

Indian Standard
SPECIFICATION FOR
POTASSIUM NITRATE FOR EXPLOSIVE AND
PYROTECHNIC COMPOSITIONS
(*Second Revision*)

0. FOREWORD

0.1 This Indian Standard (Second Revision) was adopted by the Indian Standards Institution on 29 January 1982, after the draft finalized by the Explosives and Pyrotechnics Sectional Committee had been approved by the Chemical Division Council.

0.2 This Indian Standard was originally issued in 1951 and revised in 1963. In the first revision, the limits for potassium nitrate content, water insoluble organic matter and matter insoluble in aqua regia had been included. A flame photometer method for the determination of sodium was prescribed as an alternate method. In the present revision new methods for the determination of chlorides, chlorates, perchlorates and potassium nitrate contents have been included.

0.3 This standard contains clauses **3.3** and **4.1** which call for agreement between the purchaser and the supplier.

0.4 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 potassium nitrate used in the explosive and pyrotechnic compositions.

*Rules for rounding off numerical values (*revised*).

IS : 301 - 1982

2. GRADES

2.1 The material shall be of two grades, namely, Grade 1 and Grade 2.

3. REQUIREMENTS

3.1 Description — The material shall be in the form of a white crystalline powder, free from grit, visible impurities and foreign matter.

3.2 Moisture and Volatile Content — When tested according to the method prescribed in Appendix A, the moisture and volatile content of the material shall be as follows:

- a) For Grade 1, percent by mass, *Max* 0.05
- b) For Grade 2, percent by mass, *Max* 0.20

3.2.1 Subject to agreement between the purchaser and the supplier, moisture and volatile content in excess of specified limit may be allowed, provided the material satisfies the other requirements of this standard.

3.3 Particle Size — The material shall comply with the requirements for sieve analysis as agreed to between the purchaser and the supplier.

3.4 The material, dried in accordance with the method prescribed in Appendix A, shall also comply with the requirements given in Table 1 when tested according to the methods prescribed in Appendix B. Reference to the relevant clauses of Appendix B is given in col 5 of the table.

4. PACKING AND MARKING

4.1 Packing — The material shall be packed in sound, clean and dry packages which shall ensure safe transportation and complete freedom from accidental contamination. The type and size of packages shall be subject to agreement between the purchaser and the supplier.

4.2 Marking — The packages shall be legibly marked with the following information:

- a) Name and grade of the material;
- b) Tare and net mass;
- c) Name of the manufacturer and/or his recognized trade-mark, if any;
- d) Date of manufacture; and
- e) Lot number in code or otherwise to enable the batch of manufacture to be traced from records.

TABLE 1 REQUIREMENTS FOR POTASSIUM NITRATE FOR EXPLOSIVES AND PYROTECHNIC COMPOSITIONS
(Clause 3.4)

| Sl. No. | CHARACTERISTIC | REQUIREMENT (ON DRY BASIS) | | METHOD OF TEST (REF TO CL. NO. IN APPENDIX B) |
|---------|---|------------------------------|----------------------------------|---|
| | | Grade 1 | Grade 2 | |
| (1) | (2) | (3) | (4) | (5) |
| i) | Hygroscopicity, percent by mass, <i>Max</i> | 0.25 | 1.00 | 2 |
| ii) | Matter insoluble in water, percent by mass, <i>Max</i> | 0.05 | 0.1 | 3 |
| iii) | Water insoluble organic matter, percent by mass, <i>Max</i> | 0.02 | 0.02 | 4 |
| iv) | Matter insoluble in aqua regia, percent by mass, <i>Max</i> | 0.02 | 0.02 | 5 |
| v) | Grit | Nil | Nil | 5 |
| vi) | Metallic radicals other than potassium and sodium | To pass test | To pass test | 6 |
| vii) | Acidity | do | do | 7 |
| viii) | Alkalinity | do | do | 8 |
| ix) | Chlorides (as KCl), percent by mass, <i>Max</i> | 0.02 | 0.15 | 9 |
| x) | Chlorates | To pass test | To pass test | 10 |
| xi) | Perchlorates (as $KClO_4$), percent by mass, <i>Max</i> | 0.1 | 0.1 | 11 |
| xii) | Sulphates (as K_2SO_4), percent by mass, <i>Max</i> | 0.10 | 0.10 | 12 |
| xiii) | Ammonium compounds (as NH_3) | To pass test | 0.05 percent by mass, <i>Max</i> | 13 |
| xiv) | Sodium compounds (as $NaNO_3$) | do | 0.10 do | 14 |
| xv) | Nitrites (as KNO_2) | do | 0.10 do | 15 |
| xvi) | Potassium nitrate (as KNO_3), percent by mass, <i>Min</i> | 99.50 | 98.75 | 16 |