



**GOVERNMENT OF INDIA  
MINISTRY OF DEFENCE**

**JOINT SERVICES SPECIFICATION**

**ON**

**MILL BOARD**

**(DS CAT NO. 9310-000 001)**

**JSS 9310-01: 2007**

**Revision No. 2**

**DIRECTORATE OF STANDARDISATION  
DEPARTMENT OF DEFENCE PRODUCTION  
MINISTRY OF DEFENCE  
'H' BLOCK, NIRMAN BHAWAN PO  
NEW DELHI - 110 011**

**JSS 9310-01: 2007**  
**Revision No. 2**

**GOVERNMENT OF INDIA**  
**MINISTRY OF DEFENCE**

**JOINT SERVICES SPECIFICATION**

**ON**

**MILL BOARD**

**(DS CAT NO. 9310-000 001)**

**JSS 9310-01: 2007**  
**Revision No. 2**

**DIRECTORATE OF STANDARDISATION**  
**DEPARTMENT OF DEFENCE PRODUCTION**  
**MINISTRY OF DEFENCE**  
**‘H’ BLOCK, NIRMAN BHAWAN PO**  
**NEW DELHI - 110 011**

**LIST OF MEMBER ASSOCIATED WITH PREPARATION OF THIS DOCUMENT**

1. This Joint Services Specification has been approved by Dr. BR Gandhe, Director, Directorate of Armaments (R&D), Chairman Armament Standardisation Sub Committee by circulation.

2. The following members were present/consulted in approving the document: -

| Sl No. | Name & Designation               | Organisation                                 |
|--------|----------------------------------|--|
| 1.     | Shri AC Jain, Jt Director        | Dte of Armaments, DRDO Orgn, New Delhi       |
| 2.     | Col SK Mohan                     | ADGWE/GS (WE-2/3), New Delhi                 |
| 3.     | Col NC Mehta                     | Dte of Arty (GS/Artillery-5), New Delhi      |
| 4.     | Shri K Raja, Jt Director         | Dte Gen of Naval Armt, Naval HQ, New Delhi   |
| 5.     | Air Cmde R Kumar, PDA            | Dte of Armt & Safety Eqpt, Air HQ, New Delhi |
| 6.     | Dir EME (Armt)                   | DGEME, Army HQ, New Delhi                    |
| 7.     | Lt Cdr Srinivas                  | DGNAI, Naval HQ, New Delhi                   |
| 8.     | Shri Jitendra Kumar, SSO – I     | DGAQA, DD (Armt) Gp, New Delhi               |
| 9.     | Shri DV Singhal, Addl Controller | CQA (ME), Pune)                              |
| 10.    | Col AK Mehta, Jt Controller      | CQA (Amn), Pune                              |
| 11.    | Shri SC Madhu, JTO               | CQA (SA), Ichapur, West Bengal               |
| 12.    | Lt Col SS Chadha                 | CQA (W), Jabalpur                            |
| 13.    | Dr. SN Singh, Sc 'F'             | HEMRL, DRDO, Pune                            |
| 14.    | Shri GC Adhikari, Sc 'F'         | ARDE/DRDO Orgn, Pune                         |
| 15.    | Shri RK Sharma, Jt GM            | Ammunition Factory, Pune                     |
| 16.    | -                                | Ordnance Factory Board (QC & Std), Kolkata   |
| 17.    | Lt Col Sanjay Singh              | Secretary ASSC                               |

**RECORD OF AMENDMENTS**

| <b>Amendment</b> |             | <b>Amendment pertains to:<br/>Sl.No/ Para No./ Column<br/>No.</b> | <b>Authority</b> | <b>Amended by</b>  | <b>Signature<br/>&amp;<br/>Date</b> |
|------------------|-------------|---|------------------|--|-------------------------------------|
| <b>No.</b>       | <b>Date</b> |   |                  | <b>Name &amp;<br/>Appointment<br/>(IN BLOCK<br/>LETTERS)</b> |                                     |
|                  |             |   |                  |  |                                     |

