

Current as of 21 January 2021

Fertiliser Grade Specification

	Tier:	Low Grade - 'C' Grade	Medium Grade - 'B' Grade	High Grade - 'A' Grade
Features	Longevity	< 6 weeks (1.5 months)	8-12 weeks (2 - 3 months)	12 weeks+ (>3 months)
	Prill sizing	>230SGN (Average prill greater than 2.3mm)	230-170SGN	230-170SGN
	Prill Sizing comment	Large prills common in ag-grade fertilisers	Smaller SGN for improved distribution and more even application of product/unit area	Smaller SGN for improved distribution and more even application of product/unit area
	Technology*	Compound fertiliser or small percentage of stabilised urea.	Blend of slow or controlled release technologies 20-50% of product make-up.	Slow or controlled release technologies >80% of make-up.
Price range/25kg bag		\$30 - \$40	\$40 - \$55	\$70 - \$90
Price Range/Metric Ton		\$1200-\$1600	\$1600 - \$2200	\$2800 - \$4950

* Please refer to Appendices 1 and 2 to determine if product qualifies for category as to the key differences between fertiliser technologies.

DISCLAIMER

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Appendix 1 – Definition of fertiliser types

a. Controlled Release Fertiliser (CRF)

Fertilizer in which nutrient release is controlled, meeting the stated release rate of nutrient and the stated release time at a specified temperature. (ISO 8157:2015)

Requires good quality polymer coating and consistent manufacturing conditions.

Examples:



Polymer coated NPK



Polymer coated urea



Polymer Sulphur coated

b. Slow Release Fertiliser (SRF)

Fertilizer, of which, by hydrolysis and/or by biodegradation and/or by limited solubility, the nutrients available to plants is spread over a period of time, when compared to a "reference soluble" product. (ISO 8157:2015)

i.e. minerals that take time to dissolve or be released:

Examples:



Elemental Sulphur



Reactive Phosphate Rock



Methylene Urea/ IBDU

c. Chemical Inhibitors

Chemicals that depress microbial activity to slow conversion of nitrogen to different forms. It does not control or slow the delivery of N to crops. (Chemical inhibitors can not be deemed slow or controlled release under ISO definition)

Product	eNtrench	Entec	Agrotain
Chemical	Nitrapyrin	3,4-dimethylpyrazole phosphate (DMPP)	N-(n-butyl) thiophosphoric triamide (NBPT)
Action	Slows ammonium to nitrate conversion		Slows urea to ammonia conversion
Period of use	Half-life 7-22 days @ 21°C ³	7 days at 28°C ¹ 21 days at 20°C >12 weeks at 10°C	Half-life 1.7 hrs (low pH) to 3 days (high pH) ²

References: ¹ Entec activity versus ammonium sulphate. Reference: Irigoyen *et al.* (2003) *Australian Journal of Soil Research* 41, 1177-1183; ² Engel *et al.* (2015) *Soil Sci. Soc. Am J.* 79(6), 1674-1683 and ³ Touchton *et al.* (1979) *Agronomy Journal* 71(5), 865-869.

Appendix 2 – Technology Comparison

	Controlled release	Slow release	Chemical inhibitors
Long-term nutrients	✓	✓	✗
Predictable release	✓	✗	✗
Reduce side dressings	✓	?	✗
Has affect on N form	✓	?	✓
Close root growth	✓	✓	✗
Control over P & K	✓	✓	✗
Longevity	Up to 12 months (shorter longevities made for fast growing crops)	Variable, difficult to predict	Short term, strongly affected by soil pH & temp, e.g. Entec ¹ : <ul style="list-style-type: none"> • 7 days 28°C • 21 days 20°C • >12 weeks 10°C

Reference: ¹Entec activity versus ammonium sulphate. Reference: Irigoyen *et al.* (2003) *Australian Journal of Soil Research* 41