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SUPERSEDING
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MILITARY SPECIFICATION

POWDERS, PLASMA SPRAY

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers three types of powder for use in depositing metallic and nonmetallic coatings by plasma spray techniques (see 6.1).

1.2 Classification. Plasma spray powders covered by this specification shall be of the following types, classes, and compositions, as specified (see 6.2):

Type I - Metallic (see Table I for composition)
Type II - Nonmetallic and cermet (see Table II for composition)
Type III - Multi-Component Powders (see Table III for composition)

Class 1 - Fine powders - 75 percent less than 325 mesh (45 µm) (see Table IV)
Class 2 - Medium powders - 80 percent in the range 140 to 325 mesh (106 to 45 µm) (see Table V)

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. Unless otherwise specified, the following specifications, standards, and handbooks of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DODISS) specified in the solicitation form a part of this specification to the extent specified herein.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: AFWAL/MLSE, Materials Laboratory, WPAFB, OH 45433 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end to this document or by letter.

AREA MFFP

SPECIFICATIONS

FEDERAL

PPP-C-186 Containers, Packaging and Packing for Drugs, Chemicals and Pharmaceuticals

STANDARDS

FEDERAL

FED-STD-151 Metals; Test Methods

MILITARY

MIL-STD-105 Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-129 Marking for Shipment and Storage

(Copies of specifications, standards, drawings, and publications required by manufacturers in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. The issues of the documents which are indicated as DOD adopted shall be the issue listed in the current DODISS and the supplement thereto, if applicable.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM B214 Sieve Analysis of Granular Metal Powders, Test for

ASTM B215 Sampling Finished Lots of Metal Powders

ASTM B293 Subsieve Analysis of Granular Metal Powders by Air Classification

ASTM B330 Average Particle Size of Powders of Refractory Metals and Compounds by the Fisher Sub-sieve Sizer, Test for

ASTM C117 Material Finer Than No. 200 (75 µm) Sieve in Mineral Aggregates by Washing, Test for

ASTM E11 Wire-Cloth Sieves for Testing Purposes
ASTM E304 Evaluation of Mass Spectrometers for Chemical Analysis of Solids, Recommended Practice for

ASTM E354 Chemical Analysis of High-Temperature, Electrical, Magnetic, and Other Similar Iron, Nickel, and Cobalt Alloys

ASTM E363 Chemical Analysis of Chromium and Ferrochromium

(Application for copies of the ASTM Publications should be addressed to American Society for Testing and Materials, 1916 Race Street, Philadelphia PA 19103.)

(Technical society and technical association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

3. REQUIREMENTS

3.1 Chemical composition. Unless otherwise specified, the chemical composition of the plasma spray powders shall be as specified in Table I, Table II, or Table III, determined as in 4.5.1.

3.1.1 Certified analysis. The contractor shall furnish a certified analysis of each lot of powder showing the percentage by weight of the elements specified in Table I, Table II, or Table III, as applicable.

3.2 Particle size. Unless otherwise specified or permitted in the contract or purchase order, the particle size distribution of the plasma spray powders shall be as specified in Table IV or Table V, determined as in 4.5.2.

3.2.1 Certified analysis. The contractor shall furnish a certified analysis of each lot of powder showing the particle size distribution in percent as specified in Table IV and Table V.

3.3 Flowability. Powder shall be free-flowing through a powder feeder and gun, demonstrated by a visual examination as in 4.5.3. The powder stream shall allow the flow to be consistent and without excessive pulsation.

3.4 Sprayability. Powder shall be capable of producing an acceptable spray coating. A visual examination of a spray coated panel as in 4.5.4 shall show the coating to be free of cracks and lumps.

TABLE I. Chemical composition of Type I powders (Expressed as percentages by weight).