**CONTENTS**

|   | <b>Page No.</b> |
|---|-----------------|
| 0. <b><u>FOREWORD</u></b>                             | 1               |
| 1. <b><u>SCOPE</u></b>                                | 2               |
| 2. <b><u>RELATED SPECIFICATIONS</u></b>               | 2               |
| 3. <b><u>MATERIAL AND MANUFACTURE</u></b>             | 2               |
| 4. <b><u>TENDER SAMPLE</u></b>                        | 2               |
| 5. <b><u>PRE-INSPECTION OF STORES/CONSIGNMENT</u></b> | 3               |
| 6. <b><u>QUALITY ASSURANCE</u></b>                    | 3               |
| 7. <b><u>WARRANTY</u></b>                             | 5               |
| 8. <b><u>PACKAGING AND MARKING OF PACKAGES</u></b>    | 5               |
| 9. <b><u>SAFETY OF OPERATIONS</u></b>                 | 5               |
| 10. <b><u>DEFENCE STORES CATALOGUE NUMBER</u></b>     | 5               |
| 11. <b><u>SUGGESTIONS FOR IMPROVEMENT</u></b>         | 5               |

**0        FOREWORD**

0.1        This Joint Services Specification has been prepared by 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        The specification JSS 9310-01: 1994 (Revision No. 1), was issued in Nov 94. The present document JSS 9310-01: 2007 (Revision No. 2) is revision of JSS 9310-01: 1994 (Revision No. 1) and supersedes the same.

0.4        This Joint Services Specification would be used for manufacture, supply and quality assurance of Mill Board.

0.5        Quality Assurance Authority for the item covered by this specification is the Controller, Controllerate of Quality Assurance (Military Explosives), Aundh Road, Kirkee, Pune -411 020. Enquiries regarding this specification, relating to any contractual conditions, should be addressed to the Quality Assurance Authority named in the tender or contract. Other enquiries should be referred to: -

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

0.6        Copies of this specification can be obtained on payment from: -

The Director,  
Directorate of Standardisation,  
Ministry of Defence,  
Standardisation Document Centre,  
Room No. – 5, 'J' Block, Nirman Bhawan PO,  
New Delhi – 110 011.

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

**1. SCOPE**

1.1 This specification is meant to govern manufacture, supply and quality assurance of Mill Board suitable for use for washers and discs for ammunition components for Cups for Cartridges and for packing.

**2. RELATED SPECIFICATIONS**

2.1 Reference is made in this specification to: -

|     |                          |  |
|-----|--------------------------|--|
| i)  | IS 1060(Part 1):<br>1966 | Methods of sampling and test for paper and allied products: Part 1<br>Reaffirmed 1992 Amds 4 |
| ii) | IS 1060(Part 2):<br>1960 | Methods of sampling and test for paper and allied products: Part 2<br>Reaffirmed 1997        |

2.2 Copies of Indian Standards are obtainable on payment from: -

Bureau of Indian Standards,  
Manak Bhawan,  
9, Bahadur Shah Zafar Marg,  
New Delhi - 110 002

or

their regional/branch offices

**3 MATERIAL AND MANUFACTURE**

3.1 The Mill Board shall be made from good quality waste paper. It shall be uniform in texture and thickness, free from holes, hard spots and lumps. It shall be flat and dimensionally stable. Both sides of the board shall be clean, free from loosely bound fibres and loading material. It shall be rigid, tough and capable of being stamped into washers and discs or moulded into cups without cracking or flaking.

3.2 The Mill Board shall be of such thickness and dimensions as laid down in the terms of the contract.

**4. TENDER SAMPLE**

4.1 The contractor shall submit a tender sample of 1kg conforming to this specification to the Quality Assurance Officer/Quality Assurance Authority as stated in the tender or contract.

**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 Mill Board material shall be subjected to inspection by and to the approval of the Quality Assurance Officer/Quality Assurance Authority.

