

AERONAUTICAL MATERIAL SPECIFICATION

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

AMS 3390

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Revised

IGNITION CABLE, HIGH TENSION Copper Conductor

CANCELLED

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1. ACKNOWLEDGMENT: A vendor must mention this specification number in all quotations and when acknowledging purchase orders.
2. CONSTRUCTION: This cable shall be a stranded copper conductor covered with insulating compound and a protective coating.
3. SIZE: As follows, unless otherwise ordered:

Nominal Diameter, inch

Actual Diameter, inches

0.287

0.275 - 0.287

Cable may be slightly flattened or oval in section but the average diameter must be within the limits specified. Unless otherwise ordered, cable shall be furnished in continuous unspliced lengths of not less than 500 ft.

4. CONDUCTOR: (a) The conductor shall be concentrically stranded of 19 tinned copper wires, each of which shall have a uniform diameter of 0.0112 - 0.0116 inch. All wires shall be soft drawn to gage from best obtainable commercially pure copper, and coated uniformly with a smooth, continuous layer of pure tin. They shall be free from lumps, kinks, splits, abrasions, scraped or corroded surfaces, and skin impurities and where splices are made in the individual wires the diameter of the wire shall not be increased nor the mechanical strength decreased. Each length of stranded conductor shall be uniformly cylindrical in cross-section and shall be continuous, without welds, splices or joints. There shall be no tendency for the conductor to unlay or for the individual wires to spread out when the conductor is cut after being stripped of insulation.

(b) After complete manufacture each wire of the conductor shall withstand, without breaking, an elongation of 15% in a 10-inch length when being pulled at the rate of one inch per minute.

(c) The tinned copper conductor shall not blacken when subjected to the sodium polysulfide test applied as specified in sections 7 to 9 of A.S.T.M. Specification B33-39.

5. INSULATION: (a) A covering of insulating compound shall be applied directly over the stranded conductor. This compound shall be homogeneous in character, and shall be concentrically positioned around the conductor. It shall adhere closely to the conductor, leaving a minimum air space.

(b) The specific inductive capacity of the insulating materials shall be such that the capacitance of the completed cable shall be not more than 40 micro-micro-farads per foot. This test shall be made as follows: A two foot, minimum, length of completed cable shall be dried at 176°F for 18 hours and cooled to room temperature. The cable shall be insulated at one end with suitable wax and then immersed in mercury. The capacitance shall be measured between the conductor and the mercury by means of a capacitance bridge at a frequency of approximately 1000 cycles per second.



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6. PROTECTIVE BRAID: A protective braid shall be added over the insulating compound.
7. PROTECTIVE COATING: The cable shall have a protective compound applied as a finish coating and to give a smooth, even surface closely adhering to the underlying surface. It shall be a non-hygroscopic compound highly resistant to the action of sunlight, oil, gasoline, kerosene, or salt water. It shall be capable of withstanding temperature of 258.8°F and shall not become excessively brittle with age. It shall be flexible, non-cracking, and slow burning. Adjacent layers of cable, when wound on reels shall not stick to one another at any temperature under 122°F.
8. CONCENTRICITY: The conductor shall be as nearly centered in the insulating material as possible and at no point shall the thickness of the insulating material plus protective coating be less than 0.097 inch.
9. IDENTIFICATION: At intervals of not greater than two feet the cable shall be marked permanently with the manufacturer's mark, this specification number and the month and year of manufacture, such marking to be arranged in a form similar to the following: "Manufacturer's Name and Type Designation -- AMS 3390 -- 8-41".
10. AGE: The manufacturer shall not supply cable older than six months. Cable one year old, or older, shall be retested and must meet the requirements of this specification before installation in an engine.
11. TEST SAMPLES: Not less than one 25-foot sample shall be selected from each 5000 feet or fraction thereof of cable in each shipment. In the event of failure of a sample in any test, two more samples may be selected from different portions of the same length of cable as the first sample. If a retest is made and both samples pass, the shipment may be accepted, if either sample fails, the shipment may be rejected in its entirety. Each length of cable may be subjected to the same test or tests as the original sample failed in and in this case the requirements must be met.
12. CORONA TEST: Four feet of the finished cable, having a 5 lb weight attached to the free end of the cable conductor, shall be wound upon a one-inch brass mandrel so that there are five turns spaced 3/4 inch. Both the cable and the brass mandrel shall be uniformly at room temperature before starting to wind. A brass sheath shall then be fitted snugly over the wound specimen with the cable ends extending not less than 13 inches from the belled ends of the sheath. The cable shall withstand 15,000 R.M.S. volts 60-cycle alternating current for two hours between the conductor and the sheath and mandrel without cracking or failure of the insulation.
13. HIGH POTENTIAL TEST: A specimen of the finished cable 18 inches long, after retention at room temperature for 24 hours, shall have one inch of insulation removed from each end and the ends twisted together to form a loop. This loop shall be totally immersed in distilled water at 180°F to 190°F for 30 minutes then removed and wiped dry. The loop shall then be suspended, with the ends of the insulation 3 inches above the solution, in saturated salt water at room temperature and an increasing voltage alternating current of 60 cycles frequency applied between the conductor and the solution at the rate of 2000 volts per minute. The specimen shall withstand a minimum of 20,000 R.M.S. volts for one minute before failure of the insulation or flashover occurs.