

NOTICE OF CHANGE

INCH-POUND

MIL-STD-1568B(USAF)
NOTICE 1
12 October 1994

MILITARY STANDARD

MATERIALS AND PROCESSES FOR CORROSION PREVENTION AND CONTROL IN AEROSPACE WEAPONS SYSTEMS

TO ALL HOLDERS OF MIL-STD-1568B(USAF):

1. THE FOLLOWING PAGES OF MIL-STD-1568B(USAF) HAVE BEEN REVISED AND SUPERSEDE THE PAGES LISTED:

NEW PAGE	DATE	SUPERSEDED PAGE	DATE
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2. RETAIN THIS NOTICE AND INSERT BEFORE TABLE OF CONTENTS.

3. Holders of MIL-STD-1568B(USAF) will verify that page changes and additions indicated above have been entered. This notice page will be retained as a check sheet. This issuance, together with appended pages, is a separate publication. Each notice is to be retained by stocking points until the military standard is completely revised or canceled.

Custodian:
Air Force - 11

Preparing Activity:
Air Force - 11

Reviewer:
Air Force - 14

(Project MFFP-A543)

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28 February 1989

SUPERSEDING

MIL-STD-1568A(USAF)

24 October 1979

MILITARY STANDARD

MATERIALS AND PROCESSES FOR

CORROSION PREVENTION AND CONTROL IN

AEROSPACE WEAPONS SYSTEMS



AMSC: F7033

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FOREWORD

1. This military standard is approved for use by the Air Force and is available for use by all Departments and Agencies of the Department of Defense.
2. Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: ASC/ENOSD, Wright-Patterson AFB OH 45433-7809, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.
3. The purpose of this standard is to establish the requirements for materials, processes, and techniques, and to identify the tasks required to implement an effective corrosion prevention and control program during the conceptual, validation, development, and production phases of aerospace weapon systems.

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1. SCOPE

1.1 Scope. This standard establishes the requirements for materials, processes and techniques, and identifies the tasks required to implement an effective corrosion prevention and control program during the conceptual, validation, development and production phases of aerospace weapon systems. The intent is to minimize life cycle cost due to corrosion and to obtain improved reliability.

1.2 Intended use. This standard is to provide a mechanism for implementation of sound materials selection practices and finish treatments during the design, development, production and operational cycles of the aerospace weapon systems. This standard defines requirements to ensure establishment and implementation of a corrosion prevention advisory board (where applicable), a corrosion prevention and control plan and its accompanying finish specification as directed in Section 4. The corrosion prevention and control plan will dictate the organization of the boards, their basic duties, operating procedures, and the finish philosophies used in the systems. The finish specification will therefore be required to specify the detailed finish and coating systems to be used on the respective aerospace weapons system in accordance with the finish philosophies as approved in the corrosion prevention and control plan. This standard is derived from experience gained on protection of aerospace weapons systems against corrosion by the military services and industry. It represent technical guidance and requirements for incorporation in the corrosion prevention and control plan and finish specification.

1.3 Applicability. This standard is applicable for use by all Air Force procuring activities and their respective contractors involved in the design and procurement of aerospace weapon systems. The detailed corrosion prevention and control plan and the finish specification applies to all elements of aerospace weapon systems, including spares. Materials and processes required for corrosion prevention and control in support equipment are covered in MIL-STD-808. Materials and Process Requirements for Air Force Weapon Systems are covered in MIL-STD-1587. This standard when used in conjunction with MIL-STD-808 and MIL-STD-1587 will result in reliable aerospace systems having a good balance between acquisition costs and life cycle cost. The requirement for the establishment of a corrosion prevention advisory board shall pertain to major aerospace systems approved for Air Force use as defined by AFR 800-2, Acquisition Program Management.