Composition	Mo	Cr	Ni	Fe	W	V	Al	C	Mn	Si	Co	P	S	Cu	Zn	Mg	B	O	TiO_2	Other Elements	
																				Each	Total
A-Molybdenum	99.50 min	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.15 max	--	--	0.50 6/ max
B-Nichrome 1/	--	18.0 -- 21.0	76.0 -- 80.0	1.0 max	--	--	--	0.25 max	2.5 max	1.5 max	--	--	--	--	--	--	--	--	--	--	--
C-Cobalt Base 2/	--	24.50 -- 26.50	9.50 -- 11.50	2.00 max	7.00 -- 8.00	--	--	0.45 -- 0.55	1.00 max	1.00 max	Bal	0.04 max	0.04 max	--	--	--	--	--	--	--	--
D-Aluminum C.P.	--	--	--	Fe+Si 1.00 max	--	--	99.00 min	--	--	Fe+Si 1.00 max	--	--	--	0.20 max	0.10 max	--	--	--	--	0.05 6/ max	0.15 6/ max
E-Aluminum Silicon Alloy	--	--	--	0.80 max	--	--	Bal	--	--	11.0 -- 13.0	--	--	--	0.30 max	0.20 max	0.10 max	--	--	--	0.05 6/ max	0.15 6/ max
F-Aluminum Bronze	--	--	--	0.70 -- 2.00	--	--	8.00 -- 11.00	--	--	--	--	--	--	Bal	--	--	--	--	--	--	1.00 max
G-Nickel Aluminum 3/	--	--	Bal	--	--	--	17.0 -- 20.0	--	--	--	--	--	--	--	--	--	--	--	--	--	1.0 6/ max
H-Nickel Aluminum	--	--	Bal	--	--	--	4.0 -- 5.5	--	--	--	--	--	--	--	--	--	--	--	--	--	2.5 4/ max
J-Nickel Pure	--	--	Bal	0.30 max	--	--	--	--	--	--	0.30 max	--	--	--	--	--	--	--	--	--	0.20 6/ max
K-Nickel Base Alloy	23.00 -- 26.00	4.00 -- 6.00	Bal	4.00 -- 7.00	--	0.60 max	--	0.12 max	1.00 max	1.00 max	2.50 max	0.02 max	0.02 max	--	--	--	--	--	--	--	--
M-AISI Type 316 Stainless Steel	2.00 -- 3.00	16.00 -- 18.00	10.00 -- 14.00	Bal	--	--	--	0.10 max	2.00 max	3.50 max	--	0.04 max	0.03 max	--	--	--	--	--	--	--	--
N-Nickel-Chromium Boron	--	13. -- 20.	Bal	3.0 -- 5.0	--	--	--	0.6 -- 1.3	--	3.0 -- 5.0	1. max 6	--	--	--	--	--	2.75 -- 4.75	--	--	--	--
P-Molybdenum	99.50 min	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.20 max	--	--	0.50 6/ max
R-Cobalt-Chromium-Tungsten	--	26.00 -- 30.00	4.00 -- 6.00	3.00 max	18.00 -- 21.00	0.75 -- 1.25	--	0.70 -- 1.00	1.00 max	1.00 max	Bal	--	--	--	--	--	--	--	--	--	--

TABLE I. Chemical composition of Type I powders (Expressed as percentages by weight) - Continued.

