Product Data Sheet

Fertibor®

15.2% B Typical

$Na_2B_4O_7 \cdot 5H_2O$

Disodium Tetraborate Pentahydrate

20 MULE TEAM BORAX™

RioTinto

Background

Boron is one of seven micronutrients essential to all plant growth. Its role was recognised first in the 1920s and since that time, boron deficiency has been recognised in a wide range of crops.

Correcting boron deficiency

Boron deficiency can be remedied by the correct application of a borate containing material in solid or liquid fertilisers, to the seedbed in annual crops or under the foliar canopy of perennial crops. Perennial and annual crops can also be sprayed with boron containing solutions. These are normally tank mixed with other micronutrients or with agrochemical products.

The latter method of application may be preferable since at peak requirement times the boron needs of the growing plant can frequently exceed its ability to obtain its needs through the roots. Mixing with other sprays as part of a programme enables the grower to time this availability and save application cost.

Detecting boron deficiency

Boron deficiency shows in clearly defined ways in certain crops. Generally, by the time visible symptoms are seen, yields will already have been adversely affected. The best way to establish need is either through soil testing or through tissue analysis. In this way, boron supplementation can form part of a 'balanced nutrition' approach to crop fertilisation.

Predicting boron deficiency

Certain crops world-wide are known to be more susceptible to lack of boron than others. These are shown in the tables.

Susceptible		
Alfalfa (Lucerne)	Coffee	Olive
Apple	Cotton	Pine
Broccoli	Eucalyptus	Red beet
Carnation	Grape	Rutabaga
Cauliflower	Groundnut	Sugar beet
Carrot	Mangold	Sunflower
Celery	Oil palm	Swede
Chrysanthemum	Oilseed rape	Turnip

Moderately susceptible		
Banana	Cocoa	Pear
Brussels sprout	Coconut	Poppy
Cabbage	Flax linseed	Potato
Chinese cabbage	Hop	Tea
Citrus	Maize Corn	Tobacco
Clover	Papaya	Tomato

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There are several factors which need to be taken into account when boron deficiency may be suspected:

- High rainfall
- Recent liming (pH over 6.6)
- Previous cropping
- Boron removal by previous crops
- No boron nutrition
- Sandy soils
- High organic matter

Additional reading

Boron Deficiency—Its Prevention and Cure, by V.M. Shorrocks. (available from U.S. Borax on request)

Mineral Nutrition of Higher Plants, by Horst Marschner, Academic Press.

Boron and its Role in Crop Production, by Umesh C. Gupta. CRC Press.

Tyler mesh size	mm	Percent cumulative retained
16	1.000	7.5
24	0.710	23.2
32	0.500	45.0
42	0.355	66.2
60	0.250	82.7
80	0.180	92.1
115	0.125	96.6
170	0.090	98.3
250	0.063	99.0
325	0.045	99.3

Fertibor® is a white free flowing granular material which is highly soluble without residue.

These characteristics make *Fertibor* a versatile source of elemental boron in solid, liquid or suspension fertilizers, and for direct application to the soil.

To calculate the amount of *Fertibor* required, multiply the elemental boron required by 6.6.

Main uses

- Manufacture of solid, liquid and suspension compound fertilizers
- Coating of compound or blended materials
- Manufacture of liquid micronutrient formulations
- Direct soil application to correct deficiency in some perennial plantation crops
- Incorporation into solid growing media or composts

Advantages

Easy handling

Fertibor granules are free flowing and easily handled by pneumatic or mechanical means — a valuable property in the manufacture of granulated compound fertilizers. Flowability and consistency of particle size means that *Fertibor* can be added directly to suspension fertilizers.

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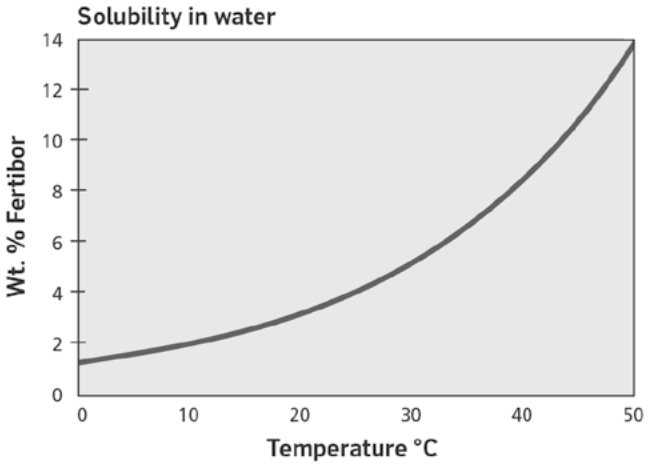
Highly soluble

Fertibor is highly soluble — a feature valued in a number of incorporation processes including fertiliser coating.

Highly consistent

The consistent particle size of *Fertibor* renders it ideal for use as a micronutrient supplement to crops, particularly perennials, where mechanical application methods (e.g. fertilizer spreading or spraying) may be difficult or inappropriate.



Bulk density		
Pack type	kgm-^{3}	lb./cu. ft.
Loose pack	1009	63
Tight pack	1137	71

pH buffering action	
Percent *Fertibor* by weight of solution	pH at 20°C (68°F)
0.1	9.25
0.5	9.22
1.0	9.23
2.0	9.25
5.0	9.32*

*pH of *Fertibor* saturated solution (3.59%)

Temperature °C	Temperature °F	Weight % of *Fertibor* in saturated solutions	Percent concentration of boron (B) in saturated solutions
0	32	1.52	0.5
10	50	2.36	0.7
20	68	3.59	1.1
30	86	5.50	1.6
40	104	8.59	2.6
50	122	13.68	4.1