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SUPERSEDING
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MILITARY SPECIFICATION

PROJECTILE, 155MM, SMOKE, WP, M110 METAL PARTS ASSEMBLY

This Specification is approved for use by the US Army Armament Research and Development Command, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 This specification covers, the requirements, quality assurance provisions, and packaging for Projectile, 155MM, Smoke, WP, M110 Metal Parts.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. Unless otherwise specified (see 6.2), the following specifications and standards of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation, form a part of this specification to the extent specified herein.

SPECIFICATIONS

FEDERAL

TT-C-490 - Cleaning Methods and Pretreatment of Ferrous Surfaces for Organic Coatings

MILITARY

MIL-M-6867 - Magnetic Inspection Units
MIL-I-6868 - Inspection Process, Magnetic Particle
MIL-A-48078 - Ammunition, Standard Quality Assurance Provisions, General Specifications For

FSC 1320

STANDARDS

MILITARY

MIL-STD-105	-	Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-410	-	Nondestructive Testing Personnel Qualification, Packing and Marking For
MIL-STD-1169	-	Packaging, Packing and Marking for Shipment of Inert Ammunition Components
MIL-STD-1235	-	Single and Multilevel Continuous Sampling Procedures for Sampling by Attributes

2.1.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this specification to the extent specified herein.

DRAWINGS (See 6.7)

US ARMY ARMAMENT RESEARCH AND DEVELOPMENT COMMAND (ARRADCOM)

PRODUCT AND PACKAGING DRAWINGS

9280357	-	Body Magnetic Particle Standard for 155MM, Smoke, WP, M110
10542945	-	Projectile, 155MM, Smoke, WP, M110 Metal Parts Assembly

PUBLICATIONS

ARRADCOM

Operating Instructions for Use of Detroit Testing Machine for Band Seating Inspection

(Copies of specifications, standards, handbooks, drawings, and publications required by manufacturers in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.

ANSI-B-46.1 - Surface Texture.

(Application for copies should be addressed to the American National Standards Institute (ANSI), 1430 Broadway, New York, NY 10018).

ASTM Method E-8 - Tension Testing of Metallic Materials
ASTM Method E-10 - Brinell Hardness of Metallic Materials
ASTM Method E103 - Rapid Indentation Hardness Testing of Metallic Materials
ASTM Method B117 - Salt Spray (Fog) Testing

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103).

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

3. REQUIREMENTS

3.1 General. Materials, parts and assemblies shall comply with the requirements specified on the applicable drawings and specifications.

3.2 First article inspection. This inspection contains technical provisions for first article inspection. Requirements for the submission of the first article samples by the contractor shall be as specified in the contract.

3.3 Heat treatment or stress relief. Heat treatment or stress relief applied to any component part shall be uniform throughout and shall be so conducted as to produce in each component the mechanical properties specified on the applicable drawings.

3.3.1 Hot forged heat treat method. Prior to finish machining, projectile bodies manufactured from forgings shall be subjected to heat treatment to attain the required mechanical properties. The heat treatment shall consist of heating above the critical temperature, followed by an oil quench. After quenching, the body forgings shall be tempered without delay at a temperature suitable to produce required mechanical properties. After removal from the tempering furnace, the body forgings shall be slowly cooled in air (forced air permitted) to a temperature of not more than 700°F, after which cooling may be accelerated by water spray. The contractor shall submit, for information only, the heat treatment procedure to the technical agency.

3.3.2 Cold shaping and hot cup - cold draw methods. Cold working shall be so accomplished as to produce in the bodies the mechanical properties specified. The bodies shall be stress

relieved at a temperature of 700°F, minimum, following the final forming operation during which time plastic flow takes place. A 30 minute minimum soak time at or above minimum temperature shall be established, which will produce mechanical properties specified on the applicable drawing.

3.4 Mechanical properties.

3.4.1 Body. Mechanical properties specified on the applicable drawing shall apply throughout the component.

3.4.2 Rotating band. After application and subsequent removal the rotating band shall have the following mechanical properties:

Tensile Strength - 30,000 lbs, per square inch (psi) minimum

Elongation - 25 percent of gage length, minimum (min)

3.5 Banding.

3.5.1 Band seat. Prior to banding, the band seat shall be clean and free from oil, grease, dirt, rust or other foreign matter. Shot or sand-blasting shall not be permitted for cleaning the band seat after knurling.

3.5.2 Band blank. The rotating band blank shall be in the form of a solid ring, annealed if necessary to comply with the applicable specification.

3.5.3 Application. The rotating band shall be applied after final heat treatment of the body, by carefully pressing the band blank into the band seat so as to make contact with the sidewalls for a minimum of eight-tenths of the band seat depth. The band shall be applied in such manner as not to distort the body wall. Distortion shall be considered deformation outside of the dimensional limits specified on the applicable drawing. There shall be no gap between the rotating band and the sidewalls of the band seat, after the rotating band has been machined to final dimension.

3.5.3.1 The bands may be applied either hot or cold, but if applied hot, the bands shall not be heated above 1600° F to prepare them for application to the body. The bands shall be heated uniformly by a process which will prevent undue oxidation (loose scale) and be applied in a manner that will hold the formation of scale between the band and the band seat to a minimum.

3.5.4 Band seating. The diametrical clearance between the rotating band and band seat shall not exceed .006 inch when the destructive method of testing is used, or .009 when the nondestructive method of testing is used.

3.6 Proving ground functional tests. The projectile assembly shall reveal no evidence of metal parts failure. Metal parts failure shall be:

a. Projectile body deformation attributable to noncompliance with drawing and specification requirements.

b. Loss or breakup of metal part components in flight.

c. Loose or fanning of rotating band attributable to noncompliance with applicable drawing and specification requirements.

d. Shear of rotating band as evidenced by complete lack of engraving.

3.7 Protection of rotating band. The machined rotating band shall be carefully protected from being nicked, burred or otherwise damaged in subsequent handling prior to shipment.

3.8 Air pressure test. Each assembly shall withstand an internal air pressure in accordance with requirements specified on the applicable drawing without evidence of leakage.