Composition	Mo	Cr	Ni	Fe	W	V	Al	C	Mn	Si	Co	P	S	Cu	Zn	Mg	B	O	TiO_2	Other Elements Each	Other Elements Total
S-Cobalt 2/ Chromium-Nickel Tungsten	--	24.50 -- 26.50	9.50 -- 11.50	2.00 max	7.00 -- 8.00	--	--	0.45 -- 0.55	1.00 max	1.00 max	Bal	--	--	--	--	--	--	--	--	-- --	--
T-Copper-Nickel	--	--	37.00 -- 39.00	--	--	--	--	--	--	--	--	--	--	Bal	--	--	--	--	--	--	1.00 max
U-Nickel-Chromium	--	18.00 -- 21.00	76.00 -- 80.00	1.00 max	--	--	--	0.25 max	2.50 max	1.50 max	--	--	--	--	--	--	--	--	--	--	--
V-Nickel-Chromium Aluminum 5/	--	15.5 -- 21.5	69.5 min	1.50 max	--	--	4.5 -- 7.5	0.30 max	3.00 max	2.0 max	--	--	--	--	--	--	--	--	--	--	--
W-Polyester-Aluminum 7/	--	--	--	0.8 max	--	--	Bal	--	--	11.0 -- 13.0	--	--	--	0.30 max	--	--	--	--	--	0.20 max	0.60 max
AA-Tungsten-Carbide Blend	--	--	--	2.0 max	Bal	--	--	4.8 -- 5.6	--	--	15. -- 18.	--	--	--	--	--	--	--	--	--	2.0 max
BB-Molybdenum Aluminum-Nickel Alloy Composite	4.0 -- 8.0	6.0 -- 11.0	60.00 min	1.00 -- 3.00	--	--	4.0 -- 8.0	--	--	1.0 -- 3.0	--	--	--	--	--	--	1.0 -- 3.0	--	3.5 max	--	4.0 max
DD-Nickel Chrome Aluminum-Iron Molybdenum	3.0 -- 8.0	11. -- 16.	60. min	4. -- 9.	--	--	5. -- 10.	--	1. max	1. max	--	--	--	--	--	--	--	--	--	--	3.5 max
EE-Copper-Aluminum	--	--	--	--	--	--	7. -- 14.	--	--	--	--	--	--	82. min	--	--	--	--	--	--	3.0 max
FF-Molybdenum Nickel Aluminum	4.0 -- 9.0	--	80. min	--	--	--	4. -- 9.	--	--	--	--	--	--	--	--	--	--	--	--	--	2.5 max
GG-Carbon Steel Molybdenum Aluminum	0.25 -- 1.75	--	--	80. min	--	--	6. -- 13.	0.25 max 8/		--	--	--	--	--	--	--	--	--	--	--	4.0 max
HH-Iron Molybdenum Aluminum	2.0 -- 4.5	--	--	82. min	--	--	1.5 -- 4.5	2.5 max 8/		--	--	--	--	--	--	--	0.15 -- 0.55	--	--	--	4.0 max

1/ Powder particles shall be essentially oxide-free.

2/ Powder shall be reduced by heating in a vacuum or dry hydrogen atmosphere for 2 - 4 hr at 1750° - 1850°F (955° - 1010°C). This requirement shall be waived if powder is produced by atomizing in an inert atmosphere.

3/ Chemistry shall be determined on that portion of the powder which is -170+270 mesh.

4/ Present as volatile phenolic binder.

5/ Percentages by weight are after removal of binder. Powder shall be a composite of not less than 96.5 percent by weight of an aggregate of nickel-chromium and aluminum powders with not more that 3.5 percent by weight of phenolic binder material capable of volatilizing completely at 1000°F (538°C).

6/ Determination not required for routine acceptance.

7/ Percentages by weight are for the metallic component only. Material shall be a blend of 59 - 61 percent by weight of aluminum alloy and 39 -41 percent by weight of completely aromatic polyester system. Polyester shall conform to the following particle size distribution before blending: A minimum of 99 percent by weight shall pass through a No. 100 (150 µm); a minimum of 85 percent by weight shall pass through a No. 170 (90 µm) sieve; and a maximum of 25 percent shall pass through a No. 325 (45 µm) sieve. Coating is normally applied over an undercoat of Type I, Composition H, Class 2, with a thickness of 0.003 - 0.005 inch (0.08 - 0.12 mm).

8/ Determined after removing organic solids.

TABLE II. Chemical composition of Type II powders (Expressed as percentages by weight).

