

MIL-M-17999C(MR)  
1 December 1972  
SUPERSEDING  
MIL-M-17999B(MR)  
1 October 1965

## MILITARY SPECIFICATION

### METAL, EXPANDED, ALUMINUM

#### 1. SCOPE

1.1 Scope. This specification covers aluminum expanded metal.

1.2 Classification. Expanded metal shall be of the following classes and alloys, as specified (see 6.2):

Class 1 - As expanded  
Class 2 - Expanded and flattened

Alloy 3003  
Alloy 5005  
Alloy 5052  
Alloy 6061

#### 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

QQ-A-250 - Aluminum Alloy Plate and Sheet; General Specification for  
QQ-A-250/2 - Aluminum Alloy 3003, Plate and Sheet  
QQ-A-250/8 - Aluminum Alloy 5052, Plate and Sheet  
QQ-A-250/11 - Aluminum Alloy 6061, Plate and Sheet  
UU-P-271 - Paper, Wrapping, Waterproofed Kraft

#### STANDARDS

##### MILITARY

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes  
MIL-STD-129 - Marking for Shipment and Storage

F&C 9535

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(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.)

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.

#### AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) STANDARDS

##### B 209 - Aluminum Alloy Sheet and Plate

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

### 3. REQUIREMENTS

3.1 Materials. Unless otherwise specified in the contract or order, expanded metal and flattened expanded metal shall be produced from aluminum alloy 3003-H14 sheet conforming to QQ-A-250/2 or 5005-H34 sheet conforming to ASTM B 209 at the supplier's option. When specified (see 6.2) in the contract or order, expanded metal and flattened expanded metal shall be produced from aluminum alloy 5052-O or 5052-H32 sheet conforming to QQ-A-250/8; or 6061T6 sheet conforming to QQ-A-250/11, as specified.

3.2 Manufacture. Expanded metal shall be manufactured from sheet aluminum in thicknesses corresponding to table I, as specified (see 6.2). Unless otherwise specified in the contract or order, the aluminum shall be sheared so that each sheet will be expanded into uniform diamond-shaped openings, the longer diagonals of which shall be parallel to the length direction of the sheet. Each opening shall be integral with adjoining openings by means of unsheared bonds (bridges) of the original sheet.

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Table I. Mesh sizes, thickness of sheet, and weight of class 2 expanded metal before flattening

Commercial style number	Size of mesh, inches			Nominal thickness of sheet from which made, inch	Width of strand, inch	Weight per square foot, pounds <sup>2/</sup>
	Nominal width of opening	Dimensions, center to center of bridges <sup>1/</sup>				
		width	length			
1/2 - No. .051	1/2	0.48	1.2	0.051	0.079-0.095	0.27
1/2 - No. .081	1/2	.48	1.2	.081	.079- .097	.44
3/4 - No. .051	3/4	.90	2.0	.051	.092- .114	.17
3/4 - No. .081Lt	3/4	.90	2.0	.081	.093- .130	.32
3/4 - No. .081Hy	3/4	.90	2.0	.081	.138 .172	.41
3/4 - No. .125	3/4	.91	2.0	.125	.138- .172	.65
1-1/2 - No. .081	1-1/2	1.34	3.0	.081	.107- .133	.22
1-1/2 - No. .125	1-1/2	1.34	3.0	.125	.134- .168	.43

<sup>1/</sup>A tolerance of plus or minus 10 percent is permitted in dimensions, center to center.

<sup>2/</sup>A variation in weight per square foot of 5 percent is permissible, based on the weight of any sheet or bundle.

3.2.1 Class 1. The strands which form the sides of the openings of class 1 expanded metal shall be straight, and shall be rectangular in cross section.

3.2.2 Class 2. Class 2 flattened expanded metal shall have the strands and bonds in the same plane as a result of passing through flattening rolls.

### 3.3 Weights, dimensions and tolerances.

3.3.1 Sheet size. Unless otherwise specified in the contract or order, class 1 expanded metal and class 2 flattened expanded metal shall be furnished in sheets 4 feet wide by 8 feet long.

3.3.2 Class 1. Class 1 expanded metal shall conform to the weights, dimensions, and tolerances specified in table I.

3.3.3 Class 2. Before flattening, class 2 expanded metal shall conform to table I. After flattening, thickness of sheet may be reduced not more than 25 percent of the original thickness as a result of passing through flattening rolls. Weight per square foot may be reduced not more than 5 percent as a result of elongation produced by passing through flattening rolls.

