AEROSPACE STANDARD	AS5528	REV. B
	Issued 2005-07 Revised 2014-07 Superseding AS5528A	

(R) Lubricant Application, Solid Film, Heat Cured, Corrosion Inhibiting

RATIONALE

Clarify testing requirements for performance characteristics when used on threaded parts. General editorial update and reorganization of Requirements and Quality Assurance sections.

1. SCOPE

This SAE Aerospace Standard (AS) establishes the surface pretreatment, temperature and baking time required to cure AS5272 lubricant when it is applied over the surfaces of manufactured parts of various metals.

2. REFERENCES

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and 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.

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.

AS5272	Lubricant, Solid Film, Heat Cured, Corrosion Inhibiting, Procurement Specification
AS8879	Screw Threads - UNJ Profile, Inch Controlled Radius Root with Increased Minor Diameter
AMS2488	Anodic Treatment - Titanium and Titanium Alloys Solution pH 13 or Higher
AMS-QQ-P-416	Plating, Cadmium (Electrodeposited)

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
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SAE values your input. To provide feedback on this Technical Report, please visit
http://www.sae.org/technical/standards/AS5528B

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 D1125 Standard Test Methods for Electrical Conductivity and Resistivity of Water

ASTM D1732 Standard Practices for Preparation of Magnesium Alloy Surfaces for Painting

ASTM D2510 Standard Test Method for Adhesion of Solid Film Lubricants

ASTM D3735 Standard Specification for VMP Naphthas

ASTM F22 Standard Test Method for Hydrophobic Surface Films by the Water-Break Test

2.3 U.S. Government Publications

Available from DLA Document Services, Building 4/D, 700 Robbins Avenue, Philadelphia, PA 19111-5094, Tel: 215-697-6396, http://quicksearch.dla.mil/.

MIL-A-8625 Anodic Coatings, for Aluminum and Aluminum Alloys

MIL-DTL-16232 Phosphate Coatings, Heavy, Manganese or Zinc Base

MIL-C-81302 Cleaning, Compound, Solvent, Trichlorotrifluoroethane

MIL-T-81533 Trichloroethane 1,1,1, (Methyl Chloroform) Inhibited, Vapor Degreasing

3. REQUIREMENTS

3.1 General Application Instructions for all Metals

Do not touch the pretreated surfaces with bare hands. Stir the lubricant until thoroughly mixed in accordance with manufacturer's recommendation. A mechanical paint shaker may be used for AS5272 Types I and II, but is not recommended for AS5272 Type III as excessive foaming with waterborne products may occur. Minor viscosity adjustments to AS5272 Type III may be made by adding deionized water. Any deionized water used shall have a resistivity not less than 1 MΩ centimeter (MΩ·cm), when tested in accordance with ASTM D1125. Ordinary tap water shall not be used. The grit blast machine and media shall be restricted to a single material application. Cross contamination between metal, machine and media shall not be allowed. Apply the lubricant by brushing, dipping, or spraying.

3.2 Application pretreatment and cure requirements, unless otherwise specified on the drawing:

3.2.1 Application on Aluminum and Aluminum Alloys

Preclean the surfaces to be coated with Aliphatic Naphtha conforming to ASTM D3735 or any environmentally safe cleaner that sufficiently cleans surfaces to meet the requirements of ASTM F22, and does not harm the surface.

3.2.2 Application on Copper and Copper Alloys

Preclean the surfaces to be coated with Aliphatic Naphtha conforming to ASTM D3735 or any environmentally safe cleaner that sufficiently cleans surfaces to meet the requirements of ASTM F22 and does not harm the surface. Abrasive-blast the surfaces with 180 to 220 grit clean aluminum oxide.

3.2.3 Application on Magnesium and Magnesium Alloys

Preclean the surfaces to be coated with Aliphatic Naphtha conforming to ASTM D3735 or any environmentally safe cleaner that sufficiently cleans surfaces to meet the requirements of ASTM F22 and does not harm the surface.

3.2.4 Application on Steel

Preclean the surfaces to be coated with Aliphatic Naphtha conforming to ASTM D3735 or any environmentally safe cleaner that sufficiently cleans surfaces to meet the requirements of ASTM F22 and does not damage the surface. Abrasive-blast the surface with 180 to 220 grit aluminum oxide.

