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IS 1114 (1964): Ammonium Chloride, Fertilizer Grade [FAD 7: Soil Quality and Gertilizers]
Indian Standard

SPECIFICATION FOR AMMONIUM CHLORIDE, FERTILIZER GRADE

(Revised)

Fifth Reprint NOVEMBER 1998

UDC 631.841.2

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG NEW DELHI 110002

Gr 3       June 1965
Indian Standard

SPECIFICATION FOR
AMMONIUM CHLORIDE,
FERTILIZER GRADE
(Revised)

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AMENDMENT NO. 1 NOVEMBER 2000
TO
IS 1114 : 1964 SPECIFICATION FOR AMMONIUM CHLORIDE, FERTILIZER GRADE
(Revised)

(Page 4, clause 3.2) — Substitute the following for the existing:

"The containers shall be securely closed and marked with the following:

a) Name of manufacturer/Pool handling agency Importer (where a manufacturer is also a pool handling agency, word ‘P’ and as the case may be, if an importer, the word ‘I’ shall be written against the name of such manufacturer, if the bag contains imported fertilizer);

b) Trade-mark and/or brand name, if any;

c) Name of the fertilizer, in case of imported fertilizer the word ‘Imported’ shall be superscribed;

d) Percent nutrient as total nitrogen to be denoted by the letter N;

e) Gross and net weight in kilogram, when packed; and

F) Maximum retail price ---- inclusive of all taxes (Applicable, if the statutory price has not been fixed).”

(PCD 20)
Indian Standard

SPECIFICATION FOR
AMMONIUM CHLORIDE,
FERTILIZER GRADE
(Revised)

0. FOREWORD

0.1 This Indian Standard (Revised) was adopted by the Indian Standards Institution on 4 December 1964, after the draft finalized by the Acids and Fertilizers Sectional Committee had been approved by the Chemical Division Council.

0.2 The 'Specification for ammonium chloride, technical' (IS: 1114-1957) was first issued in 1957. That standard covered the material used as a fertilizer as well as that for other purposes. The Sectional Committee responsible for the preparation of this standard reviewed the requirements prescribed in this specification vis-a-vis IS: 1113-1957*, and felt that the material other than that used as a fertilizer was adequately covered by IS: 1113-1957*. The Committee, therefore, decided to confine this specification to the material used as fertilizer only. Accordingly, the title of the specification has also been modified.

0.3 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS: 2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirements and the methods of sampling and test for ammonium chloride, fertilizer grade.

---

*Specification for ammonium chloride, pure (Since revised).
†Rules for rounding off numerical values (revised).
2. REQUIREMENTS

2.1 Description — The material shall be in the form of white crystals or granules or powder, free from hard caking, and shall have no perceptible odour.

2.2 The material shall also comply with the requirements given in Table 1 when tested according to the methods prescribed in Appendix A. Reference to the relevant clauses of Appendix A is given in col 4 of Table 1.

<table>
<thead>
<tr>
<th>SL No.</th>
<th>Characteristic</th>
<th>Requirement</th>
<th>Method of Test (Ref to Cl No. in Appendix A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>Moisture, percent by weight, Max</td>
<td>2.0</td>
<td>A-3</td>
</tr>
<tr>
<td>(2)</td>
<td>Ammoniacal nitrogen (as N), percent by weight, Min</td>
<td>25.0</td>
<td>A-4</td>
</tr>
<tr>
<td>(3)</td>
<td>Chlorides other than ammonium chloride (as NaCl), percent by weight (on dry basis), Max</td>
<td>2.0</td>
<td>A-5</td>
</tr>
</tbody>
</table>

3. PACKING AND MARKING

3.1 The material shall be packed in moisture-proof multi-wall paper, or jute bags lined with polyethylene films, or in such other containers as agreed to between the purchaser and the supplier.

3.2 The containers shall be securely closed and marked with the following information:

a) Name of the material;
b) Nitrogen content of the material;
c) Name of the manufacturer;
d) Weight of the material in the container;
e) Recognized trade-mark, if any; and
f) Month and year of manufacture.
3.2.1 The containers may also be marked with the Standard Mark.

NOTE — The use of the Standard Mark is governed by the provisions of the Bureau of Indian Standards Act, 1986 and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

4. SAMPLING

4.1 The method of drawing representative samples of the material and the criteria for conformity shall be as prescribed in Appendix B.

APPENDIX A

(Clause 2.2)

ANALYSIS OF AMMONIUM CHLORIDE, FERTILIZER GRADE

A-1. QUALITY OF REAGENTS

A-1.1 Unless specified otherwise, pure chemicals and distilled water (see IS: 1070-1960*) shall be used in tests.

Note — ‘Pure chemicals’ shall mean chemicals that do not contain impurities which affect the results of analysis.

