

**JSS 6810-58 : 2020**  
**(Fifth Revision)**

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**भारत सरकार**  
**GOVERNMENT OF INDIA**  
**रक्षा मंत्रालय**  
**MINISTRY OF DEFENCE**  
**संयुक्त सेवा विनिर्देश**  
**JOINT SERVICES SPECIFICATION**

**ON**

**POTASSIUM PERCHLORATE**

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**मानकीकरण निदेशालय**  
**रक्षा उत्पादन विभाग**  
**रक्षा मंत्रालय**  
**'एच' – ब्लॉक, निर्माण भवन डाकघर**  
**नई दिल्ली-११००११**

**DIRECTORATE OF STANDARDISATION**  
**DEPARTMENT OF DEFENCE PRODUCTION**  
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**RECORD OF AMENDMENTS**

<b>Amendment</b>		<b>Amendment pertains to S. No./Para No./ Column No.</b>	<b>Authority</b>	<b>Amended by</b>	<b>Signature &amp; Date</b>
<b>No.</b>	<b>Date</b>			<b>Name &amp; Appointment (In Block Letters)</b>	

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**0. FOREWORD**

**0.1** This Joint Services Specification has been prepared by the Armament Standardisation Sub Committee on the authority of the Standardisation Committee, Ministry of Defence.

**0.2** This specification has been approved by the Ministry of Defence and is mandatory for use by the Defence Services.

**0.3** This JSS 6810-58 : 2020 (Fifth Revision):

- a) was prepared in the year 1975.
- b) was revised in the year 1980, 2000, 2009, and 2014.
- c) is revision of JSS 6810-58 : 2014 (Fourth Revision) and supersedes the same.

**0.4** This specification is meant to govern Supply and Quality Assurance of Potassium perchlorate.

**0.5** Quality Assurance Authority for the item covered by this specification is The Controller, Controllerate of Quality Assurance (Military Explosives), Aundh Road, Pune-411020. (email id cqamear-dgqa@nic.in). Enquiries regarding technical parameters shall be addressed to the Quality Assurance Authority, while other enquiries shall be referred to:

The Director,  
Directorate of Standardisation,  
Ministry of Defence,  
'H' Block, Nirman Bhawan PO,  
New Delhi-110011.  
Secretary ASSC, e-mail id - assc.defstand@gov.in

**0.6** Non-registered users can obtain the following on payment:

**a) Copies of IS from:**

Bureau of Indian Standards,  
Manak Bhawan,  
9, Bahadur Shah Zafar Marg,  
New Delhi-110002.

or

their regional/branch offices.

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**b) Copies of JSSs/JSGs from:**

The Director,  
Directorate of Standardisation,  
Standardisation Documents Centre,  
Ministry of Defence,  
Room No. 05, 'J' Block,  
Nirman Bhawan PO,  
New Delhi-110011.

**0.7** Indian Standard (IS) specifications are available free of cost for registered users on:

Directorate of Standardisation Website:

***www.ddpdos.gov.in***

For registration visit our website.

**0.8** This specification holds good only for the supply order for which it is issued.

**0.9 Directorate of Standardisation Website** - All the approved JSSs/JSGs are available on the Directorate of Standardisation Website ***www.ddpdos.gov.in***. Defence Organisations desirous of accessing a copy of this document are requested to visit the Directorate of Standardisation website for registration obtaining user id/password to access the JSSs/JSGs.

## **1. SCOPE**

**1.1** This specification is meant to govern Supply and Quality Assurance of Potassium Perchlorate in the form of:

- a) Crystals.
- b) Powder-Sizes 212 micrometre.
- c) Powder-Size 125 micrometre.
- d) Powder-Size 90 micrometre.

**1.2** The material is suitable for use in the manufacture of Explosives, Pyrotechnic compositions and Propellants.

## **2. RELATED SPECIFICATION/DOCUMENTS**

References are made in this specification to:

**Table 1**

<b>S. No.</b>	<b>Specifications/ Documents No.</b>	<b>Nomenclature</b>
a)	IS 138 : 2018 (Fourth Revision)	Ready Mixed Paint, Marking, for Packages and Petrol Containers-Specification
b)	IS 460 (Part 1) : 1985 (Third Revision) Amd 1 Reaffirmed 2018	Specification for Test Sieves Part 1 Wire Cloth Test Sieves
c)	JSG 0112 : 2015 (Second Revision)	General Methods of Tests and Assessment of Impurities in Chemicals/Materials used in the Manufacture of Explosives and Ammunition

## **3. MATERIAL/FINISH**

Potassium perchlorate shall be in the form of clear white crystals or powder, free from grit, visible impurities and any foreign matter. If supplied in the form of powder, the material shall comply with the sieving requirements given in clause **7.4** or with such other requirements as may be specified under the terms of contract.

