

For Research Use Only. Not For Use In Diagnostic Procedures

Version 2.0

## 硼检测试剂盒

### Boron Assay Kit

Do not eat Store at 2-8° C & in the dark.



Cat.No.MBK3112

Size : 250 tests

Technical literature is available at : [www.mesgenbio.com](http://www.mesgenbio.com)

E-mail MesGen Technical Services if you have questions on use of this system : [tech@mesgenbio.com](mailto:tech@mesgenbio.com)

#### Description

Boron is an essential micronutrient in plants and is involved in maintaining robust cell walls, cell membranes, and reproductive tissues. Although boron is common in the soil in its natural state as a borate mineral, the amount of boron available to plants is actually quite small. As a result, boron deficiency is the second most common micronutrient deficiency among crop plants. In order to keep plant boron levels in a healthy range, supplementation to the soil via fertilizers and additives is often required. If not regulated, a lack of or excess of boron may significantly lower crop yield. In the biotech industry, sodium borohydride is commonly used to conjugate antibodies and typically needs to be removed from the final product, especially for therapeutic antibodies. MesGen Biotechnology' boron detection kit provides a convenient and reliable means to measure boron. In the assay borate complexes with azomethine-H to create a colored compound that can be measured at 420 nm. This assay can be used with a variety of samples and is simple, sensitive, and adaptable to high-throughput screening.

#### Key Features

**Fast and sensitive.** Linear detection range: 5 to 10000 µM boron with 20 µL sample (96-well).

**Convenient.** The procedure involves adding a single working reagent.

**High-throughput.** "Add-mix-read" type assay. Can be readily automated as a high-throughput 96-well or 384-well plate assay for thousands of samples per day.

#### Applications

**Direct Assays:** Boron in water, plant tissues, soil samples, and antibody conjugation solutions.

#### Kit Contents (100 tests in 96-well plates)

**Reagent A:** 12.5 mL **Reagent B:** 12.5 mL

**Standard:** 7.5 mL (10 mM boron)

**Samples:** Samples should be transparent and precipitate-free. If samples are cloudy or have precipitates, centrifuge 5 min at 14,000 x g and use clear supernatant for assay.

#### Procedures

##### Procedure using 96-well plate

1. Standards. Dilute standards in 1.5-mL centrifuge tubes as described in the Table below.

No.	Premix + dH <sub>2</sub> O	Boron (µM)
1	100 µL + 0 µL	10000
2	50 µL + 50 µL	5000
3	20 µL + 80 µL	2000
4	10 µL + 90 µL	1000
5	8 µL + 92 µL	800
6	5 µL + 95 µL	500
7	2 µL + 98 µL	200
8	1 µL + 99 µL	100
9	0.1 µL + 99.9 µL	10
10	0 µL + 100 µL	0

- Transfer 20 µL of standards and 20 µL of each sample into separate wells of a clear, flat-bottom 96-well plate.
- Working Reagent (WR). Working Reagent should be prepared fresh for each assay run and used within 15 minutes of reconstitution. For each Standard and Sample well, Mix 50 µL Reagent A and 50 µL Reagent B.
- Add 100 µL of WR to each Standard and Sample well. Tap plate lightly to ensure the contents of the wells are mixed evenly. Incubate for 30-45 min at room temperature, protected from light.
- Read optical density at 420 nm.

#### Calculation

Subtract the Blank value from the standard values and plot the ΔOD against standard concentrations. Determine the slope and calculate the boron concentration of Sample as follows:

$$[\text{Boron}] = \frac{(\text{OD}_{\text{SAMPLE}} - \text{OD}_{\text{BLANK}})}{\text{Slope}} \times n \text{ (}\mu\text{M)}$$

OD<sub>SAMPLE</sub> and OD<sub>BLANK</sub> are optical density readings of the Sample and Blank respectively.

Note 1: If the calculated boron concentration of a sample is higher than 10 mM, dilute sample in water and repeat the assay. Multiply the result by the dilution factor  $n$ .

Note 2 :  $\text{Fe}^{3+}$  and  $\text{Fe}^{2+}$  in the samples will interfere the OD420nm value. However, The concentrations of  $\text{Fe}^{3+}$  and  $\text{Fe}^{2+}$ , which lower than 500  $\mu\text{M}$  and 1000  $\mu\text{M}$  respectively, could be ignored. More metal ions OD420nm absorption refer to Figure.1 below.

**Conversions:** 1  $\mu\text{g}/\text{mL}$  Boron equals 1 ppm or 92.5  $\mu\text{M}$ .

### Storage conditions

The kit is shipped at room temperature. Store all components at 2-8°C upon receiving.

### Shelf life

12 months after receipt.

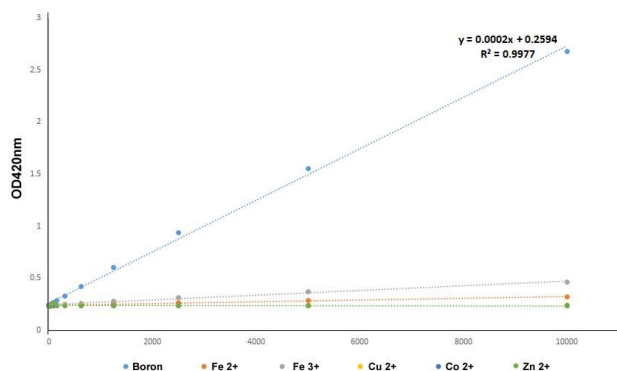


Figure.1. Boron Standard Curves for Reference and several metal ions OD420nm absorption. Boron Standard Curve in dH<sub>2</sub>O.

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