

Product Technical Information

Sprayable Superfine Tungsten Carbide Cobalt – Infralloy™ Thermal Spray Powder S7400 Series

[U.S. Patent Nos. 6,277,774 6,576,036]
7,238,219

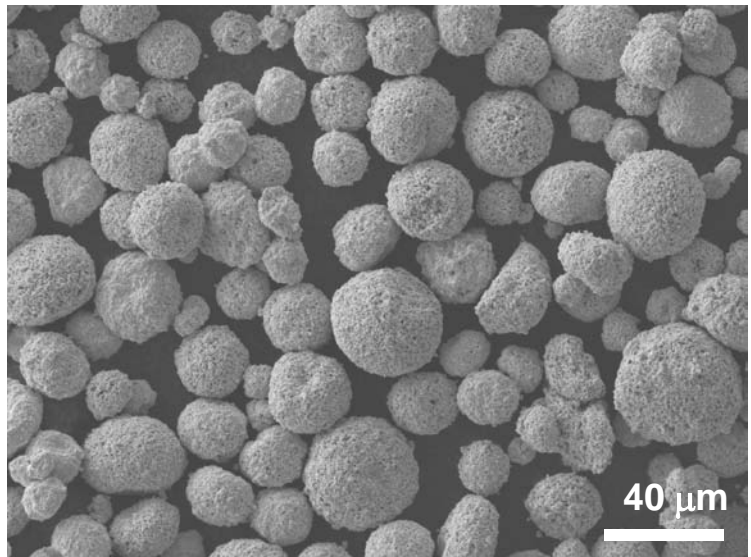
Thermal Spray Grade

Tungsten carbide cobalt is a ceramic-metal (cermet) composite material used as a wear resistant coating. The alloyed form gives superior hardness. Infralloy™ powder is made from WC nanoparticles alloyed with a cobalt binding matrix phase.

Infralloy™ Series S7400 powder is available as agglomerated particles with dimension $5 < \Phi < 45 \mu\text{m}$ with high flowability for HVOF thermal spray applications.

Morphology

SEM micrograph typical of Infralloy™ S7412 feedstock powder showing spherical geometry with high flowability.



Infralloy™ S7410 Series	S7410-5	S7410-10	S7410-15
WC: Co wt ratio	86: 10	86: 10	86:10
Cr%	4%	4%	4%
Alloy content	< 1 %	< 1 %	< 1 %
Particle size μm	0.1 - 0.5	0.1 - 0.5	0.1 - 0.5
Agglomerated size (μm)	-45 to +5	-53 to +10	-45 to +15
Coating hardness (VHN)	950 -1200	950 -1200	950 -1200

1 micron (μm) = 10^{-6} meter (m)

Infralloy™ S7412 Series	S7412-5	S7412-15
WC: Co wt ratio	88: 12	88: 12
Alloy content	< 1 %	< 1 %
Particle size μm	0.1 - 0.5	0.1 - 0.5
Agglomerated size (μm)	-45 to +5	-45 to +15
Coating hardness (VHN)	1100 -1250	1100 -1250

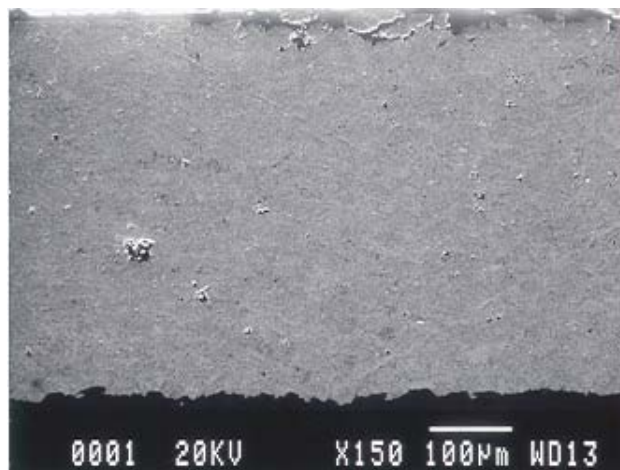
1 micron (μm) = 10^{-6} meter (m)

Infralloy™ S7417 Series	S7417-5	S7417-15
WC: Co wt ratio	83: 17	88: 17
Alloy content	< 1 %	< 1 %
Particle size μm	0.1 - 0.5	0.1 - 0.5
Agglomerated size (μm)	-45 to +5	-45 to +15
Coating hardness (VHN)	900 -1100	900 -1100

1 micron (μm) = 10^{-6} meter (m)

Coating Microstructure

Cross sectional SEM view of a typical very dense carbide coating produced by a Metco HVOF gun using Infralloy™ S7412 feedstock powder. Pores (dark spots) occupy only ~ 1% volume.



Suggested Applications

Inframat® Infralloy™ S7400 Series powder is a superior coating material providing wear-, erosion-, and corrosion-resistant surfaces where excellent to exceptional fracture toughness is required. The S7410 is an excellent candidate for chrome replacement coatings.

S7400 Series	Coating Types	Fracture Toughness
S7412	Wear-, Erosion-, Corrosion-Resistant	Excellent
S7410	Wear-, Erosion-, Corrosion-Resistant	Excellent
S7417	Wear-, Erosion-, Corrosion-Resistant	Exceptional

The Thermal Spray Grade material can be applied with DC Arc plasma and HVOF guns. Full spray specifications are available through Technical Applications Bulletins Nos. S7400.07B.

Contact Information

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