3.9 Metal defects.

3.9.1 Body and adapter. The body and adapter shall be free from all metal defects, in accordance with the defect standards (see 3.9.2) including cracks, splits, bursts, cold shuts, pipes, porosity, inclusions, folds, seams and other metal defects. In addition, the cavity of the components shall be free of scale, fins, burrs, draw marks, laminations, imbedded foreign matter, and pits.

3.9.2 Defect standards. Defect standards must be approved by the technical engineering agency. All visual standards for defects will be established for each contract after the first months production or whenever requested by the procuring contracting agency.

3.10 Tool control dimensions. Dimensions marked tool control shall be gaged at the beginning of production and whenever tooling is replaced. Where destruction of components is necessary to inspect these dimensions, measurements of the tool may be substituted provided that the contractor has established correlation

between the tool dimensions and the component dimensions prior to the start of production. The contractor shall be responsible for maintaining adequate surveillance to assure that drawing requirements are being met throughout the life of the tools.

3.11 Workmanship. The requirements for workmanship are as shown on the applicable drawing, in the applicable specifications and the following:

3.11.1 Painting. Painting shall comply with the requirements of the applicable drawing. All paint shall be dry to the touch before packing for shipment. Drying time prior to testing shall be in accordance with the applicable specification or drawing. Painting shall be complete, void free, and undamaged.

3.11.2 Surface finish. The requirements for surface finish are as detailed on the applicable drawing. The roughness comparison specimens prescribed by ANSI-B46.1 shall be used as a basis for surface roughness determinations, except in press fit area.

3.11.3 Threads. Threads shall be full and undamaged for the entire minimum length or depth as specified on the applicable drawing.

3.11.4 Burr. No part shall have a burr which might interfere with the assembly or function of the round or which might be injurious to personnel handling the item.

3.11.5 Foreign matter. No part or assembly shall contain dirt, grease, chips, rust, corrosion or other foreign matter. Particular attention shall be given to the cavity of the metal parts to assure that no grit, scale or other foreign matter remains therein after final cleaning.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection and standard quality assurance provisions. Unless otherwise specified herein or in the contract, the provisions of MIL-A-48078 shall apply and are hereby made a part of this detail specification.

4.2 Classification of inspections. The following types of inspection shall be conducted on this item:

a. First article inspection.

b. Quality conformance inspection.

4.3 First article inspection.

4.3.1 Submission. The contractor shall submit a first article as designated by the contracting officer for evaluation in accordance with the provisions of 4.3.2. The first article sample shall consist of the following items in the sample quantities as indicated.

PART DESCRIPTION	DRAWINGS	QUANTITY
Projectile Metal Parts Assembly, Complete, Painted	10542945	35
Body Assembly	10542946	10
Body	10542947	5
Adapter	10542948	5
Rotating Band Blank	7548993	5

Thirty of the above projectile metal parts assemblies shall be forwarded to a designated load plant for inert loading and shall then be forwarded to a Government proving ground for ballistic testing.

4.3.2 Inspections to be performed. See MIL-A-48078 and Table I herein.

4.3.3 Rejection. See MIL-A-48078.

TABLE I. First article inspection.

CLASSIFICATION OF DEFECTS & TESTS

MIL-P-60584A (AR)

PARAGRAPH	TITLE				DRAWING NUMBER
	Projectile, 155MM, Smoke, WP, M110, Metal Parts		SHEET 1 OF 2		See Below
					NEXT HIGHER ASSEMBLY
CATEGORY	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AQL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE /INSPECTION METHOD
	Adapter (Dwg. 10542948)				
	Examination for defects	5		3.1	4.4.2.1
	Rotating Band Blank (Dwg. 7548993)				
	Examination for defects	5		3.1	4.4.2.2
	Body (Dwg. 10542947)				
	Examination for defects	5		3.1	4.4.2.3
	Mechanical properties	2		3.4.1	4.5.1
	Body Assembly (Dwg. 10542946)				
	Examination for defects	10		3.1	4.4.2.4
	Rotating Band	5			
	a) Sidewall contact			3.5	4.5.2.2
	b) Mechanical properties			3.4.2	4.5.1.2.2
	Band seating tightness	3		3.5	4.5.2.1
	Sectionalized joint	2		3.1	4.5.3.2

NOTES:

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TABLE I. First article inspection.

CLASSIFICATION OF DEFECTS & TESTS

MIL-P-60584A (AR)

PARAGRAPH	TITLE		SHEET 2 OF 2		DRAWING NUMBER
	Projectile, 155MM, Smoke, WP, M110, Metal Parts				See Below
					NEXT HIGHER ASSEMBLY
CATEGORY	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AQL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE /INSPECTION METHOD
	Metal Parts Assembly (after paint) (Dwg. 10542945)				
	Examination for defects	35		3.1	4.4.2.5
	Salt Spray Test	2		3.1	4.5.4
	Ballistic Test			3.6	4.5.5
	a) Excess pressure	15		3.6	4.5.5.1
	b) Service pressure	15		3.6	4.5.5.2

NOTES:

4.4 Quality conformance inspection.

4.4.1 Inspection lot formation. Inspection lots shall comply with the lot formation provisions of MIL-A-48078. In addition, inspection lots of projectiles shall contain:

a. Bodies from not more than one forging manufacturer.

4.4.2 Body heat treatment or stress relieved lots.

4.4.2.1 Heat treatment lots. A heat treatment lot of bodies shall consist of bodies from only one mill heat of steel that have been heat treated in the same heat treatment equipment, at the same temperature and for the same time cycles, in one unchanged process. The maximum lot size shall be 2000 bodies. If a mill heat exceeds 2000 bodies, the mill heat shall be divided into any convienent number of heat treatment lots that would preclude the need for forming miscellaneous heat treatment lots.

4.4.2.2 Stress relieved lots. Stress relieved lots shall contain cold worked bodies from not more than one heat of steel that have been cold worked by the same process, utilizing the same tooling and equipment and stress relieved in the same furnace at the same temperature for the same length of time. The maximum lot size shall be 2000 bodies.

