

DCNO 2159-ME  
7.11.77

DC 3754-ME  
12-12-7022

13/01/03

IND/ME/371 (b)

Feb 1977

Based on C.S. 2183

सोपान/अनुसूची/विनिर्दिष्ट  
प्रमाणित नमूने प्रति ।  
Correct Copy of  
Sealed SPECIMEN TAG  
दिनांक/At this date  
.....10 SEPTEMBER 1977 तक  
  
JJS sc  
श्री निदेशक व अ.नि. (सं.नि.)  
किरकी, पुणे-411003  
FOR CONTROLLER CQ (ME)  
KIRKKEE, PUNE-411 003.

BUTANONE

( METHYL ETHYL KETONE )

**CONTROLLED COPY No. 1**

<u>APPROVAL REFERENCE</u>	<u>DATE OF APPROVAL</u>	<u>APPROVAL AUTHORITY</u>
NO. 79799/DGI(Arm-13)	06 April 1977	D.I.(ARMS)

CONTROLLERATE OF INSPECTION ( MILITARY EXPLOSIVES )  
KIRKKEE, PUNE -411 003.  
DEPARTMENT OF DEFENCE PRODUCTION  
MINISTRY OF DEFENCE .

- 2 -

IND/ME/371(L)

AMENDMENT RECORD

Amendment		Authority letter from DI(Armts)	Clauses affected	Remarks
DCI NO.	Date			

IND/MD/371(b)

BUTANONE

(METHYL ETHYL KETONE)

CONTENTS

0. FOREWORD
1. SCOPE
2. RELATED DOCUMENTS
3. DESCRIPTION
4. TENDER SAMPLE
5. PRE-INSPECTION
6. INSPECTION
7. SAMPLING
8. TEST REQUIREMENTS
9. PACKING AND MARKING
10. APPENDIX .

IND/ME/371(b)

THIS SPECIFICATION OR ANY PATTERN, DRAWINGS OR 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-110 001.

*Director General of Quality Assurance.*

0. FOREWORD

0.1 This specification has been prepared by the CONTROLLERATE OF INSPECTION ( MILITARY EXPLOSIVES ) KIRKEE, PUNE-411 003. *C&A (ME)*

0.2 For additional copies or any other enquiry regarding this specification, reference should be made to the Inspecting Authority named in the tender or contract (i.e. CI (ME) KIRKEE).

1. SCOPE *C&A (ME)*

1.1 This specification is meant to govern supply and inspection of butanone ( methyl ethyl ketone )

1.2 The material is suitable for use as an ingredient in the manufacture of varnish, nitro cellulose RD 1198 B.

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 Authority Holding Sealed Particulars (i.e. CI (ME) C&A (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 related documents referred to in clauses 8.1 and 9.1 are obtainable as follows :-

- |                  |   |                               |
|------------------|---|-------------------------------|
| IS : 82 - 1973   | ) |                               |
| IS : 170 - 1966  | ) |                               |
| IS : 2362 - 1973 | ) | Indian Standards Institution, |
| IS : 3371 - 1965 | ) | Manak Bhavan,                 |
| IS : 5298 - 1968 | ) | 9, Bahadur Shah Zafar Marg,   |
| IS : 2552 - 1970 | ) | NEW DELHI - 110 002           |
|                  | ) |                               |
|                  | ) |                               |

3. DESCRIPTION

3.1 The material shall be clear, mobile liquid, free from any visible impurities and foreign matter and shall consist essentially of butanone  $\text{CH}_3\text{COC}_2\text{H}_5$ .

4. TENDER SAMPLE

4.1 The contractor shall submit two tender samples each of 500 g free of charge, essentially from the same batch/lot of manufacture and conforming to this specification.

5. PRE-INSPECTION

5.1 Before tendering the store to the Inspecting Officer, 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 butanone ( methyl ethyl ketone ) and the packages in which it is contained shall be subject to inspection by, and to the final approval of the Inspecting Authority/Inspecting Officer.

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

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

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

7. SAMPLING

7.1 Two representative samples of about 500 g each shall be drawn from each batch/lot. However, the number of samples to be drawn will be at the discretion of the Inspecting Officer.

