(3)

MONITORING INSTRUCTION FOR INSPECTION	Issue No. 01 Rev. No. 02 Date of Issue 09/01/2017
IRON POWDER	HAPP/QA/SC/G/029

SPECIFICATION : **CQA (M) 58 FOR ELEMENTAL POWDERS**

END USE : **FSAPDS PROJECTILES / PREFRAGMENTS**

I. INSPECTION CHECK TO BE CARRIED OUT ON RECEIPT AT HAPP.

TABLE - A

SL. NO	CHARACTERITICS	SPECIFICATION / REQUIREMENT	SAMPLE SIZE
1	VISUAL	ALL THE CONTAINERS SHOULD BE FREE FROM DAMAGES AND RUPTURES.	EACH CONSIGNMENT
2	MARKING	EACH CONTAINER OF POWDER SHOULD BE SUBSCRIBED OVER IT THE LOT/BATCH/LOT NUMBER, TOTAL NO OF CONTAINERS COMPRISING THE BATCH/LOT, DATE OF MANUFACTURE AND NAME OF MANUFACTURER.	EACH CONSIGNMENT
3	PACKING	1) THE MATERIAL SHOULD BE FILLED IN DOUBLE POLYTHENE FILM BAGS AND SHOULD BE PACKED IN WEATHER TIGHT SEALED AND REINFORCED STEEL DRUMS HAVING LIFTING RINGS PROVIDED AT SIDES AND TOP. 2) THE DRUM SHOULD BE PACKED IN SEA WORTHY CRATES, WHICH SHOULD BE STURDY TO WITHSTAND ANY POSSIBLE DAMAGE TO DRUMS DURING TRANSIT & HANDLING. 3) EACH DRUM SHOULD BE SUPERSCRIBED WITH MANUFACTURING LOT NO., PURCHASE ORDER NO. AND THE DATE OF FINAL SEALING. 4) IN CASE THE POLYTHENE FILM BAGS ARE FOUND IN OPEN OR RUPTURED CONDITION INSIDE THE DRUM, THE POWDER WILL NOT BE ACCEPTED.SUCH REJECTED MATERIAL SHOULD BE REPLACED BY THE SUPPLIER AT NO COST BASIS.	EACH CONSIGNMENT
4	CHEMICAL COMPOSITION	C - 500 PPM MAX. S - 10 PPM MAX. O - 2000 PPM MAX. P - 10 PPM MAX. Cr - 150 PPM MAX. Pb - 10 PPM MAX. Ca - 20 PPM MAX. Mn - 50 PPM MAX. Iron - **99.5 % Min.**	3 SAMPLES PER BATCH / LOT
5	PHYSICAL PROPERTIES	APPARENT DENSITY AS PER ASTM B-417-82 : 2.6 - 3.1 gm /cc. AVERAGE PARTICLE SIZE AS PER ASTM B-330-82 : 5.0 - 6.0 Microns FSS	3 SAMPLES PER BATCH / LOT
7	PERFORMANCE CONFORMITY TEST	ONE BLANK SHALL BE PREPARED AS PER SKETCH NO.CQAM/58/1 AND COMPACTED, SINTERED AND THEN HEAT–TREATED BY MIXING WITH OTHER APPROVED POWDERS AS PER APPROVED MANUFACTURING PROCESS TO EVALUATE PHYSICAL PROPERTIES. LOCATION OF TENSILE SPECIMEN IN THE BLANK SHALL BE AS PER SKETCH NO. **CQAM/58/2** THREE TEST PIECES SHALL BE MACHINED AS PER SKETCH NO. **CQAM/58/3**.THE POWDER SHALL BE ACCEPTED ON SATISFYING MINIMUM REQUIREMENT OF PHYSICAL PROPERTIES AS MENTIONED BELOW. DENSITY - 17.12 ± 0.12 gm/cc UTS - 850 Mpa min % EL - 20% min **ACCEPTANCE CRITERIA** : 1) IF ONE OUT OF 3 TEST PIECES FAILS, 2 MORE TEST PIECES WILL BE MACHINED FROM THE ORIGINAL LEFT OVER BLANK AND TESTED. THE SAMPLE WILL BE CLEARED IF RESULTS ARE SATISFACTORY IN RETESTING FOR BOTH THE TEST PIECES. 2) IF MORE THAN ONE TEST PIECES FAIL IN PCT, THE SAMPLES WILL BE SENTENCED AS REJECTED.(HOWEVER IN CASE OF BULK SUPPLIES, IF MORE THAN ONE SAMPLE FAILS, A SECOND SET OF TEST PIECES SHALL BE PREPARED FROM A NEW BLANK AND ALL THE THREE TEST PIECES SHOULD PASS FOR THE LOT TO BE ACCEPTED).	1 BLANK PER BATCH / LOT

