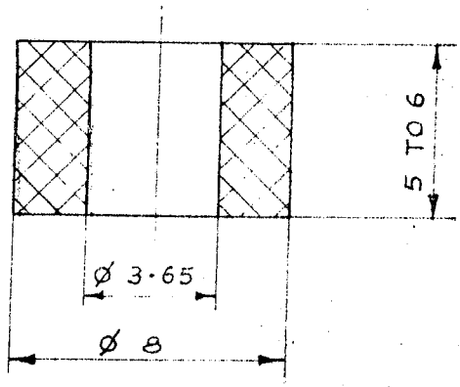
(8)

4	3	2	1

698 X01 PART Nº

DRG. CONVENTIONS CONFORM TO IS: 696
DIMNS. ARE IN mm

D.C.I. 34120-A



1-DIMENSIONS ENSURED BY THE TOOL

2-NOT PERMITTED CHIPPINGS, INCLUSIONS OF FOREIGN MATERIAL

3-PLASTIC COLOUR FROM LIGHT YELLOW TO RED - BROWN

MATL :-

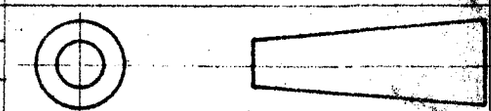
MOULDING MATERIAL A Γ 4 C GOST 20437-75. ALTERNATIVE MATL IND/ME/9[illegible] (P
GRADE 'A' OR B

R. Nº	DATE	AUTHORITY	REVISION	ZONE	AHSP / SIG	D.Q.
	03-7-87	36304-A	ALTERNATIVE MATL. SPECN. ADDED			
	1-8-87		TRACED WITHOUT CHANGE			
	29-4-87	D.C.I. 34120-A	DRG. SEALED PROV.		SDI-	SDI-

DRG. SEALED :- 29-4-87 (PROV)

DRN. M.N.K.	CHD. SDI-	TCD. D.M.N.	COMP.
SDI-	SDI-	SCALE :- 5:1	
C.D. MAN.	D/C D.O.	EST. MASS :-	
APPD.	SDI-	GAUGE SCHD :-	
	FOR C1(A)	DATE :- 28-4-87	

ASSY. DRG.



