QQ-A-200/5D
12 April 1984
SUPERSEDING
QQ-A-200/5C
August 20, 1970

FEDERAL SPECIFICATION SHEET

ALUMINUM ALLOY 5086, BAR, ROD, SHAPES, TUBE AND WIRE, EXTRUDED

This specification was approved by the Assistant Administrator, Office of Federal Supply and Services, General Services Administration, for the use of all Federal agencies.

The complete requirements for procuring the aluminum alloy 5086 bar, rod, shapes, tube and wire, extruded described herein shall consist of this document and the latest issue of QQ-A-200/GEN (see 2.1).

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers the specific requirements for aluminum alloy 5086, bar, rod, shapes, tube and wire produced by extrusion.

1.2 Classification.

1.2.1 Tempers. The bar, rod, shapes, tube and wire shall be of the following tempers: O, H111 and H112, as specified (see 6.2). The definition of these tempers shall be as specified in QQ-A-200/GEN.

1.2.2 Tubing. Tubing shall be additionally classified as follows:

Type	Description
I	Tubing extruded from hollow billets using die and mandrel (see QQ-A-200/GEN).
II	Tubing extruded from solid billets using a port-hole or spider die or similar tooling (see QQ-A-200/GEN).

2. APPLICABLE DOCUMENTS

2.1 Government publications. The issues of the following documents, in effect on date of invitation for bids or solicitation for offers, form a part of this specification to the extent specified herein.

FSC 9530, 4710,
9525, 9540

Federal Specifications

QQ-A-200/GEN - Aluminum Alloy, Bar, Rod, Shapes, Structural Shapes, Tube and Wire, Extruded; General Specification for

(Activities outside the Federal Government may obtain copies of Federal specifications, standards, and commercial item descriptions, as outlined under General Information in the Index of Federal Specifications, Standards and Commercial Item Descriptions. The Index, which includes cumulative bimonthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U. S. Government Printing Office, Washington, DC 20402.

(Single copies of this specification and other Federal specifications and commercial item descriptions required by activities outside the Federal Government for bidding purposes are available without charge from General Services Administration Business Service Centers in Boston, MA; New York, NY; Philadelphia, PA; Washington, DC; Atlanta, GA; Chicago, IL; Kansas City, MO; Fort Worth, TX; Houston, TX; Denver, CO; San Francisco, CA; Los Angeles, CA; and Seattle, WA.

(Federal Government activities may obtain copies of Federal standardization documents and the Index of Federal Specifications, Standards, and Commercial Item Descriptions from established distribution points in their agencies.)

3. REQUIREMENTS

3.1 Chemical composition. The chemical composition shall conform to the requirements specified in table I.

TABLE I. Chemical composition 1/

Element	Percent	
	Minimum	Maximum
Zinc	--	0.25
Magnesium	3.5	4.5
Copper	--	0.10
Chromium	0.05	0.25
Iron	--	0.50
Silicon	--	0.40
Manganese	0.20	0.7
Titanium	--	0.15
Other elements, each	--	0.05
Other elements, total 2/	--	0.15
Aluminum	Remainder	

TABLE I. Chemical composition 1/ - Continued

1/ Analysis shall regularly be made only for the elements specifically mentioned in table I. If, however, the presence of other elements is indicated or suspected in amounts greater than the specified limits, further analysis shall be made to determine that these elements are not present in excess of specified limits.

2/ The sum of those "others" metallic elements 0.010 percent or more each, expressed to the second decimal before determining the sum.

3.2 Mechanical properties.

3.2.1 *Mechanical properties of material as supplied.* The mechanical properties in the direction of extrusion shall conform to the requirements specified in table II. (See QQ-A-200/GEN for exceptions to elongation requirements.)

TABLE II. Mechanical properties

Temper	Thickness, (bar and shapes); diameter, (rod and wire); wall thickness, (tube); inches	Area square inches	Tensile Strength minimum ksi	Yield strength at 0.2 percent offset or at extension indicated		Elongation in 2 inches or 4 times specimen diameter minimum percent
				minimum ksi	Extension under load, inch per inch	
O	Up thru 5.000	Up thru 32	35.0 1/	14.0	0.0034	14
H111	Up thru 5.000	Up thru 32	36.0	21.0	0.0040	12
H112	Up thru 5.000	Up thru 32	35.0	14.0	0.0034	12

1/ Maximum tensile strength is 46.0 ksi.

3.3 Marking. (see QQ-A-200/GEN).

4. QUALITY ASSURANCE PROVISIONS (see QQ-A-200/GEN)

5. PREPARATION FOR DELIVERY (see QQ-A-200/GEN)

6. NOTES

6.1 Intended use. Aluminum alloy 5086 bar, rod, shapes, tube and wire produced by extrusion are intended for use where applications require a weldable moderate-strength alloy having comparatively good corrosion resistance, such as, marine applications, storage tanks and cargo vehicle.

6.2 Ordering data. Purchasers should select the preferred options permitted herein, and include the following information in procurement documents:

(a) Title, number and date of this specification
(b) Form, quantity and temper required (see 1.2.1)
(c) Dimensions required
(d) Requirements for sizes not specifically covered (see QQ-A-200/GEN)
(e) Special end use requirements
(f) Whether type II tubing is acceptable for the application (see 1.2.2)
(g) For military agencies - selection of applicable levels of preservation, packaging and packing required. Also specify marking requirements (see section 5, QQ-A-200/GEN)
(h) Selection of applicable levels of preservation and packing (see section 5, QQ-A-200/GEN).

6.3 International standardization agreements. Certain provisions of this specification are the subject of international standardization agreement ABC-NAVY-STD-44. When amendment, revision or cancellation of this specification is proposed which affects or violates the international agreement concerned, the preparing activity will inform GSA so that appropriate reconciliation action may be taken through international standardization channels.

MILITARY INTEREST:

Custodians

Army-MR
Navy-AS
Air Force-20

Review Activities

Army-AR, EA, MI
DLA-IS

User Activities

Army-CR
Navy-MC, SH

CIVIL AGENCY COORDINATING ACTIVITIES:

GSA-FSS
NASA-JFK
DOE-BPA

PREPARING ACTIVITY:

NAVY-AS

DOD Project 9530-0273

Orders for this publication are to be placed with the General Services Administration, acting as an agent for the Superintendent of Documents. See section 2 of this specification to obtain extra copies and other documents referenced herein.

INSTRUCTIONS: In a continuing effort to make our standardization documents better, the DoD provides this form for use in submitting comments and suggestions for improvements. All users of military standardization documents are invited to provide suggestions. This form may be detached, folded along the lines indicated, taped along the loose edge *(DO NOT STAPLE)*, and mailed. In block 5, be as specific as possible about particular problem areas such as wording which required interpretation, was too rigid, restrictive, loose, ambiguous, or was incompatible, and give proposed wording changes which would alleviate the problems. Enter in block 6 any remarks not related to a specific paragraph of the document. If block 7 is filled out, an acknowledgement will be mailed to you within 30 days to let you know that your comments were received and are being considered.

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STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions – Reverse Side)

1. DOCUMENT NUMBER	2. DOCUMENT TITLE
QQ-A-200/5D	Aluminum Alloy 5086, Bar, Rod, Shapes, Tube and Wire, Extruded

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

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)*

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