Single superphosphate fertilizer (powdered) — Specification

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First edition
**TECHNICAL COMMITTEE REPRESENTATION**

The following organizations were represented on the Technical Committee:

Kenya Agricultural Research Institute (KARI)
Institute of Packaging (Kenya)
Government chemist
Mea Ltd.
Pest control products Board
Kel Chemicals Ltd
Chemagro Ltd
Consumer information network
Kenya Plant Health Inspectorate Services (KEPHIS)
Ministry of Agriculture
Tea Research Foundation of Kenya
Osho chemicals
Athi river Mining Ltd
Kenya Bureau of Standards — Secretariat

**REVISION OF KENYA STANDARDS**

In order to keep abreast of progress in industry, Kenya Standards shall be regularly reviewed. Suggestions for improvements to published standards, addressed to the Managing Director, Kenya Bureau of Standards, are welcome.

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Single superphosphate fertilizer (powdered) — Specification
Foreword

This Kenya standard has been prepared by the Technical Committee on Fertilizers and soil conditioners under the guidance of the standards projects committee and it is in accordance with the procedures of the Kenya Bureau of standards.

In the preparation of this standard, the variation of the $p_{205}$ content in different sources of rock phosphate used for the manufacture of this fertilizer has been considered.

This standard has been prepared to promote safe use of fertilizers, promote fair trade practices and ensure safety of consumers.

During the preparation of this standard, special attention was paid to the environmental aspect associated with fertilizer raw-materials. Thus setting limits for heavy metal contamination of Arsenic (As), Cadmium (Cd), Mercury (Hg), Selenium (Se) and Lead (Pb).

Recent Association of Official Analytical Chemists (AOAC) methods of analysis were adopted.

Reference was made to the following documents:

*FAO Mineral fertilizer specifications: 2010*
*Canadian food inspection agency metal limits on fertilizers: 2010*
**Single superphosphate fertilizer (powdered) — Specification**

1 Scope

This Kenya Standard specifies the requirements and methods of tests for powdered single superphosphate fertilizer.

2 Terms and definitions

In addition to the definitions contained in KS ISO 1157: fertilizers - vocabulary, the following shall apply:

2.1 **Available phosphorus** — the fraction of phosphorus available to plants. This is the sum of the water-soluble and citrate-soluble phosphorus.

2.2 **Total phosphorus** — the sum of available and citrate-insoluble phosphorus.

3 Requirements

3.1 **Description**

The material shall be free from hard lumps and foreign matter and shall be free-flowing and shall not form a hard cake on storage.

3.2 **Physical**

The particle size shall be such that not less than 90% of the material shall be below 0.3mm.

3.3 **Chemical**

Powder single superphosphate fertilizer shall comply with the following compositional limits.

<table>
<thead>
<tr>
<th>SL NO</th>
<th>Parameter</th>
<th>Requirements, percentage by mass</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>Available phosphates, min</td>
<td>16.0</td>
<td>AOAC</td>
</tr>
<tr>
<td>ii)</td>
<td>Water soluble phosphate, as P₂O₅ Min.</td>
<td>13.5</td>
<td>AOAC</td>
</tr>
<tr>
<td>iii)</td>
<td>Calcium (Ca) by weight, min</td>
<td>16</td>
<td>AOAC</td>
</tr>
<tr>
<td>iv)</td>
<td>Free phosphoric acid, as</td>
<td>4</td>
<td>AOAC</td>
</tr>
</tbody>
</table>
3.4. The presence of heavy metal contaminants shall not exceed the limits stipulated in Table 2.

**Table 2 — Heavy metal contaminants**

<table>
<thead>
<tr>
<th>SL NO</th>
<th>Parameter</th>
<th>Limits, in ppm</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>i)</td>
<td>Arsenic, As, max.</td>
<td>20.0</td>
<td>AOAC/AAS</td>
</tr>
<tr>
<td>ii)</td>
<td>Cadmium, Cd, max.</td>
<td>20.0</td>
<td>AOAC/AAS</td>
</tr>
<tr>
<td>iii)</td>
<td>Mercury, Hg, max.</td>
<td>0.1</td>
<td>AOAC/AAS</td>
</tr>
<tr>
<td>iv)</td>
<td>Selenium, Se, max.</td>
<td>1.0</td>
<td>AOAC/AAS</td>
</tr>
<tr>
<td>v)</td>
<td>Lead, Pb, max.</td>
<td>30.0</td>
<td>AOAC/AAS</td>
</tr>
</tbody>
</table>

4 Packaging and marking/labelling

4.1.1 The fertilizer shall be packaged in materials that ensure the product integrity and quality and protect it against physical damage, chemical and moisture contamination.

4.1.2. The fill of the package shall comply with the weight and measures act CAP 513 of the laws of Kenya

4.1.3 The disposal of used package and condemned fertilizer shall comply with the Environmental management and coordination Act(EMCA) 1999 no.8 of the disposal of solids and liquid wastes.

4.2 labelling

Each packaging container bag shall be labelled with the following information:
a) name of the fertilizer, as “Powdered Single superphosphate fertilizer”

b) name, address and physical location of the manufacturer/packer/importer;

c) country of origin/manufacture;

d) date of manufacture

e) expiry date

f) the content net weight;

g) batch/lot number;

h) storage instructions;

i) Handling instructions.

j) Instructions for use

k) Instructions. For disposal of used containers

5. Certificate of analysis

A certificate of analysis shall accompany each consignment.

6. Sampling

Sampling shall be carried out in accordance with ISO 7410: Sampling of fertilizers