

DC NO - 5111-ME

27.04.2013

MASTER COPY

IND/ME/1023

EXPANDED CROSS-LINKED
POLYETHYLENE FOAM BASED
CUSHIONING MATERIALS FOR PACKING
OF AMMUNITION

अनुसंधान/विकास/विनिर्माण
प्रमाणित प्रतिलिपि
Certified true copy of
Serial/SPEC. NO.
दिनांक/At this date
V. Thangirvelan... 50
23/10/2020
को नियंत्रक गु.आ.वि. (मे.वि.)
लखनौ, पुणे-411 020.
MOR CONTROLLER COA (ME)
पुणे, पुणे-411 020.

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DEPARTMENT OF DEFENCE PRODUCTION
MINISTRY OF DEFENCE
CONTROLLERATE OF QUALITY ASSURANCE
(MILITARY EXPLOSIVES)
AUNDH ROAD, PUNE - 411 020.

RECORD OF AMENDMENTS

Amendment Ser. No.	Date	Details of amendment	Amendment our by (Name & Date)
3857 -ME	29 - 04 - 2005	New Specification formulated Approved and Sealed by the Controller.	R. N. JOSHI

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THIS SPECIFICATION OR ANY PATTERN DRAWING 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 OTHER PURPOSE WHATSOEVER WITHOUT THE EXPRESS WRITTEN SANCTION OF THE DIRECTOR GENERAL OF QUALITY ASSURANCE, MINISTRY OF DEFENCE. DHQ PO NEW DELHI 110011.

0. FOREWARD

- 0.1 This specification is formulated on the basis of the project report initiated by CQA(Ammn) Khadki and conducted at O.P. Bhusawal to replace Internal steel fitments of steel boxes with varying density upto 85kg/m^3 cushioning materials.
- 0.2 For additional copies or any other information regarding this specification, reference should be made to the Quality assurance Authority i.e. CQA (ME), Aundh Road, Pune-411020.

1. SCOPE

1.1 This specification is meant to govern the manufacture, supply and Quality Assurance of Expanded Polyethylene (Crosslinked) Foam based cushioning material.

1.2 The Crosslinked Polyethylene Foam is useful for Clamp lining applications etc. in steel boxes like C-48, C-53 and C-51.

2. RELATED SPECIFICATIONS AND DOCUMENTS

- 2.1 (a) IS 138:1992 Ready mixed paint, marking for packages and Petrol containers - Specification
(Revision No. 3)
Reaffirmed 2009 Amds 1
- (b) ASTM-D 624 Test method for Surface resistivity
- (c) ASTM-D 3575 Standard Test method for Flexible Cellular Material from Olefin Polymer
- (d) JSG 0112:1997 General Methods of Tests and assessment of impurities in Chemicals/Materials used in the Manufacture of Explosives and Ammunition.
(Revision No. 1)

2.2 Copies of related specifications are obtainable on payments basis as follow: -

1) ASTM & Indian standard	2) JSG
Bureau of Indian standards,	The Director
Manak Bhavan	Directorate of Standardisation
9, Bahadur Shah Zafar Marg	Standard Document Centre
New Delhi - 110 002	I-5, 'T' Block, Nirman Bhavan PO
Or	NEW DELHI 110011
Its Regional / Branch offices.	

3. MATERIAL / FINISH

3.1 The subject materials shall be in the form of sheets, blocks, profiles and fabricated fittings of various thicknesses.

4. MANUFACTURE

4.1 Crosslinked Expanded Polyethylene Foam of varying density is manufactured from resins or blend of resins of Polyolefin family such as LDPE (except EVA) chemically crosslinked with the help of suitable additives. The finished product having been Crosslinked by the process of compression moulding in the form of buns. The buns are later on skived sliced into sheets of various dimensions.

5.0 PRE - INSPECTION OF STORES / CONSIGNMENT

5.1 Manufacturer / contractor 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 contract. A declaration by the contractor that necessary pre-inspection has been carried out of the store 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 whole consignment is liable for rejection.

6.0 QUALITY ASSURANCE

6.1 The material Expanded Crosslinked Polyethylene foam and the packages in which it is packed shall be subjected to inspection by and to the approval of QA officer/ QA Authority.

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

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

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

7. SAMPLING

7.1 The number of samples to be drawn as per approved sampling plan.

8 TEST REQUIREMENTS

8.1 Samples taken from any portion of the batch / lot shall be as per App-A addition shall satisfy the following test requirements.

