

HA 1211

M-CrAlY Superalloy Powder

Product Code: 221211
 Technical Data Sheet

Revision: # 001
 Dated: 11/18/13

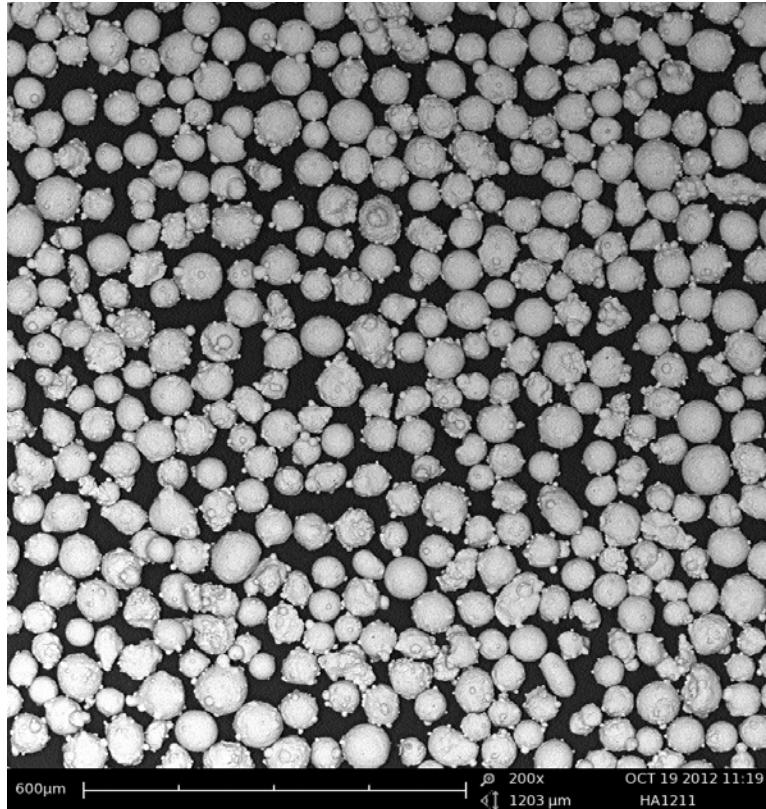


Figure 1: Typical Powder Morphology (SEM 200X)

1. PHYSICAL PROPERTIES

HA 1211 is a M-CrAlY designed specifically for the thermal spray process. It produces very dense coatings with excellent resistance to high temperature oxidation and sulfidation.

HA 1211 is widely used on gas turbine blades, shrouds, and airfoils.

Product Description	Co-NiCrAlY
Melting Point [°F]	2,525 - 2,600
Apparent Density (typical) [g/cm³] ASTM B212	3.50
Hall Flow (typical) [sec/50g] ASTM B213	-

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2. CHEMICAL PROPERTIES

2.1. Typical Chemical Analysis

Element	Co	Ni	Cr	Al	Y
Max Weight %	Bal.	33.00	22.00	9.00	0.65
Min Weight %	Bal.	31.00	20.00	7.00	0.35

3. POWDER MORPHOLOGY AND PARTICLE SIZE DISTRIBUTION

3.1. Powder Morphology

- 3.1.1. Powder morphology is water atomized and crushed and sintered
- 3.1.2. Typical Powder Morphology using SEM is shown in Figure 1.

3.2. Particle Size Distribution

- 3.2.1. The typical powder size range measured with US Mesh according to ASTM B214-07 is -170 mesh +325 Mesh. Table 1 shows the typical weight percent distribution in accordance to ASTM B214-07.
- 3.2.2. Figure 2 shows the typical particle size distribution measured with Microtrac according to ASTM B822-10

Table 1: Typical and Required Weight Percent Particle Distribution

Mesh Size	Particle Size	Maximum Percentage	Minimum Percentage
-140 Mesh	105 um	--	100
+170 Mesh	88 um	0.5	
+200 Mesh	74 um	5.0	
-325 Mesh	44 um	15.0	
-400 Mesh	37 um	7.0	

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Table 2: Typical and Required Microtrac Particle Size Distribution

<u>Percentile</u>	<u>Typical Particle Size</u>		<u>Mean</u>	<u>Required Particle Size</u>
[%]	[μm]			
0.01	26.40		D ₁₀	40 - 48 μm
5.00	38.97			
10.00	42.29			
16.00	44.92		D ₅₀	52 – 63 μm
50.00	55.47			
84.00	69.67			
90.00	74.92		D ₉₀	68 - 85 μm
95.00	83.25			
99.99	146.8			

