AERONAUTICAL MATERIAL SPECIFICATION

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COMPOUND, CORROSION - PREVENTIVE
(Parts and Equipment)

1. ACKNOWLEDGMENT: A vendor must mention this specification number in all quotations and when acknowledging purchase orders.

2. USE: This compound shall be suitable for the external preservation of miscellaneous metal parts, tools, sub-assemblies and equipment against corrosion during extended periods of shipment and/or storage.

3. MATERIAL: This compound shall be a homogeneous, stable, non-corrosive, non-drying, non-poisonous, solid grease consisting of refined petrolatum with additives to fulfill the requirements specified herein. This compound shall provide a continuous protective film on metals under normal conditions of storage in all climates and shall be easily removed with Petroleum Solvent, AMS 3160, by spraying or dipping.

4. APPLICATION: (a) The compound shall be suitable for application by one of the following methods.

   (1) Hot Application: The compound shall be heated to not more than 30°F above its melting point to provide a heated bath of compound suitable for immersion of parts.

   (2) Cold Application: A solution of the compound in solvent, AMS 3160, shall be suitable for dipping, brushing or spraying parts at room temperature.

   (b) Parts immersed in a heated bath shall be conditioned to the temperature of the bath before their removal.

   (c) After application of the compound, parts shall be drained upon suitable racks which allow the least disturbance of the protective film while it is setting.

5. REQUIREMENTS: The compound shall have the following properties:

(a) Melting Point	120-165°F
Non-Volatile	99.0% min
Ash	2% max
Abrasives	None
Resin	None

   (b) Solubility: The compound shall be readily and completely miscible in all proportions with petroleum solvent, AMS 3160, at room temperature.

   (c) Stability: The compound shall be stable and shall remain homogeneous when heated to 225°F. The ingredients shall not separate out and the compound must be capable of solution in Petroleum Solvent, AMS 3160, after the compound is stored in the original container for one year.

(d) Drying: The compound, when applied by either method specified in section 4 "Application" to a cleaned, polished steel panel and exposed to a temperature of 77°F±5° for 120 hours, shall not check to expose the metal surface.

(e) Protection: A film of the compound, applied as specified in section 4 "Application", shall protect sandblasted steel panels for a minimum of 200 hours in a humidity cabinet maintained at 120°F±5° and 95-100% relative humidity with air circulation.

(f) Corrosion: The compound shall produce no evidence of pitting, corrosion, or other adverse effect on steel, copper, lead, silver, tin, zinc, cadmium, indium, magnesium, aluminum, or brass specimens, couples or combinations thereof, and glyceryl phthalate enamels.

(g) Toxicity: The compound shall have neither a toxic effect on respiratory organs nor cause dermatitis greater than that produced by high grade mineral oil.

6. TEST PROCEDURES: (a) Melting Point Test: Fill a steel tube 1/4" inside diameter x 1/2" long with the worked grease and attach it to a thermometer so that it is parallel to the stem and the midpoint of the tube corresponds to the midpoint of the thermometer bulb. Fit the thermometer vertically through a vented cork in a test tube so that the lower end of the steel tube is about 1-1/2" from the bottom of the test tube. Suspend the test tube by its flared top through a hole in a plate which rests on and covers a beaker. The beaker shall be filled with water so that the surface is within about one inch of the top with the test tube in place. Apply heat so that after the initial time required to warm the bath and obtain a uniform rate of heating, the temperature recorded on the thermometer rises at a rate of 4.5°F±0.5° per minute. Record as the melting point, the temperature at which the grease melts and a drop falls from the tube or the grease extrudes from the tube to a length equal to the length of the tube. In order to obtain concordand results, the following precautions must be observed. The inside of the steel tube must be smoothly reamed and bright, and it must be clean and dry before filling with the grease. Air pockets must not be present in the grease in the tube. The rate of temperature rise after preliminary warming to not over 120°F must be closely observed.

(b) Non-Volatile: Ten plus or minus one (10±1) grams of the compound shall be weighed into a tared dish approximately 10 cm in diameter and 3 cm in depth. The dish shall be heated on a steam bath for four hours and the residual weight used to determine the percent of non-volatile material.

(c) Ash: The ash content shall be determined in accordance with ASTM D128-40, Section 5, except that a 20 gram sample shall be used.

(d) Abrasives: Abrasives shall be determined by dissolving the ash in aqua regia. Dilute, filter, and wash with hot water and transfer to a tared crucible. Ignite the filter paper at as low a temperature as possible until all carbonaceous matter is removed. The crucible and contents shall then be cooled in a desiccator and weighed. Any material in excess of 1 mg from a 20 gram sample, which can be identified microscopically as abrasive shall be cause for rejection of the material.

(e) Resin: Twenty-five ml. of 95% ethyl alcohol shall be added to 10 grams of the compound and the mixture heated to boiling. One or two drops of the alcohol solution shall be placed on a porcelain spot plate with three or four drops of acetic anhydride. Subsequently, add a drop of chemically pure sulphuric acid. A rose-violet coloration, produced when the acid meets the anhydride, indicating the presence of resin, shall be cause for rejection of the material.

(f) Protection: Four 2" x 4" panels of AMS 5042 steel or equivalent, with smooth edges and rounded corners, shall be sandblasted. Immediately after sandblasting, these panels shall be coated as in section 4, two by hot, and two by cold application. The panels shall be supported vertically for at least 12 hours in an atmosphere maintained at a relative humidity of 50-55% and at a temperature of 77°F±5°. At the end of this period the panels shall be supported vertically in a humidity cabinet maintained at 120°F±5° and a relative humidity of 95-100% for 200 hours. The panels shall then be removed from the humidity cabinet, cleaned with Petroleum Solvent, AMS 3160, and examined. Corrosion, pitting or other attack involving either surface, except within 1/8 inch from any edge, shall be cause for rejection of the compound.

(g) Corrosion: Panels of steel, brass, copper, aluminum, magnesium and electroplates of lead, silver, tin, indium, cadmium, and zinc, cleaned, and, where possible polished, shall be provided for this test. In general, the panels shall be approximately one inch square. Place a small portion of the compound to be tested on each of the panels taking care not to cover the entire surface. Cover each panel with an inverted watch glass and allow to stand for five days. Any evidence of corrosion or stain beneath the sample on any of the panels after cleaning with Petroleum Solvent, AMS 3160 or equivalent, shall be cause for rejection of the material. The same test shall be applied to couples or combinations of the above materials. Any pitting or staining as a result of this portion of the test shall be cause for rejection of the material. A panel coated with glyceryl phthalate enamel when treated and tested as above shall show no evidence of staining or other deterioration for acceptance of the material.

7. REPORTS: The manufacturer shall supply three copies of a notarized report of the quantitative results of tests made on the batch of compound from which the order was filled. This report shall include the purchase order number, material specification number, batch number, quantity, and date of shipment.

8. IDENTIFICATION: All containers shall be plainly marked to show this specification number, the purchase order number, quantity, batch number, the manufacturer's name or trade mark and the date of manufacture.

9. APPROVAL: The vendor shall not begin to supply compounds to this specification until samples have been approved by the purchaser, and after approval the ingredients and methods of manufacture shall not be changed without his permission. Approval of the compound and the acceptance of shipments shall include satisfactory completion of a service test conducted by the user. Results of tests on incoming shipments shall be as good as, or better than, those on approved samples.