MATL :- AS ABOVE

PROTECTIVE FINISH :-

DESIGNER'S REF.
C1A/AMN/2493 DET. 3

PART. Nº
1QX 869

D.S. CAT. Nº

AHSP :- C.1.(A) KIRKEE

PLASTIC TABLET

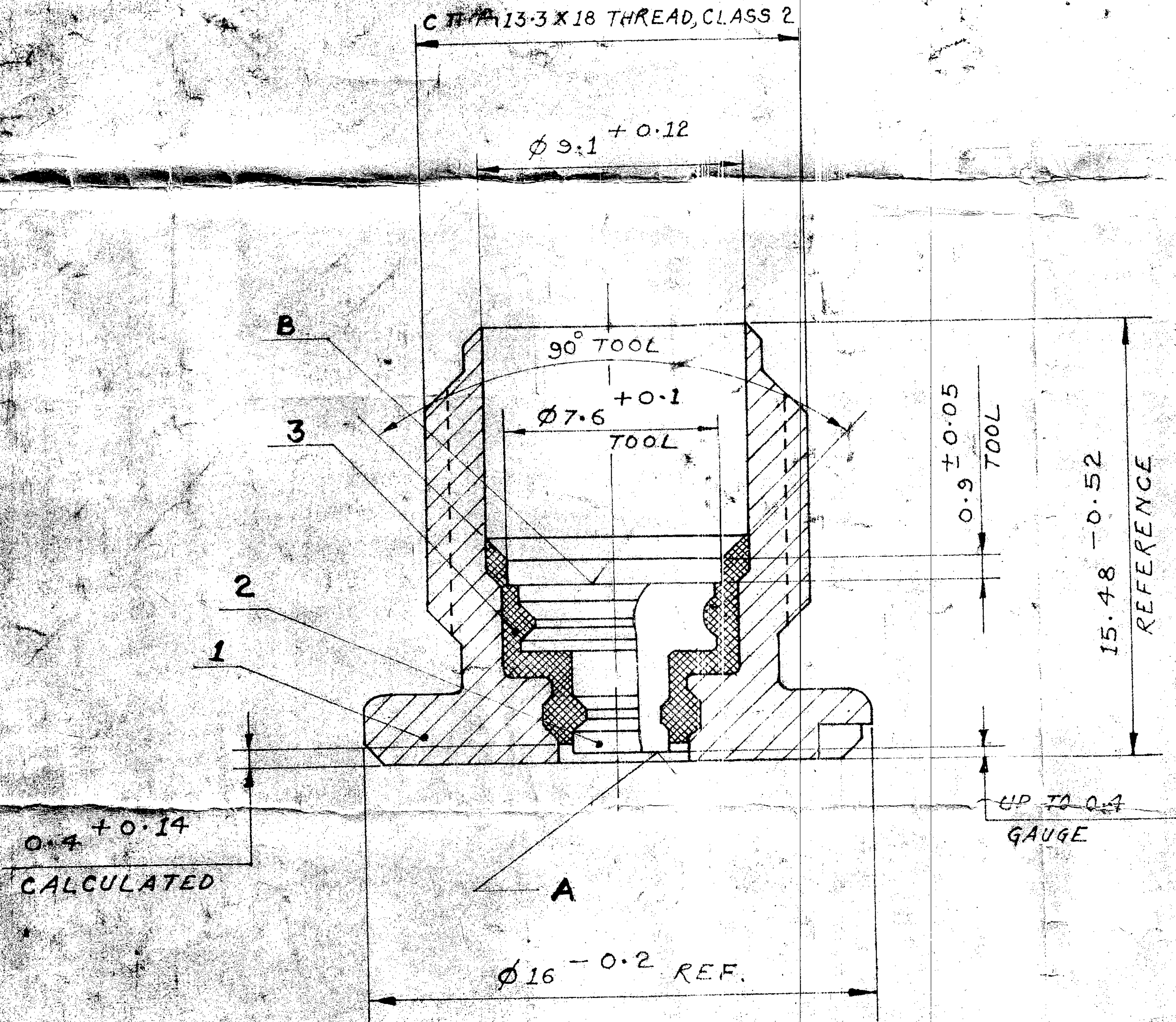
13463

BASED ON O.F.K. DRG. Nº TRD - 01

10X 73SA PART No

DRG. CONVENTIONS CONFORM TO IS : 696
DIMS. ARE IN mm

D.C.I. 34120-A



LIST OF COMPONENTS

SR No	DISCRIPTION	DESIGNER'S REF.	PART No	No PER SET
1	BODY	CIA/AMN/2493 DET. 1	1QX 861	1
2	CONTACT	CIA/AMN/2493 DET. 2	1QX 862	1
3	PLASTIC TABLET	CIA/AMN/2493 DET. 3	1QX 863	1

1. RESISTANCE OF INSULATION BETWEEN BODY AND CONTACT SHOULD BE NOT LESS THAN 100 K OHM IN THE CONDITIONS OF PRODUCTION SHOP. VOLTAGE VALUE OF DIRECT CURRENT WHILE MEASURING SHOULD BE 100-200 VOLTS.
2. LAPPING ROLLS OF PLASTIC ON THE SURFACE 'A' OF CONTACT ARE NOT PERMITTED.
3. IT IS PERMITTED:-
   a) LOCAL RUPTURES OF CHOROMATE LAYER ON THE OUTER AND INNER SURFACE OF BODY WITH SCUFFING OF BEST COATING.
   b) DARKANING OF COATING AT THE PLACESS OF RAPTURES OF CHROMATE LAYER.
   c) SCUFFING OF COATING ON THE CONTACT.
   d) INSIGNIFICANT FLASH OF PLASTIC ON THE INNER SURFACE OF BODY IN DIMENSION 9·1+0·12 THAT DOES NOT OBSTRUCT THE NORMAL CONTACT WITH BODY.
   e) INSIGNIFICANT CHIPPINGS OF PLASTIC ARROUND THE SURFACE 'A' AND 'B' OF CONTACT.
   f) SPOTTED MOULDING OF PLASTIC ON THE FLANGE OF THE BODY.
   g) INSIGNIFICANT CHIPPINGS OFF OF THREAD.
   h) MOULDING MATERIAL A Г-4-C GOST-20437-75 OR IND/ME/951 (PROV), GRADE A OR B.
   i) COLOUR OF PLASTIC FROM LIGHT-YELLOW TO RADDISH-BROWN.
   j) INSIGNIFICANT ECCENTRICITY OF POSITIONING OF CONTACT.
   k) INSIGNIFICANT DEFORMATION OF CONTACT SURFACE 5 DUE TO THE PUNCH.
4. GENERAL REQUIREMENTS TO UNIT AS PER OST B 84-533-72.