## **4. MANUFACTURE**

Potassium perchlorate shall be manufactured by a process which will produce the product conforming to this specification.

## **5. TENDER SAMPLE**

The manufacturer/supplier/contractor shall submit a tender sample of 500 g essentially from the same batch/lot of manufacture, free of all charges and conforming to this specification, when called for in the tender.

## **6. PRE-INSPECTION OF STORES/CONSIGNMENT**

**6.1** Manufacturers/contractors must satisfy themselves that the stores are in accordance with the terms of the contract and fully conform to the required specification by carrying out a thorough pre-inspection of each lot before actually tendering the same for inspection to the Quality Assurance Officer nominated under the terms of the contract. A declaration by the contractor that a necessary pre-inspection has been carried out on the stores tendered will be submitted along with the challan. The declaration will also indicate the method followed in carrying out pre-inspection showing the features checked/tested and will have the test certificate attached to the challan/declaration.

**6.2** If the Quality Assurance Officer finds that the pre-inspection of the consignment as required above has not been carried out, the consignment is liable for rejection.

## **7. QUALITY ASSURANCE**

### **7.1 Inspection**

Potassium perchlorate and the packages in which it is packed shall be subject to inspection by and to the approval of the Quality Assurance Officer/Quality Assurance Authority.

### **7.2 Sampling**

A representative sample of 250 g shall be drawn from each container. Normally the number of containers to be selected at random from a batch/lot shall depend on the size of the batch/lot and shall be in accordance with the following table:

**Table 2**

<b>No. of Containers in a Batch/Lot</b>	<b>No. of Containers to be Sampled</b>
Up to 25	3
26 to 50	4
51 to 100	5
101 to 150	6
151 to 300	7
301 to 500	8
501 and above	10

### **7.3 Criteria for Conformity**

**7.3.1** If during examination, any sample is found not to conform to this specification, the whole batch/lot/consignment shall be rejected.

**7.3.2** The foregoing provisions shall apply equally to the prime contractors and sub contractors, if any.



#### 7.4 Test Requirements

Samples taken from any portion of the batch/lot/consignment shall be in accordance with clause 3 and shall comply with the following test requirements.

**Table 3 Test Requirements of Potassium Perchlorate**

S. No.	Characteristics	Passing Standard	Test Method
a)	Moisture at 105°C for 3 hours, % by mass	0.1 <i>Max</i>	JSG 0112 Method 1 (a)
b)	Matter insoluble in water, % by mass	0.1 <i>Max</i>	JSG 0112 Method 4
c)	pH of aqueous extract	5.5 <i>Min</i> 7.5 <i>Max</i>	JSG 0112 Method 5 (a)
d)	Chlorides, as Potassium chloride, % by mass	0.1 <i>Max</i>	JSG 0112 Method 7 (b)
e)	Sulphates as Potassium sulphate, % by mass	0.1 <i>Max</i>	JSG 0112 Method 8
f)	Chlorates calculated as Potassium chlorate, % by mass	0.05 <i>Max</i>	JSG 0112 Method 11
g)	Bromates calculated as Potassium bromate, % by mass	0.04 <i>Max</i>	JSG 0112 Method 10
h)	Potassium perchlorate content, % by mass	99.0 <i>Min</i>	Appx 'A'
j)	*Sieving requirements, % by mass		JSG 0112 Method 18
	1) Size 212 micrometr		
	i) Retained on 212 micrometre IS Sieve	Nil	
	2) Size 125 micrometre		
	ii) Retained on 150 micrometre IS Sieve	Nil	
	iii) Retained on 125 micrometre IS Sieve	10 <i>Max</i>	
	3) Size 90 micrometre		
	Retained on 90 micrometre IS sieve.	Nil	

\* When in powder form

**NOTE** - Particulars of IS Sieve referred to above will be found in IS 460 (Part 1).

#### 8. WARRANTY

The stores supplied against the contract shall be deemed to have been warranted against the defective material and performance by the contractor for a period of 24 months from the date of receipt of the stores at the consignee's end and shall retain the properties described above. If during this period any of the stores supplied is found defective, the same shall be replaced by the manufacturer/supplier/contractor free of charges at the consignee's premises.

