



भारत सरकार
GOVERNMENT OF INDIA

रक्षा मंत्रालय
MINISTRY OF DEFENCE

संयुक्त सेवा विनिर्देश
JOINT SERVICES SPECIFICATION

ON

CANDELILLA WAX
(DS Cat. No. 9160-000 023)

Issued by

मानकीकरण निदेशालय
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RECORD OF AMENDMENTS

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

	CONTENTS	<i>Page No.</i>
0	FOREWORD	1
1	SCOPE	3
2	RELATED SPECIFICATIONS/DOCUMENTS	3
3	MATERIAL	3
4	TENDER SAMPLE	3
5	PRE-INSPECTION OF STORES/CONSIGNMENT	3
6	QUALITY ASSURANCE	4
7	WARRANTY	5
8	PACKAGING	5
9	MARKING	5
10	DEFENCE STORES CATALOGUE NUMBER	6
11	SAFETY OF OPERATIONS	6
12	SUGGESTIONS FOR IMPROVEMENT	6
13	APPENDIX 'A' TO 'D'	7-10

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 9160-08 : 2016, (Revision No. 2).

- a) was prepared in the year 2001.
- b) is a revision of JSS 9160-08 : 2010, (Revision No. 1) and supersedes the same.

0.4 This specification is meant to govern Supply and Quality Assurance of Candelilla Wax.

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

JSS 9160-08 : 2016
(Revision No. 2)

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 Supply and Quality Assurance of Candelilla Wax suitable for use in the manufacture of Propellants.

2 RELATED SPECIFICATIONS/DOCUMENTS

2.1 Reference is made in this specification to:

<i>S No.</i>	<i>Specification No. & Year</i>	<i>Nomenclature</i>
a)	IS 138 : 1992 (Third Revision) Reaffirmed 2014 AMD 1	Ready Mixed Paint, Marking, for Packages and Petrol Containers-Specification.
b)	IS 460 (Part 1) : 1985 (Third Revision) Reaffirmed 2008 AMD 1	Specification for Test Sieves : Part I Wire Cloth Test Sieves.
c)	Methods for Analysis and Testing	IP Standards for Petroleum its Products Part 1 Section 1 IP Methods 1 to 185.

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

Indian Institute of Petroleum
Dehradun

3 MATERIAL

3.1 The Candelilla Wax shall consists of the natural plant leaf wax and shall be clear, and free from adulterants, grit, visible impurities or other foreign matter.

4 TENDER SAMPLE

4.1 The manufacturer/supplier/contractor shall submit a tender sample of 250 g essentially from the same batch/lot of manufacture, free of all charges and conforming to this specification, when called for in the tender.

5 PRE-INSPECTION OF STORES/CONSIGNMENT

5.1 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.

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 Candelilla Wax 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.

6.1.2 Samples of the material and of the packages may be drawn from any portion of the batch/lot/consignment.

6.2 Sampling

6.2.1 Normally two representative samples each of 500 g shall be drawn from each batch/lot/consignment of supply/manufacture. However, the number of samples to be drawn shall be at the discretion of the Quality Assurance Officer/Quality Assurance Authority.

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.

6.4 Test Requirements

6.4.1 Samples taken from any portion of batch/lot/consignment shall conform to clause 3 above and shall comply with the following requirements:

Test Requirements of Candelilla Wax

<i>S No.</i>	<i>Characteristics</i>	<i>Passing Standard</i>	<i>Test Method</i>
a)	Volatile matter, % by Mass	1.5 Max	Appendix 'A'
b)	Total acidity, mg KOH per g of Wax	22 Max	Appendix 'B'
c)	Inorganic acidity mg KOH per g of Wax, % by mass	Nil	IP 182/63

<i>S No.</i>	<i>Characteristics</i>	<i>Passing Standard</i>	<i>Test Method</i>
d)	Matter insoluble in Carbon tetrachloride, % by mass	1.0 <i>Max</i>	Appendix 'C'
e)	Saponification value mg KOH per g of Wax	45 to 65	IP 136/72
f)	Setting point in °C	63 to 68	IP 55/67
g)	(a) Ash, Total % by mass:	0.5 <i>Max</i>	IP 4/75
	(b) Particles retained on 63 micrometer IS Sieve	0.01 <i>Max</i>	Appendix 'D'
	(c) Particles retained on 250 micrometer IS Sieve	Nil <i>Max</i>	Appendix 'D'

7 WARRANTY

7.1 The stores supplied against this contract shall be deemed to be warranted against the defective material and performance by the contractor for a period of 12 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.