R No	DATE	AUTHORITY	REVISION	ZONE
	3-7-97	36304-A	IN NOTE 3(h) ALT. MATL SPECN. ADDED	
	17-11-87	D.C. 34269-A	EST. MASS ADDED.	
	2-7-87		TRACED WITHOUT CHANGE.	
	29-4-87	D.C.I. 34120-A	DRG. SEALED PROV.	

SDI- SDI- AHSP. D.O. SIG

DRG. SEALED :- 29-4-87 (PROV.)

DRN RCD. CHD. SDI- C.D.MAN SDI- O/C.D.O. APPD. SDI- FOR C.I.(A)

TCD ROT COMP. ASSY DRG.
SCALE :- 5:1
EST. MASS :- 9g.
GAUGE SCHD :-
DATE :- 28-4-87

MATL :-
PROTECTIVE FINISH :-

BODY WITH CONTACT

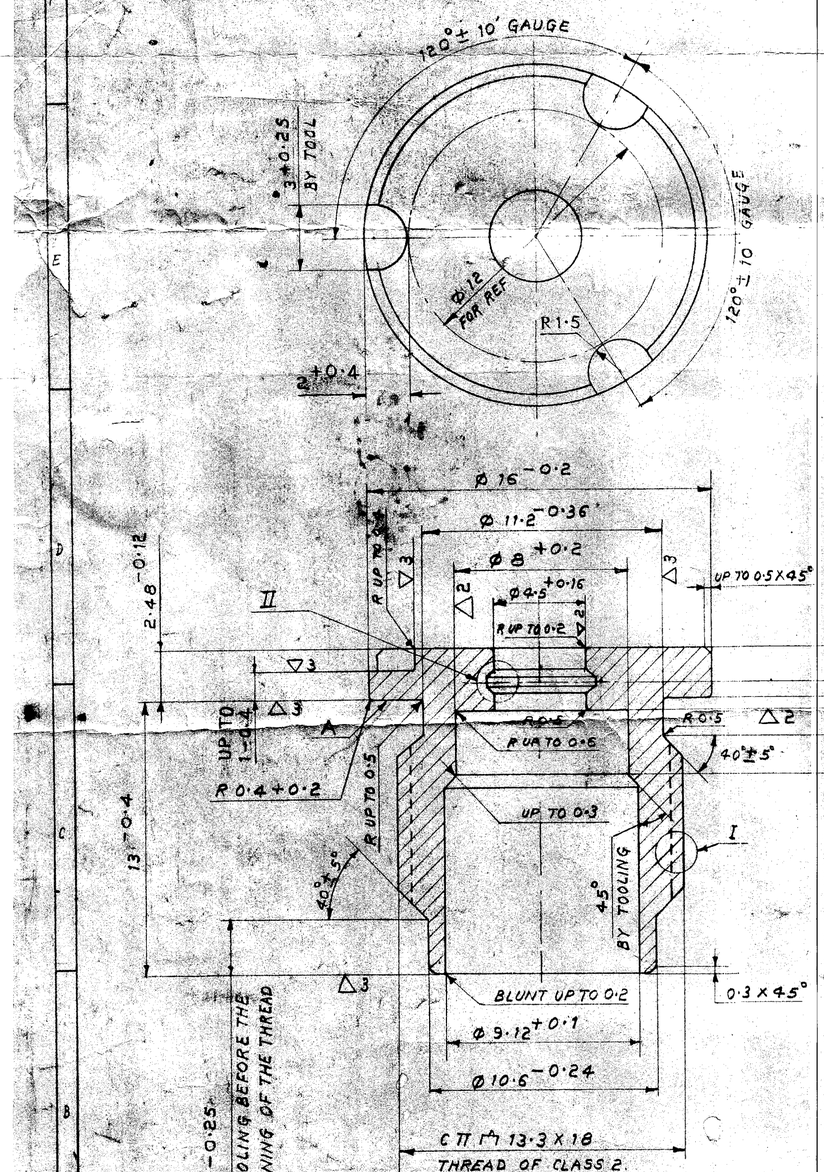
DESIGNER'S REF. CIA/AMN/2493
PART No 1QX 73SA
AHSP :- C.I.(A) KIRKEE
BASED ON O.F.K. RECORDS