Composition	Fe	C	Co	W	Si	Cr	SiO_2	CaO	Na_2O	Al_2O_3	TiO_2	Fe_2O_3	Cr_2O_3	MgO	ZrO_2 1/	Other Elements Each	Other Elements Total
A-Tungsten-Carbide Cobalt	2.00 max	3.90 -- 4.30	10.0 -- 12.0	Bal	--	--	--	--	--	--	--	--	--	--	--	--	--
B-Chromium Carbide	0.70 max	12.5 min	--	--	0.10 max	85.5 min	--	--	--	--	--	--	--	--	--	--	--
D-Aluminum Oxide	--	--	--	--	--	--	1.00 max	--	1.00 max	98.0 min	--	--	--	--	--	--	0.75 2/ max
E-Alumina-Titania	--	--	--	--	--	--	3.00 max	--	--	Bal	2.0 -- 4.1	2.0 max	--	--	--	--	1.0 2/ max
F-Chromium Oxide	--	--	--	--	--	--	0.75 max	--	--	-- 0.50	4.50 max	0.50 max	Bal	--	--	--	1.0 2/ max
G-Magnesium Zirconate	--	--	--	--	--	--	1.50 max	1.50 max	--	1.00 max 2/	0.50 max 2/	0.50 max 2/	--	18.0 -- 25.0	Bal	--	1.50 2/ max 3/
H-Zirconium Oxide	--	--	--	--	--	--	0.80 max	4.50 -- 5.50	--	0.60 max	0.40 max	0.30 max	--	0.90 max	91.5 min	--	--
J-Tungsten Carbide-Cobalt	2.00 max	3.60 -- 4.20	11.0 -- 13.0	Bal	--	--	--	--	--	--	--	--	--	--	--	--	--
K-Tungsten Carbide-Cobalt	1.50 max	5.15 min	11.5 -- 13.0	81.0 min	--	--	--	--	--	--	--	--	--	--	--	0.50 2/ max	--
M-Chromium Carbide	0.70 max	12.75 min	--	--	0.10 max	86.0 min	--	--	--	--	--	--	--	--	--	--	--

1/ Includes HfO_2.

2/ Determination not required for routine acceptance.

3/ Other Elements, total include Al_2O_3, Fe_2O_3, and TiO_2.

TABLE III. Multi-component mixture of Type III powders. 1/

Composition	Component Number	Component Type	Composition	Percentages by weight min	max
C	1	II	B	74	76
	2	I	U	24	26
L	1	II	K	48	52
	2	I	G	14	16
	3	I	N	remainder	
N	1	II	M	74	76
	2	I	B 2/	24	26
P	1	II	G	64.0	66.0
	2	I	H	34.0	36.0
R	1	II	G	64.0	66.0
	2	I	B 2/	34.0	36.0
S	1	I	DD	69	71
	2	I	FF	remainder	

1/ Composition of each component shall be determined before mixing in the specified proportions to provide the multi-component mixture shown.

2/ Refers to fine powder only; see Table IV for particle size distribution.

TABLE IV. Particle size distribution for Class 1 powders (Fine powders - 75% less than 325 mesh).

Type	Composition	+200 Mesh		-200 Mesh		-230 Mesh		+270 Mesh		-270 Mesh		+325 Mesh		-325 Mesh		-20μ Mesh		-15μ Mesh		-10μ Mesh		-5μ Mesh	
		% max	% min	% max	% min	% max	% min	% max	% min	% max	% min	% max	% min	% max	% min	% max	% min	% max	% min	% max	% min	% max	% min
I	B	--	--	--	--	--	95	--	--	--	80	--	--	--	--	--	--	--	--	--	--	--	--
I	J	--	--	--	--	--	--	--	--	--	--	5	--	--	95	--	--	--	--	5	--	--	--
I	N	--	--	--	99	--	--	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
I	P	--	--	--	--	--	--	--	--	--	--	--	--	--	100	--	80	--	--	--	--	50	--
I	S	--	--	--	--	--	--	--	--	--	100	1	--	--	--	65	35	--	--	--	--	5	--
I	U	--	--	--	--	--	--	--	--	--	100	1	--	--	--	75	45	--	--	--	--	5	--
I	W	--	--	--	85	--	--	--	--	--	--	--	--	90	70	--	--	--	--	10	--	--	--
I	AA	--	--	--	--	--	--	15	--	--	85	--	--	--	--	15	--	--	--	--	--	--	--
II	A	--	--	--	--	--	--	--	--	--	100	0.5	--	--	--	--	70	--	--	--	--	10	--
II	B	--	--	--	--	--	--	--	--	--	100	1	--	--	--	90	60	--	--	--	--	15	--
II	D	--	--	--	--	--	--	--	--	--	100	--	--	--	99	--	--	--	--	--	--	--	--
II	E	--	--	--	--	--	--	--	--	--	--	5	--	--	95	--	--	10	--	--	--	--	--
II	F	5	--	--	--	--	--	--	--	--	95	15	--	--	85	--	--	--	--	--	--	--	--
II	G	1	--	--	--	--	--	7	--	--	--	--	--	--	55	--	--	--	--	--	--	--	--
II	K	--	--	--	--	--	--	--	--	--	--	5	--	--	--	--	--	--	--	--	--	--	--
		+75 μm		-75 μm		-63 μm		+53 μm		-53 μm		+45 μm		-45 μm		-20 μm		-15 μm		-10 μm		-5 μm	