4.4.2.3 Miscellaneous lots. Small lots (such as bodies manufactured from abnormally small heats of steel or bodies that have become separated from previously delivered lots, etc.) may, at the discretion of the supplier, be grouped into miscellaneous heat treatment or stress relieved lots as the case may be. Such lots shall be identified by a miscellaneous lot code number and processed in accordance with either 4.4.2.1 or 4.4.2.2 as applicable. The maximum lot size shall be 2000 bodies.

4.4.2.4 Use. The lots constituted per 4.4.2.1, 4.4.2.2 and 4.4.2.3 shall be the basis for selecting samples for mechanical properties tests. Bodies in each heat treatment or stress relieved lots shall be identified to that particular lot until satisfactory completion of mechanical properties tests.

4.4.2.5 Projectile lots. When it has been determined that bodies of a heat-treated, stress relieved or miscellaneous lot have complied with the mechanical properties requirement of the applicable drawing, they may be regrouped for assembly into projectile lots, to which will be assigned a projectile lot number. The projectile lot shall consist of projectile assemblies produced by

one supplier under one contract in one unchanged process, in accordance with the same drawing, same drawing revision, same specification and same specification revision, under conditions of continuous production free from interruptions other than those due to the end of a shift, day, or workweek. The projectile lot thus constituted shall be the basis for the selection of samples for the functional test hereinafter prescribed.

4.4.3 Examination. See MIL-A-48078.

a. Sampling plans. Unless otherwise specified in the Classification of Defects and Test tables, sampling plans for major and minor defects shall be in accordance with MIL-STD-1235 or MIL-STD-105 as applicable. Inspection Level shall be II.

b. Automatic gaging. Facilities equipped with Government furnished automatic gaging capable of performing 100% inspection of any characteristic shall utilize this capability in accordance with the contract.

CLASSIFICATION OF DEFECTS & TESTS

PARAGRAPH	TITLE				DRAWING NUMBER
4.4.2.1	Adapter		SHEET 1 OF 3		10542948
					NEXT HIGHER ASSEMBLY 10542946
CATEGORY	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AQL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE /INSPECTION METHOD
Critical					
1	Metal defective		100%	3.9	Visual
2	Diameter of press fit area		100%	3.1	Gage
3	Reverse taper in press fit area		100%	3.1	Gage
4	Surface finish of press fit area (See Note a)		100%	3.1	
5	Form of radius at press fit area, improper		100%	3.1	Visual/Gage
6	Radius at start of press fit area improper, or not present for all circumference		100%	3.1	Visual
Major					
101	Pitch diameter of external thread, min.		.40%	3.1	Gage
102	Pitch diameter of external thread, max.		.40%	3.1	Gage
103	Major diameter of external thread, min		.40%	3.1	Gage
104	Length from rear face to basic diameter on rear taper		.40%	3.1	Gage
105	Runout of forward taper to outside thread pitch diameter and shoulder		.40%	3.1	Gage

NOTES: a) Surface finish of press fit area shall not be inspected until all manufacturing and gaging operations have been completed.

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CLASSIFICATION OF DEFECTS & TESTS

PARAGRAPH	TITLE				DRAWING NUMBER
4.4.2.1	Adapter		SHEET 2 OF 3		10542948
					NEXT HIGHER ASSEMBLY 10542946
CATEGORY	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AQL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE /INSPECTION METHOD
106	Runout of projected pitch diameter of internal threads (2 places) to outside thread pitch diameter, forward face and shoulder (See Note b)		.40%	3.1	Gage
107	Runout of press fit diameter to outside thread pitch diameter and shoulder		.40%	3.1	Gage
108	True position of diameter at rear of fuze cavity to press fit diameter		.40%	3.1	Gage
109	Pitch diameter of internal thread		.40%	3.1	Gage
110	Minor diameter of internal thread, max.		.40%	3.1	Gage
111	Depth to bottom of fuze cavity		.40%	3.1	Gage
112	Depth to bottom of counterbore at rear of fuze cavity		.40%	3.1	Gage
113	Effective internal thread length, min		.40%	3.1	Gage
114	Diameter of counterbore at rear of fuze cavity		.40%	3.1	Gage
115	Length from front face to first basic diameter on taper		.40%	3.1	Gage
116	Length from front face to second basic diameter on taper		.40%	3.1	Gage

NOTES: b) These inspections are not required when components are to be supplied as assemblies.

QUALITY CONFORMANCE INSPECTION

CLASSIFICATION OF DEFECTS & TESTS

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PARAGRAPH	TITLE		SHEET 3 OF 3		DRAWING NUMBER 10542948
4.4.2.1	Adapter				NEXT HIGHER ASSEMBLY 10542946
CATEGORY	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AQL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE /INSPECTION METHOD
Minor					
201	Diameter of undercut forward of external thread		.65%	3.1	Gage
202	Diameter of rear face		.65%	3.1	Gage
203	Length from front face to shoulder		.65%	3.1	Gage
204	Length from rear face of shoulder to rear of external thread		.65%	3.1	Gage
205	Length, total		.65%	3.1	Gage
206	Width of undercut forward of external thread		.65%	3.1	Gage
207	Diameter of thread chamfer		.65%	3.1	Gage
208	Length of internal thread, max		.65%	3.1	Gage
209	Width of notches (if applicable)		.65%	3.1	Gage
210	Depth of notches (if applicable)		.65%	3.1	Gage
211	Diameter of notches (if applicable)		.65%	3.1	Gage
212	Radii or chamfers missing or incorrect		.65%	3.11	Visual
213	Burr		.65%	3.11	Visual
214	Foreign material		.65%	3.11	Visual
215	Evidence of poor workmanship		.65%	3.11	Visual

NOTES:

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QUALITY CONFORMANCE INSPECTION

CLASSIFICATION OF DEFECTS & TESTS

MIL-P-60584A (AR)

PARAGRAPH	TITLE		SHEET 1 OF 1		DRAWING NUMBER 7548993
4.4.2.2	Blank, Rotating Band				NEXT HIGHER ASSEMBLY 10542946
CATEGORY	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AQL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE /INSPECTION METHOD
Critical:	None defined.				
Major					
101	Inside diameter		.40%	3.1	Gage
102	Width		.40%	3.1	Gage
103	Thickness		.40%	3.1	Gage
Minor:	None defined.				

