

**Conversion Coating of Titanium Alloys
Fluoride-Phosphate Type**

RATIONALE

AMS2486E results from a Five Year Review and update of this specification and adds a periodic primer adhesion test requirement.

1. SCOPE

1.1 Purpose

This specification establishes the requirements for a chemical conversion coating on titanium alloys.

1.2 Application

This process has been used typically to provide a coating that is receptive to anti-galling and organic finishes, 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 canceled and no superseding document has been specified, the last published issue of that document shall apply.

2.1 U.S. Government Publications

Available from the Document Automation and Production Service (DAPS), Building 4/D, 700 Robbins Avenue, Philadelphia, PA 19111-5094, Tel: 215-697-6257, <http://assist.daps.dla.mil/quicksearch/>

MIL-PRF-23377 Primer Coatings, High Solids
MIL-PRF-85582 Primer Coatings: Epoxy, Waterborne

FED-STD-141 Paint, Varnish, Lacquer, and Related Materials: Methods for Sampling and Testing

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3. TECHNICAL REQUIREMENTS

3.1 Conversion bath shall consist of an aqueous solution of the following materials in the concentrations shown and shall be operated at 80 °F ± 10 (27 °C ± 6).

Trisodium Phosphate ($\text{Na}_3\text{PO}_4 \cdot 12\text{H}_2\text{O}$), Technical 6.5 to 6.9 ounce per gallon (49 to 51.5 g/L).

Potassium Fluoride ($\text{KF} \cdot 2\text{H}_2\text{O}$), 2.3 to 3.2 ounces per gallon (17.5 to 24 g/L).

Hydrofluoric Acid, 1.8 to 3.0 fluid ounces per gallon (14 to 24 mL/L) of 70 weight percent HF or 2.6 to 4.4 fluid ounces per gallon (20 to 35 mL/L) of 48 weight percent HF.

3.2 Preparation

3.2.1 The coating shall be applied over a surface free from water breaks. The cleaning procedure shall not produce pitting or intergranular attack of the basis metal and shall preserve dimensional requirements. The use of halogenated solvents is prohibited. See 8.5.

3.2.2 Masking

A suitable maskant shall be applied to any area or areas where (1) application of the coating is not permitted, (2) solution entrapment may occur such as a faying surface or (3) another metal, such as a thread insert, is present.

3.3 Procedure

3.3.1 Coating

Parts shall be immersed in the conversion bath for 2 to 4 minutes.

3.3.2 Rinsing

Coated parts shall be rinsed in a circulating water bath, maintained at a temperature not higher than 185 °F (85 °C). Rinse time shall be not longer than 16 minutes when rinse water temperature is above 100 °F (38 °C).

3.3.2.1 Dissolved solids content of circulating rinse water shall be maintained below 200 parts per million.

3.3.3 Drying

Parts shall be dried for not less than 30 minutes in air at 150 to 200 °F (66 to 93 °C).

3.3.4 Handling

Parts shall be handled with clean, dry gloves.

3.4 Properties

Coating shall conform to the following requirements:

3.4.1 Color

The coating shall be gray in color but some variation in color is acceptable.

3.4.2 Coating Adhesion

Coating shall be adherent to basis metal when parts are wiped with a clean, cotton cloth. Heavy powdering or coating removal during wiping is not acceptable.