TABLE V. Particle size distribution for Class 2 powders (Medium powders - 80% in the range 140 to 325 mesh).

Type	Composition	+100 Mesh		+120 Mesh		+140 Mesh		+170 Mesh		-170 Mesh		+200 Mesh		-200 Mesh		+270 Mesh		-270 Mesh		+325 Mesh		-325 Mesh	
		% max	% min	% max	% min	% max	% min	% max	% min	% max	% min	% max	% min	% max	% min	% max	% min	% max	% min	% max	% min	% max	% min
I	A	--	--	--	--	--	--	1	--	--	--	15	--	--	--	--	--	--	--	--	80	--	--
I	B	--	--	1	--	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	80	--	--
I	C	--	--	--	--	--	--	--	--	--	100	--	--	--	95	--	--	--	--	--	90	--	--
I	D	--	--	--	--	1	--	7	--	--	--	50	--	--	--	--	--	--	--	--	89	--	--
I	E	--	--	--	--	1	--	7	--	--	--	--	--	--	--	--	--	--	--	--	90	--	--
I	F	--	--	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	90	--	--
I	G	--	--	--	--	0.5	--	5	--	--	--	--	--	--	--	--	93	--	--	--	--	--	--
I	H	--	--	--	--	0.5	--	5	--	--	--	--	--	--	--	--	--	--	--	--	90	--	--
I	K	--	--	--	--	--	--	--	--	--	100	--	--	--	95	--	--	--	--	--	75	25	--
I	M	--	--	--	--	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	20	--
I	R	--	--	--	--	--	--	--	--	--	100	--	--	--	95	--	--	--	--	--	75	--	--
I	T	--	--	--	--	--	--	--	--	--	--	5	--	--	--	--	--	--	--	--	--	5	--
I	V	1	--	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	20	--
I	BB	1	--	--	--	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	20	--
I	DD	5	--	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	90	--	10	--
I	EE	0.5	--	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	10	--
I	FF	--	--	--	--	2.5	--	5	--	--	--	--	--	--	--	--	--	--	--	--	--	10	--
I	GG	2.5	--	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	15	--
I	HH	2.5	--	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	10	--
II	H	--	--	--	--	1	--	--	--	--	--	15	--	--	--	--	--	--	--	--	75	--	--
II	J	--	--	--	--	--	--	--	--	--	--	5	--	--	--	--	--	--	--	--	90	--	--
II	M	--	--	--	--	1	--	15	--	--	--	--	--	--	--	--	--	--	--	--	80	--	--
		+150 µm		+125 µm		+106 µm		+90 µm		-90 µm		+75 µm		-75 µm		+53 µm		-53 µm		+45 µm		-45 µm	

3.5 Material safety data sheets. Material Safety Data Sheets shall be completed in accordance with FED-STD-313 and supplied for each shipment.

3.6 Workmanship. Powder, as received by purchaser, shall be uniform in quality, condition, and color; it shall be dry, granular, free from dust and foreign materials, thoroughly blended, free of lumps, and shall be capable of producing acceptable plasma spray coatings.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Inspection records shall be kept complete and available to the procuring activity for not less than three years from date of shipment of the powder.

4.2 Classification of inspection. The inspection requirements specified herein are classified as follows:

Preproduction testing (see 4.3).

Quality conformance inspection (see 4.4).

