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for C. I. M. E. Kirke



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TAPE COTTON MEDIUM

1) PROOFED

2) UNPROOFED

CONTROL RATE OF INSPECTION (MILITARY EXPLOSIVES)

KIRKE-PUNE-411 003.

AMENDMENT RECORD

Amendment		Details of amendment	Clauses affected	Remarks & Initials
D.C.No.	Date			

TAPE COTTON MEDIUM

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THIS SPECIFICATION OR ANY PATTERN, DRAWINGS OR ANY OTHER INFORMATION ISSUED IN CONNECTION THEREWITH MAY ONLY BE USED FOR A SPECIFIC ORDER PLACED BY THE COMPETENT AUTHORITY. IT IS NOT TO BE USED FOR ANY OTHER PURPOSE WHATSOEVER WITHOUT THE EXPRESS WRITTEN SANCTION OF THE DIRECTOR GENERAL OF INSPECTION, MINISTRY OF DEFENCE, NEW DELHI-110 011.

0. FOREWORD

0.1 This specification has been prepared by the Controllerate of Inspection (Military Explosives), Kirkee, Pune-411003.

0.2 For additional copies or any other enquiry regarding this specification reference should be made to the Inspection Authority (i.e. CI(ME), Kirkee).

1. SCOPE

1.1 This specification is meant to govern supply and inspection of Tape Cotton medium required for manufacture of bags for packing C.E./T.N.T./N.C.P. and Propellants.

2. RELATED DOCUMENTS

2.1 The related documents mentioned at clause 2.2 are those applicable at the date of publication of this specification. It is contractor's responsibility to confirm their current applicability and to obtain from the AHSP (I.E. CI(ME), Kirkee) information concerning any change that may be necessary due to cancellation, replacement or supersession of any of these documents.

2.2 Copies of the following related specification referred to in clause 8.1 are obtainable as follows:-

- | | | |
|------------------|------|--|
| JS Specification | - i) | The Controller,
Controllerate of Inspection,
(Military Explosives), Kirkee, Pune-411003. |
| KSS:1250 | ii) | The Director,
Directorate of Standardisation,
'J' Block, Ministry of Defence,
DHQ PO NEW DELHI-110 011. |

3. DESCRIPTION

3.1 The tape cotton, Medium shall be made from good quality cotton yarn. The weave shall be plain or twill. The tape shall be uniformly woven and shall be free from creases, flaws, knots and other defects. The selvages shall be firm and straight. The tape may be proofed or unproofed, scoured and soured and the tape may be in loom state or in roll form and shall be of the width ordered in the contract. The tapes shall normally be supplied in 50 $\pm$ 10 metres length in roll form. The tapes shall be as free from joints as practicable and the number of joints shall not exceed three in 50 metres and no piece length shall be less than 5 metres. Pins or other metal fastenings shall not be used to join any two lengths of tape.

4. TENDER SAMPLE

4.1 A tenderer shall submit a tender sample (2 rolls/hanks) of 30 to 50 metres free of all charges, conforming to this specification. The minimum mass of the sample to be submitted for test shall not be less than 250 grams.

5. PRE-INSPECTION

5.1 Before tendering the store to the Inspector, the Contractor shall carry out a thorough inspection of each delivery to satisfy himself that the store fully conforms to this specification and shall render a certificate to that effect to the Inspecting Officer.

6. INSPECTION

6.1 The tape cotton, medium and the packages in which it is contained shall be subject to inspection by and to the final approval of the Inspecting Officer/Inspection Authority.

6.2 Samples of the material and of the packages may be taken from any portion of a consignment/batch/lot.

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

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

7. SAMPLING

7.1 Not less than 5 samples from separate roll/hanks, each of at least 10 to 15 metres in length shall be drawn from a consignment of 10,000 metres or on part thereof. The length of each sample in case of 6.0 mm and 10.0mm tape shall be a minimum of 20 to 25 metres.

8. TEST REQUIREMENTS

8.1 Samples taken from any portion of the supply shall comply with clauses 3 above and shall also conform to the following requirements.

■ A) Chemical requirements - 1) General

Sl. No.	Characteristics		Passing Test Method Standard (Ref to ISS: 1250)	
1	pH of aqueous extract	a)Max b)Min	8.5 5.5	6
2	Water soluble chlorides calculated as NaCl percent by mass,	Max	0.1	7
3	Water soluble sulphates, calculated as Na ₂ SO ₄ percent by mass	Max	0.25	8
4	Ash, Percent, by mass			
	a) Unproofed material,	Max	0.5	
	b) Proofed material	Max	5.0	10

- 2) When the material is proofed it shall comply also with the following requirements in addition to the above tests(1 to 4).

Sl. NO.	Characteristics	Require ments	Test Method Ref to JSS:1250
1	2	3	4
1	Mould Proofed material water soluble matter % by mass		
	a) When mould proofed by para nitrophenol 0.25%	0.35 Min	5
	b) When mould proofed by sodium pentachlorophenate - 0.5%	0.70 Min	5
2	Smoulder proofed by Gelatine and Diammonium hydrogen phosphate.		
	a) Water soluble matter percent Min	5	5
	b) Soluble phosphate calculated as Diammonium hydrogen phosphate percent		
	1) Max	3.0	Appendix 'A' to this specn
	ii) Min	2.5	
	c) Time of smouldering seconds Max	5	
3	Smoulder proofed by Gelatine and Diammonium hydrogen phosphate and mould proofed by paranitrophenol 0.25%		
	a) Water soluble matter percent		
	1) Max	11.0	5
	ii) Min	5.0	
	b) Soluble Phosphates calculated as diammonium hydrogen phosphate percent by mass		
	1) Max	3.0	Appendix 'A' to this specification
	ii) Min	2.5	
	c) Time of smouldering seconds, Max	5	
4	Smoulder proofed by Gelatine and diammonium hydrogen phosphate and mould proofed by sodium penta chlorophenate 0.5%		
	a) Water soluble matter percent by mass Min	6.7	5
	b) Soluble phosphates calculated as Diammonium hydrogen phosphate percent by mass		
	1) Max	3.0	Appendix 'A' to this specification
	ii) Min	2.5	
	c) Time of smouldering seconds Max	5	Appendix 'B' to this specification

