



भारत सरकार  
GOVERNMENT OF INDIA  
रक्षा मंत्रालय  
MINISTRY OF DEFENCE

संयुक्त सेवा विनिर्देश  
JOINT SERVICES SPECIFICATION

ON

PAPER OIL VARNISHED (SYNTHETIC RESIN TYPE)

	DS Cat Part No.	NSN
Paper Oil Varnished (Synthetic Resin Type) Single Sided	8135-000 006	8135720495337
Paper Oil Varnished (Synthetic Resin Type) Double Sided	8135-000 265	8135720495344

मानकीकरण निदेशालय  
रक्षा उत्पादन विभाग  
रक्षा मंत्रालय  
'एच' ब्लॉक, निर्माण भवन डाकघर  
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DIRECTORATE OF STANDARDISATION  
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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 for mandatory use by the Defence Services.

**0.3** This JSS 8135-18 : 2021 (Second Revision):

- a) was prepared in the year 2001.
- b) was reaffirmed in the year 2011 and revised in 2016.
- c) is revision of JSS 8135-18 : 2016 (First Revision) and supersedes the same.

**0.4** This specification would be used for Quality Assurance and Supply of Paper oil varnished (Synthetic Resin Type).

**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

**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 and obtaining user id/password to access the JSSs/JSGs.

## **1. SCOPE**

This specification is meant to govern Manufacture, Supply and Quality Assurance of Paper oil varnished (Synthetic resin type) suitable for use in Ammunition Components.

## **2. RELATED SPECIFICATIONS/DOCUMENTS**

References are made in this specification to:

**Table 1**

<b>S No.</b>	<b>Specification/ Document No.</b>	<b>Nomenclature</b>
a)	IS 138 : 2018 (Fourth Revision)	Ready Mixed Paint, Marking, for Packages and Petrol Containers-Specification
b)	IS 1060 (Part 1) : 1966 (Revised) Amd 6 Reaffirmed 2019	Methods of Sampling and Test for Paper and Allied Products Part 1
c)	IS 1060 (Part 2) : 1960 Reaffirmed 2019	Methods of Sampling and Test for Paper and Allied Products Part 2
d)	JSG 0114 : 2020 (Second Revision)	Methods of Tests for Textiles used in Ammunition

## **3. MATERIALS AND MANUFACTURE**

Paper oil varnished (Synthetic resin type) shall consist of a pure kraft body paper, treated on one or both sides as required with a correctly cured oil modified Phenol formaldehyde varnish. If required by the contract it shall be coloured by the incorporation in the varnish of a dyestuff of approved composition. The finished paper shall not be brittle or tacky on the surfaces. The material shall be supplied in sheets or rolls of such sizes as may be prescribed by the terms of the contract. The rolls should be capable of easy unwinding.

## **4. TENDER SAMPLE**

The manufacturer/contractor shall submit a tender sample of 500 g conforming to this specification, free of all charges. The sample shall be kept flat, preferably rolled without folds and protected from exposure.

## **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 material and ingredients used during manufacture and after manufacture shall be subject to inspection by, and final approval of the Quality Assurance Officer/Quality Assurance Authority.

**6.1.2** Samples of the material and of the packages may be taken from any portion of the batch/lot/consignment,

### **6.2 Sampling**

**6.2.1** Not less than five percent of the packages shall be sampled. Four representative sheets (125 g) shall be taken from each package.

**6.2.2** The sample from rolls shall not include the end metres and shall be cut with edges parallel to the machine and cross directions of the paper respectively.

### **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 sub-contractor, if any.

### **6.4 Test Requirements**

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

a) Chemical

**Table 2**

<b>S. No.</b>	<b>Characteristics</b>	<b>Passing Standard</b>	<b>Test Method</b>
1)	Moisture content at 103°C to 105°C for 2 h, % by mass		
	i) Body paper	9.0 <i>Max</i>	IS 1060 (Part 1) Clause 9
	ii) Varnished paper	7.0 <i>Max</i>	
2)	pH of aqueous extract	5.5 <i>Min</i> 7.5 <i>Max</i>	IS 1060 (Part 1) Clause 10



**Table 2 (Concluded)**

<b>S. No.</b>	<b>Characteristics</b>	<b>Passing Standard</b>	<b>Test Method</b>
3)	Water soluble Chlorides calculated as Sodium chloride percent by mass	0.05 <i>Max</i>	JSG 0114 Method No. <b>7</b>
4)	Water soluble Sulphates calculated as anhydrous Sodium sulphate, percent by mass	0.25 <i>Max</i>	IS 1060 (Part 2) Clause <b>18</b>
5)	The ash on incineration at 800°C ± 25°C, % by mass	1.5 <i>Max</i>	IS 1060 (Part 1) Clause <b>11</b>
6)	Lead (when required to be Lead free) calculated as metallic Lead, % by mass	0.03 <i>Max</i>	IS 1060 (Part 2) Clause <b>16</b>
7)	Acetone soluble matter, % by mass	6.0 <i>Max</i>	IS 1060 (Part 2) Clause <b>20</b> (with Acetone as solvent instead of Ether)
8)	Water soluble matter, % by mass i) Total soluble matter. ii) Formaldehyde. iii) Ammonia iv) Phenol	2.0 <i>Max</i> 0.05 <i>Max</i> 0.02 <i>Max</i> 0.50 <i>Max</i>	Appx 'A'

**NOTE** - All percent shall be calculated on the dry mass of the material after drying to a constant mass.

b) Physical

The material shall be conditioned prior to test, for 24 hours in an atmosphere of 65% ± 2% relative humidity at 27°C ± 2°C.