**6.2 Sampling**

6.2.1 Not less than 5 per cent of the packages shall be sampled. The representative test sample not less than 0.5 kg shall consist of sheets of at least 300 x 300 mm.

**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 may be rejected.

**6.4 Testing**

6.4.1 Samples taken from any portion of supply shall be in accordance with Clause 3 and shall comply with the requirements given below: -

(a) Chemical Requirements of Mill Board

| Sl No. | Characteristic   | Requirements       | Test methods (Refer to IS 1060 part I & part 2, as relevant) |
|--------|--|--------------------|--|
| 1.     | Moisture content at 103 to 105 °C for 2 hours, percent by mass | Max 9.0            | 9 of Part 1  |
| 2.     | pH of water extract  | Min 5.5<br>Max 7.5 | 10 of Part 1   |

|    |   |          |              |
|----|---|----------|--------------|
| 3. | Water soluble chlorides, calculated as Sodium chloride, percent by mass           | Max 0.05 | 17 of Part 2 |
| 4. | Water soluble sulphates, calculated as anhydrous Sodium sulphate, percent by mass | Max 0.25 | 18 of Part 2 |
| 5. | Fatty and/or similar acids calculated as Oleic acid, percent by mass              | Max 0.25 | 19 of Part 2 |
| 6. | Matter soluble in Ether, percent by mass  | Max 2.5  | 20 of Part 2 |
| 7. | Ash on incineration at 800 °C ± 25 deg C percent by mass                          | Max 10.0 | 11 of Part 1 |
| 8. | Lead and compounds of lead calculated as metallic lead, percent by mass           | Max 0.2  | 16 of Part 2 |

Note: All percentages shall be calculated on dry mass of the material after drying to constant mass.

(b) Physical Requirements of Mill Board

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

| <b>Test</b>   | <b>Requirement</b>                                  |
|---|---|
| Pliability and toughness (when required for the manufacture of Cartridge Cups): - Discs pressed into cup shape mould of diameter 76 mm approximately. | Free from chipping and cracks at and near the bend. |

Note: - (i) The cuppling may be assisted by damping the material in the vicinity of the bend.

(ii) Other physical requirements shall be according to the schedule given below: -

**SCHEDULE**

| <b>Thickness in mm</b> | <b>Mass in g/m2</b> |
|------------------------|---------------------|
| 0.50 ± 0.07            | 575 ± 85            |
| 1.25 ± 0.18            | 1450 ± 220          |
| 2.50 ± 0.35            | 2675 ± 400          |
| 3.25 ± 0.48            | 3350 ± 500          |
| 5.00 ± 0.75            | 5350 ± 800          |
| 6.30 ± 0.95            | 6700 ± 1000         |
| 9.00 ± 1.00            | 9630 ± 1070         |

**7. WARRANTY**

7.1 The stores supplied against the contract shall be deemed to be warranted against defective material and performance by the contractor for a period of 12 months from the date of receipt of the store 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 or contractor free of all charges at the consignee's premises.

**8. PACKAGING AND MARKING OF PACKAGES**

8.1 50 or 100 Boards (according to the thickness of Boards on order) shall be wrapped in paper to form a packet. 10 such packets shall be packed with a single layer of Hessian Cloth to form a bale. The bale shall be packed between two suitable thick boards (wood or paper) one on top and the other at bottom and the assembly banded all round by hoop iron, for safe rail transit. The outside of each bale shall bear the Manufacturer's initials or recognised trademark, order No, date of supply and the nomenclature of the contents.

OR

Packaging (Preservation, identification and packing) shall be in accordance with the terms of the contract.

**9. SAFETY OF OPERATIONS**

9.1 Nothing in this specification shall relieve the manufacturer/ contractor / supplier / user of his responsibility for the safety of his operations in manufacture, handling, storage and use of the store.

**10. DEFENCE STORES CATALOGUE NUMBER**

10.1 The Defence Stores Catalogue Number allotted to this store is 9310-000 001.

**11. SUGGESTIONS FOR IMPROVEMENT**

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

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