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SUPERSEDING
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MILITARY SPECIFICATION
CORE, STEEL, HARDENED; FOR ARMOR PIERCING TYPES OF SMALL ARMS AMMUNITION

1. SCOPE

1.1 This specification covers hardened steel cores for use in the assembly of bullets for armor piercing types of Small Arms Ammunition.

1.2 Classification.- The hardened steel cores covered by this specification shall be of the following types (see 6.1):

Type I - Core for Cartridge, Caliber .30, Armor Piercing, M2 and Armor Piercing, Incendiary, M14
Type II - Core for Cartridge, 7.62mm, NATO, Armor Piercing, M61
Type III - Core for Cartridge, Caliber .50, Armor Piercing, Incendiary, M8
Type IV - Core for Cartridge, Caliber .50, Armor Piercing, Incendiary-Tracer, M20

2. APPLICABLE DOCUMENTS

2.1 The following documents of the issue in effect on date of invitation for bids or request for proposal form a part of this specification to the extent specified herein.

SPECIFICATIONS

Federal
PPP-B-621 - Boxes, Wood, Nailed and Lock Corner
PPP-B-636 - Boxes, Fiberboard
VV-L-800 - Lubricating, Oil, General Purpose Preservative (Water Displacing, Low Temperature)

2.1 SPECIFICATIONS (cont'd)

Military
MIL-I-6866 - Inspection; Penetrant Method of

STANDARDS

Federal
Test Method Standard No. 151 - Metals; Test Methods

Military
MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-109 - Quality Assurance Terms and Definitions
MIL-STD-129 - Marking for Shipment and Storage

DRAWINGS

U. S. Army Munitions Command
B5049044 - Core, Caliber .30, Armor Piercing, M2 and Armor Piercing Incendiary, M14
B7553742 - Core, 7.62mm, NATO, Armor Piercing, M61
B6137657 - Core, Caliber .50, Armor Piercing Incendiary, M8
B7638266 - Core, Caliber .50, Armor Piercing Incendiary, Tracer, M20

PUBLICATIONS

U. S. Army Munitions Command
ORD-SIP-S302 - Visual Inspection Standards for Cores Used in Small Arms Ammunition Manufacture

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

3. REQUIREMENTS

3.1 General.- The core shall comply with the applicable drawing, referenced specifications and the following.

3.2 Hardness.- The finished core shall have a Rockwell "C" scale hardness number within the limits specified on the applicable core drawing.

3.3 Workmanship.- The requirements for workmanship are as specified on the applicable drawing, referenced specifications and the following.

3.3.1 Metal defects.- The core shall be free of teats, cracks, chips, mutilations, defective points, tool marks, excessive corner break, no corner break, burrs, steps and long body; excessive cavity chamfer and absence of cavity chamfer (M20 only).

3.3.2 Foreign matter.- The core shall be free of rust, dirt, scale and grit.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection.- Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the supplier may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Quality assurance terms and definitions.- Reference shall be made to MIL-STD-109 for definition of quality assurance terms.

4.2 First article sample.

4.2.1 Initial production sample.- At the beginning of regular production, a sample shall be submitted in accordance with contract requirements and shall consist of 200 cores. The sample shall be manufactured using the same materials, equipment, processes and procedures as will be used in regular production and shall be obtained from the same source of supply.

4.2.1.1 Examination and test.- After inspection and provisional acceptance at source, the sample shall be inspected for all requirements of the drawings and specifications at a Government laboratory or such other facility specified in the contract.

4.2.1.2 Initial production sample.- Failure of the sample to comply with the requirements of the drawings and specifications shall result in sample disapproval.

4.3 Inspection provisions.

4.3.1 Lot.

4.3.1.1 Submission of product.- The product shall be submitted in accordance with MIL-STD-105.

4.3.1.2 Lot identification.- Each lot of cores shall be identified by lot number, type, name of the contractor and name of the steel manufacturer.

4.3.2 Examination.- Examination for major and minor defects shall be performed on a class basis in accordance with the classification of defects, Table I, using applicable sampling plans and acceptance criteria of MIL-STD-105. The acceptable quality level (AQL) for the major class shall be 0.25 percent and the AQL for the minor class shall be 1.50 percent. All non-conforming cores shall be rejected.