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STANDARD CELL
MPSNO: 185077, DT: 11/5/18
DATE: 18/5 SIGNATURE:

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FOR NEW SOURCES:

1. **APPROVAL OF NEW SOURCE:**
The firm shall supply the following information to Quality Assurance Authority for evaluation:

a) Company Profile.
b) Source & Nature of Raw material.
c) Process adopted stating the equipments, facilities with respective capacities.
d) Quality Assurance Plan
e) Customer List with address & performance Certificate.

After satisfactory evaluation, the firm shall supply the Pilot sample.

2. **Pilot sample** :The firm shall initially supply **2** kgs of Iron powder per batch/lot as Pilot Sample mentioning Batch /Lot No. and Qty. along with Test Certificates for each batch/lot indicating Chemical composition, Apparent Density, Average Particle Size. The firm shall also provide particle size distribution for each batch.

3. **Selection of samples** : **Three** representative samples of appropriate weight each from a different container covering each batch / lot of powder received shall be drawn by the quality Assurance Officer for the purpose of verifying physical and chemical properties. Powder samples drawn from the containers shall be sealed in airtight polythene container and batch / lot No. of with associated details marked on it.

4. On receipt of **2** kgs of pilot sample at HAPP, the same shall be tested for chemical composition, physical properties and Performance Conformity Test as per **Table-A.** Upon getting satisfactory results, the firm shall be given clearance for supply of placement of developmental initial batch of **100** kgs. Along with the supply, the firm shall provide all details like batch /lot no., test certificates etc. as done in the case of pilot sample(.)

5. On receipt of **100** kgs. of developmental initial batch at HAPP, the same shall be subjected to all the checks and tests as mentioned above in the case of pilot sample. On satisfactory performance of above, the firm shall be considered as approved source for supply of Iron powder and clearance shall be given for bulk supply.

6. The firm shall supply bulk with necessary test certificates for chemical composition, apparent density, average particle size and particle size distribution for each batch, for inspection and clearance of bulk from HAPP.

7. On receipt of Bulk at HAPP, the same shall be tested for chemical composition, physical properties and Performance Conformity Test as per **Table-A.** Three samples per batch/lot will be taken for chemical composition, apparent density, and average particle size for bulk batch/lot.

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FOR APPROVED SOURCES:

1. **Pilot sample** : The firm shall initially supply **2** kgs of Iron powder per batch/lot as Pilot Sample mentioning Batch /Lot No. and Qty. along with Test Certificates for each batch/lot indicating Chemical composition, Apparent Density, Average Particle Size. The firm shall also provide particle size distribution for each batch.

2. **Selection of samples** : **Three** representative samples of appropriate weight each from a different container covering each batch / lot of powder received shall be drawn by the quality Assurance Officer for the purpose of verifying physical and chemical properties. Powder samples drawn from the containers shall be sealed in airtight polythene container and batch / lot No. of with associated details marked on it.

