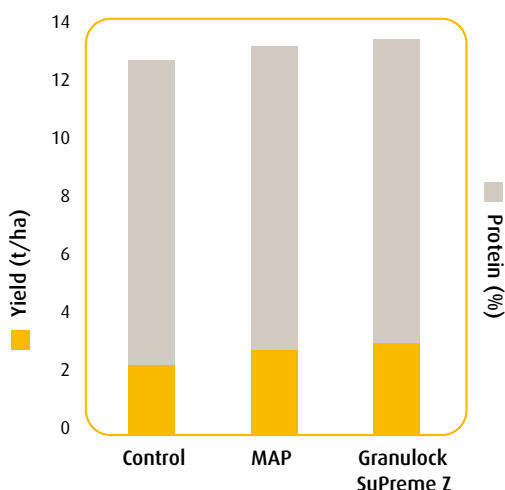
Figure 2: Cummins, South Australia, 2007

Fertiliser and rate	Yield (t/ha)	Fertiliser cost (\$/ha)	Returns minus fertiliser costs (\$/ha)
Control – no starter fertiliser	2.61	0	\$914
Granulock SuPreme Z 100 kg/ha	3.17	\$136	\$974
MAP 100 kg/ha	3.11	\$129	\$960

Least significant difference (l.s.d.) 0.1767 P > 0.001
Co-efficient of variation 4.1%

Source: Incitec Pivot Limited

Figure 3: Kalkee, Victoria, 2007



For an additional investment of \$7/ha above MAP, an extra return of \$63/ha net was achieved with Granulock SuPreme Z.

Source: Incitec Pivot Limited. All treatments received balanced nitrogen, phosphorus and sulfur fertiliser rates. Least significant difference (l.s.d) is 0.372. P = 0.05.

Note: For Figures 1, 2 and 3, fertiliser cost is based on Incitec Pivot's Recommended Retail Price including GST listed on 2/2/08 of \$1,287/t for MAP and \$1,355/t for Granulock SuPreme Z. Returns assume a farm gate wheat price of \$350/t.

Zinc – when it is needed

Granulock SuPreme Z contains water soluble zinc, for immediate availability to plants.

Water soluble zinc diffuses into the soil solution rapidly. Zinc in the soil solution is the immediate source of zinc for plant uptake. (Peverill et al, 1999)

Zinc fertilisers made from un-reacted zinc oxide are more slowly released. Zinc oxide must be reduced to soluble forms in the soil before it can be used by plants.

This process is inefficient on alkaline soils and relies on root interception. While it can take place in the root rhizosphere, this is a limited area, so zinc availability is limited.

Enhanced with sulfur

Unless gypsum or other sulfur fertilisers have been used, the application of high analysis MAP and DAP fertilisers over many years has reduced the amount of sulfur applied to the soil. This has led to an increased risk of sulfur deficiency in crops.

Granulock SuPreme Z contains 4% sulfur, added using the Sulfur Enhanced Fertilizer (SEF) technology process. This technology helps elemental sulfur particles become available to plants.

Granulock SuPreme Z contains 50% plant available sulfate sulfur and 50% elemental sulfur.

Several SuPreme Z fertiliser blends offer higher concentrations of sulfur. This additional sulfur is provided from Gran-Am® fertiliser, and is 100% plant available.



Where to use Granulock SuPreme Z



Granulock SuPreme Z can be used in a range of winter crops such as cereals, legumes and oilseeds to supply starter phosphorus, nitrogen, sulfur and zinc.

It is particularly valuable for supplying zinc to crops in the following situations:

Where sulphonylurea herbicides are used

Using sulphonylurea herbicides may result in significant root pruning, reducing the volume and exploration of the roots in the soil profile and limiting their ability to collect nutrients and moisture.

On alkaline soils

Zinc availability is reduced as soil pH increases above 6.5 (CaCl_2). On alkaline soils, the availability of zinc decreases with each unit increase in soil pH.

This is why zinc deficiencies are more common on alkaline soils. Over-liming of acid soils may also severely reduce the availability of zinc to plants. Zinc fertilisers may need to be applied every year on these soils (where less than 1 kg/ha is used) to ensure there is adequate zinc supply for crops.

Where root disease is present or expected

Root growth may also be limited by root disease, leading to temporary nutrient deficiencies. In mild cases of root disease, banding Granulock SuPreme Z may help overcome temporary setbacks by providing a readily available source of phosphorus and zinc to the young roots.

After land forming

When soils are shaped or levelled for irrigation, crops are often limited by a lack of zinc. This is because of the removal of organic matter (where most plant available zinc is found) during the relocation of surface soil. The exposure of high pH subsoils also contributes to the problem.

Other situations where Granulock SuPreme Z can be useful include:

- Where long fallow disorder or drought has reduced the population of VAM in the soil
- On sandy (coarse texture) soils with low organic matter content
- On calcareous soils, including calcareous subsoils exposed by topsoil removal
- Where soils are waterlogged, wet and cold
- Where there are high bicarbonate and/or magnesium levels in the soil or irrigation water
- On soils with a low total zinc status.

GRANULOCK[®]
SuPreme Z[™]

**For more information on Granulock SuPreme Z,
please contact your local Incitec Pivot Distributor.
Freecall 1800 009 832.**

www.incitecpivot.com.au

This is a guide only, which we hope you find helpful as a general tool. While Incitec Pivot has taken all reasonable care in the preparation of this guide, it should not be relied on as a substitute for tailored professional advice and Incitec Pivot accepts no liability in connection with this guide. Talk to your local Incitec Pivot Distributor agronomist about soil testing and arranging a specific fertiliser recommendation that best suits your needs.

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