

MONITORING INSTRUCTION FOR INSPECTION		Issue No. 01 Rev. No. 00
		Date of Issue 18.06.2021
STEEL ROD Ø30mm		HAPP/QA/SC/B/010
Rev no	Amendment	Date

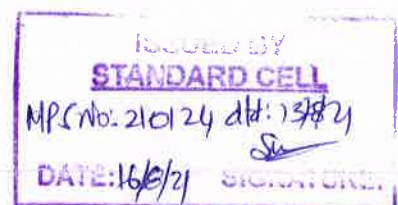
SPECIFICATION : 817M40 En 24 'V' Condition as per BS 970 Pt 1
DOCUMENT : DRDO-ARDE-DOA-TOT-209-2017 Rev No: 00 dtd: May 2021
END USE : Penetrator for 125mm FSAPDS Practice Shot with Tungsten Nose /
120mm FSAPDS Practice Shot

**TABLE A. INSPECTION CHECK TO BE CARRIED OUT AT FIRM'S PREMISES BY THE FIRM &
ON RECEIPT AT HEPF**

SL. NO.	CHARACTERITICS	SPECIFICATION / REQUIREMENT	SAMPLE SIZE
1	Workmanship (Visual)	The material shall be uniform and free from bend, undulations, cut marks, surface imperfection, rust, crack and other injurious defects.	100%
2	Diameter	Ø 29.9 - 30.5 mm	
3	Tolerance of Length	3m or 6m	
4	Straightness	Rod should be free from bend	
5	Chemical Analysis	B.S. 970 Pt 1	One sample for each heat / cast
6	Hardness	310-372 VPN	2 samples for each heat / cast
7	Mechanical Properties	UTS – 1000 to 1150 MPa 0.2% PS - 850 MPa Min. % Elongation – 12 % Min.	2 samples for each heat / cast
8	Marking	Each bar shall be legibly stamped with manufacturer's identity & heat number.	Each Consignment
9	Packing	Packing of the material shall be done in such a manner to avoid corrosion and damage in handling and transit.	

NOTE:

1. THE RAW MATERIAL SAMPLES / TEST SPECIMENS FOR EACH HEAT SHALL BE SELECTED FROM BULK AT FIRM'S PREMISES BY THE FIRM AND FORWARDED TO NEAR BY NABL ACCREDITED LABORATORY OR GOVT.APPROVED LAB FOR TESTING
2. THE FIRM HAS TO CHECK FOR THE DIMENSIONS, VISUAL DEFECTS AND MARKING AS PER TABLE A. AFTER COMPLETION OF DIMENSIONAL, CHEMICAL AND MECHANICAL PROPERTIES. THE FIRM HAS TO FORWARD THE FOLLOWING DOCUMENTS TO HEPF/TRICHY.
 - I. THE RAW MATERIAL ORIGINAL MANUFACTURER'S CERTIFICATE, HEAT NUMBER, QUANTITY PURCHASED AND NUMBER OF BARS ARE TO BE MENTIONED IN THE INSPECTION LETTER TO HEPF/TRICHY.
 - II. THE CHEMICAL AND MECHANICAL TEST CERTIFICATES FROM NABL ACCREDITED LAB OR GOVT APPROVED LAB AS PER TABLE A.
 - III. DIMENSIONAL REPORT INCLUDING VISUAL AS PER TABLE A.
3. ALL THE ABOVE DOCUMENTS MENTIONED AT NOTE NO.2 ABOVE ARE TO BE FORWARDED TO GM/HEPF.
4. MATERIAL HAS TO BE DESPATCHED TO HEPF ONLY AFTER DUE SUBMISSION OF ALL RELATED DOCUMENTS AS DETAILED IN TABLE A AND AFTER GETTING CLEARANCE FROM HEPF / TRICHY.




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TABLE B. VERIFICATION OF INSPECTION DOCUMENTS.

