

# Technical Bulletin

## Gradual-N® 10-0-10-0.5B

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### Introduction

**Gradual-N® 10-0-10-0.5B** is comprised of slowly available nitrogen in combination with potassium and boron. Approximately 25% of the nitrogen (2.5% total) is in the slowly available form and 75% (7.5% total) is in the urea form. It has an alkaline pH. Therefore, when alkaline hydrolysis is a concern with certain pesticide combinations, a buffer may need to be used. Each gallon of product will contain 1.0 pound of nitrogen and potassium along with 0.05 lbs of boron.

This product is formulated to provide equal amounts of nitrogen and potassium. The role of potassium in potassium is to regulate the electrolytes and turgidity of plant cells. Potassium also assists in cell division, protein and carbohydrate formulation. Potassium is essential for the translocation of sugars and the formation of starches within the plant. Potassium is also important in fruit set, fruit size, and sugar content.

The synergistic effects of applying boron and nitrogen have been well documented in the professional literature. However, one problem that exists is that, many times, the “shock” of an application of totally available nitrogen may cause some fruit abortion. Fruit abortion is normally caused by plant stress. In this case, the stress is caused by having more nitrogen available than the plant can utilize. Simply, the plant produces high amounts of auxins which are translocated to the fruit. This level is such that an imbalance occurs causing the abscission layer to form which results in flower or fruit abortion.

Adequate plant concentrations of boron are necessary for proper nitrogen metabolism, fruiting, and pollination. These are very important in enabling the plant to transport sugars across cell walls. This sugar transport is important during photosynthetic activity, but is extremely important during respiration (dark reaction) for the plant to be able to utilize the energy produced during the day.

**Gradual-N® 10-0-10-0.5B** has 75% of the nitrogen available immediately, but 25% of the nitrogen is available to the plant over time. The release of boron to an available form is governed primarily by temperature. However, most of the nitrogen, under field conditions, will be released to the plant within 21 days after application.

**Gradual-N® 10-0-10-0.5B** allows you to apply higher rates of nitrogen since all of the nitrogen is NOT available upon application.



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## Gradual-N<sup>®</sup> 10-0-10-0.5B

### Crops Labeled

**Berries:** strawberry

**Grain and Other crops:** corn, canola, cereals, cotton, rice, sugar cane

**Vegetables:** carrot, cole crops, cucurbits, lettuce, onion, pepper, potato, and tomato

**Tree and Fruit Crops:** apple, citrus, pear, apricot, cherry, nectarine, peach, and vines

**Turf:** northern and southern grasses.

### Use Rates and Timing

**Gradual-N<sup>®</sup> 10-0-10-0.5B** is most often recommended at 2 to 8 quarts per acre.

**WARNING:** Excess amounts of Boron can cause plant injury. **DO NOT OVER APPLY!** Always obtain specific Boron recommendations from your local agricultural authority before applying.

Consult your State Agricultural Experiment Station or State Extension Service Specialist for complete details on the spraying program best suited to your local conditions.

### Contents

#### 10-0-0

Total Nitrogen (N)*	10.0%
7.5% Urea Nitrogen	
2.5% Other Water Nitrogen	
Soluble Potash (K <sub>2</sub> O)	10.0%
Boron (B)	0.5%

Derived from: urea, polymethylene urea, potassium chloride and boric acid.

\*2.5% slowly available Nitrogen from methylene urea

Chlorine (Cl) maximum 8.0%

Arsenic (As).....< 5 ppm

Cadmium (Cd).....< 5 ppm

Lead (Pb).....< 5 ppm

### Technical Specifications

<b>Product class</b>	fertilizer
<b>Formulation</b>	liquid
<b>Weight/ gallon</b>	10.0 pounds
<b>Specific gravity</b>	1.19
<b>pH</b>	8.8-9.2
<b>Solubility in water</b>	miscible
<b>Appearance</b>	clear to light yellow
<b>Odor</b>	none
<b>Min. storage temp.</b>	32°F
<b>Container size</b>	
bulk	
250 gallon mini-bulks	
2 x 2.5 gallon package	
30 and 55 gallon drums available	

**This bulletin provides some technical information and is not intended to give complete information for all applications. Always read and follow label directions.**

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