4.3 Preproduction testing. Preproduction testing shall include all tests to determine conformance of the powder to all the technical requirements as specified in Section 3 and Tables I, II, III, IV, and V, as applicable.

4.3.1 Sampling for preproduction testing. Shall be as directed by the cognizant agency (see 6.4).

4.4 Quality conformance inspection.

4.4.1 Routine acceptance tests. Tests on each master lot of plasma spray powder shall be in accordance with Table VI. A master lot shall be all powder of the same composition or composition blend, the same particle size, or as specified in Table IV or Table V, and the same condition and manufactured at the same time from the same batches of basis materials by the same manufacturing process, and submitted for vendor's inspection at the same time.

4.4.2 Sampling. Shall be in accordance with Single Sampling for Normal Inspection, General Inspection Level II with an Acceptable Quality Level (AQL) of 1.0 specified in accordance with MIL-STD-105 as shown in Table VII. Test samples shall be taken form inspection units selected at random from each master lot in accordance with ASTM B215; sufficient powder shall be taken from each inspection unit to perform not less than two evaluations for each test.

4.4.3 Inspection unit. Shall be a representative sample at least five percent of the master lot.

4.4.4 Lot inspection. Inspection may be performed on large lot quantities of powder which are subsequently packaged in smaller quantities provided the applicable lot number identifications are maintained.

4.4.5 Quality conformance data. Test reports and statements of conformance shall be supplied with each master lot of powder and shall include results of tests to determine lot acceptance as required in 3.1.1 and 3.2.1 and statement of conformance for other quality conformance inspections.

4.4.6 Examination. Each shipment shall be examined to determine compliance with the requirements for workmanship, packaging, packing, marking, and safety.

4.5 Test methods.

4.5.1 Chemical composition. Chemical composition shall be determined by emission spectrochemical analysis in accordance with FED-STD-151, Method 112, by mass spectrochemical analysis in accordance with ASTM E304, by wet chemical analysis in accordance with ASTM E354 or ASTM E363, or by other methods acceptable to the procuring activity.

4.5.2 Particle size.

4.5.2.1 Class 1 powders. Shall be tested in accordance with ASTM B214, ASTM B293, ASTM B330, ASTM C117, or other method acceptable to the procuring activity.

4.5.2.2 Class 2 powders. Shall be tested in accordance with ASTM B214 using standard wire cloth sieves in accordance with ASTM E11.

4.5.3 Flowability. Shall be determined from visual examination of a flow of particles through an appropriate powder feeder and spray gun.

4.5.4 Sprayability. A test panel, not less than 1 x 3 inches (25 x 75 mm), shall be prepared using suitable spray equipment for visual examination of the coating.

TABLE VI. Quality conformance inspection.

Tests and inspections	Requirement	Test method
Chemical composition	Table I, Table II, or Table III	4.5.1
Particle size	Table IV or Table V	4.5.2
Flowability	3.3	4.5.3
Sprayability	3.4	4.5.4
Workmanship	3.6	Visual

TABLE VII. Sampling schedule - AQL 1.0.

Number of inspection units in the lot	Number of inspection units from which samples are to be taken	Number of nonconforming samples to	
		Accept	Reject
1 - 8	2	0	1
9 - 15	3	0	1
16 - 25	5	0	1
26 - 50	8	0	1
51 - 90	13	0	1
91 - 150	20	0	1
151 - 280	32	1	2
281 - 500	50	1	2

5. PACKAGING

5.1 Preservation, packaging, and packing. Unless otherwise specified, preservation, packaging, and packing shall be in accordance with the requirements of PPP-C-186, as specified (see 6.2).

5.2 Marking. Individual containers and exterior containers shall be marked in accordance with the requirements of MIL-STD-129 plus any special markings required by the contract or purchase order. Each container of hazardous powder shall be conspicuously marked to identify the hazard and provide instructions for safe handling and storage.

6. NOTES

6.1 Intended use. The powders covered by this specification are intended for use with plasma spray equipment and are to be applied as coatings to metallic and nonmetallic surfaces to rebuild worn or undersize areas, improve wear resistance, provide erosion and corrosion protection, and for other uses.

