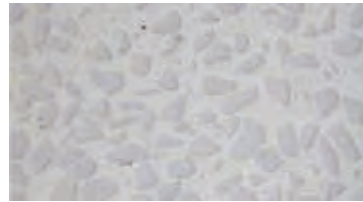
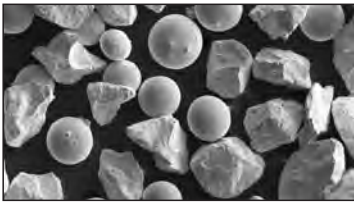


ZTC HARD-FACING MATERIAL

Surfacing and Spray&Fuse Materials



CAST TUNGSTEN CARBIDE TUBE WELDING ROD

Description

- ⊙ Cold-rolled strip tube which filled with casting tungsten carbide. The power which is made up by cast tungsten carbide is injected in strop. The cast tungsten carbide has an irregular shape, high hardness about 2200 HV_{0.1}.
- ⊙ The welding layer deposited by this rod exhibits an excellent wear resistance, which is highly recommended to surface parts in road and high-way construction, mining, oil exploration and drilling and feed grinder hammer. The rod usually welded by a slightly carbonized oxyacetylene, but argon arc welding is also applicable with a declined wear resistance.



Grade & Chemical Composition

Grade	Cast Tungsten Carbide	Low Carbon Steel
ZTC61	60-65%	35-40%

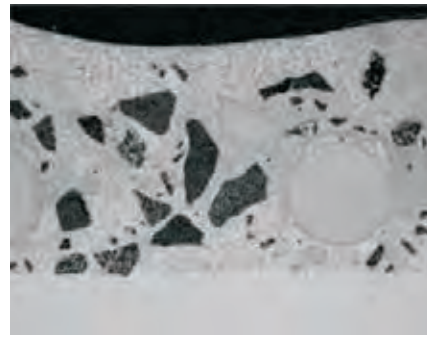
Specification

Spec.	Size (mm)	Application
ZTC61BM	Φ4 × 600	Mining
ZTC61CM	Φ5 × 600	
ZTC61BO	Φ4 × 600	Feed grinder hammer
ZTC61CO	Φ5 × 600	
ZTC61CB	Φ5 × 600	Radius retention of Steel body bit
ZTC61EB	Φ6 × 600	
ZTC61AB	Φ3.2 × 600	Blades of Steel body bit
ZTC61BB	Φ4 × 600	
ZTC61FS	Φ6 × 600	Centralizer
ZTC61GS	Φ8 × 600	

CEMENTED CARBIDE PELLET TUBE WELDING ROD

Description

- ⊙ Cold-rolled strip tube which filled with cemented carbide pellet .The cemented carbide pellet is made of WC and Co has a spherical shape , high hardness about 1400~1700 HV_{0.1} , excellent wear resistance and impact resistance.
- ⊙ The welding layer deposited by this rod exhibits both excellent wear resistance and impact resistance, which is particularly suitable for oil drilling tools and natural gas extraction tools.



The SEM of the welding layer section

Grade & Chemical Composition

Grade	Cemented Carbide Pellet	Low Carbon Steel
ZTC6200	65-70%	30-35%

Specification

Spec.	Rod Diameter (mm)	Rod Length (mm)	Coating Hardness (HRC)
ZTC62 A	$\Phi 3.2+0.3$	600	HRC ≥ 60
ZTC62 B	$\Phi 4 \pm 0.2$	600	HRC ≥ 60
ZTC62 C	$\Phi 5 \pm 0.2$	600	HRC ≥ 60

CEMENTED CARBIDE COMPOSITE ROD

Description

- ◎ The rode is made of cemented carbide/crushed carbide and Ni/Ag(Cu)alloy. The cemented carbide/crushed carbide with sharp edged has excellent wear resistance and cutting ability.
- ◎ According to different working conditions, both sharp edged and dull edged carbide are used, the former is used to cut rocks and drop out bits, while the latter is used in places where excellent wear resistance is required , such as centralizer. The coating provides an outstanding cutting property and wear resistance. Typically used in down hole tools, such as reamer, hole opener, milling tools, fishing tools and centralizer.



Grade & Chemical Composition

Grade	Cemented Carbide Pellet	Ni/Ag(Cu)Alloy
ZTC64	60-70%	30-40%

Specification

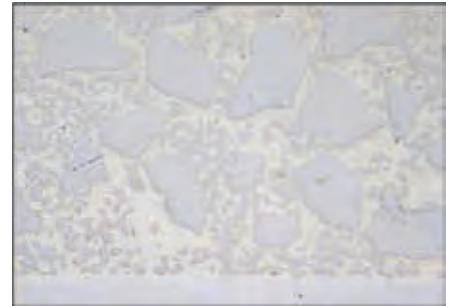
Rod Length	450 mm
Rod Weight	500g
The Partical Size of the cemented carbide (mm)	1.6-3.2
	3.2-4.8
	4.8-6.4
	6.4-8.0
	8.0-9.5

PS:The shape and diameter of the cemented carbide pellet can be made to order.