4.3.2.1 Classification of defects.- The classification of defects shall be as specified in Table I.

TABLE I 1/

Defect	Method of Inspection
CRITICAL	
None defined	
MAJOR	
101. Total length	Gage 3/
102. Outside diameter	Gage
103. Profile of ogive	Gage
104. Diameter of boattail	Gage
105. Depth of tracer cavity	Gage 2/
106. Diameter of tracer cavity	Gage 2/
107. Concentricity of tracer cavity with body diameter	Gage 2/

4.3.2.1 TABLE I (cont'd)

Defect	Method of Inspection
MAJOR (Cont'd)	
108. Rod ends, stubs and scrap	Visual
109. Teats	Visual
110. Mutilated	Visual
111. Cracked	Visual 4/
112. Chipped	Visual
113. Foreign matter in tracer cavity	Visual 2/
MINOR	
201. Diameter on boattail	Gage
202. Angle of boattail	Gage
203. Weight	Scale
204. Defective point	Visual
205. Excessive or no corner break	Visual
206. Burrs	Visual
207. Steps	Visual
208. Rusty, dirty, oxidation, etc.	Visual
209. Tool marks (body and ogive)	Visual
210. Tool marks (boattail)	Visual
211. Long body	Visual
212. Excessive chamfer on (tracer) cavity	Visual 2/
213. Absence of chamfer (tracer) cavity	Visual 2/

1/ Refer to ORD-SIP-S302 in defining and evaluating visual defects. (see 6.2.1)

2/ Applicable to Caliber .50 M20 cores only.

3/ Theoretical sharp point shall be used as datum point.

4/ Defined as cracks deeper than .010" for caliber .50 and .006" for caliber .30 cores. Core having cracks with depths equal to or less than that noted shall be classed as a minor defect. Inspection shall be in accordance with MIL-I-6866.

4.3.3 Test.- The following test shall be conducted in accordance with method and procedure specified in 4.4.

4.3.3.1 Hardness.- A sample of 100 cores, selected in such a manner that the cores are representative of the entire lot, shall be tested for hardness. Failure of four or more cores to comply with 3.2 shall be cause for rejection of the lot. If more than one but less than four cores fail in the first test, a second sample consisting of double the number of cores in the first sample, shall be tested. The lot shall be rejected if in the combined first and second sample, four or more cores fail to comply with 3.2.

4.3.3.2 Packaging, packing and marking.- Inspection for packaging, packing and marking shall be as directed by the contracting officer.

4.3.3.3 Inspection equipment.- The examinations shall be made using commercial measuring equipment with a precision of 10 percent of the tolerance on the product dimension.

4.4 Test method and procedure.

4.4.1 Hardness.- Each core of the test sample shall be tested in an area which is solidly supported in order to obtain valid readings. The hardness shall be determined by averaging three readings taken on each core 120 degrees apart. The test will be conducted in accordance with Method 243.1 in Federal Test Methods Standard No. 151. In the event that the hardness value falls below the minimum hardness specified, an evaluation shall be made on the cores in question (see 6.3). The cores subjected to the hardness test shall be scrapped.

5. PREPARATION FOR DELIVERY

5.1 Preservation.- Cores shall be coated lightly with rust inhibiting oil, Specification VV-L-800.

5.2 Packing.

5.2.1 Level C (Domestic shipment).- Cores shall be packed in boxes manufactured in accordance with Federal Specification PPP-B-621 or PPP-B-636. Not more than 10,000 caliber .30 or 7.62mm, or 2,500 caliber .50 cores shall be packed in any single container.

5.3 Marking.- Each box shall be marked with the quantity, nomenclature, caliber and model number of core, lot number, name of contractor, and the number of the contract or purchase order in accordance with MIL-STD-129.

6. NOTES

6.1 Ordering data.- Invitations for bids or request for proposal and contracts or orders will specify the following:

6.1.1 Title, number and date of this specification.

6.1.2 Type of core (see 1.2).

6.1.3 Type of packing.

6.1.4 Provision for submission of acceptance inspection reports, in duplicate, to the contracting officer, containing final inspection results for each lot of cores presented to the Government.

6.2 Defect definitions and standards.

6.2.1 Visual defects.- Defects for 7.62mm M61 cores covered by this specification are not shown specifically in ORD-SIP-S302, Visual Inspection Standards for Cores Used in Small Arms Ammunition Manufacture. The illustrations at the bottom of Page 7 of that SIP are applicable only to a predecessor design of the 7.62mm M61 core. Applicable visual defect standards of the caliber .30 API and caliber .30 AP core sections of the SIP should be used in connection with visual inspection of the 7.62mm M61 cores.

6.3 Procedure for evaluating cores falling below the minimum hardness specified. The cores in question shall be evaluated by grinding two parallel flat surfaces the entire cylindrical length of the core to a depth between 0.010 to 0.014 inch. The hardness determination shall be made by taking three readings, one reading at each of the following positions on the flat surface:

(1) Approximate junction of cylindrical length and ogive.

(2) Approximate center.

(3) Approximate junction of cylindrical length and boattail or chamfer, as applicable.

6.3.1 If hardness reading is still below minimum specified, the lot shall either be subjected to a second sample or rejected (see 4.3.3.1).

Custodian:

Army - MU

Preparing activity:

Army - MU

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