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Calcium ammonium nitrate (CAN) fertilizer — Specification

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Table of contents

1 Scope 1
2 Normative references 1
3 Terms and definitions 1
4 Requirements 1
4.1 General description 1
4.2 Physical requirement 2
4.3 Chemical requirements 2
4.4 Heavy metal contaminants 2
5 Sampling 2
6 Tests 2
6.1 Methods of test 3
6.2 Inspection 3
7 Compliance 3
8 Packaging and labelling 3
8.1 Packaging 3
8.2 Labelling 3
9 Certificate of analysis 3
10 Material safety 4

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Calcium ammonium nitrate (CAN) fertilizer — Specification

1 Scope

This draft African Standard specifies requirements, sampling and test methods for calcium ammonium nitrate (CAN) fertilizer.

2 Normative references

The following referenced documents are indispensable for the application 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 955.01, *Neutralizing value for liming materials*

AOAC 2006.03, *Arsenic, cadmium, cobalt, chromium, lead, molybdenum, nickel, and selenium in fertilizers — Microwave digestion and inductively coupled plasma-optical emission spectrometry*

EN 12048, *Solid fertilizers and liming materials — Determination of moisture content — Gravimetric method by drying at 105□2 □C*

ISO 5314, *Fertilizers — Determination of ammoniacal nitrogen content — Titrimetric method after distillation*

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

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

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

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

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 15604, *Fertilizers — Determination of different forms of nitrogen in the same sample, containing nitrogen as nitric, ammoniacal, urea and cyanamide nitrogen*

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

ISO 20978, *Neutralising value measurement (or determination)*

ISO 25475, *Fertilizers — Determination of ammoniacal nitrogen*

AOAC 965.08, Water (Free) in fertilizers. Vacuum-desiccation

EN 12946:2000/AC, Liming materials - Determination of calcium content and magnesium content - Complexometric method

3 Terms and definitions

For the purpose of this standard, the terms and definitions in ISO 8157 apply.

3.1 prill
granule obtained by solidification of droplets of fertilizers or by crystallization under special conditions

3.2 filler
substance added to fertilizer materials to provide bulk other than providing essential plant nutrients

3.3
calcium ammonium nitrate
nitrogen fertilizer consisting of a hydrated double salt of calcium nitrate and ammonium nitrate with water of crystallization, with the chemical formula of $5Ca(NO_3)_2.NH_4NO_3.10H_2O$

3.4 neutralizing value
potential neutralizing capacities of 100 kg of product, measured through the reaction with a strong acid such as hydrochloric acid

Note 1 to entry: Several units may be used (CaO equivalent, $CaCO_3$ equivalent or HO^- equivalent).

4 Requirements

4.1 General description

The fertilizer shall be in pellet /prills or granular form free of lumps, visible foreign matter and shall be free-flowing.

4.2 Physical requirement

4.2.1 The fertilizer shall consist of homogeneous granules/pellets of ammonium nitrate with limestone filler

4.2.2 When test sieved in accordance with ISO 8397, not less than 90% of weight of the material shall be of particles in the size range of 1 mm to 4.75 mm for pellets/prills or 2 mm to 5 mm for granular form.

4.2.3 Not more than 5% shall be below 1 mm size.

4.3 Chemical requirements

The fertilizer shall comply with the requirements given in Table 1 when tested in accordance with the test method specified therein.

Table 1 — Requirements/limits for calcium ammonium nitrate

Characteristic	Requirement	Test method
Mass fraction of total nitrogen content (%) min	26,0	ISO 5315
Mass fraction of Neutralizing value as equivalent of CaO (or as % by weight of CaO) (%) min.	9,0	ISO 20978/ AOAC 955.01
Moisture, %, max.	1,0	EN 12048/AOAC 965.08
Ammoniacal nitrogen, per cent by mass of total nitrogen, min	50	ISO 5314/ ISO 25475
Nitrate nitrogen, percent by mass of total nitrogen, min	50	ISO 15604

4.4 Heavy metal contaminants

The presence of heavy metal contaminants shall not exceed the limits specified in Table 2.

Table 2 — Heavy metal contaminants

Sl. No.	Parameter	Maximum Limits, mg/kg	Test method
i)	Arsenic, As	10,0	AOAC 2006.03/ ISO 17318
ii)	Cadmium, Cd	30,0	AOAC 2006.03/ ISO 17318
iii)	Mercury, Hg	0,1	ISO 17318
iv)	Selenium, Se	1,0	AOAC 2006.03
v)	Lead, Pb	30,0	AOAC 2006.03/ ISO 17318
vi)	Nickel, Ni	120	AOAC 2006.03
vii)	Chromium, Cr	50,0	AOAC 2006.03/ ISO 17318

5 Sampling and sample preparation

Sampling and sample preparation shall be carried out in accordance with ISO 14820-1 and ISO 14820-2, respectively.

6 Packaging and labelling

6.1 Packaging

The fertilizer shall be packed in clean, non-defective and appropriate containers that will protect it integrity during handling, transportation and storage.

NOTE The product may be also supplied in bulk containers.

6.2 Labelling

In addition to the labelling requirements of ISO 7409, each container of calcium ammonium nitrate fertilizer shall be legibly and indelibly labelled in accordance with Globally Harmonized System (GHS) and with the following particulars.

a) name of the fertilizer,
b) name, address and physical location of the manufacturer/packer/importer;
c) the nutrient content of the material as a percentage by mass;
d) country of origin/manufacture;
e) date of manufacture and expiry;
f) net weight;
g) batch/lot number;
h) storage instructions;
i) handling instructions.
j) for agricultural use

7 Certificate of analysis

A certificate of analysis stating the actual percentage levels of plant nutrient elements shall accompany every lot or consignment of the fertilizer.

8 Material safety

Each consignment / shipment shall be accompanied by a Material Safety Data Sheet (MSDS) and/ or Technical Data Sheet (TDS) where appropriate.