

MIL-S-50783(MU)
20 September 1973

MILITARY SPECIFICATION

STEEL ALLOY, SPECIAL PURPOSE FOR
AMMUNITION COMPONENTS (HF-1)

1. SCOPE

1.1 Scope.-This specification covers hot rooled bars and semi-finished billets of a specific composition to be used in the manufacture of Artillery, Warhead and Mortar Ammunition Components.

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

Military
MIL-A-2550 - Ammunition and Special Weapons General Specifications
for

STANDARDS

Military
MIL-STD-109 - Quality Assurance Terms and Definitions

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.

ASTM-A29 - Specification for General Requirements for Hot
Rolled and Cold Finished Carbon and Alloy Steel
Bars
ASTM-A274 - Alloy Steel Blooms, Billets, and Slabs for Gorging,
Specification for
ASTM-A317 - Macro etch Testing and Inspection of Steel Forgings
ASTM-A322 - Hot Rolled Alloy Steel Bars, Specification for

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

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3. REQUIREMENTS

3.1 Melting Process.—The steel shall be made by one of the following processes:

Basic Oxygen Process

Open Hearth

Electric Furnace

3.1.1 Deoxidation Practice.—Aluminum shall not be used in the melting and teeming of this alloy for any purpose.

3.2 Chemical Analysis.—The chemistry shall be uniform throughout the heat of steel as determined by check analysis.

3.3 Chemical Composition.—The alloy shall comply with the composition contained in Table I.

TABLE I

	<u>Ladle Analysis</u>
Carbon	1.00 - 1.15
Manganese	1.60 - 1.90
Silicon	0.70 - 1.00
Sulphur	.040 max.
Phosphorus	.035 max.
Nickel	.25 max.
Chromium	.20 max.
Molybdenum	.06 max.
Copper	.35 max.
Aluminum	.020 max.

3.4 Internal Soundness.—The steel shall be of such a quality as to meet the macroetch requirements applicable to Specification ASTM-A274 or ASTM-A322.

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3.5 Dimensions.-The material shall conform to the nominal size specified in the contract or purchase order.

3.5.1 Permissible variations for dimensions shall be as specified in the applicable ASTM specifications.

3.6 Workmanship.-The steel shall be on uniform quality and condition within the limits of good manufacturing and inspection practices; free from pipe, deep seams or cracks, excessive porosity, segregation of non-metallic inclusions, and other defects which due to their nature, degree, or extent prevent the fulfillment of other requirements.

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 to define quality assurance terms used.

4.1.2 Inspection provisions.-Inspection shall be in accordance with MIL-A-2550 except as specified herein.

4.2 Inspection testing.

4.2.1 Check analysis.-Two samples for check analysis will be selected from each heat of steel. One sample shall represent the top end of the top out of the first ingot and the second sample shall represent the bottom end of the bottom cut of the last ingot. Failure of the check analysis to comply with Table I within the tolerance specified in ASTM-A29 shall be cause for rejection of the heat.

4.2.2 Internal soundness.-Macro etch specimens shall be removed from the ends of bars or billets representing the top and bottom of the first, middle and last ingot of each heat of steel. Failure to comply with the requirements of 3.4 shall be cause for rejection of the heat of steel.

4.3.3 Test methods and procedures.

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4.3.1 Check analysis.-The preparation of samples for check analysis shall be in accordance with ASTM-A29. Determination of chemical analysis shall be by any ASTM approved method.

4.3.2 Internal soundness.-Internal soundness shall be determined by the macro etch test using the procedures prescribed by ASTM-A317.

5. PREPARATION FOR DELIVERY - Not applicable.

6. NOTES

6.1 This specification covers a specific alloy steel developed by Bethlehem Steel Corp. for use in artillery, warhead and mortar ammunition. The Government has purchased the right to have the steel manufactured by any qualified steel supplier, royalty-free, under the terms of contract number DAAAO9-72-C-0205, Entitled, "Technical Data Rights and Patent License Agreement."

6.2 Processing information which may be helpful in manufacturing this alloy will be supplied by the Government upon written request of any potential steel supplier.

6.3 Ordering data.-Procurement Documents should specify the title, number and date of this specification.

Custodian:

Army - MU

Preparing activity:

Army - MU(FA)

Project No. 1395-A203

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