FLEXIBLE WELDING ROPE

Description

- ⊙ Flexible welding rope is made with cast and self-fluxing nickel alloy on the nickel wire. The cast has an irregular shape, high hardness about 2200 HV_{0.1} and excellent wear resistance. The self-fluxing nickel alloy powder has a spherical or nearly spherical shape, high wettability with cast tungsten carbide.
- ⊙ The welding layer has an extremely effective protection against erosive and abrasive attack. It is highly recommended using in mining, drilling and agricultural equipment as well as chemical and food processing industries.



The SEM of the welding coating section

Grade & Chemical Composition

Grade	Cast Tungsten Carbide(%)	Self-Fluxing Nickel Alloy
ZTC6500	65%	35%

Specification

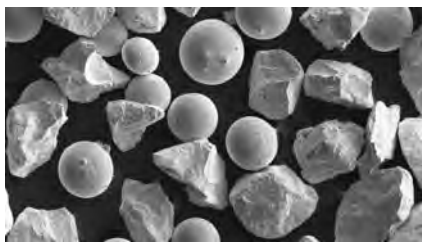
Spec.	Diameter (mm)	Length (mm)	Weight/Spool (Kg)	Hardness (HRC)
ZTC65B	Φ 4.0	(spool)	15	HRC ≥ 60
ZTC65C	Φ 5.0	(spool)	15	HRC ≥ 60
ZTC65E	Φ 6.0	(spool)	15	HRC ≥ 60
ZTC65F	Φ 8.0	(spool)	15	HRC ≥ 60

PTA /FLAME SPRAY POWDER

Cast Tungsten Carbide/NiCrBSi Self-fluxing Alloy

Description

- ③ The blended powders for PTA welding, which contain cast tungsten carbide (CTC) and nickel-based self-fluxing alloy(gas atomized). CTC particles are irregularly, and the hardness of CTC particles is 2200 HV_{0.1}. Nickel-based alloy powders show a spherical or near spherical shape, and nickel-based alloy powders has good watability with CTC during the application manufacturing of PTA and spray & fused. The PTA welding surfacing layer has excellent wear resistance and low porosity.
- ③ The powders were widely used in wear resistance, pre-strengthening anti-erosion surface or wear repairing. Typical applications : mining extraction, oil drilling, machinery equipment, grain and oil equipment etc.



SEM surface morphology of cast WC/Ni based alloy PTA powder



Section metallography of cast WC/Ni based alloy deposition welding layers

Grade & Chemical Composition

Grade	CTC(wt.%)			Ni45(NiCrBSi HRC 45)(wt.%)					
	W(%)	T.C(%)	F.C(%)	Ni(%)	Cr(%)	B(%)	Si(%)	C(%)	Fe(%)
ZTC67	95-96	3.8-4.1	≤0.08	Bal	11.0 - 15.0	2.0-3.0	3.0-4.5	0.2 - 0.6	≤5.0

Note: Other nickel-based self-fluxing alloys are available on request * such as Ni25, Ni35, Ni50, Ni55, Ni60 etc.

Specification, Particle & Physical Properties

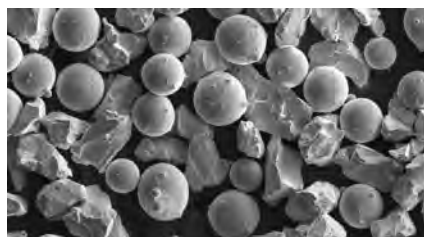
Spec.	Composition (wt.%)		Granularity (μm)	Apparent Density (g/cm ³)	Flow Rate (s/50g)	Welding Layer Hardness (HRC)
	CTC	Ni45				
ZTC674433	60	40	45-150	5.9-6.4	13-15	58-62
ZTC674533	50	50	45-150	5.6-6.1	13-15	56-62
ZTC674633	40	60	45-150	5.3-5.8	13-15	54-62

PTA /FLAME SPRAY&FUSED POWDER

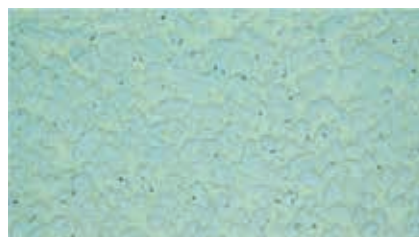
Macrocrystalline WC/NiCrBSi Self-fluxing Alloy