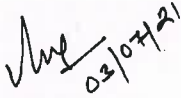
FOLLOWING INSPECTION DOCUMENTS MUST BE ENCLOSED WITH EACH SUPPLY.

SL. NO.	INSPECTION DOCUMENTS
1	THE RAW MATERIAL ORIGINAL MANUFACTURER'S CERTIFICATE, DETAILS OF HEAT NUMBER, QUANTITY PURCHASED AND NUMBER OF BARS ETC.
2	THE CHEMICAL AND MECHANICAL TEST CERTIFICATES FROM NABL ACCREDITED OR GOVT APPROVED LAB.
3	DIMENSION REPORT INCLUDING VISUAL
4	PACKING SLIP DETAILS
5	IN ADDITION TO THE ABOVE SOFT COPIES OF ALL THE CERTIFICATES MENTIONED IN TABLE - A SHALL BE SENT TO E-MAIL ID'S. happqa.ofb@ofb.gov.in , mmhapp.ofb@ofb.gov.in
NOTE	1. IN CASE OF ANY DIFFERENCES, QAP & DRAWING SHALL PREVAIL . 2. EXPLICIT DEVIATION(S) IF ANY SUCH AS TYPOGRAPHICAL ERROR, VALUES, NUMERIC, OTHER PARAMETER, ETC IS/ARE FOUND IN MONITORING INSTRUCTION OF THE ABOVE STORES, THE RELEVANT STANDARD CONFORMING TO THE SPECIFICATION SHALL BE REFERRED TO CONFIRM THE PARAMETER


SREENIVASA RAO BODALA
 DGM / PM
 MEMBER / MI COMMITTEE


AKHILESH GAUR
 WM / P
 MEMBER / MI COMMITTEE


SEINUNNOM JOSEPH KIPGEN
 DGM / QA
 MEMBER / MI COMMITTEE


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

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 STANDARD CELL
 MRS No: 210124 dt: 13/8/21
 DATE: 16/8/21 SIGNATURE:

HOS/Std Gen
30/6/2021

भारत सरकार रक्षा मंत्रालय
रक्षा अनुसंधान एवं विकास संगठन
आयुध अनुसंधान एवं विकास संस्थापन
डॉ. होमी भाभा पथ
आयुध डाकघर, पाषाण,
पुणे ४११ ०२१
भारत



रक्षासेवाओकीसेवामें
Service to the Services

Government of India, Ministry of Defence
Defence R & D Organization (DRDO)
Armament R & D Estt. (ARDE)
Dr. Homi Bhabha Road,
Armament Post, Pashan,
Pune :411021
INDIA

आय . एम . ओ . 9001:2015 प्रमाणित
ISO 9001:2015 Certified

Tele No.020-25932156/53

FAX

File No: ARDE/05-Tech

Date: 30 June 2021

From : The Director Armament R & D Estt. (ARDE), Dr Homi Bhabha Road, Armament Post, Pashan, Pune-411021 Fax No: 020-2586 5102	To: The General Manager HEPF, Trichy, Tiruchirapalli – 620025 Tamilnadu (FAX NO: 0431-2581891) Kind Attention : Smt. N. Chellapandi, Jt GM Shri Seinunnom Joseph Kipgen, DGM
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Subject: Clarification for penetrator raw material of 125mm FSAPDS Practice shot assembly

Ref: HAPP/SC/650005/2021-22 Dated 28-June-2021

Refer document no. DRDO-ARDE-DOA-TOT-209-2017 Dated May 2021 PG NO 68 and following amendments may please be noted and same will be incorporated in further revision of QAP:

FOR

%EL 13 min
Hardness 300-350 VPN

READ

%EL 12 min
Hardness 310-372 VPN

This is for your information and necessary action please.