3. On receipt of **2** kgs of pilot sample at HAPP, the same shall be tested for chemical composition and physical properties and Performance Conformity Test as per **Table-A.** Upon getting satisfactory results, the firm shall be approved for supply of Bulk. The firm shall supply bulk with complete test certificates for inspection and clearance of bulk from HAPP.

4. On receipt of Bulk at HAPP, the same shall be tested for chemical composition, physical properties and Performance Conformity Test as per **Table-A.** Three samples per batch/lot will be taken for chemical composition, apparent density, and average particle size for bulk batch/lot.

II. DOCUMENTS TO BE VERIFIED AT HAPP AFTER RECEIPT.

THE SUPPLIER SHALL ENCLOSE FOLLOWING INSPECTION DOCUMENTS ALONG WITH EACH LOT/BATCH OF PILOT AND BULK SUPPLIES HAVING LINK TO HAPP SUPPLY ORDER REFERENCE AS PER **TABLE-B.**

TABLE - B

SL. NO.	INSPECTION DOCUMENTS *
1	CERTIFICATE OF CONFIRMITY CONFIRMING THAT THE IRON POWDER HAS BEEN TESTED AND INSPECTED AND MEETS THE ABOVE MENTIONED TECHNICAL SPECIFICATION SHALL BE FURNISHED SEPARATELY FOR EACH LOT / BATCH, PILOT AND BULK SUPPLIES HAVING LINK TO HAPP SUPPLY ORDER REFERENCE.
2	PACKING SLIP INDICATING SOURCE, WEIGHT PER DRUM, HAPP SUPPLY ORDER NO., POWDER LOT / BATCH NO. ETC.
3	PARTICLE SIZE DISTRIBUTION DATA OF THE POWDER FOR EACH BATCH / LOT.
4	APPARENT DENSITY AS PER ASTM B-417-82
5	AVERAGE PARTICLE SIZE AS PER ASTM B-330-82
6	GAURANTEE / WARRANTY CERTIFICATE.
7	CERTIFICATE INDICATING DATE OF MANUFACTURE AND SHELF LIFE IF STORED IN ORIGINAL SEALED PACKING IN AMBIENT CONDITION FOR EACH BATCH / LOT.

*NOTE : HAPP SUPPLY ORDER NO. & QUANTITY MUST BE MENTIONED CLEARLY IN ALL THE ABOVE INSPECTION DOCUMENTS.

