



AEROSPACE MATERIAL SPECIFICATION

AMS2451™/4**REV. E**

Issued 1998-07
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Revised 2022-03

Superseding AMS2451/4D

Plating, Brush, Cadmium
Corrosion Protective, Low Hydrogen Embrittlement

RATIONALE

Five-Year Review. AMS2451/4E changes the reference in hydrogen embrittlement (3.2.2) from 4.4 to the base specification AMS2451.

1. SCOPE

1.1 Purpose

This specification establishes the requirements for brush plating of cadmium by electrodeposition.

1.2 Application

This process has been used typically to apply a corrosion-protective coating and to repair damaged or worn parts. It is particularly useful when prevention of hydrogen embrittlement of high-strength steel parts or assemblies is sought.

1.3 Safety - Hazardous Materials

Shall be in accordance with AMS2451.

1.4 Warning

This document includes cadmium as a plating material. The use of cadmium has been restricted and/or banned for use in many countries due to environmental and health concerns. The user should consult with local officials on applicable health and environmental regulations regarding its use.

2. APPLICABLE DOCUMENTS

In addition to those listed in AMS2451, the issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been specified, the last published issue of that document shall apply.

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<https://www.sae.org/standards/content/AMS2451/4E/>

Documents

Document Sharing Hub

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

AMS2400 Plating, Cadmium

AMS2401 Plating, Cadmium, Low Hydrogen Content Deposit

AMS-QQ-P-416 Plating, Cadmium (Electrodeposited)

3. TECHNICAL REQUIREMENTS

Shall be in accordance with AMS2451 and as follows.

3.1 Procedure

3.1.1 Cadmium shall be electrodeposited from low-hydrogen embrittlement brush plating solution in accordance with processing instructions from the solution manufacturer.

3.1.2 Hydrogen embrittlement relief shall be in accordance with AMS2451.

3.2 Properties

3.2.1 Corrosion Resistance

Shall be in accordance with AMS2451, except that salt spray exposure time shall be 250 hours $\pm$ 1 hour. Specimens shall be plated to a thickness of 0.0003 to 0.0006 inch (8 to 15 μ m). Specimens shall not be heated before exposure to salt spray unless parts receive a hydrogen embrittlement relief treatment (see 3.1.2), in which case the specimens shall receive the same treatment.

3.2.2 Hydrogen Embrittlement

The plating process shall not cause hydrogen embrittlement in steel parts 36 HRC and over, determined in accordance with AMS2451. When specified by the cognizant engineering organization, this requirement may be waived (see 8.3).

4. QUALITY ASSURANCE PROVISIONS

Shall be in accordance with AMS2451.

5. PREPARATION FOR DELIVERY

Shall be in accordance with AMS2451.

6. ACKNOWLEDGMENT

Shall be in accordance with AMS2451.

7. REJECTIONS

Shall be in accordance with AMS2451.

8. NOTES

Refer to AMS2451 and as follows.

8.1 Plating meeting the requirements of this specification will exhibit equivalent properties to plating produced in accordance with AMS-QQ-P-416, AMS2400, and AMS2401.