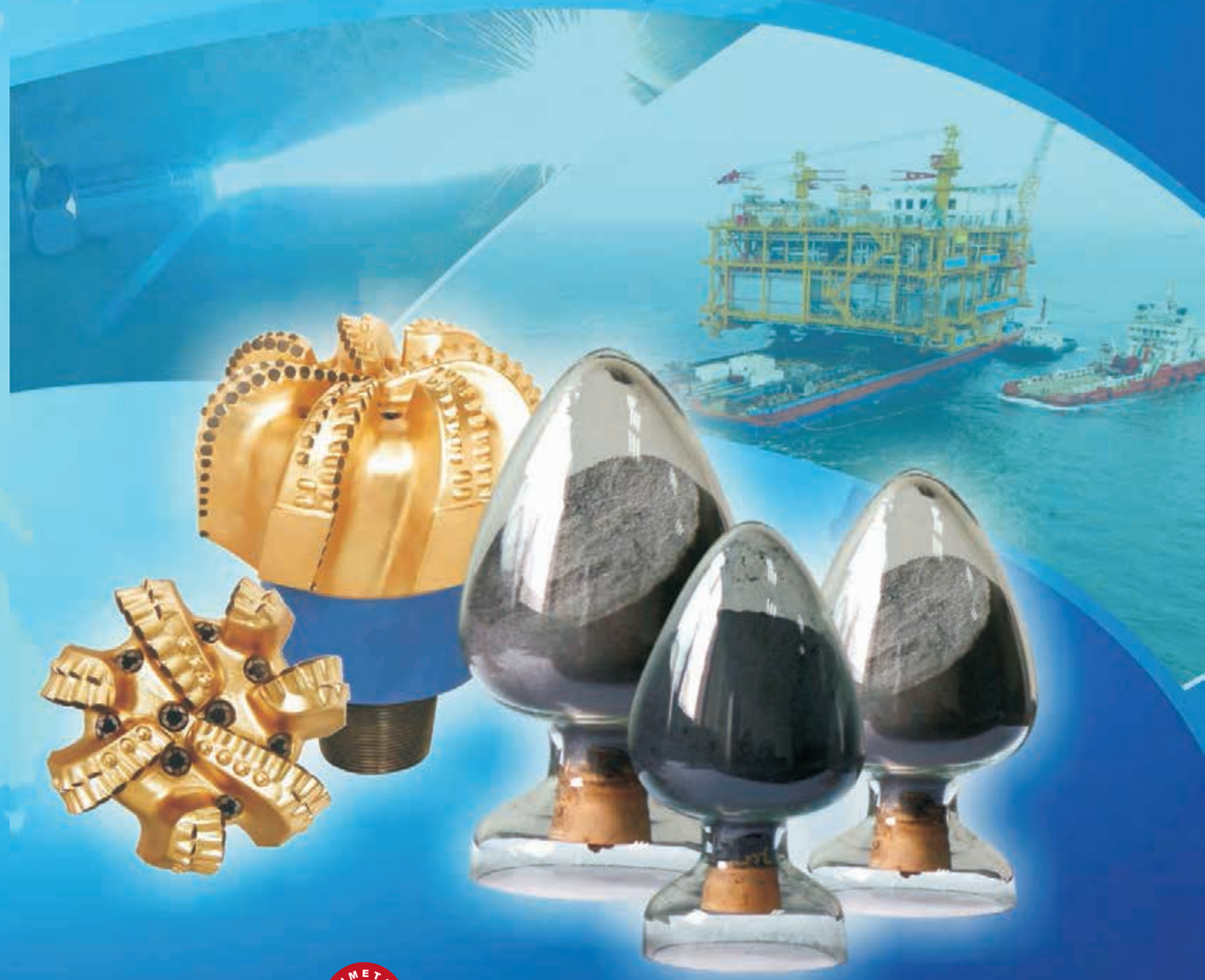
ZGCC

Hard-facing Material



Zigong Cemented Carbide Corp.,Ltd.

ZIGONG TUNGSTEN CARBIDE CO.,LTD.

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Zigong Cemented Carbide Corp.,Ltd.

ZIGONG TUNGSTEN CARBIDE CO.,LTD.

