MILITARY SPECIFICATION

TERMINALS, AIR, DIFFUSING, CIRCULAR, FOR SHIPBOARD USE

1. SCOPE

1.1 Scope.- This specification covers air supply terminals of the diffusing type for use in ventilating and air conditioning systems on naval ships.

1.2 Classification.- Diffusing terminals shall be of the following classes as specified (see 6.1):

Class 1 - Terminals constructed of aluminum.

Class 2 - Terminals constructed of plastic.

2. APPLICABLE DOCUMENTS

2.1 The following specifications, standard and drawing, of the issue in effect on the date of the invitation for bids, form a part of this specification, to the extent specified herein.

SPECIFICATIONS

MILITARY

MIL-P-17638 - Plastic Sheet, Polyvinylchloride, Rigid, High Impact

MIL-A-22010 - Adhesive, Solvent Type, Polyvinylchloride

STANDARDS

MILITARY

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes

DRAWINGS

BUREAU OF SHIPS

S3801-690702 - Hull Type Drawing for Circular Diffusing Terminal for Air Conditioning Systems.

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 shall apply.

OFFICIAL CLASSIFICATION COMMITTEE
Uniform Freight Classification Rules

(Application for copies should be addressed to the Official Classification Committee, 1 Park Avenue at 33rd Street, New York 16, N.Y.)

THE SOCIETY OF THE PLASTIC INDUSTRY

(Application for copies should be addressed to the Society of the Plastic Industry, 250 Park Avenue, New York 17, N.Y.)

3. REQUIREMENTS

3.1 Design.- The terminals furnished shall have contours, dimensions and tolerances in accordance with Drawing S3801-690702 for sizes specified (see 6.1). The drawing is predicated on class 1 terminal constructed of aluminum.

3.1.1 Sizes of the terminals shall be limited to those shown on Drawing S3801-690702.

3.1.2 Modifications necessary to accommodate the use of plastic material for class 2 terminals shall be approved by the Bureau of Ships.

3.1.3 The bellmouth and bottom plate of each terminal shall be perforated with 0.068 inch diameter holes on 1/4-inch centers. The total opening of the holes to be approximately 6.5 percent of area of the sheet.

3.2 Materials.-

3.2.1 Corrosion-resisting steel screw fasteners shall be used to secure bellmouth to throat.

3.2.2 Gasket material shall be of neoprene or rubber.

3.2.3 Class 1 terminals shall be constructed of 5052 or 3003 aluminum. The hardest temper that will withstand the forming processes shall be used.

3.2.3.1 Rivets, beaded or blind, shall be of 2014, 2017, 2024, 2117 or 5056 aluminum, or of corrosion resistant steel.

3.2.4 Class 2 terminals shall be constructed of high-impact polyvinylchloride plastic, type I, as classified by the Society of the Plastic Industry. Color of plastic material shall be equipment gray.

3.2.4.1 Where necessary to secure fabricated parts together a solvent cement manufactured from type I polyvinylchloride resin shall be used.

3.3 Construction.-

3.3.1 Terminals shall be free of loose parts which will produce rattle or noise under conditions of vibration.

3.3.2 The edges of vanes, rings, collars and other parts shall be free of burrs, tears, or irregularities, which will tend to increase noise or turbulence in the air stream. In spinning or forming the bellmouth and bottom plate some distortion of the holes in the perforated sheets is unavoidable. However, there shall be no tears or split material between holes.

3.4 Drawings.-

3.4.1 Prints of drawings, in triplicate, shall be submitted to the Bureau of Ships for approval via the purchasing activity prior to manufacture of terminals. Approval by the Bureau of Ships of the preliminary drawings shall constitute authority to proceed with manufacture, provided all changes required are incorporated into the design and construction of the terminals.

3.4.2 Drawings shall show assemblies, parts, dimensions, tolerances, details, material list and any other data necessary to enable the Bureau to determine whether the design complies with the specification.

3.4.3 After the required changes have been incorporated into the manufacturer's drawings, and validated by the Government inspector (showing date and file number of the Bureau's approval letter), a black on white print suitable for microfilming or 35mm microfilm strip of each drawing shall be provided for Bureau of Ships files.

3.4.4 Previously approved drawing.- Approval of drawings will not be required under a specific contract if the required equipment is identical with units for which drawings have been previously approved by the Bureau of Ships. Contractor will furnish prints of his approved drawings in quantity specified (see 6.1).

3.5 Label plates.- Each terminal shall carry an identifying label. The information may be pressed into the throat piece or a plate or label may be attached to the throat piece. The following information shall be shown by the label:

Air diffusing terminal

Size

Stock number

Contract number

Manufacturer's name

Manufacturer's address

3.5.1 Decalcomanias or adhesive backed metal foil may be used for label plates. Copper bearing metal label plates shall not be used on the class 1 terminals.

4. QUALITY ASSURANCE PROVISIONS

4.1 The supplier is responsible for the performance of all inspection requirements as specified, herein. Except as otherwise specified, the supplier may utilize his own or any other inspection facilities and services acceptable to the Government. Inspection records of the examination and tests shall be kept complete and available to the Government as specified in the contract or order. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure that supplies and services conform to prescribed requirements.