**Table 3**

<b>S. No.</b>	<b>Characteristics</b>	<b>Passing Standard</b>	<b>Test Method</b>
1)	Body Paper		
	i) Substance, g/m <sup>2</sup>	117 ± 6	IS 1060 (Part 1) Clause <b>6</b>
	ii) Thickness, mm	0.102 ± 0.010	IS 1060 (Part 1) Clause <b>7</b>
	iii) Bursting strength kPa (average of at least 20 tests)	309.9 <i>Min</i>	IS 1060 (Part 1) Clause <b>12.6</b>
2)	Paper Oil Varnished (Synthetic Resin Type) (Single Sided)		
	i) Substance, g/m <sup>2</sup>	137 ± 14	IS 1060 (Part 1) Clause <b>6</b>
	ii) Thickness, mm	0.127 ± 0.013	IS 1060 (Part 1) Clause <b>7</b>
	iii) Bursting strength kPa (average of at least 20 tests)	482.5 <i>Min</i>	IS 1060 (Part 1) Clause <b>12.6</b>

**Table 3 (Concluded)**

<b>S. No.</b>	<b>Characteristics</b>	<b>Passing Standard</b>	<b>Test Method</b>
3)	Paper Oil Varnished (Synthetic Resin Type) (Double Sided)		
	i) Substance, g/m <sup>2</sup>	142 ± 14	IS 1060 (Part 1) Clause 6
	ii) Thickness, mm	0.127 ± 0.013	IS 1060 (Part 1) Clause 7
	iii) Bursting strength kPa (average of at least 20 tests)	482.5 <i>Min</i>	IS 1060 (Part 1) Clause 12.6

c) Water Proofness Test

No percolation to be observed under pressure of 10 cm height of water column for 24 hours.

**7. WARRANTY**

The stores supplied against the contract shall be deemed to be warranted against the defective material and performance by the contractor for a period of 6 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 paper is to be delivered flat and unfolded in reams of 500 sheets. Each ream is to be wrapped in paper and 10 such reams are wrapped in hessian cloth to form a bale. The bale will be placed between two suitable thick boards (wood or paper) one on top and one at bottom, and the assembly banded all round by hoop iron, for safe rail transit.

**8.2** When the supply is required in rolls, each roll is to be wrapped with packing paper followed by hessian and hoop ironed by bamboo strips.

or

Packaging (preservation and packing) should be in accordance with the terms of the contract.

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

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

## **10. DEFENCE STORES CATALOGUE NUMBER/NATO STOCK NUMBER**

The Defence Stores Catalogue Number and NATO Stock Number allotted are as under:

<i>S. No.</i>	<i>Nomenclature</i>	<i>DS Cat Part No.</i>	<i>NSN</i>
a)	Paper oil varnished (Synthetic resin type), single sided	8135-000 006	8135720495337
b)	Paper oil varnished (Synthetic resin type), double sided	8135-000 265	8135720495344

## **11. 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.

## **12. SUGGESTIONS FOR IMPROVEMENT**

Any suggestion for improvement in this specification shall be forwarded to:

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

**DETERMINATION OF WATER SOLUBLE MATTER (TOTAL SOLUBLE MATTER, FORMALDEHYDE, AMMONIA & PHENOLS)**

**A-1. PREPARATION OF EXTRACT**

Cover 15 g of material cut into small pieces with 150 ml. of distilled water, free from Carbondioxide, at a temperature between 90°C and 100°C in a glass stoppered vessel. Allow to cool to room temperature with occasional shaking. Filter if necessary through a sintered glass crucible.

**A-2. WATER SOLUBLE MATTER**

Evaporate 10 ml of the extract, prepared as above and dry the residue to constant mass at 100°C.

**A-3. FORMALDEHYDE**

To 100 ml of the aqueous extract, prepared as above, add 5 ml of a 5% solution of Dimedone (5, 5- Dimethylcyclohexane- 1, 3 Dione) in Grade I alcohol, a few drops of Bromo-phenol blue indicator and if necessary, sufficient dilute Hydrochloric acid to produce a yellow colour. Add dilute Sodium hydroxide until the mixed solution is just purple and 50 ml of a buffer mixture of two volumes of 1N Sodium acetate and one volume of 1 N Hydrochloric acid. Allow to stand over night and filter the precipitate, preferable, on a tared sintered glass gooch funnel (porosity G.3), wash free from Chlorides with a little cold water and dry to constant mass at 60°C (about 3 hours) or at 100°C (about half an hour). Multiply the mass, in grams, of the precipitate by 1.03 to obtain the percentage of Formaldehyde in the material.

**A-4. AMMONIA**

To 10 ml of the aqueous extract, prepared as above, in a 100 ml distilling flask add 10 ml of aqueous 2% Sodium hydroxide solution and sufficient Potassium permanganate to impart a purple colour. Distil the mixture and collect 15 ml from a water cooled condenser. Determine the Ammonia in the distillate by means of Nessler's reagent using any standard colorimetric method and correct the result by that of a blank test on the reagents concerned and on the filter paper, if used for filtering the original aqueous extract. Multiply the result by 100 to obtain the percentage of Ammonia in the material.

**A-5. PHENOLS**

To 5 ml of the aqueous extract, prepared at clause A1 add 10 ml. of N/10 Bromate bromide solution, dilute to 30 ml and add 5 ml of 1 : 1 Hydrochloric acid. Shake, allow to stand for 15 minutes, add 5 ml of 10% Potassium iodide solution and titrate the liberated Iodine with N/20 thiosulphate solution using Starch indicator. Repeat this using 5 ml of distilled water instead of aqueous extract. The difference between the two titrations expressed in ml of N/20 thiosulphate multiplied by 0.16 gives the percent of Phenols (as C<sub>6</sub>H<sub>5</sub>OH) in the material.