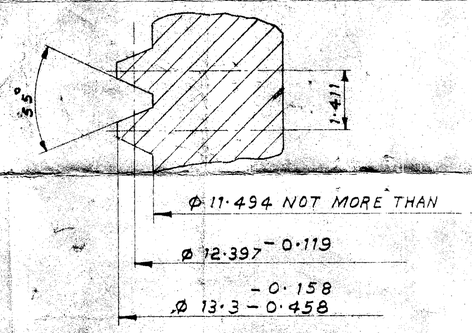
198 X01 | PART No

DRG. CONVENTIONS CONFORM TO IS:696
DIMENSIONS ARE IN mm.

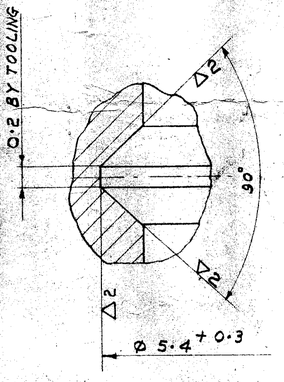
D.C.I. 34120-A

△ 4 REMAINING





I
SCALE :- 10:1



II
SCALE :- 20:1

NOTES :-

1) COATING Kδ 12 x P (CADMIUM PLATING)
2) POSITIONING OF ~~SPANNER~~ SLOTS IS CHECKED WITH SPECIAL GO-GAUGE, CONSTRUCTED ACCORDING TO NOMINAL WIDTH, DEPTH & ANGLE OF 120° ± 10'
3) CHECK THE THREAD AFTER COATING WITH THE GO-GAUGE ONLY.
4) IT IS PERMITTED :-
   a) MISALIGNMENT OF FLANGE FROM (MEAN) DIAMETER OF A THREAD NOT MORE THAN 0·025 mm
   b) MISALIGNMENT OF Ø 8 +0·1 & Ø 4·5 +0·16 - NOT MORE THAN 0·05 mm
   c) NON PERPENDICULARITY OF THREAD TO THE SURFACE 'A' UP TO 0·1 mm (IT IS CHECKED BY THREAD GAUGE & NO-GO FEELER GAUGE OF 0·1 mm)
   d) SCREWING - ON OF NO-GO THREAD RING ON THE THREAD UP TO NOT MORE THAN 2 TURNS.
   e) STAMP OF MANUFACTURE.
   f) PREPARATION OF CHAMBER AT ANGLE 35° ± 5° TO THE AXIS OF BODY BEFORE ROLL FORMING THE THREAD C M 13·3 X 18 THREAD CLASS 2.
   g) JAMMING OF PLUG GAUGE "NON-GO" IN DIAMETER 9·12 +0·1 UP TO 1·5 mm.
   h) ROUND BAR 17-4 GOST 7417-75 / 50-5-6T GOST 1050-74.
5) DIMENSION OF Ø 9·12 +0·1, Ø 16-0·2 AND C M 13·3 X 18 THREAD CLASS 2 AFTER COATING
   ANGLE 40° ± 5° ..... BEFORE THREAD CUTTING.
6) GENERAL REQUIREMENTS TO THE COMPONENT ARE AS PER OST-B 84-533-72.
7) TRACES OF THREADS ARE NOT PERMITTED OVER DIA 11·2 - 0·36
8) TECHNICAL REQUIREMENTS, RULES OF ACCEPTANCE & METHODS OF INSPECTION ARE AS PER OST-B 84-1256-76.

MATERIAL :-

ROUND BAR 17-4 GOST 7417-75 / 45-5 5-T GOST 1050-74

'APPROVED ALTERNATIVE MATERIAL STEEL 080 M46 OF BS 970 PT-I-1983 IN 'Q' CONDITION.'
OR
"STEEL ROD BS 970 PT-I-1983 GRADE 080M50 IN COLD DRAWN AND SOFTENED CONDITION."

