Society of Automotive Engineers, Inc.
TWO PENNSYLVANIA PLAZA, NEW YORK, N.Y. 10001

AEROSPACE MATERIAL SPECIFICATION

AMS 7878

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Revised

TUNGSTEN CARBIDE POWDER
Cobalt Coated

1. SCOPE:

1.1 Form: This specification covers cobalt-coated tungsten carbide in the form of powder.

1.2 Application: Primarily for producing plasma spray coatings to provide wear and fretting resistant surfaces.

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications (AMS) shall apply; the applicable issue of other documents shall be as specified in AMS 2350.

2.1 SAE Publications: Available from Society of Automotive Engineers, Inc., Two Pennsylvania Plaza, New York, New York 10001.

2.1.1 Aerospace Material Specifications:

AMS 2350 - Standards and Test Methods

2.2 ASTM Publications: Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.

ASTM B214 - Sieve Analysis of Granular Metal Powders
ASTM B293 - Subsieve Analysis of Granular Metal Powders by Air Classification

3. TECHNICAL REQUIREMENTS:

3.1 Composition: Powder particles shall consist of a tungsten carbide core enclosed in a cobalt jacket. Composition shall conform to the following percentages by weight; method of determination of those percentages shall be as agreed upon by purchaser and vendor.

	min	max
Free Carbon (3.1.1)	--	0.03
Combined Carbon	6.12	6.15
Total Carbon	6.12	6.18
Cobalt	10.50	13.50
Iron	--	0.05
Other Impurities, each (3.1.1)	--	0.01
Total Impurities (3.1.1)	--	0.15
Tungsten	remainder	

3.1.1 Determination not required for routine acceptance.

3.2 Particle Size Distribution: Powder shall be supplied with the following particle size distribution. Sieve analysis shall be conducted in accordance with ASTM B214; subsieve (micron) analysis shall be conducted in accordance with ASTM B293 or an approved optical method.

Mesh or Micron Size*	% By Weight min	max
-270 mesh	100.0	--
+325 mesh	--	0.5
- 30 microns	80.0	--
- 20 microns	--	20

*+ indicates retained on sieve
- indicates passing through sieve

3.3 Plasma Spraying: Powder shall be capable of producing acceptable plasma spray coatings to standards agreed upon by purchaser and vendor.

3.4 Quality: Material shall be thoroughly blended, uniform in color and quality, dry, and free from foreign materials and from imperfections detrimental to its spraying qualities.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor shall supply all samples and shall be responsible for performing all required tests. Results of such tests shall be reported to the purchaser as required by 4.5. Purchaser reserves the right to perform such confirmatory testing as he deems necessary to assure that material conforms to the requirements of this specification.

4.2 Classification of Tests: Tests to determine conformance to all requirements of this specification are classified as routine control tests.

4.3 Sampling: Shall be as agreed upon by purchaser and vendor.

4.4 Approval:

4.4.1 Powder shall be approved by purchaser before powder for production use is supplied, unless such approval be waived. Results of tests on subsequent shipments of powder shall be essentially equivalent to those on the approved sample.

4.4.2 Vendor shall use ingredients, processing techniques, and methods of routine inspection on production material which are essentially the same as those used on the approved sample powder. If any change is necessary in ingredients, processing techniques, or methods of routine inspection, vendor shall submit a sample for reapproval unless purchaser grants written approval after review of a detailed statement of materials and processes used on the approved sample and those proposed. No production material made by the revised procedure shall be shipped prior to receipt of approval of such procedure.

4.5 Reports:

4.5.1 The vendor of the product shall furnish with each shipment three copies of a report of the results of tests for chemical composition and particle size distribution of each lot in the shipment. This report shall include the purchase order number, material specification number, and quantity.

4.5.2 When coated parts requiring the use of this powder are supplied, the vendor of finished or semi-finished parts shall furnish with each shipment three copies of a report showing the purchase order number, this specification number, contractor or other direct supplier of powder, part number, and quantity. When powder for coating parts is produced or purchased by the parts vendor, that vendor shall inspect each lot of powder to determine conformance to the requirements of this specification, and shall include in the report a statement that the powder conforms, or shall include copies of laboratory reports showing the results of tests to determine conformance.