NOTE: i) The amount of material added in the proofing process shall not exceed 20% of the air-dry mass of the tape prior to proofing.

ii) The following details of a single process which gives satisfactory results are added for guidance.

a) Mould Proofing - The tape is dipped in a 0.25% solution of paranitrophenol or 0.5% sodium pentachlorophenate solution for 15 minutes, excess solution drained and the tape is dried in air.

b) Smoulder Proofed - Same as in (c) below but without paranitrophenol or sodium pentachlorophenate.

c) Mould and Smoulder Proofing - The tape is passed through a sizing bath containing 3 percent gelatine, 8 percent groundnut oil, 2 1/2 percent diammonium hydrogen phosphate and 0.25 percent para nitrophenol or 0.5 percent sodium pentachlorophenate. The nip rollers are adjusted to leave on the tape its own mass of size.

iii) When the percentage of diammonium hydrogen phosphate present in the material is of the order of 2 1/2% - 3% additional mould proofing is necessary.

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

B) Physical Requirements

Material shall conform to the physical requirements of the given schedule attached to this specification.

9. PACKING AND MARKING

9.1 Packing

9.1.1 Assemble as many rolls as convenient on a common hollow wooden or card board mandril. Securely tie with a piece of jute, twine or cotton tape so as to form a bundle. Such bundle will be wrapped in polythene and finally with gunny bag and tied/stitched securely.

9.2 Marking

9.2.1 All the packages constituting a consignment shall each be legibly and durably marked with the following details as applicable.

- i) Nomenclature and specification number of the material,
- ii) Name and address of the consignee, iii) AT/SC No. and date,
- iv) Consignment number, v) Lot No./Batch No. and date of manufacture,
- vi) Quantity in number, vii) Consecutive number of package and total No. of packages, viii) Date of supply,
- ix) Contractor's initials or recognised trade mark if any.

9.2.2 In addition to above, the Inspecting Officer may suggest some more marking/identification at the time of inspection.

Sd/- X X X

(Dr. S. R. RAY)

CONTROLLER

CONTROLLER OF INSPECTION (MILITARY EXPLOSIVES)

SCHEDULE TO - PHYSICAL REQUIREMENTS

Width in mm	Weave	Total Warp ends	Warp Min	Warp Max	Tex	Weight per 100 matres x 20 cm between grip in grams	Min	N
1 6.0 ± 1.5	Plain or twill	20	125	21	Tex 2	22.7	115 ± 5%	85
2 10.0 ± 1.5	"	30	125	"	"	"	160 ± 5%	115
3 13.0 ± 1.5	"	35	125	"	"	"	210 ± 5%	145
4 16.0 ± 1.5	"	45	125	"	"	"	255 ± 5%	180
5 19.0 ± 1.5	"	50	135	"	"	"	300 ± 5%	215
6 22.0 ± 1.5	"	65	140	"	"	"	385 ± 5%	265
7 25.0 ± 2.5	"	75	140	"	"	"	420 ± 5%	295
8 38.0 ± 2.5	"	110	140	"	"	"	645 ± 5%	445
9 50.0 ± 2.5	"	145	140	"	"	"	850 ± 5%	585

NOTE : 1) When tapes are scoured the soured mass will be approximately 5 percent lighter.

- 2) The Tex count figures are for guidance only.
- 3) Before testing for physical requirements, the material shall be conditioned for 24 hours in an atmosphere of 65% ± 2% relative humidity at 27°C ± 2 deg C.
- 4) Samples shall comply with the physical requirements for the specific width in the schedule attached.

APPENDIX 'A'

DETERMINATION OF SOLUBLE PHOSPHATE

1. Reagents

Magnesia Mixture

50 g Magnesium chloride, hydrated
100 g Ammonium chloride
5 ml conc. Hydrochloric acid
and diluted to 1000 ml with distilled water.

2. Procedure

a) Extract 10 g of the smouldered sample with hot boiling water. Filter if necessary. Acidify the extract with 5 ml of dilute hydrochloric acid and add few drops of methyl red indicator. Add 50 ml of magnesia mixture. Heat the solution to boiling and while still boiling very slowly run in dil. ammonia solution with constant stirring until crystalline precipitate appears. Cool the mixture. Add conc. ammonia equal approximately to 1/5 of the total volume. Stir and leave aside overnight. Filter over a tared and ignited Gooch crucible. Wash the precipitate free from chloride with dilute ammonia and finally moisten with several drops of saturated solution of ammonium nitrate in dilute ammonia solution. Dry the crucible and then ignite gently at first until all fumes of ammonia have been displaced and finally to constant mass at bright red heat and weigh.

b) From the mass of the precipitate of Magnesium Pyrophosphate ($Mg_2P_2O_7$) calculate the percentage of solution phosphate as diammonium hydrogen phosphate $(NH_4)_2 HPO_4$.

APPENDIX 'B'

METHOD FOR DETERMINATION OF TIME OF SMOULDERING

A piece of tape of diameter equal to the width is fixed centrally on a steel skewer and ignited in a Bunsen flame from which it is withdrawn on ignition. The time elapsing between the flame dying out and the disappearance of glow is observed. This is the time of smouldering.
