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IND/ME/971:2016

DECOPPERING AGENT

FOR

155 MM CHARGE 8 AND CHARGE 9

(DS Cat No. 9535 – 000 864)

सत्यमेव जयते

CONTROLLERATE OF QUALITY ASSURANCE (MILITARY EXPLOSIVES)

AUNDH ROAD, PUNE - 411 020

DEPARTMENT OF DEFENCE PRODUCTION

MINISTRY OF DEFENCE

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AMENDMENT RECORD

Amendment		Authority letter	Clauses Affected	Remarks
D.C. No.	DATE			

CONTENTS

THIS SPECIFICATION OR ANY OTHER 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 QUALITY ASSURANCE, MINISTRY OF DEFENCE, NEW DELHI - 110 011.

0 FOREWORD

0.1 This specification has been prepared by the Controllerate of Quality Assurance (Military Explosives) Aundh road, Pune – 411 020.

0.2 This specification is a revision of IND/ME/971(Prov) and supersedes the same.

0.3 For additional copies or other enquiry regarding this specification, reference should be made to the quality assurance authority, i. e. CQA (ME), Aundh Road, Pune – 411 020.

1 SCOPE

1.1 This specification is meant to govern manufacturer, supply and quality assurance of decoppering agent.

1.2 The material is suitable for prevention of coppering in guns. It is used with 155 mm ammunition.

2 RELATED SPECIFICATION AND DOCUMENTS

2.1 The related documents as mentioned in clause 2.2 are those applicable at the date of publication of this specification. It is contractors/ manufacturer's responsibility to confirm their current applicability and to obtain from CQA(ME), Aundh road, Pune – 411 020 information concerning any change that may be necessary due to cancellation, replacement or supersession of any of these documents.

2.2 The following related specifications have been referred to in the preparation of this IND/ME specification.

(i)	IS 1817 : 1961 Reaffirmed 2010	---	Sampling of Nonferrous strips and foil
(ii)	IS 138-1992, Amend-1 Reaffirmed 2009	---	Paint R/M marking for Packages and Petrol Containers

2.3 Copies of this specification and other related specifications are obtainable on payment basis as follows:-

SPECIFICATION		SOURCE OF SUPPLY
(i) IND/ME/ Specification	:	C. Q. A. (ME), AUNDH ROAD, PUNE - 411 020.
(ii) JSS	:	The Director Directorate of Standardization Standardization Documents Centre Ministry of Defence Room no 05, 'J' Block Nirman Bhawan PO New Delhi – 110 011
(iii) IS Specification	:	Bureau of Indian Standards, Manak Bhawan 9, Bahadur Shah Zafar Marg, NEW DELHI – 110 002 or Their regional / Branch offices

3 MATERIAL

3.1 The material decoppering agent shall have smooth surface free from grit and oiliness. It shall have uniform thickness

4 MANUFACTURE

4.1 The material shall be manufactured by a process which has received authoritative approval. The quality assurance officer shall be informed regarding the process used and shall be informed with prior notification any proposed deviation there from. All the deviations from the approved process shall be recorded immediately and all the material affected shall be set aside pending the decision of the quality assurance officer /Quality assurance authority.

5 TENDER SAMPLE

5.1 The contractor / manufacturer shall submit three sample each measuring 30 cm length x full width free of charge and conforming to this specification to QA Authority.

6 QUALITY ASSURANCE

6.1 INSPECTION

6.1.1 The decoppering agent and the packages in which it is packed shall be subject to inspection by and to the approval of QA Officer / QA authority.

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

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

6.1.4 The foregoing provisions shall equally apply to the prime contractors and subcontractors, if any.

6.2 SAMPLING

6.2.1 The samples shall be drawn as given in IS 1817

6.3 TEST REQUIREMENTS

6.3.1 Sample taken from any portion of the batch/lot/ consignment shall conform to clause 3.1 above and in addition shall satisfy the following test requirements.

Sl. No.	Test		Passing Standard	Test Method
1. **	Length in mm		500 ± 5	-
2. **	Width in mm		100 ± 5	-
3.	Thickness in mm	Max	0. 08 + 0.01	
4. *	Tin percent	Min Max	47.5 51.5	Appendix 'A'
5.	Lead percent	Min Max	47.5 51.5	Appendix 'A'
6.	Antimony Percent	Min Max	0.8 1.2	
* Note :- Tin used shall have purity minimum 99.85 percent. ** The linear dimensions viz length and width are for general guidance.				