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Company Profile

Founded in the year of 2009, Zigong Tungsten Carbide Co., Ltd（ZTC）is located in the famous age-old salt capital-Zigong City, Sichuan Province, China. It is a joint venture company between Zigong Cemented Carbide Co., Ltd and HF Technologies AG in Switzerland, with a registered capital USD10 millions. ZTC is a quite new but advanced comprehensive company engaged in Hard-facing materials R&D，manufacturing and application service. Based on the decades experience for hardfacing materials manufacturing and application of Zigong Cemented Carbide Co., Ltd, by assimilating the up-to-date technology and management pattern in the same field from abroad and through the efforts of our staff, it has become one of the leading companies in the world in this industry.

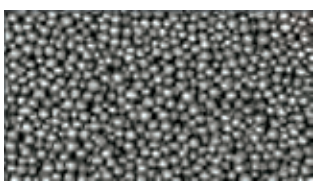
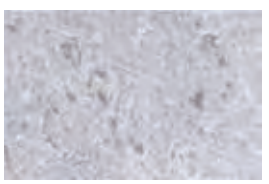
As the major hardfacing materials producer in China, ZTC was authorized to draw up the national standards for hardfacing materials. It is one of the two principal manufacturers for making macrocrystalline tungsten carbide in the world and also the fist one in China to make spherical tungsten carbide. ZTC owns a strong technical team consisting of the expert who enjoys the government subsidies reward by the Sate Council, senior engineers and skilled technicians. It practices a quality policy of “With technology in the lead, implementing scientific management and seeking for top quality” and strictly follows ISO9001: 2008 quality management system certification, ISO14001: Environmental Management System and OHSAS18001: Occupational Health and Safety Management System, thus being able to provide customers with stable and reliable products and services.

ZTC possesses the most production and application equipment such as the Spray Tower, Vacuum Sintering Furnaces, GTV High Velocity Oxygen Fuel(HVOF) System with K2, JP5000, DJ2600 Guns and Plasma Transferred Arc (PTA) Deposit Welding Machine, etc. It is also equipped with a lot of up-to-date test and analysis apparatus like the Laser Particle Sizer(Microtrac-S3500), Atomic Absorption Spectroscopy (VARIAN AA240FS), Olympus Metallography Microscope and Carbon Sulphur Determinater (LECO CS600), etc. Now, six categories with dozens of grades of hardfacing materials such as casting tungsten carbide, macrocrystalline tungsten carbide, spherical casting tungsten carbide, carbide-based hardfacing electrodes, WC-based spray powder, and Cr_3C_2-based spray powder, etc are available in ZTC. In addition, it is able to produce and process the matrix powders for PDC bits, the PTA deposit welding powder and HVOF spray powder. Those products are widely used in aerospace, electric, oil field, metallurgy, mining, construction materials and food processing machine industries and have ready market both at home and abroad. Our sales share in the domestic market is more than 40% and that in the international market more than 20%. ZTC is now one of the largest hardfacing materials suppliers in the world.

Our company insist on the business principle of “Work hard, live happily”, aspires for providing our customers with best product and service and seek cooperation with outstanding domestic and foreign enterprises. Our goal in the coming five years is to work even more harder to further develop our WC-based, Cr_3C_2-based and Ni-based hardfacing materials like matrix materials, thermal spray powder and deposited welding materials and make ZTC a first-class company in the world in this field. It is expected that by the end of the 12th Five Years Plan period, our company production capacity will reach 1, 970 tons, and the total sales income, RMB1 billon and net profit, about RMB90 millions.

ZTC HARD-FACING MATERIAL

Carbide Materials

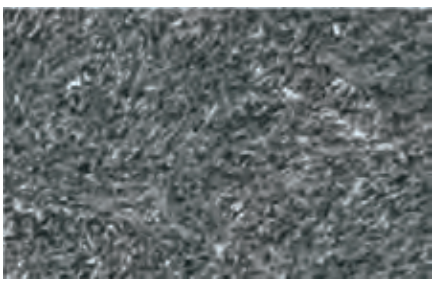
CAST TUNGSTEN CARBIDE

Description

◎ Cast tungsten carbide is made of W and WC by melted broken, is irregular dark/gray particles,which has high melting point(2525℃),high hardness($HV_{0.1}$ 1700–2500), high wear resistance.

◎ The products applied in the preparation of diamond drill bits materials, PTA materials, coating materials and cemented carbide wear-resistant electrode (wire), etc., which used in pre-reinforcement of wear-resistant surface or repairing worn surface of mining, oil, metallurgical industry, construction machinery, agricultural machinery and steel industries.