Description

- ⊙ The PTA/Spray&Fused powders are blended with macrocrystalline tungsten carbide (Macro WC) and nickel-based self-fluxing alloy (gas atomized). Macro WC particles are irregularly, and the hardness of MTC particles is 1700 HV_{0.1}.
- ⊙ MTC is a fully carburized stoichiometric compound with constant carbon content of 6.14 % , and has a stable single-phase microstructure. Macro WC has good wettability with nickel-based alloys during the application manufacturing of PTA and spray & fused. The PTA welding surfacing layer has excellent wear resistance, good impact resistance and low porosity.
- ⊙ The powders were used in wear resistance, pre-strengthening anti-erosion surface or wear repairing widely. Typical applications : oil drilling, slag slurry mixing, forklift bucket, wear molds, machinery equipment, grain and oil equipment etc.



SEM surface morphology of macrocrystalline WC/Ni-based alloy PTA powder



Section metallography of macrocrystalline WC/Ni-based alloy deposition welding layers

Grade & Chemical Composition

Grade	Macro WC(wt.%)Ni45			(NiCrBSi HRC 45)(wt.%)					
	W(%)	T.C(%)	F.C(%)	Ni(%)	Cr(%)	B(%)	Si(%)	C(%)	Fe(%)
ZTC68	Bal	6.1-6.2	≤0.06	Bal1	11.0 - 15.0	2.0-3.0	3.0-4.5	0.2 - 0.6	≤5.0

Note: Other nickel-based self-fluxing alloys are available on request • such as Ni25, Ni35, Ni50, Ni55, Ni60 etc.

Specification, Particle & Physical Properties

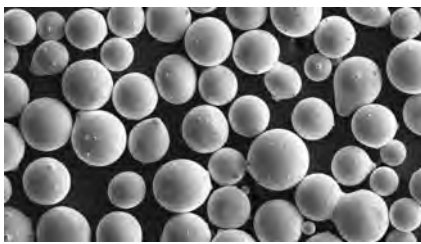
Spec.	Composition (wt.%)		Granularity (μm)	Apparent Density (g/cm ³)	Flow Rate (s/50g)	Welding Layer Hardness (HRC)
	Macro WC	Ni45				
ZTC684433	60	40	45-150	5.7-6.1	11-14	54-58
ZTC684533	50	50	45-150	5.4-5.9	11-14	52-56
ZTC684633	40	60	45-150	5.2-5.6	11-14	50-56

PTA /FLAME SPRAY POWDER

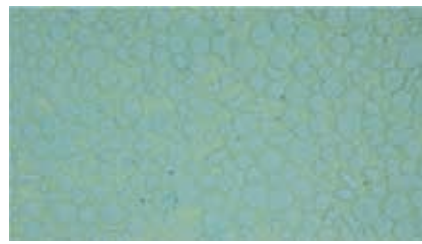
Spherical Cast Tungsten Carbide/ NiCrBSi Self-fluxing Alloy

Description

- ⊙ The blended powders for PTA welding, which contain spherical cast tungsten carbide (CTC-D) and nickel-based self-fluxing alloy(gas atomized). CTC-D particles are spherical, and the hardness of CTC-S particles is 3000 HV_{0.1}. Nickel-based alloy powders show a spherical or near spherical shape, and nickel-based alloy powders has good wettability with CTC-D during the application manufacturing of PTA and spray & fused. The PTA welding surfacing layer has excellent wear resistance and low porosity.
- ⊙ The powders were widely used in wear resistance, pre-strengthening anti-erosion surface or wear repairing. Typical applications : mining extraction, machinery processing, oil drilling , shield equipment etc.



SEM surface morphology of spherical cast WC/Ni based alloy PTA powder



Section metallography of spherical cast WC/Ni based alloy deposition welding layers

Grade & Chemical Composition

Grade	CTC-D(%)			NiCrBSi(HRC 45)(wt.%)					
	W(%)	T.C(%)	F.C(%)	Ni(%)	Cr(%)	B(%)	Si(%)	C(%)	Fe(%)
ZTC69	95-96	3.8-4.1	≤0.08	Bal	11.0 - 15.0	2.0-3.0	3.0-4.5	0.2 - 0.6	≤5.0

Note: Other nickel-based self-fluxing alloys are available on request * such as Ni25, Ni35, Ni50, Ni55, Ni60 etc.

Specification, Particle & Physical Properties

Spec.	Composition (wt.%)		Granularity (μm)	Apparent Density (g/cm ³)	Flow Rate (s/50g)	Welding Layer Hardness (HRC)
	CTC-D	Ni45				
ZTC694433	60	40	45-150	7.6-8.1	10-14	59-64
ZTC694533	50	50	45-150	7.3-7.9	10-14	57-63
ZTC694633	40	60	45-150	7.0-7.6	10-14	56-61