Introduction of PTA Metal Powders for Wear Resistant Hard-Facing

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Reduced Maintenance Cost  Improved Service Life  Increased Reliability  Fast Changout Time  Increased Production
PTA metal welding powder is a new type of special hard surfacing (spray) welding material independently developed by our company. The metallographic structure is a high-entropy alloy structure, and the high-entropy hard phase microhardness HV0.1 reaches 3000-3800. With low friction coefficient and low density, it is an excellent self-lubricating material.

**Technical Parameter:**
The hardfacing layer has high hardness, high temperature resistance, oxidation resistance, corrosion resistance and impact resistance. At the same time, the hardfacing speed is fast, the bonding strength with the substrate is high, the welding layer is hard, uniform and dense, and the dilution rate and porosity are low (1%). The hardness of the surfacing layer can exceed 70HRC, and the surfacing layer has excellent wear resistance, which has been verified by customers to be 10-20 times that of conventional products. The service life is 5-20 times that of conventional products. It can replace tungsten carbide alloy powder and has higher wear resistance.

**Chemical composition:** FeCoCrMoTiSnBnB

**Supply particle size:** -150+53 microns (-100+270 mesh)

**Performance Parameters of Hardfacing Layer:**
Rockwell hardness: 68-75HRC  Microhardness: 1400-2000HV0.1
Bonding strength: ≥70MPa  Coating density: 6.0-6.5g/cm³
Impact toughness: 4.5-12.5J/cm²
Fracture toughness: 4.5-12.5MPa m¹/²

**Applicable workpiece material:**
The product is suitable for surfacing (spray) welding on low-carbon steel, medium-carbon steel, low-alloy steel, high-alloy steel, cast steel, cast iron, casting and forging workpieces. It is used to manufacture, coat and repair the wear parts which withstand strong abrasive particles with low, medium and high impact.
It is excellent for hardfacing on the wear parts of various workpieces (cast iron, cast steel, alloy steel, carbon steel and other substrates). PTA plasma powder surfacing technology can be used to replace cast tungsten carbide, with higher (70HRC), lower friction coefficient, better wear resistance, and the cost of hardfacing is only half of that of cast tungsten carbide.
Application Case

Construction machinery
Mining Machinery
Petroleum machinery
Mold manufacturing
Rolling Machinery
Cement Machinery
Brick Factory Machinery
Agricultural Machinery

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Application Case

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Application Case

wear resistant parts used in CNC machine

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Application Case

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Application Case

Tunnel Boring Machine Shield Cutter valve

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Application Case

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Application Case

cone rock bit  diamond drilling bit

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Application Case

hot forging die/mold

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Application Case

Hunan WISE New Material Technology Co., Ltd.

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Hunan WISE New Material Technology Co., Ltd. formerly as Changsha Langfeng Metallic Material Co., Ltd., founded in 2009 in Changsha Longping High-Tech Park, Hunan Province, China. We are a company based on innovation, and it is specialized in the production and research of metallic carbide powders, TiC based cermet materials, high wear resistant entropy alloy powder. With varieties and continuing updates of standard products, we are able to provide the cost-efficient solutions for our partners.

At present, our annual production capacity of TiC based cermet material can reach 156 tons, with three production lines: a production line for metal carbide powders, a production line for carbide alloys, a production line for TiC based cermet material; including 2pcs double cone mixer, 5pcs V-type mixer, 12pcs drum ball mill, 6pcs tilting ball mill, 3pcs drying oven, 2pcs vacuum drying oven, 1pc electric drying oven, 1pc molybdenum wire Sintering furnace, 20pcs carbon tube sintering furnace, 4pcs vacuum sintering furnace;

Currently we have stable market in: Vietnam, Canada, Turkey, Brazil, Belgium, Finland, India, etc.

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Company Introduction

Powder Blending Workshop

Wet Milling and Compression

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Company Introduction

Powder Ball Milling and Crushing

Carbonzation Sintering

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Unique Advantages

**Raw Materials with High Purity:**
The use of high-purity manganese powder, iron powder, nickel powder and self-produced titanium carbide powder to max ensure the final quality of TiC-based cermet material;

**Unique Metallic Cermet Additive Application:**
max improve the grain densification, improve the alloy shape and particle size distribution, and further improve the overall performance of cermet material;

**Unique Sintering Technology**
to max ensure stable performance of TiC-based cermet material;

**Self-Researched Liquid Sintering Technology:**
to effectively reduce the harmful impact caused by harmful elements, inclusions and oxygen hazards, and greatly enhance the wear resistance and impact toughness.

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- Improved Service Life
- Increased Reliability
- Fast Changout Time
- Increased Production

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