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**9. PACKAGING**

**9.1** A quantity of 25 kg of Potassium perchlorate shall be packed in polythene bag having film thickness 0.13 mm suitably closed for air tightness. Filled polythene bag shall then be inserted in close texture gunny bags and stitched without damaging the inner polythene bag. Two such gunny bags shall be placed in a suitable wooden box.

**9.2** Alternatively the material shall be packed in hermetically sealed polythene bag of film thickness 0.13 mm and then packed in mild steel drum. The quantity packed in mild steel drum shall not be more than 50 kg. Drum shall be lined with paper before polythene bags are enclosed.

**9.3** Material packed in any other package shall receive a prior approval of the Quality Assurance Officer/Quality Assurance Authority.

**9.4** The inclusion of any foreign matter or impurities in any of the packages shall render the whole consignment liable to rejection.

**10. MARKING**

**10.1** All packages containing the material shall be indelibly and legibly marked with the following details:

- a) Nomenclature and Specification Number of the Material
- b) Name and Address of the Consignee
- c) AT or SO Number and Date
- d) Consignment Number
- e) Batch Number and Date of Manufacture
- f) Gross and Net Mass
- g) Consecutive Number of Package and Total Number of Packages in the Consignment
- h) Date of Supply
- j) Manufacturer's Initials or Recognised Trademark

**10.2** In addition to the above, the Quality Assurance Officer may suggest some more markings/identifications suitable at the time of inspection.

**10.3** The paint used for marking should conform to IS 138 and to the satisfaction of the Quality Assurance Officer/Quality Assurance Authority.

**11. DEFENCE STORES CATALOGUE NUMBER/NATO STOCK NUMBER**

The Defence Stores Catalogue Number allotted to this store is 6810-000 904 and NATO Stock Number allotted to this store is 6810720489887.

**12. SAFETY OF OPERATIONS**

Nothing in this specification shall relieve the manufacturer/supplier/contractor of his responsibility for the safety of operations in the manufacture, storage, transit or use of this store.

**13. SUGGESTIONS FOR IMPROVEMENT**

Any suggestion for improvement in this document may be forwarded to:

The Director,  
Directorate of Standardisation,  
Ministry of Defence,  
'H' Block, Nirman Bhawan PO,  
New Delhi-110011.

**DETERMINATION OF POTASSIUM PERCHLORATE CONTENT**

**A-1.** Place a little anhydrous AR Sodium carbonate in a Nickel crucible and heat to the fusion point. Turn the crucible so that the whole of the sides and bottom are covered by Sodium carbonate. Cool, weigh accurately 0.5 g of the sample, and 5 g of Chloride-free anhydrous Sodium carbonate. Mix thoroughly and transfer to the crucible. Cover the mixture with a uniform layer of about 2 g of Sodium carbonate. Heat the crucible to dull redness under such conditions that no reducing gas can enter the crucible. (This can be obtained by placing the crucible in a hole bored in an asbestos sheet and covering it with a lid). Maintain this temperature for one hour, allow to cool, extract the residue with water, acidify with Nitric acid and estimate the Chloride as follows:

**A-1.1** Add 50 ml of 0.1 N Silver nitrate solution to the solution obtained above and boil gently for 20 minutes to coagulate the precipitate. Cool, add 5 ml of 10% Ferric alum solution and titrate with 0.1 N Ammonium thiocyanate solution. Carry out a blank determination on all reagents and apply necessary correction. Correct the volume of Ammonium thiocyanate equivalent to the Perchlorate present for the Chlorates and Chlorides previously determined. Calculate the mass of Potassium perchlorate equivalent to the corrected volume of Ammonium thiocyanate and express as a percentage of the original sample.

**Calculations**

$$\begin{array}{l} \text{Potassium perchlorate,} \\ \text{\% by mass} \end{array} = \frac{(\text{Blank} - \text{Titre}) \times F \text{ of } \text{NH}_4 \text{ CNS} \times 0.01387 \times 100}{\text{Mass of sample taken}}$$