



AEROSPACE MATERIAL Society of Automotive Engineers, Inc. SPECIFICATION

TWO PENNSYLVANIA PLAZA, NEW YORK, N.Y. 10001

AMS 3890

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Revised

GRAPHITE YARN, NON-STRUCTURAL 2 Ply Yarn, 720 Filaments

1. **ACKNOWLEDGMENT:** A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.
2. **FORM:** The product shall consist of 2-ply yarn having 720 continuous filaments per ply and a maximum of 4 turns per inch.
3. **APPLICATION:** Primarily for use in weaving graphite cloth and fabric of various shapes and constructions for fabrication of components used in ablation applications.
4. **TECHNICAL REQUIREMENTS:** The product shall conform to the following requirements; tests shall be performed on the product supplied and in accordance with the issue of specified ASTM methods listed in the latest issue of AMS 2350.

| | min | max | |
|------------------------------------|-------------------|-------|------------|
| 4.1 Assay Carbon, wt % | 99.0 | -- | ASTM D271 |
| 4.2 Ash Content, % by wt | -- | 1.0 | See Note 1 |
| 4.3 pH | 6.5 | 10.0 | ASTM D1512 |
| 4.4 Filament Diameter, in. | 0.00035 - 0.00045 | | ASTM D578 |
| 4.5 Density of Filament, gm per cc | 1.8 | - 1.9 | ASTM C135 |
| 4.6 Breaking Strength, lb per ply | 2.0 | | ASTM D578 |

Note 1. Ash content shall be determined on triplicate samples from each spool of yarn. Approximately 5 g of graphite yarn shall be dried for not less than 1 hr in a circulating air oven at $110^{\circ}\text{C} \pm 3$ ($230^{\circ}\text{F} \pm 5.4$) and cooled in a desiccator. Accurately weigh to 0.001 g approximately 2 g of the cooled sample into a previously dried, tared crucible, place in a muffle furnace, gradually heat to $760^{\circ}\text{C} \pm 15$ ($1400^{\circ}\text{F} \pm 27$), hold in an oxidizing atmosphere for not less than 3 hr, then raise temperature to $870^{\circ}\text{C} \pm 15$ ($1598^{\circ}\text{F} \pm 27$) and hold at heat for not less than 1 hr until ignition is complete. Remove the crucible from furnace, cool in desiccator, and weigh. Calculate ash content as follows:

$$\text{Ash Content, \%} = \frac{\text{Final sample weight} - \text{Dry sample weight}}{\text{Dry sample weight}} \times 100$$

5. **QUALITY:** The product shall be uniform in quality and condition and free from foreign materials and from internal and external imperfections detrimental to fabrication, appearance, or performance of parts.
6. **REPORTS:** Unless otherwise specified, the vendor of the product shall furnish with each shipment three copies of a report of the results of tests to determine conformance to the technical requirements of this specification. This report shall include the purchase order number, material specification number, vendor's material designation, and quantity.

REAFFIRMED

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