PNS 88:1993

BPS

PHILIPPINE NATIONAL STANDARD

Fertilizers - Determination of Biuret Content of Urea (Colorimetric Method) - Test Method

BUREAU OF PRODUCT STANDARDS

DEPARTMENT OF TRADE AND INDUSTRY

Foreword

This Philippine National Standard Method of Test for the Determination of Biuret Content of Urea - Colorimetric Method was prepared by the Bureau of Product Standards' Technical Committee on Fertilizers and Soil Conditioners, BPS/TC 15.

This standard is a re-issue of Philippine National Standard (PNS) 88:1986 which was first published by the former Philippines Bureau of Standards in 1970.

Presentation of the standard was changed to conform to PNS 01:Part 4 - A Standard for Standards - Guide for the Presentation and Editorial Practice of Philippine National Standards.

Fertilizers – Determination of Biuret Content of Urea (Colorimetric Method) – Test Method

1 Scope

This standard describes the method of test for the determination of biuret content of urea by the colorimetric method.

2 Summary of Method

A known weight of sample is dissolved in carbon dioxide-free distilled water and passed through an ion-exchange column to remove interference such as ammonium ions. The eluate is then treated with copper sulfate in the presence of alkaline tartrate solution; the biuret in the sample reacts to form a copper complex, the intensity of which is proportional to the biuret content. The color intensity of which is measured at 550 um and with the absorbance known, the percent biuret is determined from the calibration curve. Results are reported to the nearest 0.01 mass percent.

3 Apparatus

3.1 Spectrophotometer, capable of measuring absorbance at 555 um. Photoelectric colorimeters fitted with a 500 um to 570 um (or 520 um to 580 um) filter are acceptable.

3.2 Absorption Cells, matched pair 50 mm light path length.

3.3 Water Baths, capable of maintaining temperatures of 30°C ± 5°C and 50°C ± 5°C.

3.4 Filter paper, Whatman 1 or its equivalent.

4 Reagents

Unless otherwise indicated, the purity of the following materials shall be of reagent grade.

4.1 Carbon dioxide-free distilled water (pH 6.5 to 7.5 at 25°C) – Prepare by boiling distilled water, cooled and prepared fresh daily.

4.2 Alkaline Tartrate Solution – Dissolve 40 g of sodium hydroxide in 500 mL of water-stopper the container and allow to cool. Add 50 g of sodium potassium tartrate ($NaKC_4H_4O_6.4H_2O$) and agitate the solution to dissolve the crystals. Dilute to one litre and mix well. Allow the solution to stand one day before use.

4.3 Copper Sulfate Solution – Dissolve 15 g of copper sulfate solution ($CuSO_4.5H_2O$), in carbon dioxide-free distilled water and dilute to one litre.

4.4 Biuret Standard Solution, 1 mg/mL – Dissolve 250 mg ± 1 mg of biuret in carbon dioxide-free distilled water and dilute to the mark in a 250 mL volumetric flask.