



AEROSPACE MATERIAL SPECIFICATION

AMS4300™

REV. D

Issued 1974-03
Revised 2006-10
Reaffirmed 2012-02
Stabilized 2017-06

Superseding AMS4300C

Boron-Aluminum Composite Sheet
50 v/o 5.6B, 6061-0, For Diffusion Bonding

RATIONALE

AMS4300D stabilizes this document because it contains mature technology that is not expected to change and thus no further revisions are anticipated.

STABILIZED NOTICE

AMS4300D has been declared "STABILIZED" by the SAE AMS D Nonferrous Alloys Committee. This document was stabilized because this document contains mature technology that is not expected to change and thus no further revisions are anticipated. Previously this document was reaffirmed. The last technical update of this document occurred in October, 2006. Users of this document should refer to the cognizant engineering organization for disposition of any issues with reports/certifications to this specification; including exceptions listed on the certification.

NOTE: In many cases, the purchaser may represent a sub tier supplier and not the cognizant engineering organization.

SAE Technical Standards Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be revised, reaffirmed, stabilized, or cancelled. SAE invites your written comments and suggestions.

Copyright © 2017 SAE International

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of SAE.

TO PLACE A DOCUMENT ORDER: Tel: 877-606-7323 (inside USA and Canada)
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
http://www.sae.org

SAE WEB ADDRESS:

Full document details: SAE AMS4300D

SAE values your input. To provide feedback on this Technical Report, please visit <http://standards.sae.org/AMS4300D>

Documents
Document Sharing Hub

1. SCOPE

1.1 Form

This specification covers boron filaments and 6061-0 aluminum alloy foil laminated and bonded into a composite sheet.

1.2 Application

These products have been used typically for fabrication of structural components by forming, laminating, and diffusion bonding into structural components where the composite properties of high-modulus boron filaments and aluminum alloy matrix are desirable for use up to 500 °F (260 °C), but usage is not limited to such applications.

1.3 Safety - Hazardous Materials

While the materials, methods, applications, and processes described or referenced in this specification may involve the use of hazardous materials, this specification does not address the hazards that may be involved in such use. It is the sole responsibility of the user to ensure familiarity with the safe and proper use of any hazardous materials and to take necessary precautionary measures to ensure the health and safety of all personnel involved.

2. APPLICABLE DOCUMENTS

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.

2.1 SAE Publications

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

AMS 3865	Boron Filaments, Tungsten Substrate, Continuous
AMS 4009	Aluminum Alloy Foil, 1.0Mg - 0.60Si - 0.30Cu - 0.20Cr (6061-0)

2.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM B 660 Packaging/Packing of Aluminum and Magnesium Products
ASTM E 345 Tension Testing of Metallic Foil

3. TECHNICAL REQUIREMENTS

3.1 Material

The product shall be a monolayer of boron filaments laid on and covered with 6061-0 aluminum alloy foil, pressed and bonded to produce nominally 50% by volume each of boron filaments and aluminum alloy.

3.1.1 Boron Filaments

Shall conform to AMS 3865 with nominal filament diameter of 0.0056 inch (0.142 mm).

3.1.2 Aluminum Alloy Foil

Shall conform to AMS 4009 of the thickness required to produce 50% by volume.

3.2 Construction

3.2.1 Fabrication

The product shall be fabricated by collimated positioning of boron filaments, 130 ± 2 per inch (25.4 mm) on an aluminum alloy foil backing sheet. The boron filaments shall be secured on the foil with a suitable binder that may be driven off during the outgassing phase of subsequent diffusion bonding. Each boron filament/aluminum alloy monolayer shall be covered with an additional layer of foil of the same thickness as the backing foil.

3.2.2 Filament Gaps

There shall be not more than one 0.010-inch (0.25-mm) gap per inch (25.4 mm) of width in any 12 inches (305 mm) of length and no gap shall have a width greater than 200% of the nominal filament spacing. Determination of the number of gaps and gap width shall be made in accordance with 3.2.2.1.

3.2.2.1 Nondestructive Evaluation

Orientation of boron filaments within the product shall be determined visually or, when specified, by low-energy radiographic techniques. Locations of nonconforming gaps, crossovers, stray filaments, splices, or broken filaments shall be marked on the product in such a manner that the defective area can be removed before further fabrication.

3.2.3 Filament Crossovers

There shall be no filament crossovers or stray filaments, determined in accordance with 3.2.2.1.

3.2.4 Spliced or Broken Filaments

Spliced or broken filaments shall not exceed 0.5% of the filament count in any 10-foot (3-m) or shorter length and shall not be closer to an adjacent filament defect than 0.50 inch (12.7 mm) laterally (transverse direction) and 6.0 inches (152 mm) along the filament axis (longitudinal direction), determined in accordance with 3.2.2.1.

3.2.5 Edge Delamination

Shall not extend more than 0.05 inch (1.3 mm) from any edge.