NOTES:

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QUALITY CONFORMANCE INSPECTION

CLASSIFICATION OF DEFECTS & TESTS

MIL-P-60584A (AR)

PARAGRAPH	TITLE		SHEET 1 OF 3		DRAWING NUMBER 10542947
4.4.2.3	Body				NEXT HIGHER ASSEMBLY 10542946
CATEGORY	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AQL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE /INSPECTION METHOD
Critical					
1	Metal defective		100%	3.9	Visual
2	Magnetic particle		100%	3.9	4.5.6
Major					
101	Pitch diameter of thread, max		.40%	3.1	Gage
102	Minor diameter of thread, max		.40%	3.1	Gage
103	Pitch diameter of thread, min		.40%	3.1	Gage
104	Diameter of rotating band seat		.40%	3.1	Gage
105	Depth from front face to bottom of base counterbore		.40%	3.1	Gage
106	Effective thread length		.40%	3.1	Gage
107	Length from front face to first basic diameter		.40%	3.1	Gage
108	Length from front face to second basic diameter		.40%	3.1	Gage
109	Length from bottom of base counterbore to first inside basic diameter		.40%	3.1	Gage
110	Length from bottom of base counterbore to second inside basic diameter		.40%	3.1	Gage
111	True position of base counterbore with pitch diameter and forward face		.40%	3.1	Gage
112	Length from front of boattail to rear of rotating band seat		.40°	3 1	Gage
113	Location of rotating band seat		.40%	3.1	Gage

NOTES:

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CLASSIFICATION OF DEFECTS & TESTS

PARAGRAPH	TITLE				DRAWING NUMBER
4.4.2.3	Body		SHEET 2 OF 3		10542947
					NEXT HIGHER ASSEMBLY
					10542946
CATEGORY	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AQL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE /INSPECTION METHOD
114	Thickness of wall, min. at blend area		.40%	3.1	Gage
115	Variation in wall thickness to rear of bourrelet		.40%	3.1	Gage
116	Variation in wall thickness forward of bourrelet		.40%	3.1	Gage
117	Width of rotating band seat		.40%	3.1	Gage
118	Length, total		.40%	3.1	Gage
119	Length from front face to rear of bourrelet		.40%	3.1	Gage
120	Diameter of base counterbore		.40%	3.1	Gage
121	Min. distance from bottom of base counterbore to basic diameter on taper of counterbore		.40%	3.1	Gage
122	Diameter of nose counterbore		.40%	3.1	Gage
123	Diameter of rear face		.40%	3.1	Gage
124	Outside diameter of body (2 places) at rear of rotating band undercut and blend area		.40%	3.1	Gage
125	Runout of rear face with body		.40%	3.1	Gage
126	Runout of boattail with body		.40%	3.1	Gage
127	Runout of ogive with body		.40%	3.1	Gage
128	Runout of projected pitch diameter of threads (2 places with body and forward face		.40%	3.1	Gage
129	Runout of bourrelet with body		.40%	3.1	Gage

NOTES:

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QUALITY CONFORMANCE INSPECTION

CLASSIFICATION OF DEFECTS & TESTS

MIL-P-60584A (AR)

PARAGRAPH	TITLE		SHEET 3 OF 3		DRAWING NUMBER 10542947
4.4.2.3	Body				NEXT HIGHER ASSEMBLY 10542946
CATEGORY	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AQL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE /INSPECTION METHOD
130	Diameter of bourrelet, min		.40%	3.1	Gage
131	Mechanical properties	(Note a)		3.4.1	4.5.1
132	Foreign matter on band seat		.40%	3.1	Visual
133	Scoring or knurling missing from rotating band seat		.40%	3.1	Visual
134	Weight (excluding lifting plug and grommet)		.40%	3.1	Gage
Minor					
201	Depth of nose thread counterbore		.65%	3.1	Gage
202	Radii or chamfers missing or incorrect		.65%	3.1	Visual
203	Surface finish improper		.65%	3.11	Visual
204	Evidence of shot or sand blasting on rotating band seat		.65%	3.1	Visual
205	Burr		.65%	3.11	Visual
206	Foreign matter (except as otherwise classified)		.65%	3.11	Visual
207	Evidence of poor workmanship		.65%	3.11	Visual

NOTES:

a) See Paragraph 4.4.5.

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CLASSIFICATION OF DEFECTS & TESTS

PARAGRAPH	TITLE		SHEET 1 OF 3		DRAWING NUMBER 10542946
4.4.2.4	Body Assembly				NEXT HIGHER ASSEMBLY 10542945
CATEGORY	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AQL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE /INSPECTION METHOD
Critical					
1	Adapter not seated for 360°		100%	3.1	Visual
2	Air pressure test		100%	3.8	4.5.3.1
3	Air pressure test stamp missing (indicating failure to pass test)		100%	3.1	Visual
4	Magnetic particle stamp missing (indicating failure to pass test)		100%	3.1	Visual
Major					
101	Runout of projected pitch diameter (2 places) with body and forward face		.40%	3.1	Gage
102	Runout of adapter with body		.40%	3.1	Gage
103	Runout of rotating band with body		.40%	3.1	Gage
104	True position of base counterbore with press fit surface		.40%	3.1	Gage
105	Diameter of rotating band		.40%	3.1	Gage
106	Diameter of rotating band groove		.40%	3.1	Gage
107	Diameter of rotating band relief groove		.40%	3.1	Gage
108	Length from rear of rotating band to start of angle		.40%	3.1	Gage
109	Angle at front of rotating band		.40%	3.1	Gage

NOTES:

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CLASSIFICATION OF DEFECTS & TESTS