(R L Saini, Sc 'E')
For Director, ARDE

Copy to:

Sr Q A Officer
SQAE(A) HAPP Trichy, Tamilnadu.
(K.A : Shri N Badrappan, AE(QA)/DAQAO (Fax No :0431-2581018)



फैक्स / Fax : + 91(0) 2025865102

ई-डॉक / e-mail : director@arde.drdo.in



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Technical Specification & Quality Document			Document No.: DRDO-ARDE-DOA-TOT-209-2017				
Issue:01	Date	May 2021	Revision No.	00	Date:	May 2021	Page 68
Component / Assembly			125mm FSAPDS Practice Shot Assembly (Empty)				

PENETRATOR

1. Drawing No. : 9607 01 03 05 06 001 12TC
2. Method of manufacture : Machining
3. Receiving Inspection :
- Raw material : Steel to Grade 40Ni6Cr4Mo3 as per IS: 5517-1993 or En 24 'V' Condition as per B.S. 970 pt 1 :1955

Tests/checks and acceptance criteria for raw material:

1. Chemical analysis as per specification IS: 5517-1993 or B.S. 970, Pt -1 :1955
2. Mechanical properties:

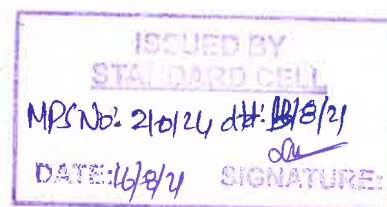
Sr. No.	Properties	Acceptance criteria
1.	UTS	1000 -1150 MPa
2.	0.2% PS	800MPa (min)
3.	% Elongation	13 % (min)
4.	Hardness	300-350 HV

4. In-process inspection : Nil
5. Stage inspection : Nil
6. Final Inspection:
- 6.1 Visual inspection:
- 6.1.1 Features for visual examination and acceptance criteria:

Sr. No.	Details of features	Sample size	Acceptance criteria
1.	Burrs	100 %	Not permitted
2.	Damage to buttress threads	100 %	Not permitted
3.	Poor surface finish	100 %	Not permitted
4.	Tool Marks	100 %	Not permitted

- 6.2 Dimensional Inspection:
- 6.2.1 Critical Inspection:

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255 max.

Chemical composition and mechanical property requirements (concluded)