2. APPLICABLE DOCUMENTS

2.1 Government documents

2.1.1 Specifications and standards. The following specifications and standards form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents shall be those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation. (See 6.2)

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SPECIFICATIONS

FEDERAL

QQ-P-35	Passivation Treatments for Corrosion-Resisting Steel
QQ-N-290	Nickel Plating (Electrodeposited)
QQ-p-416	Plating, Cadmium (Electrodeposited)

MILITARY

MIL-M-3171	Magnesium Alloy, Processes for Pretreatment and Prevention of Corrosion on
MIL-S-5002	Surface Treatments and Inorganic Coatings for Metal Surfaces of Weapon Systems
MIL-C-5541	Chemical Conversion Coatings on Aluminum and Aluminum Alloys
MIL-F-7179	Finishes, Coatings and Sealants for the Protection of Aerospace Weapon Systems
MIL-A-8625	Anodic Coatings, for Aluminum and Aluminum Alloys
MIL-S-8784	Sealing Compound Aluminum Integral Fuel Tanks and Fuel Cells, Cavities, Low Adhesion, Accelerator Required
MIL-S-8802	Sealing Compound, Temperature Resistant, Integral Fuel Tanks and Fuel Cell Cavities, High Adhesion
MIL-C-8837	Coating, Cadmium (Vacuum Deposited)
MIL-S-13165	Shot Peening of Metal Parts
MIL-F-18264	Finishes: Organic, Aircraft: Application and Control of
MIL-P-23377	Primer Coating: Epoxy-Polyamide, Chemical and Solvent Resistant
MIL-C-27725	Coatings, Corrosion Preventive, for Aircraft Integral Fuel Tanks
MIL-P-28809	Printed Wiring Assemblies
MIL-M-38510	Microcircuit, General Specification for
MIL-C-38999	Connector, Electrical, Circular, Miniature, High Density Quick Disconnect, Environment Resistant, Removable Crimp and Hermetic Solder Contacts, General Specification for
MIL-M-45202	Magnesium Alloys, Anodic Treatment of
MIL-I-46058	Insulating Compound, Electrical (for Coating Printed Wiring Boards)
MIL-S-81733	Sealing and Coating Compound, Corrosion Inhibitive
MIL-C-83231	Coatings, Polyurethane Rain Erosion Resistant for Exterior Aircraft and Missile Plastic Parts
MIL-C-83286	Coating, Urethane, Aliphatic, Isocyanate, for Aerospace Applications
MIL-S-83430	Sealing Compound, Integral Fuel Tanks and Fuel Cell Cavities, Intermittent Use to 360°F
MIL-C-83445	Coating Systems, Polyurethane, Non-Yellowing, White, Rain Erosion Resistant, Thermally Reflective
MIL-C-83488	Coating, Aluminum, Ion Vapor Deposited
MIL-P-83953	Pencil, Aircraft Marking
MIL-P-85582	Primer Coatings: Epoxy, VOC Compliant, Chemical and Solvent Resistant
MIL-M-87929	Manuals, Technical: Operation and Maintenance Instructions in Work Package Format (For USAF Equipment)

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STANDARDS

MILITARY

MIL-STD-454	Standard General Specification for Electronic Equipment
MIL-STD-808	Finishes, Materials and Processes for Corrosion Prevention Control in Support Equipment
MIL-STD-883	Microelectronics, Test Methods and Procedures for
MIL-STD-889	Dissimilar Metals
MIL-STD-1500	Cadmium-Titanium Plating, Low Embrittlement, Electro-deposition
MIL-STD-1587	Materials and Process Requirements for Air Force Weapon Systems
MIL-STD-2073-1	DoD Material Procedures for Development and Application of Packaging Requirements (Part 1 of 2 Parts)

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Naval Publications and Forms Center, (ATTN: NPODS), 5801 Tabor Avenue, Philadelphia PA 19120-5099.)

2.1.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

AFR 400-44	Corrosion Prevention and Control Program
AFR 800-2	Acquisition Program Management
T.O. 1-1-1	Cleaning of Aerospace Equipment
T.O. 1-1-2	Corrosion Prevention and Control for Aerospace Equipment
T.O. 1-1-4	Exterior Finishes, Insignia and Marking Applicable to USAF Aircraft
T.O. 1-1-8	Application of Organic Coatings, Aerospace Equipment
T.O. 1-1-689	Prevention and Control of Corrosion and Fungus in Communication, Electronic Meteorological, and Avionic Equipment

FORM

DD 1423	Contract Data Requirements List
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(Copies of AFRs and DD Forms 1423 are available from Air Force Publication Distribution Center, 2800 Eastern Blvd, Baltimore MD 21220. Copies of Air Force Technical Orders are available from Oklahoma City Air Logistics Center, Tinker AFB OK 73145-5609.)