PARAGRAPH	TITLE		SHEET 2 OF 3		DRAWING NUMBER 10542946
4.4.2.4	Body Assembly				NEXT HIGHER ASSEMBLY 10542945
CATEGORY	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AQL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE /INSPECTION METHOD
110	Angle at rear of rotating band relief groove		.40%	3.1	Gage
111	Width of rotating band		.40%	3.1	Gage
112	Width of rotating band groove		.40%	3.1	Gage
113	Width of rotating band, rear of angle		.40%	3.1	Gage
114	Width of rotating band relief groove		.40%	3.1	Gage
115	Location of rotating band		.40%	3.1	Gage
116	Length total (max)		.40%	3.1	Gage
117	Rotating band mechanical properties	(Note a)		3.4.2	4.5.1.2.2
118	Rotating band sidewall contact	(Note b)		3.5	4.5.2.2
119	Band seating tightness	(Note c)		3.5	4.5.2.1
120	Sectionalized joint	(Note d)		3.1	4.5.3.2
Minor					
201	Depth of undercut forward of rotating band (if applicable)		.65%	3.1	Gage
202	Width of under cut forward of rotating band (if applicable)		.65%	3.1	Gage
203	Radii or chamfers missing or incorrect		.65%	3.1	Visual
204	Surface finish improper		.65%	3.11	Visual

NOTES: a) See Paragraph 4.4.5.2.4
b) See Paragraph 4.4.6.3
c) See Paragraph 4.4.6
d) See Paragraph 4.4.7.2

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QUALITY CONFORMANCE INSPECTION

CLASSIFICATION OF DEFECTS & TESTS

PARAGRAPH	TITLE	SHEET 3 OF 3	DRAWING NUMBER 10542946
4.4.2.4	Body Assembly		NEXT HIGHER ASSEMBLY 10542945

CATEGORY	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AQL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE /INSPECTION METHOD
205	Notches incorrect (if applicable)		.65%	3.1	Visual
206	Burr		.65%	3.11	Visual
207	Foreign matter		.65%	3.11	Visual
208	Evidence of poor workmanship		.65%	3.11	Visual

NOTES:

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CLASSIFICATION OF DEFECTS & TESTS

PARAGRAPH	TITLE				DRAWING NUMBER
4.4.2.5	Metal Parts Assembly (after paint)		SHEET 1 OF 2		10542945
					NEXT HIGHER ASSEMBLY
CATEGORY	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AQL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE /INSPECTION METHOD
Special					
a	Ballistic Test	(Note a)			
	A. Excess pressure			3.6	4.5.5.1
	B. Service pressure			3.6	4.5.5.2
Major					
101	Diameter of bourrelet, max		100%	3.1	Ring Gage
102	Salt spray test (protective coating)	(Note b)		3.1	4.5.4
103	Rotating band damaged		.40%	3.7	Visual
104	VCI paper missing or improperly inserted		.40%	3.1	Visual
105	Threads damaged		.40%	3.11	Visual
106	Protective finish incomplete or damaged		.40%	3.11	Visual
Minor					
201	Marking missing, incorrect, or illegible		.65%	3.1	Visual
202	Paint on thread		.65%	3.1	Visual
203	Paint on front face of adapter		.65%	3.1	Visual
204	Paint on rotating band surfaces		.65%	3.1	Visual
205	Paint not dry		.65%	3.1	Visual
206	Corrosive preventive compound inadequate or excessive		.65%	3.1	Visual

NOTES:

a) See Paragraph 4.5.5.3
b) See Paragraph 4.4.7.3

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QUALITY CONFORMANCE INSPECTION

CLASSIFICATION OF DEFECTS & TESTS

MIL-P-60584A (AR)

PARAGRAPH	TITLE				DRAWING NUMBER
4.4.2.5	Metal Parts Assembly (after paint)		SHEET 2 OF 2		10542945
					NEXT HIGHER ASSEMBLY
CATEGORY	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AQL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE /INSPECTION METHOD
207	Burr		.65%	3.11	Visual
208	Foreign matter		.65%	3.11	Visual
209	Grommet missing or loose		.65%	3.1	Visual
210	Evidence of poor workmanship		.65%	3.11	Visual
211	Lifting plug missing		.65%	3.1	Visual

NOTES:

DRDAR-QA Form 160 Jul 77

QUALITY CONFORMANCE INSPECTION

CLASSIFICATION OF DEFECTS & TESTS

MIL-P-60584A (AR)

PARAGRAPH	TITLE		SHEET 1 OF 1		DRAWING NUMBER 8837835
4.4.2.6	Pallet				NEXT HIGHER ASSEMBLY
CATEGORY	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AQL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE /INSPECTION METHOD
Critical:	None defined.				
Major:	None defined.				
Minor					
201	Pallet damaged (unserviceable)		.65%	3.1	Visual
202	Improperly packed		.65%	3.1	Visual
203	Strapping missing, loose or broken		.65%	3.1	Visual/Manual
204	Marking missing, incorrect or illegible		.65%	3.1	Visual
205	Evidence of poor workmanship		.65%	3.11	Visual

NOTES:

DRDAR-QA Form 160 Jul 77

4.4.4 Testing. Testing is described in the First Article Table, Quality Conformance Inspection Tables, and herein.

4.4.5 Mechanical properties.

4.4.5.1 Hardness.

4.4.5.1.1 Heat treatment lots. In order to determine uniformity of heat treatment, each body forging in the heat treatment lot (as defined by 4.4.2.1) shall be subjected to a hardness test with a Brinnel hardness tester, or by any other method of hardness testing approved by the procuring activity.

4.4.5.1.2 Stress relieved lots. Twenty-five cold shaped bodies from the first batch of each stress relieved lot (as defined by 4.4.2.2) processed through the stress relief furnace and 5 bodies from each one hour's production thereafter for the balance of the stress relieved lot shall be subjected to a hardness test to assess uniformity of the product.

4.4.5.1.3 Miscellaneous lots. Miscellaneous heat treatment lots shall be subjected to a hardness test in accordance with 4.4.5.1.1. Miscellaneous stress relieved lots shall be subjected to a hardness test in accordance with 4.4.5.1.2.