8. TEST REQUIREMENTS

8.1 Samples drawn from any portion of the supply shall comply with clause 3.1 above and shall also conform to the following requirements :-

Sl. No.	Characteristics	Passing standard	Test Method
1		3	4
1.	Colour Max.	10 Hazen	Appendix A.2 of IS 3371-1965
2.	Relative density at 25°C/25°C Min. Max.	0.801 0.803	Method No. 6 IS 82-1973
3.	Distillation range, at standard atmospheric pressure 101.325 kPa (760 mm Hg)	9.0°C to 31.0°C	IS 5298-1968
4.	Water content percent by mass Max.	0.2	Karl Fischer Method IS : 2362-1973
5.	Residue on evaporation percent by mass Max.	0.002	Method No. 8 of IS 82-1973 (oven heating for 30')
6.	Acidity calculated as CH <sub>3</sub> COOH percent by mass Max.	0.003	Appendix B of IS 170 - 1966
7.	Alcoholic impurities calculated as C <sub>2</sub> H <sub>5</sub> OH percent by mass <sup>49</sup> Max.	0.7	Appendix A to this specification.

## 9. PACKING AND MARKING

### 9.1 Packing

9.1.1 The material shall be supplied in hermetically sealed glass or earthen-ware bottles/metal cans packed in wooden box or wooden barrels (with inert absorbent and cushioning material. Alternatively M.S. drums, galvanised to I.S. 2552-1970 (with screwed closures), as of required capacity (viz. 200 litres; 100 litres or as stipulated in the contract) may be used.

9.1.2 The inclusion of any foreign matter or visible impurities in any of the packages shall render the

IND/ME/371(b)

whole consignment liable to rejection.

9.2 Marking

9.2.1 All packages constituting a consignment shall 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) A.T./S.O. No. and date..
- iv) Consignment No.
- v) Distinctive lot number/batch number and date of manufacture.
- vi) Consecutive No. of package and total No. of packages.
- vii) Gross and net mass.
- viii) Date of supply.
- ix) Contractor's initials or recognised trade mark.

IND/MS/371(b)

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

*Surjit Singh*

( Dr. SURJIT SINGH )  
DIRECTOR

CONTROLLER OF INSPECTION (MILITARY EXPLOSIVES)  
For DIRECTOR OF INSPECTION ( ARMS AND AMMUNITION )

..... 8.

IND/MS/371(b)

10. APPENDIX

METHOD FOR THE DETERMINATION OF ALCOHOLIC IMPURITIES

A.1 Outline of method. Any alcoholic impurities are acetylated by reaction with acetyl chloride and the alcohol equivalent to the acetyl group consumed is determined by titration with sodium hydroxide solution using 1-naphtholphthalein as indicator.

A.2 Reagents. The reagents used shall be of a recognized analytical reagent quality.

- (1) Pyridine, dry
- (2) Sodium hydroxide, N solution
- (3) Acetylating reagent. To 118 ml of acetyl chloride add sufficient dry toluene to give 1000 ml.
- (4) 1-Naphtholphthalein indicator solution, 5 g/l.

A.3 Procedure. Transfer 10.0 ml of the acetylating reagent into each of two dry, 250 ml glass-stoppered conical flasks, using an automatic suction device on the pipette.

Add 2 ml of the pyridine to each flask, immediately stopper tightly and shake vigorously, taking care not to wet the stoppers. To one flask add 5.0 ml of the sample, ensuring it all comes into contact with the reagent. Shake the flask vigorously, taking care not to wet the stopper.

Place the flasks in a water bath at 60°C ± 1 deg C, loosening the stoppers momentarily to release any pressure and replacing them tightly. Leave in the bath for 20 minutes with occasional shaking, then remove and cool.

Add 25 ml of water and 0.5 ml of the 1-naphtholphthalein indicator solution to each flask and titrate their contents with 1N sodium hydroxide solution.



IND/ME/371(b)

A.4 Calculation. Alcohol content, calculated as  
butanol,  $C_4H_9OH$ .

$$\text{percent by mass} = \frac{0.296 (T1 - T2)}{d}$$

Where T1 = volume, in millilitres, of N sodium hydroxide solution used for the blank test,

T2 = volume, in millilitres, of N sodium hydroxide solution used for the test sample.

and d = relative density of the sample.

.....

CMK/26.10.77/