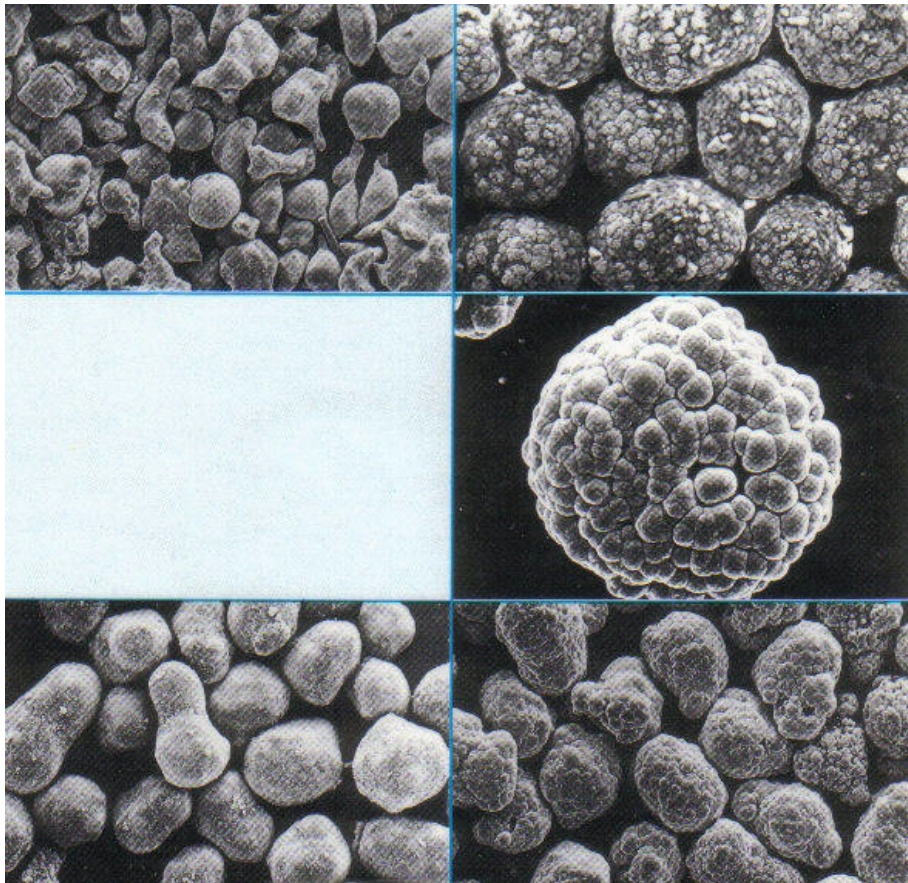


NICKEL-ALUMINUM COMPOSITE POWDERS

Nickel-Aluminum Composite Powders are a type of exothermic self-bonding thermal-spraying materials. The composite powders include those of Nickel Clad Aluminum, Aluminum Clad Nickel, Nickel Chromium-Aluminum, etc. These powders are characterized by vigorous exothermic reaction occurring between molten aluminum and nickel during the thermal spray application stage. The reaction promotes the formation of metallurgical bond between the applied powder coating and the substrate, hence providing the "self-bonding" coating.

Nickel-Aluminum Composite Powders are commonly used as undercoats. Among them, Nickel Clad Aluminum and Aluminum Clad Nickel Composite Powders can be applied at moderate temperatures forming under coat easily just by flame spray. Nickel Chromium Aluminum Composite Powder can be used at high temperatures, say above 650°C. Its coating is easily formed by either plasma or flame spray. Nickel-Aluminum Composite Powders can also be applied to form protective coat resistant to oxidation and to thermal shock.



NICKEL-ALUMINUM COMPOSITE POWDERS

POWDER	PARTICLE SIZE (MESH)	TYPICAL COMPOSITION (%)	COATING FUNCTION & APPLICATIONS
TS-1 Nickel-Clad Aluminum Composite Powder	-140+325	Al: 9.0 Impurity < 1.0 Ni: Balance	* Resistant to wear, oxidation, thermal corrosion and thermal shock at temperature up to 815°C; * Good for * Good for aero-engine parts, tank transmission parts, internal combustion engine driving parts, automobile crankshafts, machine tool slide-ways, great-power engine shafts and air blower vanes, etc.
TS-2 Nickel-Clad Aluminum Composite Powder	-140+325	Al: 17~20 Impurity < 1.0 Ni: Balance	
TS-3 Aluminum-Nickel-Aluminum Composite Powder	-140+325	Al: 13~16 Impurity < 1.0 Ni: Balance	
TS-5 Aluminum Clad Nickel Composite Powder	-140+325	Ni: 85 Al: 7 Si, Ti: Balance	* Exothermic, strong self-bonding; * Good bonding coating
TS-6 Aluminum Clad Nickel Composite Powder	-140+325	Ni: 95 Al: 5	* Excellent exothermic self-bonding property; * Resistant to oxidation and thermal shock; * Good as bond layer or service coating
TS-110 Nickel-Chromium-Aluminum Powder	-140+325	Cr: 17~19 Al: 5.5~6.5 Ni: Balance	* Excellent resistance to high temperature (<980°C) oxidation and to atmosphere corrosion; * Good for exhaust mufflers, heat treatment forges and equipment, exhaust valves, high temperature clearance control, especially as undercoating for ceramics
TS-112 Nickel-Chromium-Aluminum-Cobalt Powder	-140+325	Al: 6 Co: 6 Ni-Cr: Balance	* High bonding strength; * good as coating resistant to high temperature and SO ₂ corrosion and bond layer for ceramics
TS-113 TS-113F Nickel-Chromium-Aluminum-Cobalt-Yttria Composite Powder	-140+325 (TS-113) -325 (TS-113F)	Cr: 14~16 Co: 6 Al: 4.0~5.0 Y ₂ O ₃ : 1.5~2.0 Others: 4.0~5.0 Ni: Balance	* High temperature oxidation resistant coating and bonding layer for thermal barrier coatings
TS-114 Nickel-Chromium-Aluminum-Yttria Composite Powder	-140+325	Al: 6 Y ₂ O ₃ : 2 Ni-Cr: Balance	* High bonding strength; * Good as a coating resistant to high temperature oxidation, SO ₂ corrosion and employed as bonding layer for ceramic coatings