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DRAFT EAST AFRICAN STANDARD

Fertilizers — Nitrogen, phosphorous and potassium (NPK) compound — Specification

EAST AFRICAN COMMUNITY

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Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in the East African Community. It is envisaged that through harmonized standardization, trade barriers that are encountered when goods and services are exchanged within the Community will be removed.

The Community has established an East African Standards Committee (EASC) mandated to develop and issue East African Standards (EAS). The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the public and private sector organizations in the community.

East African Standards are developed through Technical Committees that are representative of key stakeholders including government, academia, consumer groups, private sector and other interested parties. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the Principles and procedures for development of East African Standards.

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

The committee responsible for this document is Technical Committee EASC/TC 020, *Agriculture and agrochemicals.*

Fertilizers — Nitrogen, Phosphorous and Potassium (NPK) compound — Specification

1 Scope

This Draft East African Standard specifies requirements, sampling and test methods for NPK fertilizer (compound).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

AOAC 937.02, *Magnesium (water-soluble) in fertilizers*

AOAC 962.01, *Calcium and magnesium in liming materials — EDTA Titrimetric method*

AOAC 965.08, *Water (free) in fertilizers — Vacuum-desiccation*

AOAC 972.02, *Manganese (acid-soluble) in fertilizers — Atomic absorption spectophotometric method*

AOAC 975.02, *Zinc in fertilizers — Atomic absorption spectophotometric method*

AOAC 975.01, *Copper in fertilizers — Atomic absorption spectophotometric method*

AOAC 980.01, *Iron in fertilizers — Atomic absorption spectophotometric method*

AOAC 2006.03, *Arsenic, Cadmium, Cobalt, Chromium, Lead, Molybdenum, Nickel and Selenium in fertilizers*

ISO 5315, *Fertilizers — Determination of total nitrogen content —Titrimetric method after distillation*

ISO 6598*, Fertilizers — Determination of phosphorus content — Quinoline phosphomolybdate gravimetric method*

ISO 8157, *Fertilizers, soil conditioners and beneficial substances— Vocabulary*

ISO 8397, *Solid fertilizers and soil conditioners — Test sieving*

ISO 10084, *Solid fertilizers — Determination of mineral — Acid-soluble sulphate content — Gravimetric method*

ISO 17318, *Fertilizers and soil conditioners — Determination of arsenic, cadmium, chromium, lead and mercury contents*

ISO 17319, *Fertilizers and soil conditioners — Determination of water-soluble potassium content — Potassium tetraphenylborate gravimetric method*

ISO 14820-1, *Fertilizers and liming materials - Sampling and sample preparation - Part 1: Sampling*

ISO 14820-2, *Fertilizers and liming materials - Sampling and sample preparation - Part 2: Sample preparation*

ISO 7409, Fertilizers -*Marking - Presentation and declarations*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 8157 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at http://www.iso.org/obp

4 Requirements

4.1 General requirements

4.1.1 Description

NPK fertilizer may be in granular, prilled or crystalline forms. It shall be free from any foreign matter. The particles shall be free flowing and of uniform colour for complex and for single compacted granule.

4.1.2 Particle size

The particle size of the material shall be such that not less than 90 % by mass of fertilizer shall be of particles size range of 2 mm – 4 mm for granules and for prills/crystals material shall be of particles size range of 1 mm – 4 mm when tested by the method given in ISO 8397.

4.2 Specific requirements

4.2.1 NPK fertilizer shall have a moisture content of not more than 1.5 % by mass (maximum) when tested in accordance with AOAC 965.08.

4.2.2 A compound fertilizer shall contain two or more of the following primary plant nutrient elements intended for fertilizing crops: nitrogen (N), phosphorus (P) and potassium (K). The lower limit of the declared value of any of the primary nutrients shall not be more than 0.7 units when tested in accordance with ISO 5315 for nitrogen, ISO 6598 for phosphorus and ISO 17319 for potassium

4.2.3 Besides the primary nutrient elements, the fertilizer may also contain one or more of the following nutrient elements: Sulphur, calcium, magnesium, boron, cobalt, copper, iron, manganese, molybdenum, and zinc, which, when present for the purpose of fertilizing crops and mentioned in any form or manner, shall be guaranteed on the elemental basis. Sources of the elements guaranteed and proof of availability shall be provided upon request. The nutrient elements shall be mentioned and guaranteed if their percentage values by mass are equal to or more than the values given in Table 1 when tested in accordance with the test methods prescribed therein.

Table 1 — Requirements for additional nutrients in NPK fertilizer

S/N	Nutrient Element	Requirement, % min.	Test method

S/N	Nutrient Element	Requirement, % min.	Test method
i.	Sulphur (S)	1.00	ISO 10084
ii.	Calcium (Ca)	1.00	AOAC 962.01
iii.	Magnesium (Mg)	0.60	AOAC 937.02
iv.	Copper (Cu)	0.05	AOAC 975.01
v.	Iron (Fe)	0.10	AOAC 980.01
vi.	Manganese (Mn)	0.050	AOAC 972.02
vii.	Molybdenum (Mo)	0.0005	AOAC 2006.03
viii.	Zinc (Zn)	0.05	AOAC 975.02

5 Contaminants

Heavy metal contaminants in NPK fertilizer shall conform to the limits given in Table 2 when tested in accordance with the test methods prescribed therein.

Table 2 — Requirements for heavy metal contaminants for NPK fertilizer

S/N	Heavy metal	Requirement	Test method
i.	Arsenic, mg/kg, max.	40	ISO 17318
ii.	Cadmium, mg/kg, max.	30	
iii.	Mercury, mg/kg, max.	0.1	
iv.	Lead, mg/kg, max.	30	
v.	Chromium, mg/kg, max.	500	
vi.	Selenium, mg/kg, max.	1.0	AOAC 2006.03
vii.	Nickel, mg/kg, max.	120	AOAC 2006.03

7 Packaging

The fertilizer shall be packaged in materials that are clean and non-defective that protect the product from physical, chemical and moisture contamination and withstand multiple stages of handling (transportation and storage).

8 Labelling

Each package shall be legibly and indelibly labeled in accordance with ISO 7409 in English and/or any other official language in the destination country with the following information:

a) name of the fertilizer; “Nitrogen Phosphorus Potassium (NPK)"

b) brand name if any;

c) name and address of the manufacturer/packer and importer/ distributor;

d) NPK grade in terms of percent by mass of each of the primary nutrient;

e) name and percent by mass of any other guaranteed element present;

f) net content by mass in metric units;

g) country of origin;

h) handling instructions including the words “Use No Hooks”;

i) production date

j) expiry date;

k) batch number; and

l) storage conditions.

9 Sampling

Sampling and sample preparation of Nitrogen, Phosphorus and Potassium (NPK) compound fertilizers shall be carried out as prescribed in ISO 14820-1 and ISO 14820-2 respectively.