



**mineral
magic**

Mineral Magic™ is Biogenic Amorphous Silica (BAS) and is both non-toxic and non-carcinogenic and a 100% natural mineral that has been over 125 million years in the making. Direct from Mineral Magics mine in Western Australia's Northwest it is simply produced by crushing and screening the raw, mined product which requires the absolute minimum carbon footprint as opposed to the manufactured products that attempt to achieve the same benefits. Whether it be for the hydrophobic sand plains or the heavy clay-based soil, our Lawn Conditioner can provide benefits to improve the soil structure and water habits to ensure an improve quality, with less negative impact on the environment at lower cost, for your turf.

Increased Moisture Retention

Mineral Magic holds more than 60% of it's own volume in water. Unlike many amendments though, that water retained is plant available and just continues to 'charge up and release' for ever. It's honeycomb like structure creates a massive specific surface area to achieve this.

Once full of water, the mineral does not change form in any way like swelling, slaking, or going soft.

The feature of the water retention is that it works totally independently of the specification of the soil and therefore does not lead inhibit the free drainage desired in winter. In fact it actually works in a positive way by drawing excess water into the honeycomb like structure and reducing the effects of waterlogging and increasing firmness.



Resistance to Drought Stress

As shown is a study by Dr. Ed McCoy (Ohio State University), titled "Water Flow in Putting Greens" shows that amorphous silica blends can delay the onset of drought stress in greens by two days compared to peat.

In addition the slow release of monosilicic acid (Plant Available Silicon) from Mineral Magic has been scientifically proven to slow down transpiration to provide additional heat and drought stress.

Minimise Watering

Mineral Magic retains moisture at the root zone, virtually eliminating the time-intensive chore of hand watering due to a localised dry spot.

Nutrient Retention

A Mineral Magic/sand root zone mix holds on to more fertiliser at the root zone and exchanges nutrients more efficiently with a CEC of approximately 50 times that of the sand. Fewer nutrients leached into the water table means a positive impact on the environment.

Reduce Pesticide Use & Costs

One of the most significant benefits of using Mineral Magic is the slow release of monosilicic acid (Plant Available Silicon) . Monosilicic acid has been proven to provide a major resistance to all biotic and abiotic stresses by strengthening the cell wall of the plant. In addition, better aeration and air/water-holding capacity at the root zone reduces the pressure on turf that leaves it susceptible to insect or disease damage. Healthier turf means less pesticide use and that translates into greater profitability for you.

Silicon Disease Reduction in Various Turfgrass Species

Species	Disease	Reduction
Zoysia	Leaf Blight	Yes
Creeping Bentgrass	Root Rot, Brown patch, Dollar Spot	Yes
KY Bluegrass	Powdery Mildew	Yes
Couch/Bermuda	Bipolaris Leaf Spot	Yes
Buffalo	Grey Leaf Spot	Yes
Perennial Ryegrass	Grey Leaf Spot	Yes

Ref: Datnoff, L.E. (2005). Silicon in the Life and Performance of Turfgrass. Applied Turfgrass Science, 2(1), pp. 1-6.

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Reduce Fertiliser Use & Costs

Using Mineral Magic instead of peat as an amendment for sand-based greens gives the root zone a higher CEC value (nutrient-holding capacity) and this lengthens the intervals and/or the application rates and therefore reduces the amount of fertiliser costs.

Permanently Improve the Root Zone

Unlike peat and other inferior conditioners that naturally degrade over time, Mineral Magic particles retain their structure to permanently enhance the root zone.

Even after 20 years of use – long after peat/sand mixes fall out of USGA spec – there is minimal degradation in amorphous silica/sand mixes.

Increase Oxygen Levels at the Root Zone

Mineral Magic/sand greens have a greater oxygen-holding capacity than peat/sand greens. Greater oxygen at the root zone aids in the ability to combat localized dry spot, wet greens, compaction, traffic, algae, and poor nutrient retention.

Increase Root Depth and Density

As shown in a study by Dr. Ed McCoy (Ohio State University), "Analysis of Water Flow and Turfgrass Stress," the increased porosity of 20 percent amorphous silica* amended root zone allows roots to grow approximately 70mm deeper than when amended with peat. Deeper roots mean greater resistance to heat and wear stress.

Closer to home – at the Mt Lawley Golf Club in WA, the roots were protruding out of the bottom of the cup changer at 8 weeks!* (US product – "Profile")



Mount Lawley Golf Club 2023 - 12 month growth soil profile

RATE OF APPLICATION

Situation	Rate	Application
Renovations	500kg - 1000kg per ha	Core turf. Mix Mineral Magic with compost. Water in with wetting agent.
Construction	1000kg - 5000kg per ha	Add 10cm layer of soil conditioner over the top of Mineral Magic and mix thoroughly with rotary hoe.

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Symbiotic Relationships

Mineral Magic develops a symbiotic relationship with organic amendments and enhanced microbial activity. Mineral Magic is not a silver bullet. It does however form an integral part of what we describe as;

SOAP – Sum Of All Parts

Another of the parts required in achieving the best amended soil for turfgrass production is an organic in the form of compost or manure.

In all field trials and reconstructions we have witnessed;

- ✓ Mineral Magic made a significant difference over any control plot that was untreated
- ✓ Organic compost made a significant difference over any control plot that was untreated
- ✓ The two of these combined made an exponential difference (a 1 + 1 = 3 so to speak) and outperformed either of the treatments just on their own.

The most distinctive evidence of this was the water holding capacity, rhizosphere (root) biomass and the Fungal/Bacteria ratio. (As tested with microBIOMETER®)

PRODUCT SPECIFICATIONS

Item	Quantity/Volume
pH (1:5 water)	8.5
Electrical Conductivity (EC) (1:5 water)	< 40*
Cation Exchange Capacity (CED; meg/100g)	> 30
Nitrogen	< 0.1% Total
Phosphorus	< 0.2% Total
Sulphur	< 0.1% KCl extractable
Plant Available Silicon (PAS)	0.1%**
Copper	0.2 mg/kg
Zinc	1.0 mg/kg
SiO ₂	86% Total
Al ₂ O ₃	7.2% Total
CaO	1.3% Total
Fe ₂ O ₃	0.8% Total
MgO	0.3% Total
LOI	4.7%
Organic Matter	0.22% w/w
Manganese	4.3 mg/kg*
Boron	7 mg/kg Total

*EC after flushing. **Measured by the calcium chloride extraction method (1:100 extraction ratio). *DTPA Extractable. Typical analysis specified. Given the heterogeneity of the material the actual properties of the material may differ from those specified in this document. The information contained in this Product Specification Sheet is given in good faith and may not be interpreted as a binding specification or representation.