R.No	DATE	AUTHORITY	REVISION	ZONE	AHSP	D.O
	03-7-97	36304-A	MATERIAL SPECNS. ADDED			
	17-11-87	D.C. 34269-A	EST. MASS ADDED.			
	27-8-87		TRACED WITHOUT CHANGE			
	29-4-87	D.C.I 34120-A	DRG. SEALED PROV.		SIGN.	SDI-

DRG. SEALED :- 29-4-87 (PROV)

DRN :- A.K.J. | CHD :- F.J.D. | TCD :- SNS | COMP :-
SDI- C'DMAN | SDI- O'IC D.O. | SCALE :- 5:1
APPD. | SDI- FOR C.I.(A) | EST. MASS :- 8 g.
GAUGE SCHD :-
DATE :- 28-4-87
MATERIAL :- AS STATED.
PROTECTIVE FINISH :-

ASSY. DRG

DESIGNERS REF. CIA/AMN/2493

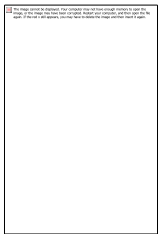
PART No 1QX 861

D.S. CAT. No

AHSP :- C.I.(A). KIRKEE

BODY

BASED ON O.F.K. DRG No TRD-



GOVERNMENT OF INDIA
MINISTRY OF DEFENCE

SPECIFICATION

ON

GLASS FIBRE FILLED PHENOLIC MOULDING MATERIAL

(DS CAT PART NO. GDE 'A' 9330 – 000123)

Departmental Specification No. IND/ME/951 (PROV)

ISSUED BY

CONTROLLERATE OF QUALITY ASSURANCE
(MILITARY EXPLOSIVES)
AUNDH ROAD, KIRKEE PUNE – 411 003

RECORD OF AMENDMENTS

Amendment Sl. No.	Date	Details of Amendment	Amendment Carried out by (Name & Designation)

CONTENTS

0.0 FOREWORD

0.1 This specification is prepared by Controllerate of Quality Assurance (Military Explosives), Aundh Road, Kirkee, Pune – 411 003.

0.2 Quality Assurance Authority for the item covered in this specification is the Controllerate of Quality Assurance (Military Explosives), Aundh Road, Kirkee, Pune – 411 003.

0.3 For additional copies or any other enquiries regarding this specification in relation to an invitation to tender or contract in which it is involved should be addressed to Quality Assurance Authority (i.e. CQA (ME), Aundh Road, Kirkee, Pune – 411 003) named in that tender or contract.

1.0 SCOPE

1.1 This specification is meant to govern manufacture, supply and Quality Assurance of Thermosetting Glass Fibre Filled Phenolic Moulding Material.

1.2 The material is suitable for making various ammunition and armament components.

2.0 RELATED SPECIFICATIONS

2.1 The following related specifications have been referred to in the preparation of this specification**:-**

IS: 867	–	Methods of tests for phenolic moulding materials.
IS: 2213	–	Methods of sampling of thermosetting moulding materials.
BS: 2702	–	Methods of testing plastics.
ASTM 1673	–	Methods of testing.

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

IND/ME	–	The Controllerate of Quality Assurance, (Military Explosives), Aundh Road, Kirkee, Pune – 411 003
ASTM, JSS	–	The Director, Directorate of Standardisation, 'H' Block, Min. of Defence, DHQ, P.O., New Delhi – 110 011
IS	–	The Bureau of Indian Standards, Manak Bhavan, B.S. Zafar Marg, New Delhi – 110 002

3.0 MATERIAL/FINISH

3.1 The moulding material shall consists of phenol formaldehyde resin as binder and glass fibre as filler. The glass fibre is quoted with binder. Colour of moulding material shall be yellow unless purchaser orders for some specific colour. Moulding material shall be free from foreign matter and shall not form continuous undivided lumps. Grade A materials shall be used when electrical requirements are required. The type of phenolic resin and glass fibre shall be such that the phenolic moulding material made from this should satisfy the requirements mentioned in clause 6.3.1

4.0 MANUFACTURE

4.1 The glass fibre filled phenolic moulding material shall be manufactured by a process, which has received authoritative approval. The QA Authority/QA Officer shall be informed regarding the process used and shall be given prior notification of any proposed deviation therefrom.

All the deviations from the approved process shall be recorded immediately and all the material affected shall be aside pending the decision of the QA Authority/QA Officer.

4.2 The method of manufacture shall be such that the moulded components made out of the material shall meet the end use requirements.

5.0 QUALITY ASSURANCE

5.1 Advance Sample

5.1.1 The Contractor/Manufacturer shall submit a tender sample of 1.5 kgs, along with test specimen three each for the physical test mentioned in clause 7 dimensions conforming to the respective test methods.