The SEM of cast tungsten carbide



The metallograph of cast tungsten carbide

Grade & Chemical Composition

Grade	Chemical Composition (%)							
	W	T.C	F.C	Cr	V	Si	O	Fe
ZTC 11	95–96	3.8–4.1	≤0.08	≤0.01	≤0.05	≤0.02	≤0.05	≤0.3

Specification & Particle Size

Spec.	Particle Size
ZTC1109	-840+590 μm (20–30mesh)
ZTC1111	-590+420 μm (30–40mesh)
ZTC1115	-420+250 μm (40–60 mesh)
ZTC1119	-250+177 μm (60–80mesh)
ZTC1123	-177+125 μm (80–120 mesh)
ZTC1126	-250+44 μm (60–325mesh)
ZTC1127	-210+38 μm (70–400 mesh)
ZTC1128	-177+74 μm (80–200 mesh)

Spec.	Particle Size
ZTC1129	-149+105 μm (100–140mesh)
ZTC1131	-149+62 μm (100–230mesh)
ZTC1134	-125+88 μm (120–170mesh)
ZTC1140	-105+74 μm (140–200mesh)
ZTC1142	-88+44 μm (170–325mesh)
ZTC1143	-74+44 μm (200–325 mesh)
ZTC1147	-44 μm (-325 mesh)
ZTC1148	-38 μm (-400 mesh)

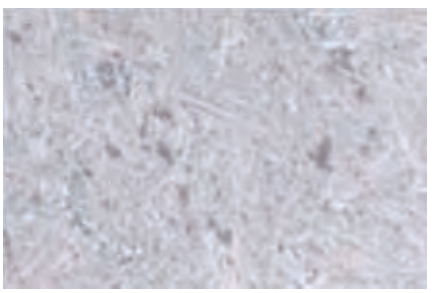
SPHERICAL CAST TUNGSTEN CARBIDE

Description

◎ Spherical cast tungsten carbide which is dendritic crystal composed of WC and W_2C and made by ultra high-temperature spheroidization or gas atomization process has a high melting point(2525℃), high hardness($HV_{0.1}$ 3000) ,high flowability, high wear resistance and chemical stability .It is dark gray

◎ The products applied as the preparation of diamond drill bits matrixmaterials, plasma surfacing materials, coating materials and cemented carbide wear-resistant rode (wire)materials, etc., are used in reinforcement of wear-resistant surface and are used to make PDC、PDC drilling tool、production by infiltration 、spray(spray welding)、overlay.

The SEM of spherical Casting tungsten carbide



The metallograph of spherical Casting tungsten carbide

Grade & Chemical Composition

Grade	Chemical Composition (%)									
	W	T.C	F.C	Ti	Mo+Co+Ni	Cr	V	Si	O	Fe
ZTC12	95-96	3.8-4.1	≤0.08	≤0.01	≤0.2	≤0.01	≤0.05	≤0.02	≤0.05	≤0.3

Specification & Particle Size

Spec.	Particle Size (mesh)	Particle Size(μm)
ZTC1215	-40+60	-420+250
ZTC1219	-60+80	-250+180
ZTC1221	-80+100	-250+150
ZTC1230	-100+200	-150+75
ZTC1243	-200+325	-75+45
ZTC1233	-100+325	-150+45

MACROCRYSTALLINE TUNGSTEN CARBIDE

Description

◎ Macrocrystalline tungsten carbide is a fully carbonized and dense light gray tungsten carbide powder with homogeneous micro-structure and excellent thermal stability, made from precisely chosen raw material and special alloying. With high hardness(1700 $HV_{0.1}$) and high melting point(2700℃), macro crystalline tungsten carbide exhibits superior wear and impact resistance property.

◎ It is mainly used as hardphases in PDC matrix powder, PTA surfacing and flame spray material, cemented carbide rod(wire), as well as raw material in cemented carbide production, which is widely used in surface reinforement and wear repairing in mining, oil, metallurgy, construction, agricultural machinery steel industry.

The SEM of macrocrystallite tungsten carbide

The Metallograph of macrocrystallite tungsten carbide

Grade & Chemical Composition

Grade	Chemical Composition (%)									
	W	T.C	F.C	Ni	Co	Ti	Ta	Nb	Si	Fe
ZTC21	Bal	6.1~6.2	≤0.06	-	-	≤0.15	≤0.03	≤0.03	≤0.02	≤0.25

Specification & Physical Properties

Spec.	Particle Size (mesh)	Corresponsive Size Range(μm)
ZTC2115	-40+60	-425+250
ZTC2119	-60+80	-250+180
ZTC2128	-80+200	-180+75
ZTC2144	-200+400	-75+38
ZTC2147	-325	-45