Steel (7)	Chemical composition			Concession (8)		Size (9) (diameter or thickness) (mm)		N/mm ² (10)		Impact (11) (kJ/m ²)		N/mm ² (12)		HB (13)																
	C	Mn	P	Others	HT	MT	HT	MT	HT	MT	HT	MT	HT	MT																
826M40	0.36-0.44	0.45-0.70	1.00-1.40	0.20-0.35	1.30-1.70	%	%	%	%	%	%	%	%	%																
															817M40	0.36-0.44	0.45-0.70	1.00-1.40	0.20-0.35	1.30-1.70	HT	MT	HT	MT	HT	MT	HT	MT		
															T	> 150 ≤ 250	> 63 ≤ 150	> 29 ≤ 100	> 13 ≤ 83	> 6 ≤ 29	> 6 ≤ 29	850-1000	850-1000	30	35	13	13	635	248-302	
															U	> 100 ≤ 150	> 63 ≤ 150	> 29 ≤ 100	> 13 ≤ 83	> 6 ≤ 29	> 6 ≤ 29	850-1000	850-1000	30	35	13	13	635	248-302	
															V	> 63 ≤ 150	> 63 ≤ 150	> 29 ≤ 100	> 13 ≤ 83	> 6 ≤ 29	> 6 ≤ 29	850-1000	850-1000	30	35	13	13	635	248-302	
															W(11)	> 29 ≤ 250	> 29 ≤ 250	> 29 ≤ 250	> 29 ≤ 250	> 29 ≤ 250	> 29 ≤ 250	925-1075	925-1075	35	40	12	12	740	269-331	
															X(11)	> 29 ≤ 150	> 29 ≤ 150	> 29 ≤ 150	> 29 ≤ 150	> 29 ≤ 150	> 29 ≤ 150	1000-1150	1000-1150	35	40	12	12	740	269-331	
															Y(11)	> 29 ≤ 150	> 29 ≤ 150	> 29 ≤ 150	> 29 ≤ 150	> 29 ≤ 150	> 29 ≤ 150	1000-1150	1000-1150	35	40	12	12	740	269-331	
															Z(11)	> 29 ≤ 100	> 29 ≤ 100	> 29 ≤ 100	> 29 ≤ 100	> 29 ≤ 100	> 29 ≤ 100	1075-1225	1075-1225	35	40	12	12	740	269-331	
															Z(11)	> 29 ≤ 100	> 29 ≤ 100	> 29 ≤ 100	> 29 ≤ 100	> 29 ≤ 100	> 29 ≤ 100	1150-1300	1150-1300	35	40	12	12	740	269-331	
826M40	0.36-0.44	0.45-0.70	0.50-0.80	0.45-0.85	2.30-2.80	%	%	%	%	%	%	%	%	%	%															
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																Z(11)	> 29 ≤ 100	> 29 ≤ 100	> 29 ≤ 100	> 29 ≤ 100	> 29 ≤ 100	> 29 ≤ 100	1075-1225	1075-1225	35	40	12	12	725	269-331
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																Z(11)	> 29 ≤ 100	> 29 ≤ 100	> 29 ≤ 100	> 29 ≤ 100	> 29 ≤ 100	> 29 ≤ 100	1150-1300	1150-1300	35	40	12	12	725	269-331
826M40	0.36-0.44	0.45-0.70	0.50-0.80	0.45-0.85	2.30-2.80	%	%	%	%	%	%	%	%	%	%															
																U	> 100 ≤ 150	> 63 ≤ 150	> 29 ≤ 100	> 13 ≤ 83	> 6 ≤ 29	> 6 ≤ 29	770	770	35	35	9	9	680	249-302 (4)
																V	> 63 ≤ 150	> 63 ≤ 150	> 29 ≤ 100	> 13 ≤ 83	> 6 ≤ 29	> 6 ≤ 29	770	770	35	35	9	9	680	249-302 (4)
																W(11)	> 29 ≤ 250	> 29 ≤ 250	> 29 ≤ 250	> 29 ≤ 250	> 29 ≤ 250	> 29 ≤ 250	855	855	35	35	9	9	680	249-302 (4)
																X(11)	> 29 ≤ 150	> 29 ≤ 150	> 29 ≤ 150	> 29 ≤ 150	> 29 ≤ 150	> 29 ≤ 150	855	855	35	35	9	9	680	249-302 (4)
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																Z(11)	> 29 ≤ 100	> 29 ≤ 100	> 29 ≤ 100	> 29 ≤ 100	> 29 ≤ 100	> 29 ≤ 100	1250	1250	35	35	9	9	680	249-302 (4)
																Z(11)	> 29 ≤ 100	> 29 ≤ 100	> 29 ≤ 100	> 29 ≤ 100	> 29 ≤ 100	> 29 ≤ 100	1250	1250	35	35	9	9	680	249-302 (4)

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8/21/83
DATE: 6/8/21 SIGNATURE

(12) 1 N/mm² = 1 MPa
 (14) For guidance only.
 (16) Higher phosphorus contents or ranges, for example 0.050 % to 0.090 % or 0.070 % to 0.120 % can be supplied by agreement between the purchaser and the supplier.
 (17) All the steels are category 1. See also foreword.
 (18) For cold drawn bar of ≤ 6 mm diameter or *air*, all mechanical properties shall be the subject of agreement between the purchaser and the supplier at the time of enquiry and order.
 (19) For normalizing and hardening and tempering treatments, see tables 3 and 7.
 (10) When specifically ordered.
 (11) Often ordered in the softened condition for machining and subsequent heat treatment to achieve these specified mechanical properties.
 (12) Cold drawn bars are not normally available in this tensile strength range.
 (13) May not always be obtained by bulk heat treatment but the properties can be achieved by the appropriate heat treatment of the individual components (see note to 1.4.4.2.1) and also apply to cast bars