AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
29 West 39th Street
New York City

AMS 7294

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Revised

LABELS, ALUMINUM FOIL
Etched and Enameled

1. ACKNOWLEDGMENT: A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.

2. APPLICATION: For use on surfaces which may be subject to weathering and temperatures up to 300 F, but where resistance to severe abrasion and to synthectic lubricants is not required.

3. CONSTRUCTION: Shall consist of 1145-H19 or equivalent aluminum foil with a pressure sensitive adhesive backing suitably protected by a cellophane film.

4. TECHNICAL REQUIREMENTS:

4.1 General:

4.1.1 Printing: The legend on the face of the label shall be as specified on the drawing or purchase order.

4.1.2 Finish:

4.1.2.1 Face: The legend shall be aluminum, unless otherwise specified. All aluminum areas shall have a dull matte finish, unless otherwise specified. All colored areas shall be baked enamel and, unless otherwise specified, shall be etched, before enameling, to a level below that of aluminum areas and shall have a black dull matte finish.

4.1.2.2 Back: The adhesive side need not be anodized. Discoloration of the label back shall not be considered objectionable.

4.1.3 Installation: Labels shall be capable of being installed on smooth clean bare or primed aluminum by the following procedure: The label shall be immersed in water at 70 - 85 F for 1 - 1.5 min., the excess water blotted off, the cellophane backing removed, and the label applied and pressed down firmly to the surface.

4.1.4 Corrosion: The product shall not have a corrosive effect on other materials when exposed to conditions normally encountered in service. Discoloration of the surface under the label shall not be considered objectionable.

4.1.5 Shelf Life: After aging in the original sealed unit container for 6 months under conditions normally encountered in storage, the labels shall be capable of meeting all requirements of this specification.

Printed in U. S. A.

4.2 Properties:

4.2.1 Adhesion: The label shall have an average peel strength of not less than 3.50 lb per in. width when a specimen 1 in. wide and 3 - 5 in. long is installed approximately in the center of an aluminum panel 1.5 in. wide, 5 in. long, and 0.040 in. thick.

4.2.1.1 Sample Preparation: Soak label in clean water at 70 - 85 F for 1 - 1.5 minutes. Blot off all excess water and remove cellophane backing. Allow moisture to dry from adhesive surface for at least 3 min., then apply label to a clean, bare, 2024-T3 aluminum alloy panel. Roll down with a smooth, hard-faced roller 2 - 5 in. in diameter, with 10 lb being exerted on the label, using 5 strokes in each direction at a rate of about 1 in. per second. Allow to cure at 70 - 85 F for 72 hours.

4.2.1.2 Peel Strength Testing: Peel the label back from one end of the panel about 1 in., and bend the exposed end of the panel in a sharp right angle away from the label. Grip the bent end of the panel and the label in the jaws of a tensile testing machine and peel the balance of the label from the panel at an angle of about 90 deg, using a cross-head speed of 12 in. per minute. The test shall be performed at 70 - 85 F.

4.2.1.3 Results: Report for each specimen the average of at least 3 readings taken at equal intervals of 1/2 - 1 in. of label peeled, depending on the sample size, except no readings shall be taken during the first or last 1/2 in. of peeling.

4.2.2 Fluid Resistance: Labels applied in accordance with 4.2.1.1 shall not blister, lift, or delaminate, and the enamel finish shall not blister, crack, soften, change color, or otherwise be adversely affected when immersed in the following fluids at 70 - 85 F for the specified times:

4.2.2.1 Fuel: Immerse in Reference Fuel A in accordance with ASTM D471-54T for 4 hours. Edge penetration up to 1/16 in. shall not be cause for rejection.

4.2.2.2 Water: Immerse in distilled or deionized water for 24 hours.

4.2.3 Weather Resistance: Labels applied in accordance with 4.2.1.1 shall be capable of being exposed for 300 hr at 145 F + 5 in a single arc accelerated weathering apparatus (Atlas or equivalent) without loss of adhesion or legibility. Slight fading or color change shall not be reason for rejection. Panels in the weathering apparatus shall receive 17 min. of light alone and 3 min. of light with spray of deionized water, for every 20 min. of operation.

4.2.4 Abrasion Resistance: Labels applied in accordance with 4.2.1.1 shall be entirely legible after 300 cycles on a Taber Abraser using CS-10 wheels, 500 g loads, and a vacuum grit pickup.

4.2.5 Heat Aging: Labels applied in accordance with 4.2.1.1 shall be capable of being heated at a temperature of 300 F + 10 for 24 hr without blistering, curling, delaminating, or loss of legibility. After cooling to 70 - 85 F, the label shall be capable of passing the adhesion test of 4.2.1.

4.3 Thickness: Unless otherwise specified, the thickness of the aluminum foil shall be not greater than 0.0033 in. and the thickness of any portion of the label after etching shall be not less than 0.0025 in. exclusive of the adhesive and the enamel. The thickness of the adhesive shall not exceed 0.001 inch.

5. REPORTS:

5.1 Unless otherwise specified, the vendor of the product shall furnish with each shipment three copies of a report stating that the product meets the requirements of this specification. This report shall include the purchase order number, material specification number, part number, and quantity.

5.2 Unless otherwise specified, the vendor of finished or semi-finished parts or assemblies to which aluminum foil labels are applied, shall furnish with each shipment three copies of a report showing the purchase order number, this specification number, contractor or other direct supplier of labels, part number, and quantity. When labels are produced or purchased by the parts vendor, that vendor shall inspect each lot of labels to determine conformance to the requirements of this specification, and shall include in the report a statement that the labels conform, or shall include copies of laboratory reports showing the results of tests to determine conformance.

6. IDENTIFICATION: Unless the drawing specifies the location of the part number on the face of the label or it is otherwise agreed between purchaser and vendor, the part number shall be ink stamped on the cellophane backing of each label or applied to each unit package. The date of manufacture shall also be ink stamped on the cellophane backing of each label or applied to each unit package.

7. PACKAGING:

7.1 Unless otherwise specified, labels shall be packaged in units of 25 or less, and sealed. Packages shall be resistant to the transmission of water vapor.

7.2 Packaging shall be accomplished in such a manner as to ensure that the product, during shipment and storage, will not be permanently distorted, and will be protected against damage from exposure to moisture or any normal hazard.

7.3 Each container of unit packages shall be legibly marked to give the following information:

ALUMINUM FOIL LABELS, ENAMELED
PART NUMBER _____
SPECIFICATION NUMBER AMS 7294
PURCHASE ORDER NUMBER _____
MANUFACTURER'S IDENTIFICATION _____
DATE OF MANUFACTURE _____
QUANTITY _____