3.2.5 Application on Stainless Steels

Preclean the surfaces to be coated with Aliphatic Naphtha conforming to ASTM D3735 or any environmentally safe cleaner that sufficiently cleans surfaces to meet the requirements of ASTM F22 and does not harm the surface. Abrasive-blast the surfaces with 180 to 220 grit aluminum oxide.

3.2.6 Application on Titanium and Titanium Alloys

Preclean the surfaces to be coated with Aliphatic Naphtha conforming to ASTM D3735 or any environmentally safe cleaner that sufficiently cleans surfaces to meet the requirements of ASTM F22 and does not harm the surface. Unless otherwise specified, abrasive-blast the surface with 180 to 220 grit aluminum oxide or alkaline anodize per AMS2488, Type 2.

3.2.7 Application on Cadmium Plated Substrate Metal

Film adhesion, (reference.3.5) is dependent on the active surface. Application of AS5272 should take place as soon as possible after plating.

3.2.8 Cure

Permit the coated parts to air dry for at least 30 minutes (or flash cure at 149 to 174 °F (65 to 79 °C)) for 10 to 30 minutes) to assure complete removal of solvent or water. Bake the part so that the coated surface remains at 400 °F ± 27 °F (204 °C ± 15 °C) for at least 1 hour at temperature for AS5272 Types II and III, or 302 °F ± 27 °F (150 °C ± 15 °C) for at least 1 hour at temperature for AS5272 Type I, or 2 hours at temperature for AS5272 Type III. The curing time shall be counted from the time the part reaches the cure temperature, not when the part is first subjected to heat.

3.3 Film Appearance

The bonded solid film lubricant, when examined as specified in 4.5, shall be uniform in color, smooth, free from any cracks, scratches, pinholes, blisters, bubbles, runs, sags, foreign matter, grit, or rough particles.

3.4 Film Thickness

The average film thickness, based on six readings minimum, of the cured film for all types shall be between 0.0003 and 0.0005 inches, with no single reading less than 0.0002 inches or greater than 0.0007 inches, except as noted in 3.4.1 and 3.4.2.

3.4.1 Internally Threaded Components

For internally threaded fasteners (e.g., nuts, inserts), the cured film for all types shall show complete coverage in the threaded area with no requirement for thickness verification other than visual. The coated internal threads shall permit a minimum free rotation of three-quarters turn on a corresponding mating bolt.

3.4.2 Externally Threaded Components

For externally threaded fasteners (e.g., bolts, studs), the cured film for all types shall show complete coverage with no requirement for thickness verification other than visual in the threaded area. The coated external threads shall permit a minimum free rotation of three-quarters turn on a corresponding mating nut or ring gage (GO).

3.5 Film Adhesion

The bonded solid film lubricant, when tested as specified in Table 1 and 4.7, shall not be lifted to expose any bare metal surface. For threaded fasteners, the coating shall be continuously bonded to the fastener and shall not display loss of adhesion or separation from the fastener when examined at a magnification of 4X.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection

The applicator is responsible for performing all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, and unless disapproved by the purchaser, the applicator's own or any other facilities suitable for the performance of the inspection requirements specified herein, may be used. The purchaser reserves the right to perform any of the inspections set forth in this specification where such inspections are deemed necessary to assure supplies and services conform to the prescribed requirements.

4.1.1 Responsibility for Compliance

All items shall meet all requirements of Section 3. The inspection set forth in this specification shall become part of the manufacturer's overall inspection system or quality program. The absence of any inspection requirements in this specification shall not relieve the manufacturer of the responsibility of assuring that all products or supplies submitted to the purchaser for acceptance comply with all requirements of the contract or purchase order. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the procuring activity to acceptance of defective material.

4.2 Quality Conformance Inspection

The quality conformance inspection shall consist of all the tests specified in Table 1. Inspections shall be performed on manufactured parts. Except coupons may be used for testing when configuration prohibits testing of parts.

4.3 Inspection Conditions

4.3.1 Atmospheric Conditions

Unless otherwise specified, all examinations and tests shall be performed at a temperature of 77 °F ± 5 °F (25 °C ± 3 °C) and at a relative humidity between 30 and 70%.

4.4 Methods of Inspection

Methods of inspection shall be in accordance with Table 1 and 4.5 through 4.7.