Test Requirements of Expanded Cross-Linked Polyethylene foam based cushioning materials.

Sl. No.	CHARACTERSTIC	PASSING STANDARD	TEST METHOD	Remark
(1)	(2)	(3)	(4)	(5)
1.	Colour	Black		
2.	Thickness in mm	As per requirement $\pm 10\%$	Appendix 'A' Para -2	
3.	Width in mm	As per requirement $\pm 5\%$	Appendix 'A' Para -2	
4.	Density kg/m^3 upto thickness 25 mm	50 to 65	ASTM D3575 Suffix 'W' Test Method 'A'	Sample size upto 25mm thickness will be of 25cm x 25cm x 10 mm thick
	Above 25mm	65 to 85	-----oo-----	Above 25mm, sample size will be 25cm x 25cm x 30mm thick
5.	Water absorption (At 27 Deg.C for 48 Hrs.) Max.g/cm ²	0.02	ASTM D3575 Suffix 'L'	upto 25mm thickness test sample thickness will be 10mm & above 25mm thickness test sample thickness will be 25mm
6.	Tensile Strength Kg/cm^2 Minimum (At break)	5.0	ASTM D3575 Suffix 'T' ASTM-412/D- 638 Die A speed of head travel - 501 5mm /min.	Test specimen thickness will be 8mm
7.	Elongation % Minimum	50	ASTM - D 3575 Suffix 'T' ASTM - 412 Die A speed of head travel 501 5mm /min.	tensile strength & elongation are tested together hence test specimen will remain the same Passing standard should be 50% minimum.
8.	Tear Strength Kg/cm Minimum	1.8	ASTM D-624 Die C speed of head travel 500 50mm/min	Thickness of the specimen will be 10mm
9.	Compression Strength at 25 % deflection Kg/cm^2 Minimum	0.6	ASTM D575 Suffix 'D'	Test specimen Will be of 25mm thickness
10.	Thermal Stability at - 50°C/2hrs. & + 70°C/24hrs. Change in dimensions % Max	5	ASTM D-3575 Suffix 'S'	Sample size 250mm x 250mm x 25mm
11.	pH of water extract	6.0 to 8.5	ISC : 0112:1997 Method No 5(I)	

9.0 WARRANTY

9.1 The stores supplied against 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 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 manufacture / supplied / contractor free of all charges at the consignee's premises.

10. PACKAGING

10.1 The stores shall be securely packed to avoid damages in transit so as to reach in perfect serviceable condition to the consignee. The packages shall be legibly marked with the consignee's address and other necessary details for easy identification of the stores by consignee.

10.2 The materials shall be supplied in sound and dry packages, consisting of polythene film of 0.13mm thick and suitable external packages. The packages shall be securely closed.

10.3 The material offered in any other packages shall have the prior approval of the Quality Assurance Officer / Quality Assurance Authority.

10.4 Inclusion of any foreign matter or impurities in any of the packages shall render the whole consignment liable for rejection.

11. MARKING

11.1 All the packages containing the material shall be indelibly and legibly marked with following details :-

- i. Nomenclature of the store and specification number
- ii. Name and address of the consignee
- iii. A/T or S.O.No. and date
- iv. Consignment number
- v. Lot / Hatch number
- vi. Gross and net mass
- vii. Consecutive No. of packages and total No. of packages in the consignment.
- viii. Date of supply
- ix. Contractors initials or recognized trade mark

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

11.3 The paint used for marking shall conform to IS 138.

12. SAFETY OPERATIONS :-

12.1 Nothing in the specifications shall relieve the manufacture / supplier / contractor user of his responsibility for the safety of operations in manufacture, transit handling, storage and use of the store.

13. SUGGESTIONS FOR IMPROVEMENT :-

13.1 Any suggestion for improvement in this specification shall be forwarded to the Controller, Controllorate of Quality Assurance (Military Explosives), Aundh Road, Pune - 411 020.

Date : 09 Feb 2013

sd/-...
(K. N. Patil)
Controller CQA (ME),
Aundh Road
Khadki, Pune 411 020.

Appendix 'A'

TEST SPECIMEN

1. Test specimen in case of sheets, fabricated or die-cut parts, moulded sheets shall be cut from buns, as described in clause 4.1
2. Measure the dimensions up to 25mm using a dial type gauge with a minimum foot area of 650 mm square (1 inch square). Thickness of material having irregular surface characteristics shall be treasured by a method agreed between end use AHSP and the manufacturer.