6.2 Ordering data. Procurement documents should specify not less than the following:

a. Title, number and revision letter, and date of this specification.

b. Type, class, and composition (see 1.2).

c. Manufacturer's identification.

d. Quantity desired.

e. Size of container desired.

f. Selection of applicable levels of preservation, packaging, and packing (see 5.1 and 5.2).

6.3 The Appendix is a list of commercial cross-references for plasma spray powders of this specification versus industrial powder specifications.

6.4 An epoxy cement found suitable for bond test specimen preparation (4.3.1) is identified as 3M Co., EC-2186 Epoxy Cement.

6.5 Procedures for performance testing of coatings are available in AMS 2437.

Custodians:
Air Force - 20
Navy - SH
Army - MR

Reviewers:
Navy - AS
Army - AR
Air Force - 71, 99

Preparing Activity:
Air Force - 20

Project MFFP-0296

10. APPENDIX

10.1 The following chart lists commercial cross-references for Plasma Spray powders of this specification versus Industrial Powder Specifications.

MIL-P-83348A	AMS	AISI	PWA	GE	BOEING	ALLISON	METCO
Type I, Comp. A, Class 2			1313				63NS
Type I, Comp. B, Class 1			1315				43F-NS
Type I, Comp. B, Class 2			1317				43C-NS
Type I, Comp. C, Class 2			1318				45C-NS
Type I, Comp. D, Class 2			1320				54NS
Type I, Comp. E, Class 2			1335				52C-NS
Type I, Comp. F, Class 2							51NS
Type I, Comp. G, Class 2			1321				404NS
Type I, Comp. H, Class 2			1337				450NS
Type I, Comp. J, Class 1							56F-NS
Type I, Comp. K							---
Type I, Comp. M, Class 2		316					41C
Type I, Comp. N, Class 1	4775						
Type I, Comp. P, Class 1			1338				---
Type I, Comp. R, Class 2			1314				---
Type I, Comp. S, Class 1			1316				45VF-NS
Type I, Comp. T, Class 2			1369				57NS
Type I, Comp. U, Class 1							43VF-NS
Type I, Comp. V, Class 2			1347				443NS
Type I, Comp. W, Class 1			1349				601NS
Type I, Comp. AA, Class 1							73FNS-1
Type I, Comp. BB, Class 2							442
Type I, Comp. EE, Class 2							445
Type I, Comp. FF, Class 2							447NS
Type I, Comp. GG, Class 2							448
Type I, Comp. HH, Class 2							449
Type II, Comp. A, Class 1	7879						71VF-NS
Type II, Comp. B, Class 1							81VF-NS
Type II, Comp. D, Class 1			1310				105SF
Type II, Comp. E, Class 1							101NS
Type II, Comp. F, Class 1							106F
Type II, Comp. G, Class 1			1333				210NS
Type II, Comp. H, Class 2			1312				201B-NS
Type II, Comp. J, Class 2			1302				71NS
Type II, Comp. K, Class 1							72F-NS
Type II, Comp. M, Class 2							70C-NS
Type III, Comp. C,	7875		1305				81VF-NS
Type III, Comp. L,			1322				439NS
Type III, Comp. N,			1307				81NS
Type III, Comp. P,			1341				421NS-1
Type III, Comp. R,			1346				303NS
Type III, Comp. S,							444

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STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

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1. DOCUMENT NUMBER	2. DOCUMENT TITLE
MIL-P-83348A	Powders, Plasma Spray

3a. NAME OF SUBMITTING ORGANIZATION	4. TYPE OF ORGANIZATION *(Mark one)*
	☐ VENDOR
b. ADDRESS *(Street, City, State, ZIP Code)*	☐ USER
	☐ MANUFACTURER
	☐ OTHER *(Specify)*: _____

5. PROBLEM AREAS

a. Paragraph Number and Wording:

b. Recommended Wording:

c. Reason/Rationale for Recommendation:

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7a. NAME OF SUBMITTER *(Last, First, MI)* – Optional	b. WORK TELEPHONE NUMBER *(Include Area Code)* – Optional
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