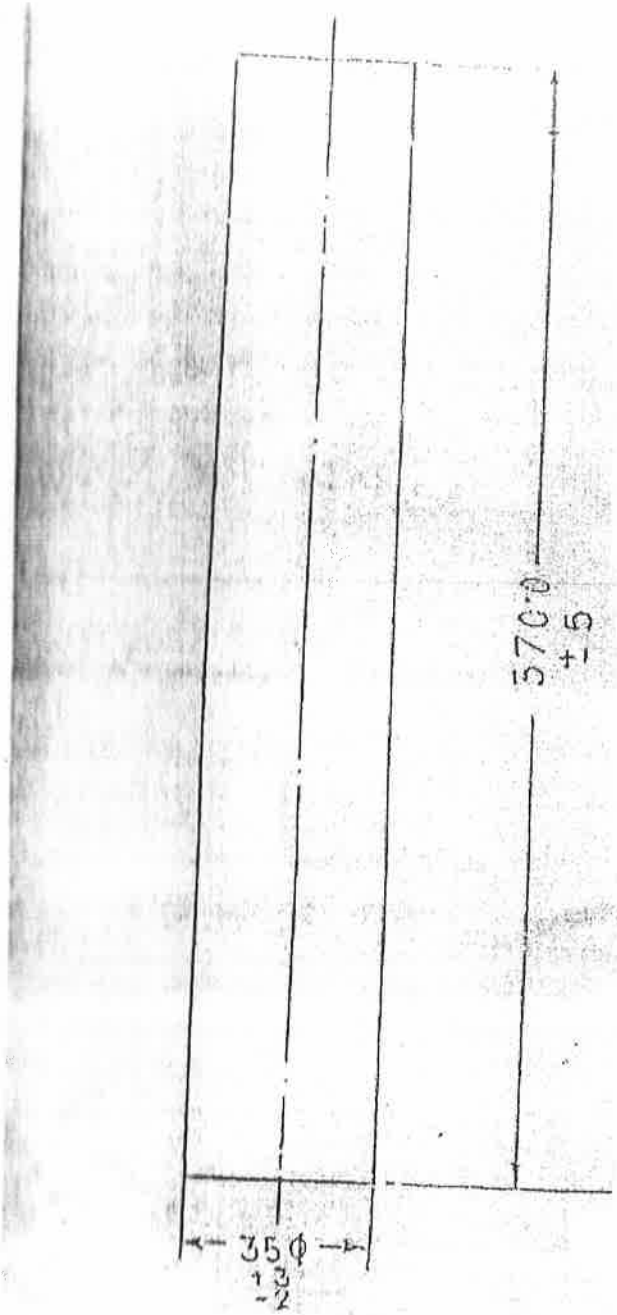
SUMIT KUMAR
AWM / PM
MEMBER / MI COMMITTEE

D.BHASKAR RAO
WM / E
MEMBER / MI COMMITTEE

T.PRABHU
JT.GM / QA
CHAIRMAN / MI COMMITTEE

ISSUED BY
STANDARD CELL
MPS NO: 185077 , Dt: 11/05/18
DATE: 18/5/18 SIGNATURE:

NOTE:IN ADDTION TO THE ABOVE SOFT COPIES OF ALL THE CERTIFICATES MENTIONED IN TABLE - B SHALL BE SENT TO E-MAIL ID's. happqa.ofb@ofb.gov.in ,mmhapp.ofb@ofb.gov.in

