भारत सरकार
GOVERNMENT OF INDIA

रक्षा मंत्रालय
MINISTRY OF DEFENCE

संयुक्त सेवा विनिर्देश
JOINT SERVICES SPECIFICATION

ON

MINERAL JELLY

(DS Cat. No. 8030-000 032)

Issued by

मानकीकरण निदेशालय
रक्षा उत्पादन विभाग
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नई दिल्ली-110 011

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DEPARTMENT OF DEFENCE PRODUCTION
MINISTRY OF DEFENCE
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RECORD OF AMENDMENTS

Amendment		*Amendment pertains to : S No./Para No./ Column No.*	*Authority*	*Amended by*	*Signature & Date*
No.	Date			Name & Appointment (IN BLOCK LETTERS)	

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 8030-09 : 2016, (Revision No. 3)

a) was revised in the year 2002.
b) is a revision of JSS 8030-09 : 2010, (Revision No. 2) and supersedes the same.

0.4 This specification would be used for Supply and Quality Assurance of Mineral Jelly.

0.5 Quality Assurance Authority for the item covered by this specification is the Controller, Controllerate of Quality Assurance (Military Explosives), Aundh Road, Pune-411 020. 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-110 011

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-110 002
or
Their regional/Branch offices.

(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-110 011

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 approach the Directorate of Standardisation for obtaining user id/password to access the website.

1 SCOPE

1.1 This specification is meant to govern Quality Assurance and Supply of Mineral Jelly suitable for use:

a) As stabilizer (when used alone or in conjunction with other stabilizers) in the manufacture of propellants and explosives.

b) As a preservative for gauges.

c) As an ingredient of protective compositions.

d) As an ingredient for the manufacture of plasticising oil.

2 RELATED SPECIFICATIONS/DOCUMENTS

2.1 Reference is made in this specification to:

S No.	*Specification No. & Year*	*Nomenclature*
a)	IS 138 : 1992 (Third Revision) Reaffirmed 2014 AMD 1	Ready Mixed Paint, Marking, for Packages and Petrol Containers-Specification.
b)	IS 1448 (Part 2) : 2007 (Second Revision) Reaffirmed 2013	Methods of Test for Petroleum and Its Products -Part 2 : Petroleum Products and Lubricants-Neutralization Number-Potentiometric Titration Method.
c)	IS 1448 (Part 4) : 2008 (Second Revision) Reaffirmed 2013	Methods of Test for Petroleum and its Products-Part 4 : Petroleum Products-Determination of Ash.
d)	IS 1448 (Part 21) : 2012 (Third Revision)	Petroleum and its Products-Methods of Test-Part 21 : Flash Point (Closed) by Pensky Martens Apparatus.
e)	IS 1448 (Part 36) : 1960 Reaffirmed 2008	Methods of Test for Petroleum and its Products-Part 36 : Sulphur Mercaptans.
f)	IS 1448 (Part 52) : 1971 (First Revision) Reaffirmed 2013 AMD 1	Methods of test for petroleum and its Products-Part 52 : Drop Point.
g)	IS 1448 (Part 55) : Sec 2 : 2004 (First Revision) Reaffirmed 2011	Methods of Test for Petroleum and its Products -Part 55/Sec 2 : Saponifiable and Unsaponifiable Matter in Oil Fat and Waxes.

S No.	*Specification No. & Year*	*Nomenclature*
h)	IS 1448 (Part 57) : 1964 Reaffirmed 2013	Methods of Test for Petroleum and its Products : Part 57 Consistency of Greases at Various Temperatures.
j)	IND/ME/494	Oil plasticising for PE.
k)	Methods for Analysis and Testing : 1976	IP Standards for Petroleum and its Products Part 1 Section 1 IP Methods 1 to 185.

2.2 Copies of the IND/ME Specifications are obtainable from:

The Controller
Controllerate of Quality Assurance (Military Explosive),
Aundh Road,
Pune-411 020.

2.3 Copies of IP Standards for petroleum and its products are obtainable from:

Indian Institute of Petroleum
Dehradun

3 MATERIAL

3.1 The Mineral Jelly shall consist wholly of a genuine petroleum residue or Mineral Jelly prepared by blending suitable waxes with suitable lubricating oils. It shall be of uniform consistency and free from scales, specks, grit, water and visible impurities.

