

ICS 65.080
CCS B 10

NY

**INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

NY 525-2012

**Organic fertilizer
(English Translation)**

Issued on: March 1, 2012

Implemented on: June 1, 2012

Issued by: Ministry of Agriculture of the People's Republic of China

Table of Contents

Foreword.	3
1 Scope..	4
2 Normative References.	4
3 Terms and definitions..	5
4 Requirements..	5
5 Test methods..	6
6 Inspection rules..	18
7 Packaging, marking, transportation and storage.	19

1 Scope

This Standard specifies the technical requirements, test methods, inspection rules, marking, packaging, transportation and storage of organic fertilizer.

This Standard applies to organic fertilizer, which is made through fermentation using the materials processed from excrements of livestock, residues of plant and animal and products of plant and animal as raw materials.

This Standard does not apply to green manures, farmyard manures and other organic fertilizers collected and made by farmers.

2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition dated applies to this document. For undated references, the latest edition of the referenced documents (including all amendments) applies to This Standard.

GB/T 601, Chemical reagent - Preparations of standard volumetric solutions

GB/T 6679, General rules for sampling solid chemical products

GB/T 6682, Water for analytical laboratory use - Specification and test methods

GB/T 8170, Rules of rounding off for numerical values and expression and judgement of limiting values

GB/T 8576, Determination of free water for compound fertilizers - Vacuum oven method

GB 18382, Fertilizer marking - Presentation and declaration

GB 18877, Organic-inorganic compound fertilizers

GB/T 19524.1, Determination of fecal coliforms in fertilizers

GB/T 19524.2, Determination of mortality of ascarid egg in fertilizers

HG/T 2843, Chemical fertilizer Products - Standard volumetric, standard, reagent and indicator solutions for chemical analysis

Weigh 39.23 g of potassium dichromate (analytically pure); use a small amount of water to dissolve; transfer to a 1 L volumetric flask; dilute to scale; and shake up as standby.

5.2.3.5 Ferrous sulfate (FeSO_4) standard solution. $c(\text{FeSO}_4) = 0.2 \text{ mol/L}$.

Weigh 55.6 g of ($\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$) (analytically pure); dissolve in 900 mL of water; add 20 mL of sulfuric acid (5.2.3.2) to dissolve; dilute to 1 L; and shake up as standby (filter if necessary). The accurate concentration of the solution is calibrated using 0.1 mol/L potassium dichromate standard solution (5.2.3.3); and carry out calibration immediately prior to use.

The calibration of $c(\text{FeSO}_4) = 0.2 \text{ mol/L}$ standard solution. absorb 20.00 mL of potassium dichromate standard solution (5.2.3.3) to add to a 150 mL triangular flask;

add 3 mL ~ 5 mL of sulfuric acid (5.2.3.2) and 2 drops ~ 3 drops of phenanthroline indicator (5.2.3.6); and use ferrous sulfate standard solution (5.2.3.5) for titration.

Based on the consumption of ferrous sulfate standard solution at the time of titration, calculate its accurate concentration c in accordance with Equation (1).

where, c_1 -- concentration of potassium dichromate standard solution, in mol/L;

V_1 -- volume of potassium dichromate standard solution absorbed, in mL;

V_2 -- volume of ferrous sulfate standard solution at the time of titration, in mL.

5.2.3.6 Phenanthroline indicator

Weigh 0.695 g of ferrous sulfate (analytically pure) and 1.485 g of phenanthroline (analytically pure) to dissolve in 100 mL of water; and shake up as standby. The indicator is perishable, so it shall be sealed and stored in a brown bottle.