A-2. PREPARED SAMPLE

A-2.1 Mix the sample well by swirling the bottle several times and transfer a portion immediately to a wide-mouth bottle and stopper it. Take care that no pieces of cork or sealing wax get mixed with the sample. Do not expose the sample to an atmosphere containing acid or alkaline fumes.

A-3. DETERMINATION OF MOISTURE

A-3.1 Procedure — Weigh accurately about 5 g of the prepared sample in a weighed shallow porcelain dish and dry for 24 hours in a vacuum.

*Specification for water, distilled quality (revised) (Since revised).
desiccator over sulphuric acid and reweigh. Preserve the dried material for subsequent tests.

A-3.2 Calculation

\[
\text{Moisture, percent by weight} = 100 \frac{W_1}{W_2}
\]

\(W_1\) = loss in weight in g on drying, and

\(W_2\) = weight in g of the *prepared sample* taken for the test.

A-4. DETERMINATION OF AMMONIACAL NITROGEN

A-4.1 Apparatus — The apparatus, as assembled, is shown in Fig. 1. It consists of a flask \(A\) of 1000 ml capacity fitted with a rubber stopper through which passes one end of the connecting bulb tube \(B\). The other end of the bulb tube \(B\) is connected to the condenser \(C\) by a rubber stopper, and the lower end of the condenser \(C\) is attached by means of a rubber tubing to a dip tube \(D\) which dips into a beaker \(E\) of 250 ml capacity.

A-4.2 Reagents

A-4.2.1 *Standard Sulphuric Acid* — 0.1 N.

A-4.2.2 *Methyl Red Indicator* — Dissolve 0.03 g of methyl red in 100 ml of water.

A-4.2.3 *Magnesium Oxide* — Freshly ignited and free from carbonate.

A-4.2.4 *Standard Sodium Hydroxide Solution* — 0.1 N.

A-4.3 Procedure — Powder the *prepared sample* finely in a clean dry glass or porcelain pestle and mortar. Weigh accurately about 0.2 g of it and transfer to a beaker. Dissolve in about 20 ml of water and transfer the solution to the distillation flask \(A\) and add about 500 ml of water. Assemble the apparatus as shown in Fig. 1, with the tip of the dip tube \(D\) dipping in 50 ml of standard sulphuric acid contained in the beaker \(E\) to which a few drops of methyl red indicator have been added. Add about 5 g of freshly ignited magnesium oxide to the flask \(A\) and distil at least one-third of the total volume of the liquid in flask \(A\) to ensure complete distillation. Lower the beaker \(E\) until the end of the dip tube \(D\) is out of the acid. Shut off the burner and when the flask \(A\) becomes cool, detach it from the condenser and rinse the condenser thoroughly with water into the beaker \(E\). Add two or three drops of methyl red indicator and titrate with standard sodium hydroxide solution.

A-4.3.1 Carry out a blank test using all reagents in the same quantities but without the *prepared sample*.
A-4.4 Calculation

Ammoniacal nitrogen (as N), percent by weight

\[
\frac{1.4008 (B - A) N}{W}
\]

where

\( B \) = volume in ml of standard sodium hydroxide solution used to neutralize the acid in the blank determination.
IS : 1114 - 1964

\[ A = \text{volume in ml of standard sodium hydroxide solution used to neutralize the excess of acid in the test with the material}, \]

\[ N = \text{normality of standard sodium hydroxide solution}, \] and

\[ W = \text{weight in g of the prepared sample taken for the test}. \]

A-5. DETERMINATION OF CHLORIDES OTHER THAN AMMONIUM CHLORIDE

A-5.1 Reagents

A-5.1.1 Standard Silver Nitrate Solution — 0.1 N.

A-5.1.2 Concentrated Nitric Acid — conforming to IS : 264-1950*

A-5.1.3 Nitrobenzene

A-5.1.4 Ferric Ammonium Sulphate Solution — saturated, in water.

A-5.1.5 Standard Ammonium Thiocyanate Solution — 0.1 N.

A-5.2 Procedure --- Dissolve about 0.2 g of the prepared sample, previously dried as in A-3.1 and accurately weighed, in about 40 ml of water. Add exactly 50 ml of standard silver nitrate solution and 5 ml of concentrated nitric acid. Add 0.5 ml of nitrobenzene and make up the volume of the mixture to exactly 100 ml with water. Take exactly 50 ml of the solution and add 2 ml of ferric ammonium sulphate solution. Titrate the excess of silver nitrate in this portion with standard ammonium thiocyanate solution.

A-5.2.1 Carry out a blank test following the procedure given under A-5.2 but without using the material.