8 PACKAGING

8.1 The Candelilla Wax shall be supplied in sound, clean, approved package, containing and approved quantity.

8.2 The inclusion of any foreign matter or impurities in any of the packages 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 the Consignment.
- h) Date of Supply.
- j) Manufacturer's Initials or Recognised Trademark.

JSS 9160-08 : 2016
(Revision No. 2)

9.2 In addition to the above the Quality Assurance Officer may suggest some more marking/identification suitable at the time of inspection.

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

10 DEFENCE STORES CATALOGUE NUMBER

10.1 The Defence Stores Catalogue Number allotted to this store is 9160-000 023.

11 SAFETY OF OPERATIONS

11.1 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.

12 SUGGESTIONS FOR IMPROVEMENT

12.1 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-110 011

Appendix 'A'

A DETERMINATION OF VOLATILE MATTER

A.1 Weigh 5 g of the wax into a tared, shallow, flat bottomed glass dish of approximately 7 cm internal diameter. Dry for 6 h at 100°C to 105°C. Cool to room temperature in desiccator and reweigh. Calculate the loss in mass as per cent volatile matter.

$$\begin{array}{l} \text{Volatile Matter Content,} \\ \text{\% by mass} \end{array} = \frac{\text{Loss in mass}}{\text{Mass of the sample taken}} \times 100$$

B DETERMINATION OF TOTAL ACIDITY

B.1 Weigh approximately 5 g of the sample to the nearest 0.01 g into a 250 ml conical flask. Heat a mixture of 60 ml Toluene 40 ml industrial methylated spirit 74 O.P. to 40°C to 50°C in another flask and add 1 ml of Phenolphthalein indicator. Neutralise the mixture with 0.1 N alcoholic potassium hydroxide solution. Add the neutralised solvent to the sample, heat the mixture to boiling on a water bath or hot plate and boil for 5 minutes with occasional agitation. Add a further 1 ml of Phenolphthalein solution and titrate as quickly as possible with 0.1 N alcoholic potassium hydroxide solution.

B.2 Calculation

$$\text{Total acidity expressed as mg KOH per g of Wax} = \frac{5.61 T}{W}$$

Where:

T = volume in millilitres of the titre

W = mass in grams of samples taken.

Appendix 'C'

C DETERMINATION OF MATTER INSOLUBLE IN CARBON TETRACHLORIDE

C.1 Prepare a Grade 2 sintered glass crucible by washing with warm Carbon tetrachloride. Dry the crucible and weigh.

C.2 To 10 g of the wax placed in a 400 ml glass beaker, add 200 ml of Carbon tetrachloride and heat on a water bath, stirring until all the wax has dissolved. Filter while hot through the prepared Grade 2 sintered glass crucible and wash three or four times with hot Carbon tetrachloride, using about 50 ml in all. Remove the bulk of Carbon tetrachloride by warming the crucible on the water bath, complete the drying in an oven at 100°C to 105°C, cool in desiccator and re-weigh. Calculate the percentage of matter insoluble in Carbon tetrachloride from the gain in weigh of the crucible.

Appendix 'D'

D EXAMINATION OF ASH FOR GRITTY PARTICLES

D.1 Retain the ash, obtained during the determination of the total ash content, and brush gently on a small 63 micrometer IS Sieve. Weigh the amount retained on the sieve and calculate as a percentage of Candelilla Wax.

D.2 Transfer the material retained on the 63 micrometer IS Sieve to a 250 micrometer IS Sieve. There shall be no material, considered for the purpose of this test as gritty particles, retained on the 250 micrometer IS Sieve.