4.2 Sampling.-

4.2.1 Inspection lot.- All diffusing terminals of the same size and class offered for delivery at one time shall be considered a lot for purposes of sampling and inspection.

4.2.2 Sampling for examination and shake test.- Sample diffusing terminals shall be selected at random from each lot in accordance with Standard MIL-STD-105 at Inspection Level II for the examination specified in 4.3 and the test specified in 4.4.3. The Acceptable Quality Level (AQL) shall be 1.5 percent.

4.3 Examination.- Each of the sample diffusing terminals selected in accordance with 4.2.2 shall be examined and measured to verify compliance with this specification. Examination shall be conducted as specified in Table I. Any diffusing terminal in the sample containing one or more defects shall be rejected and if the number of defective diffusing terminals in any sample exceeds the acceptance number for that sample, the lot represented by the sample shall be rejected.

Table I - Classification of defects in accordance with Standard MIL-STD-105

Categories	Defects
Critical	None defined.
Major:	
101	Circular diffusing terminal incomplete; component parts missing.
102	Not in accordance with approved drawing.
103	Evidence of unauthorized material used.
104	Material thickness (Vanes, mounting ring, bellmouth,

Table I (Continued)

Categories	Defects
Major (Cont'd):	
	and throat not within specified tolerance.)
105	Number and location of vanes nonconforming.
106	Vane configuration and size nonconforming.
107	Drilling, mounting holes, bolt circles and fasteners nonconforming; rivets loose.
108	Diffusing terminal diameter and overall height not as specified.
109	Not free of cracks, splits, and deformation.
110	Surfaces not smooth, evidence of sharp edges, or burrs.
111	Vane assembly not inclined the specified angle.
112	Bottom plate not formed to the specified contour (radius nonconforming).
113	Throat diameter nonconforming.
114	Evidence of rattle.
115	Ring spacing not as specified.
116	Cemented joints (plastic) nonconforming; evidence of looseness.
117	Adhesive used (plastic) not as authorized.
118	Throat piece flange nonconforming; warpage exceeds specified tolerance.
Minor:	
201	Marking, manufacturer's name or trademark missing, not legible or not permanent.
202	Area of holes in bellmouth not as specified.

4.4 Tests.-

4.4.1 Materials for class 2 terminals shall be tested as specified in Specification MIL-P-17638 and MIL-A-22010 to insure uniform quality and adaptability of materials to the requirements of this specification.

4.4.2 Each sample diffusing terminal selected in accordance with 4.2.2 shall be violently shaken by hand. Any audible noise shall be accepted as an indication of loose parts.

4.5 Possible Test Failures:

(a) Chemical composition (aluminum) nonconforming; percentage of elements not within the minimum and maximum values.

(b) Physical tests (aluminum) mechanical properties of aluminum not as specified.

(c) Tensile strength not within the specified (P.S.I.) minimum and maximum tolerance elongation less than the minimum percent specified.

(d) Plastic material:
Test specimen fails to meet requirement of MIL-P-17638

(e) Adhesive tests:
Evidence of nonadhesion, fails to withstand requirements of MIL-A-22010.

5. PREPARATION FOR DELIVERY

5.1 Cleaning.- All brazed joints shall be cleaned of flux and residue by wire brushing. Class 1 terminals shall be cleaned by the use of a dilute aqueous solution of phosphoric acid containing an organic grease solvent. The acid shall be removed by thoroughly washing in warm water. Terminals shall be thoroughly dried before packaging.

5.2 Packaging.- Each terminal shall be packaged in a close fitting, sturdy cardboard box.

5.3 Packing.- Unless otherwise specified in the contract or order, the terminals shall be packed for shipment in a manner which will insure acceptance by the carrier and safe delivery to destination. Containers shall comply with the Uniform Freight Classification Rules or other regulations as applicable to the mode of transportation.

5.4 Where special preservation, packaging or packing is required because of particular shipment or storage requirements, detail requirements shall be specified (see 6.1).

5.5 Marking.-

5.5.1 Unless otherwise specified (see 6.1), each package shall be marked to show the stock number, nomenclature, size, contract number, name and address of manufacturer of the packaged terminal. Any additional marking required will be stated in the contract or order.

5.5.2 Unless otherwise specified (see 6.1), shipping containers shall be marked to show the stock numbers, nomenclature, quantity and sizes of contents, gross weight and cube, contract number and the complete address of the consignor and the consignee. Any additional marking required will be stated in the contract or order.

6. NOTES

6.1 Ordering data.- Procurement documents should specify the following:

(a) Title, number, and date of this specification.
(b) Include applicable Bureau of Ships drawing (see 2.1).
(c) Class required (see 1.2).
(d) Sizes required (see 3.1).
(e) Number of prints of the approved drawing required (see 3.4.4).
(f) If the preservation, packaging and packing requirements are other than specified in 5.2 and 5.3 (see 5.4).
(g) If the marking requirements are other than specified in 5.5.

Notice.- When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever, and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data, is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

Preparing activity:
Navy - Bureau of Ships
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