A-5.3 Calculation

A-5.3.1 Total chlorides (as NaCl), percent by weight (on dry basis)

\[ \frac{11.69 (V_1 - V_2) N}{W} \]

where

\[ V_1 = \text{volume in ml of standard ammonium thiocyanate solution used in the blank determination}, \]

\[ V_2 = \text{volume in ml of standard ammonium thiocyanate solution used in the test with the material}, \]

\[ N = \text{normality of standard ammonium thiocyanate solution}, \] and

\[ W = \text{weight in g of the dried prepared sample taken for the test}. \]

*Specification for nitric acid (Since revised)
A-5.3.2 Express the ammoniacal nitrogen content, percent by weight, of the material as determined in A-4.4 in terms of sodium chloride (NaCl) as follows:

Sodium chloride equivalent of the ammoniacal nitrogen content, percent by weight

\[ = 4.173 \times A \]

where

\( A \) is the ammoniacal nitrogen content as determined in A-4.4.

A-5.3.3 Calculate chlorides other than ammonium chloride as follows:

Chlorides other than ammonium chloride (as NaCl), percent by weight

\[ = B - C \]

where

\( B = \) total chlorides on dry basis (as NaCl), percent by weight (A-5.3.1), and
\( C = \) percent by weight of sodium chloride (NaCl) equivalent to the ammoniacal nitrogen content (A-5.3.2).

APPENDIX B

(Clause 4.1)

SAMPLING OF AMMONIUM CHLORIDE, FERTILIZER GRADE

B-1. GENERAL REQUIREMENTS OF SAMPLING

B-1.0 In drawing, preparing, storing and handling samples, the following precautions and directions shall be observed.

B-1.1 Samples shall not be taken at a place exposed to weather.

B-1.2 The sampling instrument shall be clean and dry.

B-1.3 Precautions shall be taken to protect the samples, the material being sampled, the sampling instrument and the containers for samples from adventitious contamination.

B-1.4 To draw a representative sample, the contents of each container selected for sampling shall be mixed as thoroughly as possible by suitable means.
B-1.5 The samples shall be placed in clean, dry and air-tight glass or other suitable containers on which the material has no action.

B-1.6 The sample containers shall be of such a size that they are almost completely filled with the sample.

B-1.7 Each sample container shall be sealed air-tight after filling and marked with full details of sampling, the date of sampling, month and year of manufacture, and other important particulars of the consignment.

B-2. SCALE OF SAMPLING

B-2.1 Lot — All the containers in a single consignment of the material drawn from a single batch of manufacture shall constitute a lot. If a consignment is declared to consist of different batches of manufacture, the batches shall be marked separately and the groups of containers in each batch shall constitute separate lots. In the case of a consignment drawn from a continuous process, 1000 containers (or 100 tonnes) of the material shall constitute a lot.

B-2.2 The number of containers to be chosen from a lot shall depend on the size of the lot and shall be as given in Table 2.

<table>
<thead>
<tr>
<th>Lot Size</th>
<th>No. of Containers to be Selected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 100</td>
<td>N</td>
</tr>
<tr>
<td>101 to 300</td>
<td>6</td>
</tr>
<tr>
<td>301 to 500</td>
<td>7</td>
</tr>
<tr>
<td>501 to 800</td>
<td>8</td>
</tr>
<tr>
<td>801 to 1300</td>
<td>9</td>
</tr>
<tr>
<td>1301 and above</td>
<td>10</td>
</tr>
</tbody>
</table>

B-2.3 These containers shall be chosen at random from the lot, and in order to ensure randomness of selection a random number table as agreed to between the purchaser and the supplier shall be used. In case such a table is not available, the following procedure may be adopted:

Starting from any container, count them as 1, 2, 3, ......... up to $r$ and so on in one order. Every $r$th container thus counted shall be withdrawn and used in the preparation of a composite sample, where $r$ is the integral part of $N/n$. 
B-3. TEST SAMPLES AND REFEREE SAMPLE

B-3.1 From each of the containers selected according to B-2.2 and B-2.3, an equal quantity of the material shall be taken and thoroughly mixed to constitute a composite sample weighing not less than 100 g.

B-3.2 This composite test sample shall be divided into three equal parts, thus forming three test samples. These shall be immediately transferred to thoroughly dried bottles which shall then be sealed air-tight with glass stopper. These shall be labelled with all the particulars of sampling given under B-1.7. One of these test samples shall be sent to the purchaser and another to the supplier.

B-3.3 Referee Sample — The third test sample, bearing the seals of the purchaser and the supplier, shall constitute the referee sample and shall be used in case of dispute between the purchaser and the supplier. It shall be kept at a place agreed to between the purchaser and the supplier.

B-4. NUMBER OF TESTS

B-4.1 Tests for all the characteristics shall be conducted on the composite sample.

B-5. CRITERIA FOR CONFORMITY

B-5.1 A lot shall be declared as conforming to the requirements of this specification if the test results for all the characteristics satisfy the relevant requirements given in this specification.
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