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3.4 Workmanship. The workmanship shall be first class in every respect. The strands shall be of substantially uniform width and thickness and shall be smooth and free from sharp edges. Metal shall be free from waves, buckles, or burns. Broken strands, weld-repaired strands, irregular-shaped openings, and any other defects which may affect serviceability shall not be permitted.

## 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.

4.2 Lot. A lot shall consist of all expanded metal sheets of the same class, alloy, and size and manufactured under the same conditions, submitted for inspection at one time.

4.3 Sampling for examination. Samples for examination shall be selected in accordance with inspection level II, 1.5 percent AQL, of MIL-STD-105.

4.4 Examination.

4.4.1 Visual and dimensional. Each of the sample expanded metal sheets selected in accordance with 4.3 shall be visually and dimensionally examined to verify compliance with this specification.

4.4.2 Preparation for shipment. Examination of the packaging, packing, and marking for shipment shall be made for conformance to the requirements of section 5.

4.5 Rejection. Any expanded metal sheet in the sample containing one or more visual or dimensional defects shall be rejected, and if the number of defective expanded metal sheets in any sample exceeds the acceptance number for that sample, the lot represented by the sample shall be rejected.

## 5. PREPARATION FOR DELIVERY

5.1 Packaging and packing.

5.1.1 Levels A and B. Expanded metal, segregated for size, and class, shall be packed for shipment in secured lifts. The unit quantity shall be wrapped with one thickness of waterproof barrier material conforming to UU-P-271. The load shall be mounted on nominal 2 by 4 inch skids running

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lengthwise or crosswise with respect to the load. The load shall be tensioned with a minimum of five straps; three girthwise and two lengthwise. The strapping in the direction of the skids shall be placed over the skids and securely stapled to the skids with corrosion resisting staples. The strapping shall be 1-1/4 by 0.035-inch flat band or 8 gage high tensile wire. The gross weight of the secured lift shall not exceed 3000 pounds.

5.1.2 Level C. Expanded metal sheets shall be packaged and packed for shipment in compliance with common carrier regulations applicable to that mode of transportation to ensure safe delivery at destination at lowest transportation cost without assessment of penalty charges for improper packing.

5.2 Marking. In addition to any special marking required in the contract or order, marking of shipping containers shall be in accordance with MIL-STD-129.

## 6. NOTES

6.1 Intended use. Expanded metal covered by this specification is intended for machinery guards, ventilating screens, and other general uses.

6.2 Ordering data. Purchasers should exercise any desired options offered herein and procurement documents should specify the following:

- a. Title, number, and date of this specification.
- b. Class, alloy and temper required (see 1.2 and 3.1).
- c. When other than uniform diamond-shaped openings are required.
- d. Commercial style number.
- e. when special size sheets are required.
- f. Level of packaging and packing required (see 5.1)
- g. Special marking, when required (see 5.2)

Custodian:  
Army - MR

Preparing activity:  
Army - MR

Review activities:  
Army - MR  
DSA - IS

Project No. 9535-A003

User activities:  
Army - ME, AT

SPECIFICATION ANALYSIS SHEET		Form Approved Budget Bureau No. 119 M004
<p align="center"><b>INSTRUCTIONS</b></p> <p>This sheet is to be filled out by personnel either Government or contractor involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity.</p>		
SPECIFICATION		
MIL-M-17999C(MR), Metal, Expanded, Aluminum		
ORGANIZATION		CITY AND STATE
CONTRACT NO	QUANTITY OF ITEMS PROCURED	DOLLAR AMOUNT
MATERIAL PROCURED UNDER A		
<input type="checkbox"/> DIRECT GOVERNMENT CONTRACT <input type="checkbox"/> SUBCONTRACT		
1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE? A. GIVE PARAGRAPH NUMBER AND WORDING		
B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES		
2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID		
3. IS THE SPECIFICATION RESTRICTIVE? <input type="checkbox"/> YES <input type="checkbox"/> NO      IF "YES" IN WHAT WAY?		
4. REMARKS (Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)		
SUBMITTED BY (Printed or typed name and activity)		DATE

DD FORM 1426

REPLACES NAVSHIPS FORM 4663, WHICH IS OBSOLETE