2.2 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of documents which are DoD adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issue of the documents cited in the solicitation. (See 6.2).

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AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM G47	Determining Susceptibility to Stress-Corrosion Cracking of High-Strength 7XXX Aluminum Alloy Products
ASTM G64	Resistance of Stress Corrosion Cracking of High Strength Aluminum Alloys, Classification of
ASTM A380	Cleaning and Descaling Stainless Steel Parts, Equipment and Systems

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103-1187.)

AEROSPACE MATERIALS SPECIFICATIONS (AMS)

AMS 3267	Sealing Compound, Low Adhesion, Corrosion Inhibiting, for Removable Panels and fuel Tank Inspection Plates
AMS 3374	Aircraft Firewall, Sealing Compound, One-part Silicone

(Application for copies should be addressed to the Society of Automotive Engineers, 400 Commonwealth Dr., Warrendale, PA 15096-0001.)

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. DEFINITIONS. Not applicable.

4. GENERAL REQUIREMENTS

4.1 General requirements. The contractor shall prepare a Corrosion Prevention and Control Plan. The plan shall define corrosion prevention and control requirements and considerations for system definition, design, engineering development, production and deployment phases, consistent with the design life of the system.

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5. DETAIL REQUIREMENTS

5.1 Documentation. The following documents shall result from the implementation of the Corrosion Prevention and Control Program.

5.1.1 Corrosion prevention and control plan. The contractor shall prepare a corrosion prevention and control plan which describes the contractor's specific corrosion prevention and control measures to be implemented for the purpose of controlling corrosion. This corrosion prevention and control plan shall address only those materials and processes intended to be used in this specific aerospace weapon system being procured. This includes installation of government furnished equipment.

5.1.2 Finish specification. The prime contractor shall prepare a finish specification which identifies the specific organic and inorganic surface pretreatments and coatings intended to be used for protection against corrosion of the materials selected for the aerospace weapons system as previously identified in the corrosion prevention control plan. After the document has been approved by the responsible Air Force procuring activity, the requirements contained therein shall be included in all applicable production drawings.

5.1.3 System peculiar corrosion control technical order. The prime contractor shall prepare a system peculiar corrosion control technical order which details the procedures for corrosion control and maintenance to be utilized the personnel in the organizational, intermediate and depot levels. This document shall be prepared in accordance with MIL-M-87929. In addition, maximum use of General Technical Orders 1-1-1, 1-1-2, 1-1-4, 1-1-8, and 1-1-689 will be made. Through field surveys and Air Force technical order change request, this technical order shall be updated as required.

5.2 Schedule for submission

5.2.1 Corrosion prevention and control plans. The initial draft of the corrosion prevention and control plan shall be submitted to the procuring activity as a part of the proposal package. The corrosion prevention plan and finish specification shall be submitted for approval 60 days prior to preliminary design review or in accordance with DD-1423. Revision of this document shall be accomplished as required to properly record a change to materials and processes being used for corrosion prevention and control. Through design studies, analysis of failure reports, and weapons systems inspections, data shall be collected which shall be analyzed for required revisions to this document.

5.2.2 System peculiar corrosion control technical order. The system peculiar corrosion control technical order shall be submitted as required by the procuring activity.

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5.3 Implementation of corrosion prevention advisory board

5.3.1 Corrosion prevention advisory board (CPAB)

5.3.1.1 Establishment. The Program Manager will establish the CPAB in accordance with AFR 400-44 during the conceptual design phase of the program prior to Full Scale Development (FSD). The CPAB will be actively involved in reviewing all design considerations and documentation relating to corrosion prevention and control throughout the life of the program.

5.3.1.2 Membership. The board shall be co-chaired by representatives of the procuring activity and the prime contractor. The board shall include members from the contractor's organization and from the Air Force as follows:

- a. Prime contractor members. The contractor members shall be authoritative representatives of the contractor's organizations necessary to insure that proper materials, processes, and treatments are selected and subsequently properly applied and maintained from the initial design stage to the final deliverable hardware.
- b. Air Force members. The Air Force team will be as designated by the applicable Systems Program Office in accordance with the provisions of AFR 400-44 and AFLC/AFSC Supplement 1 and supplements thereto.