7. SUPPLIER'S INSPECTION OF STORES / CONSIGNMENT

7.1 Before tendering the store for inspection, the supplier shall carry 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 QA Officer/QA Authority.

8. WARRANTY

8.1 The store supplied against the contract shall deem to have been warranted against defective material and performance by the manufacturer / 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 / Contractor free of charge at the consignee's premises.

9 PACKAGING

9.1 The decoppering agent shall be packed in approved packages containing an approved quantity

10 MARKING

10.1 The packages shall be legibly and durably marked with the following details.

i) Nomenclature and specification number of the material.

ii) Name and address of the consignee.

iii) A/T or S.O.No. and date.

iv) Consignment number.

v) Lot / Batch no.& date of manufacture.

vi) Gross / Net mass.

vii) Consecutive number of package and total no. of packages in the consignment.

viii) Date of supply.

ix) Contractors initials or recognised trade mark.

10.2 In addition to above the QA Officer / QA Authority may suggest some more marking / identification suitable at the time of inspection.

10.3 The paint used for marking shall conform to IS 138 (Latest Issue) and to the satisfaction of QA Officer / QA Authority.

11 DEFENCE STORE CATALOGUE NUMBER

11.1 The defence store catalogue number allotted to this store is 9535 – 000 864.

12 SUGGESTIONS FOR IMPROVEMENT

12.1 Any suggestion for improvement in this document shall be forwarded to the Controller, CQA(ME) Aundh Road, Pune - 411 020.

Date : 24.05.2016

(Mrs. MGP DHANRAJ)
CONTROLLER
CQA(ME), Aundh Road
Pune - 411 020

APPENDIX 'A'

DETERMINATION OF COMPOSITION OF FOIL, TIN / LEAD

a) Lead Content

i) Weigh out accurately about 0.5 g. of the finely divided foil into a 150 – 200 ml. beaker and cover with a watch glass. Add 5ml. of water, followed by 15 ml of concentrated nitric acid. Keep the beaker covered during the ensuing violent reaction. when the vigorous reaction is over. evaporate on a water bath to a volume of about 5ml. but not to dryness. Dilute to 5ml. heat on a water bath for 10 - 15 minutes and then filter through a Whatman No. 42 Filter paper and collect the filtrate in a 250 - 400 ml. beaker, wash the precipitate at least ten times with dilute nitric acid (1 : 100). keep the filtrate and washing for the determination of lead.

ii) The insoluble residue consists of meta stannic acid and antimonic acid. together with some co-precipitated lead compounds. The ignited residue will consist of Sn_2O_2 + Sb_2O_4 + PbO. The tin and antimony are volatalised as the iodides by the addition of about 15 times its weight of pure ammonium iodide and heating until no fumes are evolved. The lead remains behind as a mixture of oxyiodide and oxide. This is then treated with 2-3 ml. of concentrated nitric acid, evaporated to dryness on the hot plate, the nitrate cautiously decomposed and finally ignited to oxide at a low heat. The residual PbO in the crucible is dissolved in concentrated nitric acid and added to the above main filtrate from the metastannic acid. The lead is then determined as lead sulphate by the usual standard method.

b) TIN AND ANTIMONY CONTENT

i) repeat the above experiment and transfer the impure metastannic acid precipitate and filter paper, preferably dried at 100 degree centigrade to a kjeldahl flask a mixture of 12ml of concentrated sulphuric acid and 5 g of potassium hydrogen sulphate and boil gently until the organic matter is destroyed. The mixture is evaporated to fumes of sulphur trioxide, allowed to cool, cautiously transferred quantitatively to a conical flask with the aid of 50ml of water, 5 ml concentrated hydrochloric acid is added the solution cooled to 10°C titrated with standard 0.1 N potassium permanganate and of antimony is calculated. The milli equivalent of anti mony is 0.06088 g i.e.1 ml in $KMnO_4$ = 0.06088 g. of Sb.

ii) Excess of concentrated hydrochloric acid (about 20 % of the volume of the entire solution) is then added, followed by 2 - 3 g. of pure lead and the mixture boiled gently in an atmosphere of carbon dioxide. The quadrivalent tin is reduced by the lead to the bivalent state, and the antimony is precipitated, as the metal. The stannous tin is titrated with standard 0.1 N iodine and from the volume required of the latter the percentage of tin is calculated.

$$1 \text{ ml. N Iodine} = \frac{0.05935}{\text{g Sn}}$$

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