4.4.5.2 Tension test.

4.4.5.2.1 Heat treatment lots. Two projectile body forgings, one of the hardest and one of the softest as determined by 4.4.5.1.1, shall be subjected to this test. Failure of any tension test specimen to comply with the yield strength or elongation requirements of the applicable drawing shall be cause for rejection of the lot. At the option of the contractor, the entire lot may be reheat treated and retested; or a new set of bodies may be selected and tested from a segment of the heat treat lot having a tighter hardness range than the heat treatment lot as originally sampled. If an acceptable hardness range can be established for this heat treatment lot, bodies falling within this range will be accepted. All other bodies will be rejected. Rejected bodies may be reheat treated and retested.

4.4.5.2.2 Stress relieved lots. Two projectiles bodies from each stress relieved lot (as defined by 4.4.2.2) shall be selected at random and subjected to this test. Failure of any tension test specimen to comply with the yield strength or elongation requirements of the applicable drawing shall be cause for rejection of the lot.

4.4.5.2.3 Miscellaneous lots. Samples for tension test of miscellaneous heat treatment or stress relieved lots shall be selected in accordance with 4.4.5.2.1 or 4.4.5.2.2, as applicable. Failure of any tension test specimen to comply with the yield strength or elongation requirements of the applicable drawing shall be cause for rejection of the lot. Double the number of samples shall be selected for miscellaneous lots.

4.4.5.2.4 Rotating band. One body and band assembly shall be selected from each 8-hour production or fraction thereof from each banding machine in operation and subjected to this test to determine compliance with 3.4.2. Failure to comply shall be cause for rejection of the assemblies represented by the sample.

4.4.6 Band seating.

4.4.6.1 Tightness (nondestructive method). When the nondestructive method of testing is employed, five body and band assemblies from each 1-hour production or fraction thereof per banding machine in operation shall be subjected to this test. Failure of one or more bands to comply with 3.5.4 shall be cause for rejection of the assemblies represented by the failing sample.

4.4.6.2 Destructive method. One body and band assembly from each 8-hour production or fraction thereof shall be subjected to this test to determine compliance with 3.5.4. Failure to comply shall be cause for rejection of the assemblies represented by the failing sample.

4.4.6.3 Sidewall contact. Rotating bands removed as specified under 4.4.5.2.4 or 4.4.6.2 shall be examined to determine compliance with 3.5.3. Failure to comply shall be cause for rejection of assemblies represented by the sample.

4.4.7 Brazed joint.

4.4.7.1 Air pressure test. Each metal parts assembly shall be subjected to this test to determine compliance with requirements of the applicable drawing. Failure of any assembly to comply shall be cause for rejection of the assembly.

4.4.7.2 Sectionalized joint. Two body assemblies, prior to painting, shall be selected from each lot of body assemblies and subjected to this test to determine compliance with the requirements of the applicable drawing. Failure to comply shall be cause for rejection of the lot.

4.4.7.3 Cleaning and application of protective coating. The sample size and acceptance criteria for the inspection of cleaning the item and the application of protective coating shall be as specified in the applicable specification. Failure to comply with the requirements shall be cause for taking the corrective action recommended therein.

4.4.8 Magnetic particle inspection.

4.4.8.1 Body. Heat treated bodies after final machining and prior to further processing shall be inspected 100% by the magnetic particle inspection technique.

4.4.9 Inspection equipment. For inspection equipment required to perform the examinations and tests prescribed herein, the contractor shall submit for approval inspection equipment designs in accordance with the terms of the contract. See Section 6 of MIL-A-48078 and 6.3 herein.

4.4.9.1 Automatic inspection equipment. All automatic test and inspection equipment when utilized by the contractor shall be subjected to periodic verification and calibration check during production. The procedures shall include as a minimum: Frequency, method of verification, and the method of retrieval of items produced between verification and calibration. These procedures shall be included in the operation and calibration procedures as required by the above paragraph.

4.4.9.2 Certification of nondestructive test (NDT) personnel. All personnel operating or calibrating NDT equipment shall be qualified and certified in accordance with MIL-STD-410.

4.5 Methods of inspection.

4.5.1 Mechanical properties.

4.5.1.1 Hardness (body). After final heat treatment or stress relief, but prior to final machining, the Brinnel Hardness test or any other method approved by the procuring activity shall be performed on the outside surface at the band seat location. The test shall be made in accordance with ASTM Method E-103 and the following:

a. The surface of the body in the area to be hardness tested shall be prepared by machining or grinding a flat of sufficient depth, 0.015 inches minimum, to remove scale and get below the decarburization zone. (Note: Flats and impressions shall be completely removed by final machining.)

b. Hardness tester periodic verification shall be performed using brinnel test standards manufactured in accordance with ASTM Method E-10 in lieu of production samples.

c. All hardness test measurements shall be automatically recorded.

d. The hardness tester shall use a standard 10mm brinnel ball. The hardness tester shall determine hardness in accordance with the following test sequence. First, the tester shall clamp the body to be tested with a 10,000-500 lb clamping load. Second, apply a minor load of approximately 10% of the 3000 kg of total test load. Third, apply the total test load. The clamping load will not be exceeded when the test load is applied. Fourth, relax the total test load back to the minor load. Fifth, automatically measure this penetrator travel from initial minor load position following application of the total test load. Sixth, display hardness and release the body.

4.5.1.2 Tension test.

4.5.1.2.1 Body. From the samples provided by 4.4.5.2.1, 4.4.5.2.2 or 4.4.5.2.3 two tension test specimens conforming to the largest obtainable round type specimen as prescribed by ASTM Method E-8, shall be taken from opposite sides of the body at midwall, in such a manner that the center of the gage length of the mechanical test bar will fall in line coincident with the center of the rotating band seat. The number of specimens and their location are for the convenience of the contractor and Government and shall not restrict the contractor or Government from testing additional specimens at other locations if necessary to determine that the mechanical properties of the projectile body to meet the drawing requirements. The criteria for performing the tests shall be as prescribed by ASTM Method E-8.

