

AEROSPACE
MATERIAL
SPECIFICATION

AMS 3071A

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CONCENTRATE, CORROSION PREVENTIVE COMPOUND, AIRCRAFT ENGINE

This specification has been declared "NONCURRENT" by the Aerospace Materials Division, SAE, as of 4-21-83. It is recommended that this specification not be specified for new designs.

This cover sheet should be attached to the "A" revision of the subject specification.

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AEROSPACE MATERIAL SPECIFICATIONS

SOCIETY OF AUTOMOTIVE ENGINEERS, Inc.

485 Lexington Ave., New York, N. Y. 10017

AMS 3071A

Superseding AMS 3071

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CONCENTRATE, CORROSION PREVENTIVE COMPOUND Aircraft Engine

1. **ACKNOWLEDGMENT:** A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.
2. **APPLICATION:** Preservation of metal parts of aircraft engines during shipment and/or storage, when blended with aircraft engine lubricating oil. The blend may also be used for lubrication of the engine while operating during preservation in accordance with AMS 2570.
3. **TECHNICAL REQUIREMENTS:** When ASTM methods are specified for determining conformance to the following requirements, tests shall be conducted in accordance with the issue of the ASTM method listed in the latest issue of AMS 2350.

3.1 Concentrate:

- 3.1.1 **Miscibility and Homogeneity:** Shall be soluble in and miscible with aircraft engine lubricating oil at temperatures above 50 F (10 C) and no blend shall show separation when heated at 210 F $\pm$ 2 (98.9 C $\pm$ 1.1) for 24 hours.
- 3.1.2 **Carbon Residue:** When one part of the concentrate is diluted with three parts of aircraft engine lubricating oil conforming to 3.2, the carbon residue shall not exceed 5.5% when calculated by the following formula, and shall be loose and flaky:

$$\frac{CR (\text{Blend}) - 0.75 CR (\text{Blending Oil})}{0.25} = CR (\text{Concentrate})$$

where CR = Carbon Residue determined in accordance with ASTM D189.

- 3.2 **Engine Lubricating Oil:** Shall conform to the latest issue of MIL-L-6082, Grade 1120.
- 3.3 **Blend:** A blend of one part concentrate and three parts aircraft engine lubricating oil conforming to 3.2 shall conform to the following requirements:
- 3.3.1 **Properties:**

Viscosity, Saybolt Universal at 210 F (98.9 C), sec	100 - 125	ASTM D88 or D445
Viscosity Index, min	95	ASTM D567
Flash Point, min	350 F (176.7 C)	ASTM D92
Pour Point, max	20 F (-6.7 C)	ASTM D97
Precipitation Number, max	0.1	ASTM D91
Ash (20 g sample), %, max	1.0	ASTM D482
Volatile Matter, % by weight, max	3.0	3.3.1.1
Corrosion, Copper Strip	No discoloration or pitting	3.3.1.2
Humidity Protection, hr, min	150	3.3.1.3
Hydrobromic Acid Neutralization, hr, min	24	3.3.1.4

- 3.3.1.1 Volatile Matter: Approximately 10 g of compound shall be weighed, to the nearest 0.1 g, into a tared dish measuring about 2-3/4 in. in diameter by about 3/4 in. deep. The dish shall be placed in an oven maintained at $221\text{ F} \pm 2$ ($105\text{ C} \pm 1.1$) for 24 hours. After heating, the dish shall be reweighed and the volatile matter calculated.
- 3.3.1.2 Corrosion: Shall be determined in accordance with ASTM D130 except that a temperature of $212\text{ F} \pm 2$ ($100\text{ C} \pm 1.1$) shall be used in place of 122 F (50 C).
- 3.3.1.3 Humidity Protection: Two 2 x 4 in. freshly sand blasted panels of low carbon steel, AMS 5042 or equivalent, shall be dipped in the compound so as to submerge completely all surfaces and shall then be suspended vertically in an atmosphere maintained at $77\text{ F} \pm 5$ ($25\text{ C} \pm 2.8$) and 50 - 55% relative humidity for 4 hours. At the end of this period, the panels shall be suspended vertically in a humidity cabinet operating at a temperature of $120\text{ F} \pm 2$ ($48.9\text{ C} \pm 1.1$) and relative humidity of 97 - 100%. Cleaned, humidified air shall flow over the panels at a rate of 8 ± 1 linear ft per hour. Upon completion of the specified time, the panels shall be removed from the cabinet, cleaned with naphtha, and examined. Visible corrosion of any surface, except within 1/8 in. from any edge, shall be cause for rejection of the compound. If no more than three rust spots no larger than 1 mm in diameter occur, the compound shall be retested. If, on retesting, no rust spots occur, the compound shall be acceptable.
- 3.3.1.4 Hydrobromic Acid Neutralization: Two 2 x 4 in. freshly sand blasted panels of low carbon sheet, AMS 5042 or equivalent, shall be dipped in a 10% emulsion of 0.2% hydrobromic acid solution in aircraft engine lubricating oil and slushed vigorously for one minute. The panels shall be removed and allowed to drain for 1 minute. Each panel shall then be dipped in the corrosion preventive compound ten times per minute for 1 min. in such a manner that the panel is immersed completely each time. They shall then be suspended vertically in an atmosphere maintained at $77\text{ F} \pm 5$ ($25\text{ C} \pm 2.8$) and 50 - 55% relative humidity for 4 hours. After draining, the panels shall be hung vertically in the humidity cabinet specified in 3.3.1.3 for 24 hours. At the end of the period, the panels shall be cleaned with naphtha and examined for corrosion. Visible corrosion of any surface, except within 1/8 in. from any edge, shall be cause for rejection of the compound.
- 3.3.2 Toxicity: Compound shall contain no materials of known toxicity. The vapor shall not cause discomfort or injury to workmen engaged in application of the material.
- 3.3.3 Application and Removability: Blend shall form a continuous, completely protective film on metals by any method of application, and shall be readily removed by spraying with AMS 3160 petroleum solvent or by wiping with cloths saturated with the solvent.
- 3.3.4 Effect on Color-Indicating Properties of Cobalt Chloride-Impregnated Silica Gel: Blend shall show no adverse effect on the property of cobalt chloride-impregnated silica gel to indicate the degree of saturation and equivalent relative humidity, when tested as follows:
- 3.3.4.1 Five g of dehydrating agent, conforming to AMS 3420, Grade D, shall be placed in each of two opposite tubes of a centrifuge. One tube shall be filled with the compound under test and the other tube filled with aircraft engine lubricating oil so that the dehydrating agent is completely covered in each tube. Immediately before starting the centrifuge, the temperature of the material in each tube shall be $110\text{ F} \pm 5$ ($43.3\text{ C} \pm 2.8$). The centrifuge shall be operated at a minimum speed of 1800 rpm for 5 minutes. The centrifuge shall then be stopped, the tubes removed, and as much of the oil as possible shall be poured from each tube without spilling the dehydrating agent. The tubes shall then be filled with distilled water and centrifuged as previously. At the end of 5 min., the centrifuge shall be stopped and colors of the saturated dehydrating agents shall be compared without removing from the tubes. Differences in color, not attributable to reproducibility of this test for dehydrating agent tested with lubricating oil, shall be cause for rejection of the compound.