5.2 Bulk Store

5.2.1 Glass fibre filled phenolic moulding material and the packages shall be subject to the inspection by and to the approval of the QA Officer/QA Authority.

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

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

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

5.2.5 Before tendering the store for inspection the supplier 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 this effect to QA Officer/QA Authority.

6.0 SAMPLING

6.1 A representative sample of 1.5 kg shall be drawn from each container selected from the batch, lot, consignment. The number of containers to be selected from the batch/lot/consignment shall be as follows**:-**

Lot Size	**No. of containers to be selected**
Up to 3	Each container
4 to 15	3
16 to 50	4

51 to 100	5
101 to 300	7
301 to 500	10
501 to 1000	15

7.0 TEST REQUIREMENTS

7.1 Samples taken from any portion of the batch/lot consignment shall conform with the clause 3 and in addition shall conform with the following test requirements.

S. No.	Characteristic	Passing Grade A	Standard Grade B	Test Method
1.	Impact strength kg cm/cm2, Min. (unnotched specimen)	50	50	IS 867 Clause 10
2.	Cross breaking strength kg/cm2, Min.	1200	1200	IS 867 Clause 10
3..	Moisture and volatile matter content % Min.	2 to 7	2 to 7	7.2
4.	Binder Content %, Min Max.	 36 40	 36 40	7.3
5.	Free Phenol %, Max	0.5	-	IS 867 Clause 16
6.	Free Ammonia %, Max	0.02	-	IS: 867 Clause 16
7.	Density g/ml, Min. Max	 1.7 1.9	 1.7 1.9	 IS 867 Clause 6
8.	PH of water extract Min. Max.	 6.0 10.0	 6.0 10.0	Clause 7.4
9.	Water absorption % Max	0.2	0.2	IS 867 Clause 12
10.	Dielectric constant at 10^6 H2 frequency	7	-	ASTM 1673

	Max			
11.	Dessipation factor at 10^6 H2 frequency Max	0.05	-	-do-
12.	Volume resistibity Ohm cm, Min	1012	-	IS 867 Clause 21
13.	Surface resistivity Ohm Min.		-	IS 867 Clause 20
14.	Dielectric strength at 50 HZ frequency KV/mm, Min.	8	-	IS 867 Clause 19
15.	Tensile Strength Kgs/Cm^2	800	800	-

7.2 MOISTURE CONTENT

7.2.1 About 150 to 200 moulding material is cut into pieces of length 4 to 5 mm and thoroughly mixed. About 5 g from the above material is taken in a crucible and weighed accurately. This is then placed in an oven and heat to 105 + 5 deg C for 2 hours. It is then cooled in desiccator to room temperature and weighed accurately.

$$\text{Moisture content} = \frac{M - M1}{M - M2} \times 100$$

Where, M = Mass of crucible + moulding material before heating

M1 = Mass of crucible + moulding material after heating.

7.3 BINDER CONTENT

7.3.1 After determining the moisture content, the weighed portion of moulding material in a crucible is placed in muffle furnace and heated at 500 deg C till the material attains white colour. The crucible is then cooled in a desiccator to room temperature and weighed.

$$\text{Binder content \%} = \frac{M1\text{-}M3}{M1\text{-}M2} \times 100$$

Where, M1 = Mass of crucible + moulding material after drying at 105 deg C + 5 deg C.

M3 = Mass of crucible + moulding material after heating at 500 deg C.

M3 = Mass of empty crucible.

7.4 REACTION OF AQUEOUS EXTRACT

7.4.1 Take approximately 5 g sample of rasping from moulded test specimen mentioned in clause 6.3.1 in 250ml conical flask. Cover it with 100 ml distilled water and keep it for 1 hour with occasional shaking. The supernetant water layer is taken and tested for pH value on standard pH meter.

8.0 WARRANTY

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

9.0 PACKAGING

9.1 The glass fibre filled phenolic moulding material shall be packed in polythene bag having film thickness 0.13mm and then in gunny bag stitched properly/woven poly bag. Qty. in each pack shall not exceed 25 Kg.

10.0 MARKING

10.1 All the packages containing the material shall be durably and legibly marked with the following details as applicable.

i) Nomenclature and specification No of the material.

ii) Name and address of the consignee.

iii) A/Tor SO No. and date.

iv) Consignment Number.

v) Lot/Batch No. and date of manufacture.

vi) Gross and not mass.