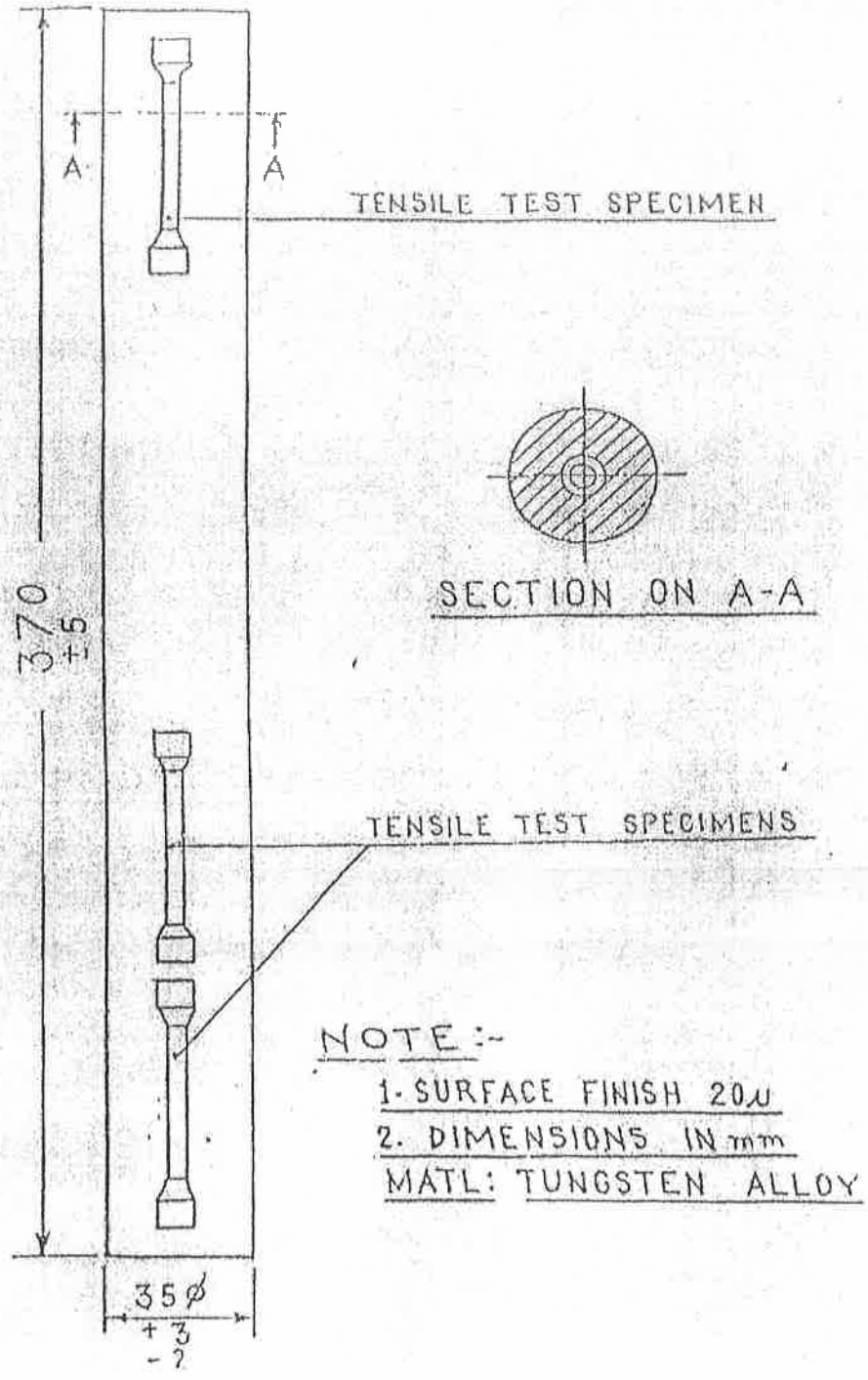


NOTE:

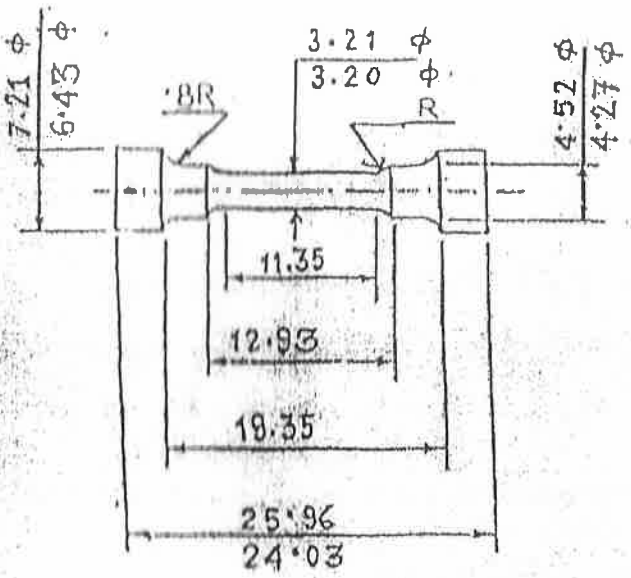
1. **SURFACE FINISH 20μ**
2. **DIMENSIONS ARE IN mm.**

MATL : TUNGSTEN ALLOY

HEAVY ALLOY BLANKS	SKETCH NO. CQAM / 58/1



ATION OF TEST SPECIMENS PENETRATOR mm /120mm /125mm / FSAPDS HEAVY BLANKS METER LARGER THAN 25mm	SKETCH No. **CQAM/58/2**



MACHINING FINISH : Ra = 1.75 ▽

EMERYGRIT 220 FINISH : Ra = 0.36 μ

DIMENSIONS ARE IN mm

MTL :- TUNGSTEN ALLOY

ND TENSILE TEST PIECE	SKETCH No. CQAM/58/3