

AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
29 West 39th Street
New York City

AMS 3542

Issued 3-1-44

Revised

WRAPPER, GREASEPROOF PAPER
(Laminated)

CANCELLED

Page 1 of 3 pages

1. **ACKNOWLEDGMENT:** A vendor must mention this specification number in all quotations and when acknowledging purchase orders.
2. **MATERIAL:** The material covered by this specification is primarily a lamination of coated or impregnated paper sheets bonded together with a greaseproof adhesive.
3. **APPLICATION:** This specification covers the requirements for a greaseproof and non-corrosive material for use as a primary wrapper in contact with highly finished and corrodible metallic surfaces, which usually will be coated with a corrosion-preventive compound.
4. **GENERAL REQUIREMENTS:**
 - (a) The strength and flexibility of the wrapper shall be sufficient to permit folding and shaping ordinarily encountered in any manual or machine packaging operations without mechanical failure or appreciable loss in greaseproof properties.
 - (b) It is desirable that the wrapper shall have a "dead-fold" characteristic to facilitate its application to irregularly shaped objects.
 - (c) The wrapper shall not produce corrosion or staining on steel, aluminum, magnesium, brass, copper, cadmium, zinc, tin, silver, or lead.
 - (d) The wrapper shall not delaminate or deteriorate during its normal use in service.
 - (e) The wrapper shall be colored noticeably red with a fast direct dye on the greaseproof side.
 - (f) The wrapper shall not be abrasive.
5. **DETAIL REQUIREMENTS:** The wrapper shall conform to the following requirements:

Hydrogen Ion Concentration, pH	6.5--7.5
Chloride plus Sulfate, %	0.1 max
Water Repellency, hours	24 min
Greaseproofness, minutes	30 min
Aging, hours	70 min
Tearing Resistance (TAPPI T414m-40), grams	150 min
Tensile Strength, (TAPPI T40m-41) pounds per inch of width (Machine and Cross Direction)	22 min
*Stretch Machine Direction, %	8 - 15
Cross Direction, %	5 - 10

*May be determined conveniently at the same time as the tensile strength.

Documents

6. **TESTS:** (a) **Hydrogen Ion Concentration.**- Place 2.5 grams of finely shredded wrapper in a 150 ml beaker and add 125 ml of boiling distilled water having a pH of 6.9 - 7.1. Cover with a watch glass to prevent rapid evaporation and boil for 10 minutes. Cool the beaker and contents to room temperature and decant the solution free of wrapper. Determine the pH value of the solution electrometrically.

(b) **Chloride and Sulfate.**- Two separate samples of finely shredded wrapper each weighing approximately 2 grams, weighed to an accuracy of ± 0.01 gram, shall be immersed in 100-200 ml of distilled water which is then boiled for 10 minutes. The solutions shall be filtered free of paper making certain that the paper is thoroughly washed with hot distilled water.

(1) **Chloride.**- To one filtrate add 3 drops of concentrated nitric acid and a slight excess of approximately 0.1N silver nitrate solution. Collect the precipitated silver chloride in a tared Gooch crucible and wash this precipitate thoroughly with distilled water containing 1.0 ml of concentrated nitric acid per 100 ml of water. Heat the Gooch crucible to 250-300°F (121.1-148.9°C) to expel all water. Cool and weigh as silver chloride. Calculate the percent chlorine from the weight of the samples taken by the following formula;

$$\frac{\text{Ag Cl} \times 0.2474 \times 100}{\text{weight of sample}} = \% \text{ Cl}$$

(2) **Sulfate.**- To the other filtrate add 3 drops of concentrated hydrochloric acid and a slight excess of approximately 0.1N barium chloride solution. Digest the precipitated barium sulfate just below the boiling point for about one hour. Filter the solution through a fine grade filter paper and wash the precipitate 10 times with hot distilled water. Transfer the filter paper containing the precipitated barium sulfate to a tared crucible and gently ignite over a Bunsen burner or in a muffle furnace for a half hour. Cool and weigh as barium sulfate. Calculate the percent sulphate from the weight of the sample taken by the following formula;

$$\frac{\text{Ba SO}_4 \times 0.4115 \times 100}{\text{weight of sample}} = \% \text{ SO}_4$$

(c) **Water Repellency.**- A 2-inch diameter specimen of wrapper which has been creased at right angles and unfolded and slightly dished shall be placed gently on the surface of a water bath at room temperature. Potassium permanganate, finely ground, shall be sprinkled over the inside dished surface of the specimen. Any discoloration of the water after 24 hours shall be cause for rejection of the wrapper.

(d) **Greaseproofness.**-

(1) Place 5 ml of the test turpentine in a 2-inch outside diameter and 1-inch deep Stender dish. A 2-inch diameter specimen of wrapper which has been creased at right angles and unfolded shall be placed over the Stender dish opening and sealed with beeswax or an equivalent material not affected by turpentine for the duration of the test. The dish shall be inverted onto an absorbent white paper or blotter. Any staining of the absorbent paper within a period of 30 minutes shall be cause for rejection of the wrapper. The average time of 10 tests shall be used.