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

viii) Date of supply.

ix) Contractor's initials or recognized trade mark.

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

11.0 DEFENCE STORES CATALOGUE NUMBER

11.1 Defence Stores Catalogue Number allotted to this store is Gde 'A' – 9330-000123.

12.0 SUGGESTIONS FOR IMPROVEMENT

12.1 Any suggestion for improvement in this particular document shall be forwarded to**:-**

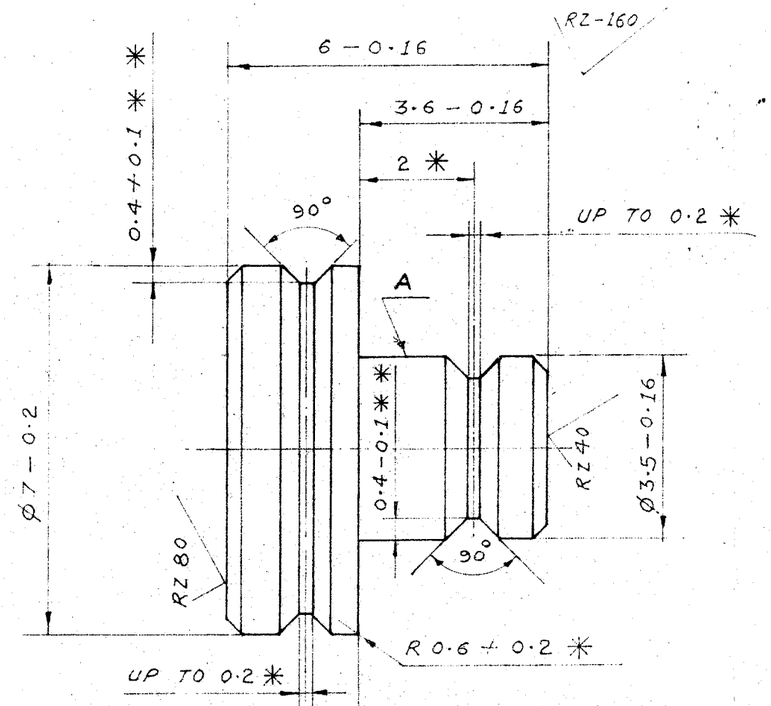
The Controller,
CQA (ME),
Aundh Road,
Kirkee,
Pune – 411 003

8	7	6	5	4	3	2	1

PART No. 1QX 862

DRG CONVENTIONS CONFORM TO IS 636
DIMS. ARE IN m.m

D.C.I. 34120-A



✳ TOOL

✳✳ SETTING DIMENSION

GENERAL REQUIREMENTS - REFER TO OST - B 84 - 533 - 72

NOT PERMITTED :- OXIDATION, CRACKS BURRS.

PERMITTED :- SMALL SCRACHES, CAVITIES, SCUFFING OF COATING.

TECHNICAL REQUIREMENTS :- ACCEPTANCE RULES.

METHODS OF INSPECTION :- REFER TO OST B 84-1256-76

MATERIAL :- BRASS 1C 59-1T GOST 15527-70 COATING 03 (TIN COATING THICKNESS 3 MICRON.)

"APPROVED ALTERNATIVE MATERIAL BS 2874 GRADE CZ 129 IN 'H' CONDITION."

R.N.D	DATE	AUTHORITY	REVISION	ZONE	AH.SP.	D.O.
	03.7.87	36304-A	ALTERNATIVE MATL. SPEC. ADDED			
	22-7-87		TRACED WITHOUT CHANGE			
	29-4-87	D.C.I. 34120-A.	DRG. SEALED. PROV.		SDI- SIG.	SDI-

DRG SEALED :- 29-4-87 (PROV.)

DRN J.V.G	CHD. F.J.D.	TRD. RDT	COMP.
SDI- C.D'MAN.	SDI- D'/C.D.O.	SCALE :- 10:1	
APPD	SDI- FOR C.I.(A)	EST. MASS :-	
		GAUGE SCHD :-	
		DATE :- 28-4-87	

MAT'L :- AS ABOVE.

PROTECTIVE FINISH :-

ASSY. DRG.

DESIGNER'S REF.
CIA/AMN/2493 DET. 2

PART No. 1QX 862

D.S.CAT No.

AH.SP :- C.I.(A). KIRKEE.

CONTACT