Dimensions over 25mm may be measured with dial gauge, scale or measuring tape.

The scale tape or gauge shall be graduated to permit measurements within $\pm 1.0\%$ of the dimension to be measured.

Results reported shall be the average of 3 equally spaced measurements of length and width. Thickness shall be the average of center and four equally spaced measurements around the perimeter of the specimen / sample.

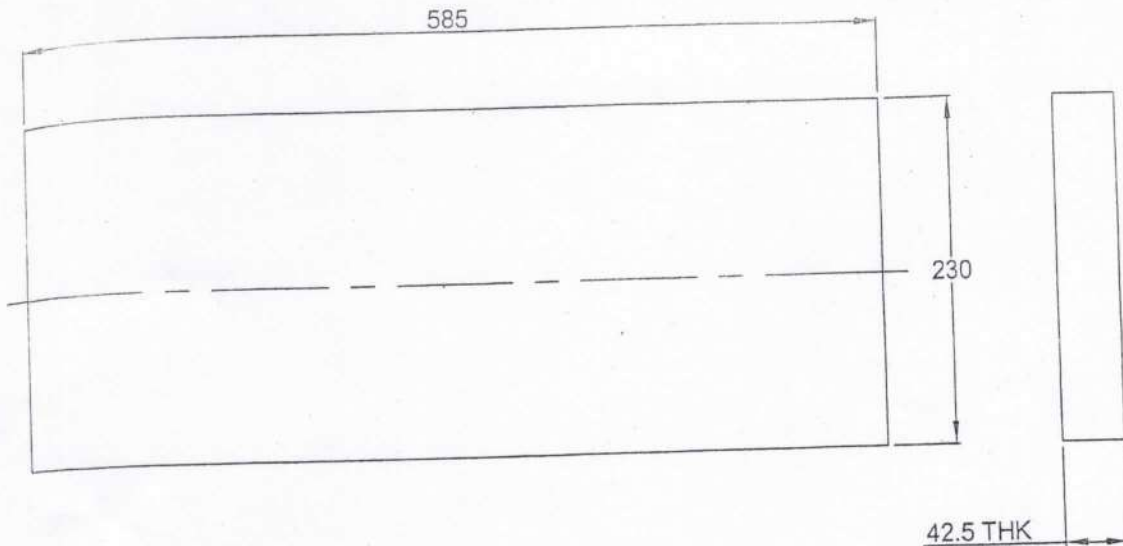
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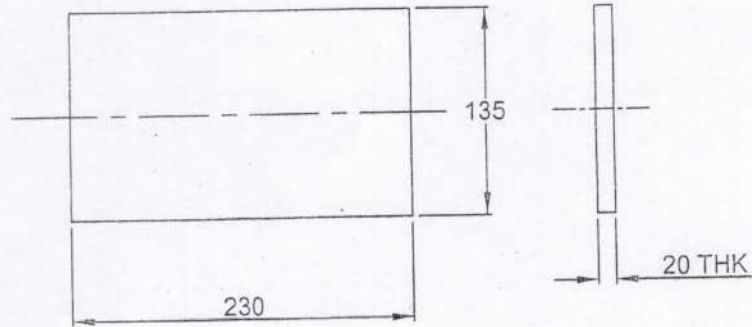
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R. NO.	DATE	AUTHORITY	ZONE	BRIEF RECORD	CD.	GO.
					SIGN.	
DEVIATION FOR UNTOLERANCED DIMENSIONS TO CONFIRM OT SPEC. IS:2102 MEDIUM				DRAWING CONVENTIONS CONFIRM TO IS SPEC.		
SCALE: NA				DRAWING:		DATE: 10-01-2017
EST MASS:				DRN.B KUMAR TO A		PASSED
GAUGE SCHD.				CHD. PC RAO'ScF'		
E DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED				APPROVED		
MATL:- EXPANDED CROSS-LINKED POLYETHYLENE FOAM Specification No. IND/ME/1023				FOR DIRECTOR		
PROTECTIVE FINISH: —				ASSY.DRG. HEMRL/EDS/AERA/T-90/DRG/006		
TITLE: PACKING SHEET-II				DRG.NO. HEMRL/EDS/AERA/T-90/DRG/006/2		
F DESIGN AUTHORITY:				DET No. 2 SHTS.1 SHT.No1.		
HIGH ENERGY MATERIALS RESEARCH LABORATORY, PUNE - 411021				PART No. D.S.CAT.No. A.H.S.P.		



