PRODUCT DATA SHEET

SOLUBOR®

20.5% B
$Na_2B_8O_{13} \cdot 4H_2O$
Disodium octaborate tetrahydrate
CAS Number 12280-03-4

20 MULE TEAM BORAX™
RioTinto

The most economical foliar boron

Solubor® is manufactured to combine the highest concentration of boron with the maximum possible dispersion and solubility in water. As such, it has a number of different uses in agro-industrial markets, in addition to its long-established role in farm sprays.

Solubor can be used in the following applications:

- Manufacture of solution or suspension fertilizers. Optimized dissolution at low ambient temperatures and high concentration make *Solubor* the product of choice.
- Inclusion in multi-element soluble powder formulations for spraying on farm
- Formulation of high-performance liquids containing either boron alone or a combination of nutrients for spraying, fertigation, or irrigation
- To provide boron through irrigation, fertigation, or hydroponics where this is the most practical form of plant feeding

To calculate the amount of *Solubor* required, multiply the elemental boron required by 4.8.

Rapid dispersion

The amorphous particles of *Solubor* facilitate rapid wetting and incorporation in water and more viscous liquids, even at low temperatures.

Minimal crystallization

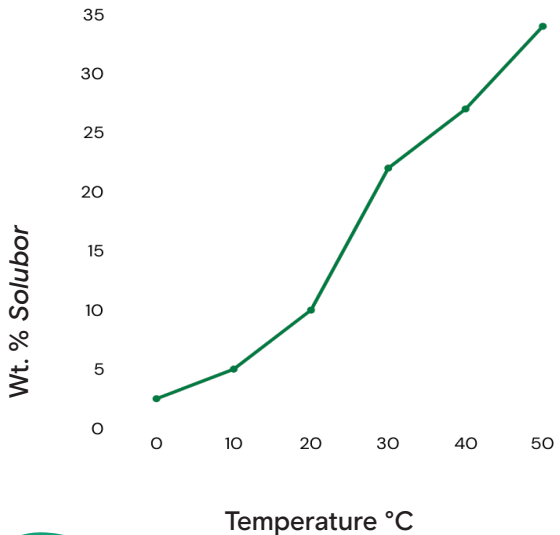
Solubor causes minimum changes to crystallization temperatures or density of formulations. Research has shown that levels of up to 2.7% *Solubor* can be added to the more common liquid fertilizer formulations while maintaining crystallization temperatures below 1.7°C (35°F).

Solubility

The minute particle size of *Solubor* (<75 microns) and inherent high solubility, even at low temperatures, gives rapid solubility properties even under demanding conditions.

Temperature °C	°F	Weight % of *Solubor* in saturated solutions	Percent concentration of boron (B) in saturated solutions
0	32	2.5	0.5
10	50	4.5	0.9
20	68	9.7	2.0
30	86	21.9	4.6
40	104	27.4	5.7
50	122	34.3	7.2

Solubility in water



SOLUBOR®

20 MULE TEAM BORAX™
RioTinto

pH

Solubor has a slight buffering action and maintains pH in solutions.

pH	
Percent *Solubor* by weight of solution	**pH at 23°C (73.4°F)**
1	8.5
2	8.4
5	8.0
10	7.6
15	7.3

Saturated solutions

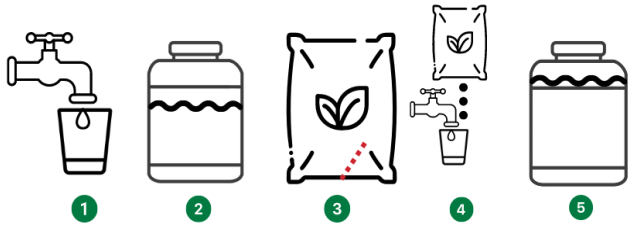
Temperature °C	°F	Weight % of *Solubor* in saturated solutions	Percent concentration of boron (B) in saturated solutions
0	32	2.5	0.5
10	50	4.5	0.9
20	68	9.7	2.0
30	86	21.9	4.6
40	104	27.4	5.7
50	122	34.3	7.2

Boron concentration or content (20.8% typical)

The relatively small quantities of *Solubor* needed to correct deficiency (and therefore for addition to formulations) make it an economical source of boron for manufacturers.

Bulk density		
Pack type	**kgm^{-3}**	**lb/cu ft**
Loose pack	500	25
Tight pack	560	35

Mixing instructions



OMRI Listed

Suitable for organic farming

OMRI® LISTED
For Organic Use · OMRI.org

PRODUCT DATA SHEET

SOLUBOR®

20 MULE TEAM BORAX™
RioTinto

Boron: An essential plant nutrient

Boron is one of eight micronutrients essential to all plant growth. Adequate boron is necessary for proper absorption of macronutrients and for maintaining the integrity of plant cell walls.

Detecting boron deficiency

Different crops show different signs of boron deficiency. Generally, but the time symptoms are seen, yields will already have been adversely affected. The best way to establish boron need is either through soil testing or tissue analysis. In this way, boron supplementation can form part of a regular crop fertilization program.

Predicting boron deficiency

Certain crops are known to be more susceptible to boron deficiency than others. Specific crop information can be found at www.borax.com/ag.

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

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

Correcting boron deficiency

Boron deficiency can be remedied by the correct application of a borate containing material in solid or liquid fertilizers, to the seedbed in annual crops or under the foliar canopy of perennial crops. Crops can also be sprayed with boron containing solutions. These are normally tank mixed with other micronutrients or agrochemical products. Mixing with other sprays as part of a program not only saves on application cost, but allows for precise timing.

About U.S. Borax

U.S. Borax, part of Rio Tinto, is a global leader in the supply and science of borates—naturally-occurring minerals containing boron and other elements. We are 1,000 people serving 650 customers with more than 1,800 delivery locations globally. We supply around 30% of the world's need for refined borates from our world-class mine in Boron, California, about 100 miles northeast of Los Angeles.

Our local agriculture experts understand the uses and benefits of boron on crops. In addition to a global sales team, we have a number of agronomists on staff to help fertilizer distributors maximize the benefits of borates in agriculture applications. Our ag team can answer individual growers' questions and concerns about their particular crop.

High quality, high reliability, high performance borate products. It's what we're known for.