5.2.4 Determination procedures

Weigh 0.2 g ~ 0.5 g (accurate to 0.000 1 g) of air-dried sample that has been screened through Mesh Phi 1 mm; place in a 500 mL triangular flask; accurately add 50.0 mL of

0.8 mol/L potassium dichromate solution (5.2.3.4); then add 50.0 mL of concentrated sulfuric acid (5.2.3.2); add a bent neck small funnel; place in boiling water; and maintain for 30 min after water is boiling. Take out and cool to room temperature; use water to rinse the

small funnel; and contain the washings into the triangular flask. Take down the triangular flask; transfer the reactant nondestructively into a 250 mL volumetric flask; cool to room temperature; add dropwise to scale; absorb 50.0 mL of the solution to pour into a 250 mL triangular flask; add water approximately to 100 mL;

add 2 drops ~ 3 drops of phenanthroline indicator (5.2.3.6); use 0.2 mol/L ferrous sulfate standard solution (5.2.3.5) to titrate to the end when the solution turns from certain acidity, the phosphate anions in the solution to be tested reacts with metavanadic acid and molybdic acid to generate yellow ternary heteropoly acid. Within a certain concentration range [1 mg/L ~ 20 mg/L], the absorbance and the phosphorus content of the yellow solution are in a direct proportion relationship; and then use the spectrophotometric method to quantify phosphorus.

5.4.2 Reagents

5.4.2.1

Sulfuric acid ($\rho=1.84$).

5.4.2.2

Nitric acid.

5.4.2.3 30% hydrogen peroxide.

5.4.2.4

Vanadium ammonium molybdate reagent.

Solution A. weigh 25.0 g of ammonium molybdate to dissolve in 400 mL of water.

Solution B. weigh 1.25 g of ammonium metavanadate to dissolve in 300 mL of boiling water; add 250 mL of nitric acid (5.4.2.2) after cooling; and cool.

Inject solution A slowly into solution B while stirring; use water to dilute to 1 L; mix up; and store in a brown bottle.

5.4.2.5

Sodium hydroxide solution. a solution of mass concentration 10%.

5.4.2.6

Sulfuric acid (5.4.2.1). a solution of volume fraction 5%.

5.4.2.7

Phosphoric acid solution. 50 $\mu\text{g/mL}$.

Weigh 0.219 5 g of potassium dihydrogen phosphate (standard reagent) dried for 2 h at 105°C; transfer to a 1 L volumetric flask after using water to dissolve; add 5 mL of sulfuric acid (5.4.2.1); and use water to add to scale after cooling. 1 mL of the solution contains 50

μg of phosphorus (P).

5.4.2.8 2,4-(or 2,6-) dinitrophenol indicator. a solution of mass concentration 0.2%.

5.4.2.9

Non-phosphorus filter paper.

5.4.3 Apparatus

Commonly-used laboratory apparatus and spectrophotometer.

5.4.4.1 Preparation of sample solution

Prepare as specified in 5.3.4.1.

5.5.3 Apparatus

Commonly-used laboratory apparatus and flame-photometer.

5.5.4.1 Preparation of sample solution

Prepare as in 5.3.4.1.

5.5.4.2 Preparation of blank solution

Except that no sample is added, the reagents used and operation are the same as in 5.4.4.1.

5.5.4.3 Plotting of standard curve

Absorb 0 mL, 1.00 mL, 2.50 mL, 5.00 mL, 7.50 mL and 10.00 mL of potassium standard solution (5.5.2.4) to pour into six 60 mL volumetric flasks respectively; add blank solution of an equal volume to that of sample solution absorbed; and add water to scale.

The solutions are the standard solution series, 1 mL of which contains 0 μg , 2.00 μg , 5.00 μg , 10.00 μg , 15.00 μg and 20.00 μg of potassium (K). On the flame-photometer, use blank solution to adjust the apparatus to zero point and use the standard solution of maximum concentration in the standard solution series to adjust the full scale to 80 scale mark. Then measure other standard solutions in turn from low concentration to high concentration; and record the indicating values of the apparatus. Plot the standard curve or calculate the linear regression equation in accordance with the potassium concentration and apparatus indicating values.