PA 05/14/23

R. NO.	DATE	AUTHORITY	ZONE	BRIEF RECORD	CD.	GO.
					SIGN.	
DEVIATION FOR UNTOLERANCED DIMENSIONS TO CONFIRM OT SPEC. IS:2102 MEDIUM				DRAWING CONVENTIONS CONFIRM TO IS SPEC.		
SCALE: 1:5				DRAWING:		
EST MASS:				DRN.B KUMAR'TO'A DATE: 10-01-2017		
GAUGE SCHD.				CHD. PC RAO'Sc'F' PASSED		
DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED				APPROVED		
MATL:- EXPANDED CROSS-LINKED POLYETHYLENE FOAM Specification No. IND/ME/1023				FOR DIRECTOR		
PROTECTIVE FINISH: —				ASSY.DRG. HEMRL/EDS/AERA/T-90/DRG/006		
TITLE: PACKING SHEET-III				DRG.NO. HEMRL/EDS/AERA/T-90/DRG/006/3		
DESIGN AUTHORITY:				DET No. 3 SHTS.1 SHT.No.1		
HIGH ENERGY MATERIALS RESEARCH LABORATORY, PUNE - 411021				PART No.		
				D.S.CAT.No.		
				A.H.S.P. —		



OK
25/09/24

Ph
25/2/23

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आयुध निर्माणी भंडारा
म्युनिशन्स इंडिया
लिमिटेड कीड़काई
भारत सरकार का उद्यम
रक्षा मंत्रालय
भंडारा, महाराष्ट्र-441 906.

Ordnance Factory Bhandara
Unit of Munitions India Ltd.
Govt. of India Enterprise,
Ministry of Defence
Bhandara, Maharashtra- 441906.



दूरभाष सं/PHONE No. 07184-275742-49

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Quality Assurance Plan

ITEM: EXPANDED CROSS LINKED POLYTHYLENE FOAM SHEET

SPECIFICATION/DRAWING: IND/ME/1023 DC NO. 5111-ME, DT 27.04.2013. EACH SET CONSIST OF SIZE

- 1)585X220X35 MM-2 NOS/SET, 2)585X230X42.5MM-2 NOS./SET,
3)230X135X20MM-7 NOS./SET, 4)245X125X1.5 MM-26 NOS./SET.

Supplier/ Manufacturer has to submit latest Pre-inspection report/test results from NABL accredited laboratory/ Govt. laboratory for all test requirement as mentioned in above said specification/Supply Order.

1. Firm has to supply the bulk material strictly as per specification/drawing & supply order.
2. Bulk quantity, of the store will be inspected for the following parameter-
Visual inspection- (Quantity 100%) item should be free from any visual defects/damage.

Dimensional Inspection-as per specification/drawing mentioned above & in the Supply Order.

3. All parameters should be as per above mentioned specification/drawing.
4. All other criteria should be as per the specification/drawing mentioned above.
5. Bulk will be accepted on the basis of inspection & test report of NABL accredited laboratory/Govt. laboratory/OFBA laboratory as per specification/Drawing mention above and all other criteria mentioned in supply order/"any attached sheet" with the supply order should be followed strictly.
6. Item should be appropriately packed to ensure that there is no transit damage.
7. If any latest version of the specification/Drawing mention above is found available and included in the supply order then the latest version will be followed.
8. Clearance of advance sample: Firm has to supply advance sample -
 - a. When an item is being developed for the first time.
 - b. When an item is being developed through new source.
 - c. When an item is being supplied by the firm after laps of three years after completion of last order.

(S.A. Randive)

Junior Works Manager (SG)
For Chief General Manager

पंजीकृत पताम्युनिशन्स इंडिया लिमिटेड : मुख्यालय, द्वितीय तल, न्याति यूनिट्री, गुंजन थिएटर के पास, नागर मार्ग, येरवदा, पुणे, महाराष्ट्र - 411006 .

Regd. Office: Munitions India Ltd Headquarters., 2nd Floor, NyatiUnitree, Near Gunjan Theatre, Nagar Road, Yervada Pune, Maharashtra - 411006दूरभाष सं /PHONE No. 020-67080400, 020-67080401.