



RAKSHA MANTRALAYA
MINISTRY OF DEFENCE

JOINT SERVICES SPECIFICATION

ON

AMMUNITION PROTECTIVE COMPOSITION NO 230
(CEMENT RD 1279,POLYSTRENE)
(DS Cat No. 8030-000 041)

JSS 8030-41: 2006

MANAKIKARAN NIDESHALAYA
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LIST OF MEMBER ASSOCIATED WITH PREPARATION OF THIS DOCUMENT

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: -

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17.	Lt Col Sanjay Singh	Secretary ASSC

RECORD OF AMENDMENTS

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

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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 and is mandatory for use by the Defence Services.

0.3 This specification has been prepared on the basis of IND/ME/706 (a) and supersedes the same.

0.4 This specification would be used for supply and quality assurance of Ammunition Protective Composition No 230, (cement RD 1279, Polystyrene cement)

0.5 Quality Assurance Authority for the item covered in this specification is the Controller, Controllerate of Quality Assurance (Military Explosive), Aundh Road, Kirkee, Pune - 411 003. 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, DHQ PO,
New Delhi - 110 011

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

The Director,
Directorate of Standardisation,
Standardisation Documents Centre,
Room No. J-13 'J' Block
DHQ PO, New Delhi - 110 011

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

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1. SCOPE

1.1 This specification is meant to govern supply, manufacture and quality assurance of Ammunition Protective Composition No 230 (Cement RD 1279, Polystyrene cement) suitable for use as an adhesive cement for various polystyrene armament stores.

2. RELATED SPECIFICATIONS

2.1 Reference is made in this specification to :-

a)	IND/ME/369(b)	Tritolyl Phosphate
b)	JSS 9330-01: 2000 (Revision No 1)	Polystyrene moulding powder Amn Type A & B
c)	IS 0537: 1967 Specification	Toluene, Pure, Nitration Grade (First revision) (Amendment 2)
d)	IS 138: 1992	Ready Mixed paint, Marking for Packing and Petrol Containers (Third revision) Reaffirmed 1999
e)	IS 188: 1977	Methods for the determination of viscosity of liquids.

2.2 Copies of the 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

2.3 Copies of the JSS are obtainable on payment from:-

The Director,
Directorate of Standardisation,
Standardisation Documents Centre
J-13, 'J' Block, DHQ PO,
New Delhi - 110 011.

2.4 Copies of the IND/ME specification are obtainable on payment from:-

Controller,
Controllerate of Quality Assurance (Military Explosive)
Aundh Road, Kirkee,
Pune 411 003

3. MATERIAL

3.1 Ammunition protective composition No 230 shall be in the form of a homogeneous clear liquid and shall consist of Polystyrene, Tritolyl phosphate, Toluene and Dye (if colour is required) in the proportion shown in clause 4.4.1 below. It shall be free from sediments or suspended matter, any foreign matter and visible impurities.

4. MANUFACTURE

4.1 Ammunition Protective composition No. 230 shall be manufactured by a process which will produce the product confirming to this specification.

4.2 Nothing in this specification shall relieve the manufacturer of his responsibility for safety of operations.

4.3 Ingredients

4.3.1 The ingredients used in the manufacture of Ammunition Protective composition No. 230 shall conform to the relevant specifications shown against each.

Sl No	Ingredient	Specification
1	2	3
(i)	Polystyrene Type 'A'	JSS 9330-01
(ii)	Tritolyl Phosphate	IND/ME/369 (b)
(iii)	Toluene	IS 537

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4.4 **COMPOSITION**

4.4.1 The composition given below is a general guideline to the manufacturer: -

SI No	Ingredient	Specification
1	2	3
(i)	Polystyrene Type 'A'	21.0
(ii)	Tritolyl Phosphate	7.0
(iii)	Toluene	72.0
(iv)	Dye (colour as required)	0.1

5. **TENDER SAMPLE**

5.1 The manufacturer/ supplier/ contractor shall submit two tender samples each of 500 g essentially from the same batch/lot of manufacture, free of all charges and conforming to this specification, to the Quality Assurance Authority /Quality Assurance Officer as stated in the contract.

6. **PRE-INSPECTION OF STORES/CONSIGNMENT**

6.1 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 chalan. 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 chalan/declaration.

6.2 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.

Note: Not applicable when the store is manufactured in the Ordnance Factories.

7. **QUALITY ASSURANCE**

7.1 **Inspection**

7.1.1 Ammunition Protective Composition No 230 and the packages in which it is packed, shall be subjected to inspection and to the approval of the Quality Assurance Officer/Quality Assurance Authority.

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8.2 Keeping Qualities

8.2.1 The material when stored in the original sealed containers under normal temperature conditions must retain the properties described in clause 7.4.1 above for period of 6 months from the date of receipt at the consignee's end.

9. PACKAGING

9.1 The material shall be supplied in dry, sound, clean tin containers with an air tight lid. Quality in each package shall not exceed 5.0 Kg and shall be stored in a dry place.

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

9.3 The inclusion of any foreign matter or impurities in any of the package shall render the whole consignment liable to rejection.

9.4 The packages constituting a consignment shall comply in every respect with the current statutory regulations for transport of inflammable liquids by rail, road or sea.

10. MARKING

10.1 All packages containing the material shall be indelibly marked with the following details (as applicable):-

- (i) Nomenclature and specification number of the material.
- (ii) Name and address of the consignee.
- *(iii) AT / SO number and date.
- *(iv) Consignment number.
- (v) Lot/ Batch No. and date of manufacture.
- (vi) Gross and net mass.
- *(vii) Consecutive number of package and total number of packages in the consignment.
- *(viii) Date of supply.
- (ix) Contractor's initials or recognized trade mark.

Note: - Not applicable when the store is manufactured in Ordnance factories.

10.2 In addition to the above the Inspecting Officer may suggest some more markings/identifications at the time of Inspection.

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

11. DEFENCE STORE CATALOGUE NUMBER

11.1 The Defence store catalogue number allotted to this store is _____. (TO BE GIVEN BY CQA(ME))

12. SAFETY OF OPERATIONS

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

13. SUGGESTIONS FOR IMPROVEMENT

13.1 Any suggestion for improvement in this document shall be forwarded to:-

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

APPENDIX 'A'

DETERMINATION OF VOLATILE MATTER

Weigh accurately about 5g of the material in a weighing bottle (m 1) and transfer the material to a shallow flat bottomed tared circular dish (m 3) approximately 100 mm in diameter. The weighing bottle is again weighed to determine the mass of material (m 2) transferred to circular dish. Place the dish and contents on a boiling water bath until practically all the volatile matter has been removed. Heat the dish and contents in an oven at 100⁰ C ± 2 deg C for 3 hours, cool to room temperature in a desiccator and weigh (m 4).

$$\% \text{ Volatile Matter} = \frac{M_4 - M_3}{M_1 - M_2} \times 100$$

APPENDIX 'B'

DRYING TIME

Spread the cement on a clean, dry smooth and degreased tin plate sheet (5 mm x 10 mm) at room temperature (25⁰ C ± 2 deg C) and allow to drain in a vertical position. The film shall dry within 10 minutes.

ADHESION TEST

Take two test piece of polystyrene (size 150 mm x 20 mm x 6 mm thick), apply a thin coating of the cement using a suitable brush so as to avoid air bubbles on the side of each test piece. Press the test piece together so that an overlap joint of 25 mm length is made and allowed to remain at room temperature ($25^{\circ}\text{C} \pm 2 \text{ deg C}$) for 24 hours.

The joint shall not get detached when the test piece is tested for adhesion by pulling apart the two ends of the test piece.