4.5.1.2.2 Rotating band. Following the examination for depth of sidewall contact as described in 4.5.2.2, the rotating band shall be removed from one of two segments from the sample provided by 4.4.5.2.4 and carefully flattened without hammering so as to hold additional cold working to a minimum. The specimen blank shall be machined so that all serration marks from the band seat are removed. A test specimen having two centimeter gage length and a one centimeter gage width, and grip ends of sufficient length to accomodate the tensile machine shall be removed from the blank band. The specimen shall be tested in accordance with the procedure prescribed by ASTM Method E-8.

4.5.2 Band seating.

4.5.2.1 Tightness.

4.5.2.1.1 Nondestructive method. The samples provided in 4.4.6.1 shall be tested utilizing the equipment and procedures prescribed in 4.4.6.1 Detroit Testing Machine Manual (see 6.6).

4.5.2.1.2 Destructive method. The body and band assembly selected in accordance with 4.4.6.2 should not be processed through the band machining line, although each band should have a light surface cut to true up the surface prior to measuring. The diameter of each band shall be measured on three (3) locations, 60 degrees apart, on the points along the cylindrical portion of their length, near the front and rear edges. This comprises six (6) diametrical measurements per band. These points of measurement shall be marked on the bands and on the projectile body adjacent thereto in such a manner as to permit proper body and band orientation after removal. The bands shall be carefully removed so as to keep deformation to a minimum. After removal, the thickness of the band shall be measured at each of the marked points (a total of 12 measurements) and the diameter of the band seat corresponding to these points shall also be measured. Add to each of the diameters of the band seat the sum of the corresponding two (2) thicknesses of the band; the results obtained shall then be subtracted from the previously determined diameters over the band. The six (6) results shall be totaled and the sum thus obtained will be divided by six (6) to determine the average diametrical clearance.

4.5.2.2 Sidewall contact. The samples provided by 4.4.6.3 shall be sectioned by cutting through two planes normal to the longitudinal axis one-half inch forward and rear of rotating band. The cylindrical portion containing the rotating band shall be sectioned approximately in half through a plane parallel to its longitudinal axis. One of the two parts shall be used for establishment of mechanical properties of the band; the other part shall be sectioned into two parts, thus exposing four surfaces, each of which reveals a view of the band as swaged into the band seat. The exposed surfaces shall be subjected to a light grinding operation to remove metal smear effects of saw cuts prior to measurements for depth of sidewall contact to determine compliance with requirements of 3.5.3.

4.5.3 Brazed joint.

4.5.3.1 Air pressure testing. This test will be performed using equipment capable of performing the test accurately and consistently. The equipment shall be calibrated prior to start of each day's operation and after each four (4) hours continuous operation. The assembly shall be submerged in water in such manner

that the nose adapter joint is covered, and observation can be made for full 360 degrees of adapter joint. Observation shall be made for air bubbles rising to the surface of the water or bubbles leaving the vicinity of the adapter joint. In performing the test the pressure will be applied until the required minimum pressure is reached, after which the pressure will be held for a minimum length of time specified on the applicable drawing. After acceptance stamp letter "A" as indicated on the assembly drawing.

4.5.3.2 Sectionalized joint. The samples provided in accordance with 4.4.7.2 shall be sectionalized by removing a portion of the body at least one inch to the rear of the brazed area. The section (containing the brazed joint) shall be cut into two (2) segments. From each segment, the porition of the body shall be peeled from the adapter. After peeling, the brazed area of each segment of the adapter and the mating pieces of the body shall be visually examined to determine compliance with the applicable drawing.

4.5.4 Protective coating. The procedures for testing the cleaning and surface treatment methods for the components and assemblies shall be in accordance with the criteria for testing as specified in the applicable specification. The salt spray prescribed shall be performed utilizing the equipment and procedures specified by ASTM Method B-117 and TT-C-490.

4.5.5 Proving ground ballistic tests. The following tests shall be conducted using cannon tubes having 25 percent minimum remaining life based upon current gun tube condemnation criteria. Photographic equipment shall be positioned near the muzzle of the weapon to record the condition of the projectile as it exits the tube. Chamber pressures and velocities shall be recorded for each round fired. All photographs and recovered hardware shall be examined for any noncompliance with the applicable requirements of 3.6. Range, deflection, and velocity shall be recorded for each round fired for information. An attempt will be made to recover the projectiles fired for this test.

4.5.5.1 Excess pressure. Each projectile submitted for this test shall be inert loaded, dummy fuzed and will be fired for recovery in an M185 or M199 cannon tube after adjusting the weight of or pre-conditioning at +145°F the M119 series propelling charge to yield a chamber pressure of 112 + 2% of peak pressure.

4.5.5.2 Service pressure. Each projectile submitted for this test shall be inert loaded, dummy fuzed and will be fired for recovery in an M185 or M199 cannon tube with an M119 series propelling charge.

4.5.5.3 Sampling procedures. Normal sampling will be conducted until five (5) consecutive lots have been accepted. Reduced sampling shall then be instituted. Any failure, while on reduced sampling, mandates return to normal sampling. Sample sizes for normal and reduced sampling shall be as follows:

		NORMAL	REDUCED
a.	Excess pressure	10	5
b.	Service pressure	10	5

4.5.6 Magnetic particle inspection. The procedures for performing this test utilizing the wet flourescent method shall be as specified in Specification MIL-I-6868, for indirect magnetization by either the continuous method or the residual method. The suspension shall be applied to the entire body, inside and outside. The body shall be inspected after inducing a circular magnetic field and again after inducing a longitudinal magnetic field. The magnetic particle standard per Dwg. 9280357 shall be utilized to establish inspection sensitivity. Any body which fails to comply with the requirements of 3.9 shall be rejected. Bodies which comply shall be stamped with the letter "M" as specified on the applicable drawing. After draining, the body shall be thoroughly inspected in a darkened area under the ultra-violet light which will produce adequate flourescence of the magnetic particles. The solids content of the suspension shall be maintained at a level recommended by the manufacturer. The suspension shall be checked at the start of each days' production and at intervals of not over 4 hours continuous operation, utilizing the procedures and the equipment prescribed by Specification MIL-I-6868. When performing the test for solids content of suspension, if it is determined that it does not comply, all assemblies that have been accepted since the last satisfactory test shall be retested after the suspension has been brought to the proper level. After acceptance, the body assembly shall be demagnetized and cleaned. The magnetic particle test shall be performed on equipment that complies with the requirements of Specification MIL-I-6867. The operator(s) of the equipment and the inspectors making the determination shall be certified in accordance with MIL-STD-410.

