

AEROSPACE MATERIAL SPECIFICATION

SAE AMS7879

REV. E

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Superseding AMS7879D

**Tungsten Carbide-Cobalt Powder
Cast and Crushed**

RATIONALE

AMS7879E is a Five Year Review and update of this specification.

1. SCOPE

1.1 Form

This specification covers tungsten carbide-cobalt in the form of powder.

1.2 Application

This powder has been used typically for producing plasma spray coatings to provide wear and fretting resistant surfaces, but usage is not limited to such applications.

2. APPLICABLE DOCUMENTS

The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been specified, the last published issue of that document shall apply.

2.1 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19248-2959, Tel: 610-832-9585, www.astm.org.

ASTM B 214 Sieve Analysis of Granular Metal Powders
ASTM B 215 Sampling Finished Lots of Metal Powders

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3. TECHNICAL REQUIREMENTS

3.1 Composition

Shall conform to the percentages by weight shown in Table 1, determined by methods acceptable to purchaser.

TABLE 1 - COMPOSITION		
Element	min	max
Carbon	3.90	4.30
Cobalt	10.00	12.00
Iron	--	2.00
Tungsten	remainder	

3.2 Condition

As manufactured.

3.3 Properties

Powder shall conform to the following requirements:

3.3.1 Particle Size Distribution

Powder shall be supplied with the particle size distribution shown in Table 2.. Sieve analysis shall be conducted in accordance with ASTM B 214; subsieve (micron) analysis shall be conducted in accordance with a method approved by purchaser.

TABLE 2 - PARTICLE SIZE DISTRIBUTION		
Mesh or Micron Size*	Percent By Weight min	Percent By Weight max
-270 mesh (46 µm)	100.0	--
+325 mesh (45 µm)	--	0.5
- 20 µm	70.0	--
- 5 µm	--	10
* + indicates retained on sieve		
- indicates passing through sieve		

3.3.2 Plasma Spraying

Powder shall produce acceptable spray coatings; standards for acceptance and method of test shall be agreed upon by purchaser and vendor.

3.4 Quality

Powder, as received by purchaser, 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 of powder shall supply all samples for vendor's tests and shall be responsible for the performance of all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the powder conforms to specified requirements.

4.2 Classification of Tests

4.2.1 Acceptance Tests

All technical requirements except 3.3.2 (plasma spraying) are acceptance tests, and shall be performed on each heat or lot as applicable.

4.2.2 Preproduction Tests

All technical requirements are preproduction tests and shall be performed prior to or on the initial shipment of powder to a purchaser, on each lot, when a change in ingredients and/or processing requires approval by the cognizant engineering organization (See 4.4.2), and when purchaser deems confirmatory testing to be required.

4.3 Sampling and Testing

Shall be in accordance with ASTM B 215; sufficient powder shall be taken from each lot to perform all required tests. The number of determinations for each requirement shall be as specified in the applicable test procedure or, if not specified therein, not less than three.

4.3.1 When a statistical sampling plan has been agreed upon by purchaser and vendor, sampling shall be in accordance with such plan in lieu of sampling as in 4.3 and the report of 4.5 shall state that such plan was used.

4.4 Approval

4.4.1 The process and control procedures, a preproduction sample, or both, whichever is specified, shall be approved by the cognizant engineering organization before production powder is supplied.

4.4.2 The supplier shall make no significant change in ingredients, processes, or controls from those on which the approval was based, unless the change is approved by the cognizant engineering organization. A significant change is one that, in the judgment of the cognizant engineering organization, could affect the properties or performance of the powder.

4.5 Reports

The vendor of powder shall furnish with each shipment a report showing the results of tests for composition and particle size distribution of each lot and stating that the powder conforms to the other technical requirements. This report shall include the purchase order number, lot number, AMS7879E, vendor's product designation, and quantity.

4.6 Resampling and Retesting

If any sample used in the above tests fails to meet the specified requirements, disposition of the powder may be based on the results of testing three additional samples for each original nonconforming sample. Failure of any retest sample to meet the specified requirements shall be cause for rejection of the powder represented. Results of all tests shall be reported.

5. PREPARATION FOR DELIVERY

5.1 Packaging and Identification

5.1.1 Powder shall be packaged in 5-pound (2.3-kg) sealed containers to protect it from contamination during shipment and under normal dry storage conditions. Seals used on containers shall be so designed that they must be destroyed in order for the container to be opened.