

Sub: Data for SDOTE case in vendor registration portal for Ammonium Perchlorate

Ref: PV letter no. 3210/Gen/PV/M1, dt. 07/05/2026

With reference to the above, the required data for manufacturing technology and testing/inspection facility of Ammonium Perchlorate (material no. 12003007) is given below:

1. **Manufacturing technology (in Brief):** Manufacturing of Ammonium Per chlorate is done in three phases:

i) **Electrolysis phase:**

Sodium Chlorate (NaClO_3) is electrochemically oxidized to Sodium per chlorate:



ii) **Crystallization phase (By "Sulphate route only"):**

Sodium per chlorate is then reacting with Ammonium Sulphate solution (Double decomposition) to form Ammonium per chlorate & Sodium Sulphate (Byproduct):



Both the products are in the dissolved stage in water. The Ammonium per chlorate is separated from Sodium Sulphate as there is difference in solubility in water of these two compounds at difference temperature. Ammonium per chlorate is separated by filtration and the mother liquor containing un-reacted Sodium Perchlorate and Sodium Sulphate is recycled back into the process.

iii) **Re-crystallization/Drying phase:**

Re crystallisation, drying, coating with anti-caking agent (salt of stearic acid / other organic compounds), classifying (sieving) and blending are done to produce propellant grade Ammonium per chlorate over 99% purity as per test parameter given in clause no. 2.

2. **Test requirements and test apparatus:** The Ammonium perchlorate shall be supplied in the form of a clean white powder, free from grit, foreign matter and visible impurities. Samples taken from any portion of the batch/lot/consignment of the material shall conform to the following test requirements.

Sl. No.	Characteristics	Passing standard	Apparatus required for testing
01	Purity by mass (%min)	99	Glass stoppered Flask
02	Chlorides as NH_4Cl (%max)	0.1	--
03	Chlorates as NaClO_3 (%max)	0.05	Nessler's Tube
04	Bromates as NaBrO_3 (%max)	0.04	Iodine Flask
05	Sulphated Ash by mass (%max)	0.5	Silica Crucible with cover
06	Sulphates as $(\text{NH}_4)_2\text{SO}_4$ (%max)	0.25	Silica Glooch Crucible Muffle furnace Desiccator
07	Water Insoluble Matter (%max)	0.15	Sintered glass crucible Oven ($100 \pm 2^\circ\text{C}$) Muffle Furnace ($800 \pm 25^\circ\text{C}$)
08	Moisture, (Total), (%max)	0.35	Karl Fisher Aquameter Metler DL 55 Auto titrator or equivalent
09	pH	4-6	Calomel electrode or equivalent, suitable potentiometer
10	Sieve Spectrum, % by mass		Sieve shaker
	a) -300 micron IS sieve + 150 micron IS sieve (-52+100 BSS) (min)	88	
	b) -150 micron IS sieve +105 micron IS sieve (-100+150 BSS) (max)	12	
	c) -105 micron IS Sieve, Max	0.8	
11	Characteristics of FERTFLO- N_4	Not for testing	---

3. The manufacturer must have the facility for manufacturing Ammonium Perchlorate via Sulphate route as mentioned in clause no. 1(ii) and should have all plant & Machinery along with requisite test facility for better quality control which has to be demonstrated to the capacity verification team nominated by OFI at the time of capacity verification.