5. PREPARATION FOR DELIVERY

5.1 Packing.

5.1.1 Level A. Not applicable.

5.1.2 Level B. Not applicable.

5.1.3 Level C. Not applicable.

5.2 Packaging and packing. Packaging, packing and marking shall be in accordance with MIL-P-1169.

5.2.1 Projectile metal parts shall be palletized in accordance with Dwg. 8837835.

6. NOTES

6.1 Intended use. The components covered by this specification are intended for use on the 155MM, Smoke, WP, M110 Projectile.

6.2 Ordering data. See MIL-A-48078.

6.3 Submission of inspection procedures and equipment designs for approval. See MIL-A-48078. Submit equipment designs as required to : Commander, ARRADCOM, ATTN: DRDAR-QAR-I, Dover, NJ 07801.

6.4 Visual examination qualification. When compliance with the applicable requirement is in doubt as result of visual examination, the characteristics may be measured or gaged to determine acceptability.

6.5 Submission of ballistic test data and ammunition data cards. In addition to the normal distribution of records for items procured by the Department of the Army, two copies of all ballistic test data and ammunition data cards shall be forwarded to: Commander, ARRADCOM, ATTN: DRDAR-QAR-Q Dover, NJ 07801.

6.6 Band seating. The operating procedures for use of Detroit Testing Machine, Commander, ARRADCOM, ATTN: DRDAR-QAR-I, Dover, NJ 07801.

6.7 Drawings. Drawings listed in Section 2 of this specification under the heading US Army Armament Research and Development Command (ARRADCOM) may also include drawings prepared by and identified as Edgewood Arsenal, Frankford Arsenal, Rock Island Arsenal, or Picatinny Arsenal drawings. Technical data originally prepared by these activities is now under the cognizance of ARRADCOM.

6.8 Data requirements. When this specification is used in an acquisition which incorporates a DD Form 1423, Contract Data Requirements List (CDRL), the data requirements identified below shall be developed as specified by an approved Data Item Description (DD Form 1664) and delivered in accordance with the approved CDRL incorporated into the contract. When the provisions of DAR 7-104.9(n)(2) are involked and the DD Form 1423 is not used, the

data specified below shall be delivered by the contractor in accordance with the contract or purchase order requirements. Deliverable data required by this specification is cited in the following paragraphs:

PARAGRAPH	DATA REQUIREMENT	APPLICABLE DID
3.3.1, 3.3.2 3.5.3	Procedure Report	* DI-T-5372 Tailored
4.5.1.2.1	Quality Inspection Test Demonstration & Evaluation Report	DI-R-1724
4.5.6	Quality Inspection Report	DI-R-1721

* Delete a, b, c, d, of paragraph 1 block 10, DD Form 1664, and substitute contractor designated parameters and limits.

6.9 Steel blooms, billets, slabs and bars.

6.9.1 Steel grade. It is the responsibility of the manufacturer of the projectile metal parts to select a fully killed carbon steel of a grade compatible with the abilities of the equipment and the methods of processing the metal within the operations of the shops of the forger and machiner to produce the projectile to the dimensions, mechanical properties and metal integrity specified as an end item requirement.

6.9.2 Raw material. The supplier of the selected steel raw material is responsible only for furnishing a metal composition, grade, and type with dimensions, weight, soundness and freedom from metallurgical or mechanical defect limitations identifiable with the standard AISI grade (selected by the projectile manufacturer) and complying with the specific ASTM designation and tests selected by the projectile manufacturer.

6.9.3 Forging quality processing techniques. In the application of carbon steel, blooms, billets, slabs and bars, forging quality processing techniques adapted to use of the selected steel should be applied with the expectation that there will be variables in the metal cross-sectional dimensions, in weight per unit length, in the hardenability variance from heat to heat, in the mechanical condition of the surface, and in the straightness of the raw material. Economic advantages will be realized if the process and equipment within the shops of the forger and the machiner have been engineered in terms of equipment sequence of operations, tooling designs, handling devices and processing techniques having the capabilities of compensating for such variables.

6.10 Preproduction sample/hardness range. To minimize the need for reheat treating material or for having miscellaneous heat treatment lots it is recommended that the contractor process a preproduction sample to establish what should be an acceptable hardness range for each mill heat. This hardness range could then be used for screening bodies during processing of the heat treatment lot from that mill heat. When using a hardness range acceptance it will still be in accordance with paragraph 4.4.5.2.1.

Custodian:
Army-AR

Preparing activity:
Army-AR

(Project 1320-A732)

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NOTE: This form may not be used to request copies of documents, nor to request waivers, deviations, or clarification of specification requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document*(s)* or to amend contractual requirements.

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STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions – Reverse Side)

1. DOCUMENT NUMBER	2. DOCUMENT TITLE
MIL-P-60584A	PROJECTILE, 155MM, SMOKE, WP, M110 METAL PARTS ASSEMBLY

3a. NAME OF SUBMITTING ORGANIZATION	4. TYPE OF ORGANIZATION *(Mark one)*
	☐ VENDOR
b. ADDRESS *(Street, City, State, ZIP Code)*	☐ USER
	☐ MANUFACTURER
	☐ OTHER *(Specify)*: _____

5. PROBLEM AREAS

a. Paragraph Number and Wording:

b. Recommended Wording:

c. Reason/Rationale for Recommendation:

6. REMARKS

7a. NAME OF SUBMITTER *(Last, First, MI)* – Optional	b. WORK TELEPHONE NUMBER *(Include Area Code)* – Optional
c. MAILING ADDRESS *(Street, City, State, ZIP Code)* – Optional	8. DATE OF SUBMISSION *(YYMMDD)*

DD FORM 82 MAR 1426

PREVIOUS EDITION IS OBSOLETE.