

Nickel Based with Hardphase Powders Powders for PTA

1. Introduction

ForteCoat range cast (cast and crushed) and spherical cast (cast spherodized) tungsten carbide-nickel alloy matrix powders are developed for application surfacing with PTA.

Particle distribution designed for homogenous mix in metallic matrix. This achieved even hardness of PTA overlay.

With the help of self-fluxing chemistry of nickel alloy matrix, lower heat is required for PTA welding, which minimizes the dissolution of carbides.

Cast and crushed tungsten carbide-nickel alloy matrix produce coatings hard, dense and especially resistant to low stress abrasion and erosion.

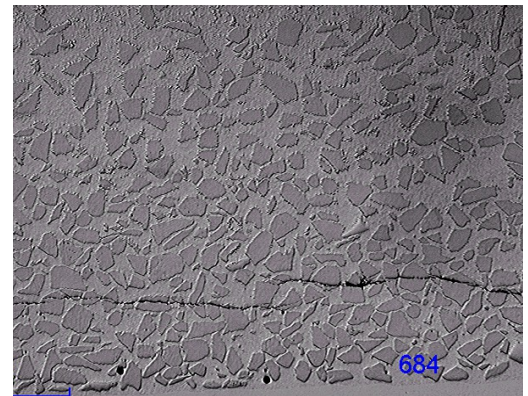
1.1 Uses and Applications

Mildsteels, stainless steels and other nickel alloys can be surfaced with these powders. This product groups finds uses in mining, oil and gas, food, agricultural and machinery industries.

Typical applications are:

- Stabilizer and hardbanding applications
- Ground engagement tools
- Rub bars
- Decanter screws for food and chemical applications
- Shovel bucket teeths
- Shrouds and adaptors
- Conveyer screws
- Fan blades
- Clinker grinders
- Wear guides
- Deflectors for recycling equipments

Product Characteristics	
Manufacturing Process	Inert gas atomization
Powder Morphology	blend of spheroidal and angular or spherical particles
Surfacing Process	PTA



Typical cross-section of PTA overlay

2. Material Information

2.1 Chemical Compositions

Product Code	Hardphase %	WCType	Matrix %	%					
				Ni	Cr	B	Si	C	Fe
15550	50	CTC	50	Balance	13.5	2.8	4.0	0.55	4.0
15560	60	CTC	40	Balance	13.5	2.8	4.0	0.55	4.0
15560	60	CTC	40	Balance	15.5	2.9	4.3	0.7	4.2
15750	60	Spherical-CTC	40	Balance	13.5	2.8	4.0	0.55	4.0

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2.2 Coating Characteristics

Product Code	Matrix Hardness	Microhardness of WC:
15550	HRC 52-58	HV ₁₀ 2400
15560	HRC 52-58	HV ₁₀ 2400
15560	HRC 57-62	HV ₁₀ 2400
15750	HRC 52-58	HV ₁₀ 2900

* *approximate*

2.3 Particle Size Distribution

Product Code	53-150 µm	63-180 µm	63-210 µm
15550	•	•	•
15560	•	•	•
15560	•	•	•
15750	•	•	•

* *(other particle size distributions are available on request)*

3. Selection Criteria

Powders with softer nickel alloy matrix and higher percentage are preferred for high impact lower abrasion conditions. Increase of nickel alloy matrix hardness or ratio of hard phase results excellent

abrasive resistance but fair impact resistance.

ForteCoat 15750, blend of spherical cast tungstene carbide has highest resistance to abrasive wear.