

AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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AMS3072B

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COMPOUND, CORROSION PREVENTIVE 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, and for lubrication of the engine while operating during preservation in accordance with AMS 2570.
3. **MATERIAL:** Shall be a blend of one volume of AMS 3071 Concentrate and three volumes of aircraft engine lubricating oil conforming to the latest issue of MIL-O-6082, Grade 1120.
4. **TECHNICAL REQUIREMENTS:** Compound shall conform to the following requirements; tests shall be conducted in accordance with listed ASTM methods, except as otherwise specified.

4.1 Properties:

Property	Value	Test Method
Viscosity, Saybolt Universal at 210 F, Sec	100-125	ASTM D88-44 or D445-46T
Viscosity Index, min	95	ASTM D567-41
Flash Point, deg Fahr, min	350	ASTM D92-46
Pour Point, deg Fahr, max	20	ASTM D97-47
Carbon Residue, %, max	2.5	ASTM D189-46
Precipitation Number, max	0.1	ASTM D91-40
Ash (20 g sample), %, max	1.0	ASTM D482-46
Volatile Matter, by weight, %, max	3.0	4.1.1
Corrosion, Copper Strip	No discoloration or pitting	4.1.2
Humidity Protection, hr, min	150	4.1.3
Hydrobromic Acid Neutralization, hr, min	24	4.1.4

- 4.1.1 **Volatile Matter:** Approximately 10 grams of compound shall be weighed, to the nearest 0.1 gram, 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 F $\pm$ 2 for 24 hours. After heating, the dish shall be reweighed and the volatile matter calculated.
- 4.1.2 **Corrosion:** Shall be determined in accordance with ASTM D130-30, except that a temperature of 212 F $\pm$ 2 shall be used in place of 122 F.

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- 4.1.3 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 $77\text{ F} \pm 5$ and 50-55% relative humidity for four hours. At the end of this period, the panels shall be suspended vertically in a humidity cabinet operating at a temperature of $120\text{ F} \pm 2$ and relative humidity of 97-100%. Cleaned, humidified air shall flow over the panels at a rate of 8 ± 1 linear feet 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.
- 4.1.4 Hydrobromic Acid Neutralization: Two 2 x 4-in. freshly sand blasted panels of low carbon steel, 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 one minute. Each panel shall then be dipped in the corrosion preventive compound ten times per minute for one minute in such a manner that the panel is immersed completely each time. They shall then be suspended vertically in an atmosphere maintained at $77\text{ F} \pm 5$ and 50-55% relative humidity for four hours. After draining, the panels shall be hung vertically in the humidity cabinet referred to in 4.1.3 for 24 hours. At the end of the period, the panels shall be cleaned with naphtha and examined for corrosion. Visible corrosion on any surface, except within $1/8$ in. from any edge, shall be cause for rejection of the compound.
- 4.2 Homogeneity: Compound shall show no separation when heated at $210\text{ F} \pm 2$ for 24 hours.
- 4.3 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.
- 4.4 Application and Removability: Compound shall form a continuous, completely protective film on metals by any method of application, and shall be readily removed by spraying with Petroleum Solvent, AMS 3160, or by wiping with cloths saturated with the solvent.
- 4.5 Effect on Color-Indicating Properties of Cobalt Chloride Impregnated Silica Gel: Compound 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:
- 4.5.1 Five grams 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 $110\text{ F} \pm 5$. The centrifuge shall be operated at a minimum speed of 1800 rpm for five 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.