5.3.1.3 CPAB Duties

- a. The primary function of the Air Force members shall be to interface with the contractor's corrosion team (CCT) to insure the goals of this standard are attained. The CPAB shall monitor the contractor's activity during all phases of the program.
- b. The Air Force member(s) shall attend those contractor's team meetings deemed appropriate, based on the agenda items to be discussed, and, if necessary, to present the Air Force position on controversial technical decisions made at previous meetings.
- c. The procuring activity shall maintain authority to conduct periodic reviews, on a scheduled basis, of the contractor's design, of the contractor and subcontractor facilities where critical parts and assemblies are being fabricated, processed, assembled and readied for shipment to evaluate the adequacy of the efforts in corrosion prevention and control. Discrepancies will be documented and submitted for review and resolved by the board. The reviews shall be scheduled as frequently as deemed necessary by the co-chairpersons.

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5.10.3 Electronic or avionics systems

5.10.3.1 Cleaning of printed wiring boards (PWBs). All electronic systems shall be thoroughly cleaned to remove all contamination and solder flux prior to the application of conformal coatings and prior packaging. The cleanliness test specified in MIL-P-28809 shall be performed to verify the effectiveness of cleaning procedures.

5.10.3.2 Conformal coatings. All PWBs shall be conformally coated with a material specified in MIL-I-46058 and coated in accordance with MIL-P-28809.

5.10.3.3 PWB orientation. PWBs shall be mounted in a vertical position with the connectors on a vertical edge where design permits.

5.10.3.4 Hermetic sealing. Electronic devices not specifically covered by MIL-M-38510 shall be hermetically sealed. Maintaining a maximum internal water vapor content of 500 ppm at 100 °C when tested in accordance with MIL-STD-883, Method 1018.

5.10.3.5 Electrical connectors. All connectors meeting MIL-C-38999 shall be Class W.

5.10.3.6 General requirement. The technical baseline for design and construction of electronic equipment shall be in accordance to MIL-STD-454.

6. INFORMATION FOR GUIDANCE ONLY

This section contains information of a general or explanatory nature which is helpful, but is not mandatory.

6.1 Intended use. This standard is intended to provide Air Force Systems Program Offices with a procurement document that provides timely and comprehensive consideration during systems design of corrosion prevention and control processes and of the lessons learned over the years from operational systems worldwide. System reliability and maintainability will be significantly improved by the use of this standard. It should be used in conjunction with MIL-STD-1587 in selection of materials and processes which will meet the requirements of the systems being designed in accordance with MIL-STD-1530. system reliability and maintainability will be significantly improved by the use of this standard. It should be used in conjunction with MIL-STD-1587 in selection of materials and processes which will meet the requirements of the systems being designed in accordance with MIL-STD-1530.

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6.2 Issue of DoDISS. When this standard is used in acquisition, the applicable issue of the DoDISS must be cited in the solicitation (see 2.1.1 and 2.2).

6.3 Data requirements. The following Data Item Descriptions (DIDs) must be listed, as applicable, on the Contract Data Requirement List (DD 1423) when this standard is applied on a contract, in order to obtain the data, except where DoD FAR Supplement 277.405-70 exempts the requirement for a DD 1423.

<u>Paragraph #</u>	<u>DID #</u>	<u>DID Title</u>	<u>Suggested Tailoring</u>
5.1.1	DI-MFFP-81403	Corrosion Prevention and Control Plan	—
5.1.2	DI-MFFP-81402	Finish Specification Report	—

The above DIDs were those cleared as of the date of this standard. The current issue of the DoD 5010.12-L, Acquisition Management Systems and Data Requirements Control List (AMSDL), must be researched to ensure that only current, cleared DIDs are cited on the DD Form 1423.

6.4 Key words

Cadmium plated
 Corrosion prevention advisory boards
 Corrosion prevention/control
 Materials and processes
 Metal finishes
 Organic coatings
 Sealants
 Stress corrosion

6.5 Changes from previous issue. Vertical lines or asterisks are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

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