4 TENDER SAMPLE

4.1 The manufacturer/contractor shall submit one tender sample of 1 kg essentially from the same batch/lot of manufacture, free of all charges and conforming to this specification, to the Quality Assurance Officer/Quality Assurance Authority when called for in the tender.

4.2 If practical trials for end use are considered necessary, the contractor should supply required quantity free of cost as required by the Quality Assurance Officer.

5 PRE-INSPECTION OF STORES/CONSIGNMENT

5.1 Manufacturers/contractors must satisfy themselves that the stores are in accordance with the terms of 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.

5.2 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.

6 QUALITY ASSURANCE

6.1 Inspection

6.1.1 The Mineral Jelly and its packages in which it is contained shall be subjected to inspection by and to the final approval of the Quality Assurance Officer/Quality Assurance Authority.

6.1.2 Sample of the material and the packages in which it is contained may be taken from any portion of a consignment.

6.2 Sampling

6.2.1 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:

No. of Container in a Batch/Lot	*No. of Containers to be Sampled*
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

6.3 Criteria for Conformity

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

6.3.2 The foregoing provisions shall apply equally to prime contractors and to any sub-contractor, if any.

6.4 Test Requirements

6.4.1 Samples taken from any portion of batch/lot/consignment shall conform to clause 3 above and in addition shall conform to the test requirements shown in the following table:

Test Requirements of Mineral Jelly

S No.	*Characteristics*	*Passing Standard*	*Test Method*
a)	Volatile matter, % by mass	0.2 *Max*	Appendix 'A'
b)	Ash, % by mass	0.03 *Max*	IS 1448 (Part 4) Method 'A'
c)	Mineral acidity to Methyl orange	NIL	IS 1448 (Part 2) Method 'C'
d)	Organic acidity mg of KOH/g	0.1 *Max*	IS 1448 (Part 2) Method 'D'
e)	Saponifiable matter mg of KOH/g	1.0 *Max*	IS 1448 (Part 55) (T)
f)	Drop point	45°C *Min* 60°C *Max*	IS 1448 (Part 52)
g)	Flash point	204°C *Min*	IS 1448 (Part 21)
h)	Bromine value	70 *Min* 110 *Max*	Appendix 'B'
j)	Consistency: Difference between worked and unworked penetration units	70 *Max*	IS 1448 (Part 57) or IP method 50/69
k)	Sulphur mercaptans	Nil	IS 1448 (Part 36) Copper strip corrosion test at 100°C ±1°C for 3 h.

NOTES-

1 When the material is required for the manufacture of Oil Plasticising for PE, it shall give satisfactory Oil Plastic sing for PE, conforming to specification IND/ME/494 when prepared in accordance with the method given in Appendix 'A' to the specification IND/ME/494.

2 Material must also satisfy the end use requirement which may be assessed by carrying out suitable practical trials wherever considered necessary.

3 Test Clause No. 8 i.e. Bromine value is applicable only when Mineral Jelly is to be used alone as stabilizer in the manufacture of propellants.

7 WARRANTY

7.1 The stores supplied against the contract shall deem to have been warranted against defective material and performance by the contractor/manufacturer for a period of 12 months from the date of receipt of the stores at the consignee's end and if during this period any of the stores supplied is found defective, the same shall be replaced by the manufacturer/ supplier/contractor, free of all charges, at the consignee's premises.

8 PACKAGING

8.1 The Mineral Jelly shall be supplied in sound, clean, dry and painted barrels or other approved packages containing an approved quantity.

8.2 The inclusion of any foreign matter or impurities in any of the package will render the whole consignment liable to rejection.

9 MARKING

9.1 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) A/T or S.O. Number and Date.
d) Consignment Number.
e) Batch No. and Date of Manufacture.
f) Gross and Net Mass.
g) Consecutive Number of Package and Total Number of Packages in Consignment.
h) Date of Supply.
j) Manufacturer's Initials or Recognised Trademark.

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

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

10 DEFENCE STORES CATALOGUE NUMBER

10.1 The Defence Stores Catalogue Number allotted to Mineral Jelly is 8030-000 032.

11 SAFETY OF OPERATIONS

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

12 SUGGESTIONS FOR IMPROVEMENT

12.1 Any suggestion for improvement in this document shall be forwarded to:

The Director,
Directorate of Standardisation,
Ministry of Defence,
'H'-Block, Nirman Bhawan PO,
New Delhi-110 011

Appendix 'A'

A DETERMINATION OF VOLATILE MATTER

A.1 About 20 g of the material shall be taken in a weighed flat dish (M) of heat resistant glass approximately 90 mm in diameter and 8 mm in height. It shall then be weighed (M_1) accurately and placed in an oven adjusted at 105°C ±1°C and kept therein for 6 h. At the end of this period, the dish shall be taken out and allowed to cool in a desiccator. It shall then be accurately weighed (M_2). The loss in mass per 100 g of the material shall be reported as per cent volatile matter.

Calculation:

$$\text{Volatile matter, \% by mass} = \frac{(M_2 - M)}{(M_1 - M)} \times 100$$

Appendix 'B'

B DETERMINATION OF BROMINE VALUE

B.1 Prepare a solution containing 0.16 g of Bromine in about 15 ml of dry Carbon tetrachloride (non-reactive to bromine). For the determination of the concentration of this solution, take a tap-tube of which the tap has been lubricated with non-reactive grease and add about 1 ml of the Carbon tetrachloride so that the capillary portion at the bottom of the tube is filled. Add 15 ml of the Bromine solution from a self-filling burette, 20 ml of 10% Potassium iodine solution and 40 ml of water. After thorough agitation of the contents of the tube, titrate the liberated Iodine with N/10 Sodium thiosulphate using Starch as indicator.

B.2 Carry out the test by subjecting 1 g of the Mineral Jelly to the action of 0.16 g Bromine in a total solution volume of 50 ml. In adjusting the solutions of the reacting bodies to this volume, assume that 1 ml of the solvent is loss by evaporation during transfer of the Mineral Jelly to the tube, and initially, therefore, add an additional 1 ml to the dry tap-tube to compensate for this loss and to fill the capillary portion at the bottom of the tube.

B.3 Weigh exactly 1 g of the sample (M) into a small lipped beaker and melt the material by standing the beaker on the steam-bath. Add 10 ml of dry Carbon tetrachloride and replace the beaker on the steam-bath until the Mineral Jelly is dissolved. Transfer the solution to the tap-tube and rinse the beaker into the tap-tube with successive small quantities of solvent. The total volume of solvent used for this purpose must be that obtained by deducting from 50 ml the volume of Bromine solution to be added later.

B.4 Stopper the tap-tube and immerse in a water bath at 20°C for 15 minutes after which add at a uniform rate during a period of approximately 2 minutes, that volume of Bromine solution containing exactly 0.16 g Bromine. Mix the contents of the tube and return it to the bath for a period of exactly 60 minutes from the time of the first addition of the Bromine solution. Maintain the temperature of the bath throughout the test at 20°C and cover the bath to prevent access of light to the tubes. Remove the tap-tube from the bath, add 20 ml of 10% Potassium iodine solution and 40 ml of water and agitate the contents of the tube. After the expiry of one minute, titrate the liberated Iodine with N/10 Sodium thiosulphate. Carry out a blank experiment similarly.

B.5 Calculate the Bromine value of the Mineral Jelly i.e. the number of mg of Bromine reacting with 1 g of Mineral Jelly during the test from the difference between the titration of the blank experiment and the test.

Calculation:

$$\text{Bromine value} = \frac{(t_2 - t_1) \times 7.99 \times F}{M}$$

Where:

t_1 = Volume in ml of N/10 Sodium thiosulphate required for sample titration

t_2 = Volume in ml of N/10 Sodium thiosulphate required for blank titration

F = Factor of N/10 Sodium thiosulphate

M = Mass of sample taken

NOTES-

1 The tap at the base of the reaction vessel, although not used in the experiment, facilitates cleaning of the apparatus. A reaction vessel of similar shape and construction but without the tap may be used, if desired.

2 1 ml of N/10 Sodium thiosulphate = 7.99 mg Bromine.

3 A graduated 1 ml pipette could be used for transferring Bromine solution.