QUALITY SERVICE VALUE

POWDER

Viper Carbide & Metals Inc.

Viper Carbide & Metals Inc.
Office: 50 W. Big Beaver Rd. STE 120 Troy, MI 48084, USA
Warehouse: 43424 N Interstate 94 Service Dr. Belleville, MI 48111, USA
Office: +1 734 546 3127
Email: purchaser@vipercarbide.com
Website: www.vipercarbide.com

HongKong Office
Add: FLAT/RM A 12/F, ZJ 300, 300 LOCKHART ROAD, WAN CHAI, HONG KONG.

China Office
Add: 800 Changjiang South Road, Zhuzhou, Hunan
Tel：+1 734 834 3996 (Xiao)
+86 158 7332 9070 (Joanna)
Email: joanna.wu@vipercarbide.com

CATALOG

ABOUT US

Viper Carbide & Metals, Inc. was founded on August 7, 2019, with the purpose of providing high-performance Carbide products to the North American market.

Based in Michigan, we are a company passionate in the carbide business and committed to always going beyond our customer's expectations when it comes to quality, packaging & delivery.

With a vast variety of carbide products, we hope to always have exactly what you are looking for with the material quality you expect.

Viper Carbide believes not only in high quality products, but the highest-quality customer service. With that said, we will always do our best to provide you with products that exceed your expectations and earn your trust. Our success is defined by Viper’s dedication to customer service and the happiness of you, the customer.

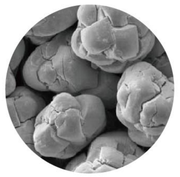
TUNGSTEN CHEMICALS

APT

Monocrystal APT

Physical Properties	Chemical Properties
Fsss : 35-60μm Apparent Density : 1.5-2.6g/cm³	WO_3 Content: ≥88.5%

Packing: Inner double plastic bags, outer steel drum, 200kg/piece or as per customer's request.



Polycrystalline APT

Physical Properties	Chemical Properties
Fsss : 40-65μm Apparent Density : 1.5-2.8g/cm³	WO_3 Content: ≥88.5%

Packing: Inner double plastic bags, outer steel drum, 200kg/piece or as per customer's request.

Impurities:(ppm,max)

Al	As	Bi	Ca
5	10	1	10
Cd	Co	Cr	Cu
1	5	5	3
Fe	K	Mg	Mn
10	10	5	5
Mo	Na	Ni	P
20	10	5	7
Pb	S	Sb	Si
1	7	2	7
Sn	Ti	V	
1	5	5	

AMT

Main composition content : (Calculated by the subtractive method)	WO_3 ≥89%
Water insoluble:	≤ 0.05%
PH value:	≤4

Impurity content (% , max)

Al	As	Bi	Ca	Cu	Cr	Co
0.0010	0.0010	0.0001	0.0010	0.0005	0.0010	0.0010
Fe	K	Mg	Mn	Mo	Ni	Na
0.0030	0.0010	0.0005	0.0010	0.0030	0.0005	0.0020
Pb	S	Sb	Sn	Si	Ti	V
0.0001	0.0030	0.0005	0.0010	0.0010	0.0010	0.0010

TUNGSTEN OXIDE

Impurities:(ppm,max)

Al	As	Bi	Ca
5	10	1	10
Cd	Co	Cr	Cu
1	5	5	3
Fe	K	Mg	Mn
10	10	5	5
Mo	Na	Ni	P
20	10	5	7
Pb	S	Sb	Si
1	7	2	10
Sn	Ti	V	
1	5	5	

Yellow Tungsten Oxide

Physical Properties	Chemical Properties
Fsss : 10-25μm Apparent Density : 1.5-3.2g/cm³	Purity: ≥99.95% Ignition loss: ≤0.5%

Packing: Inner double plastic bags, outer steel drum, 200kg/piece or as per customer's request.

Blue Tungsten Oxide

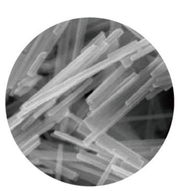
Physical Properties	Chemical Properties
Fsss : 10-22μm Apparent Density : 1.5-3.0g/cm³	Purity: ≥99.95% Ignition loss: ≤0.5%

Packing: Inner double plastic bags, outer steel drum, 200kg/piece or as per customer's request.

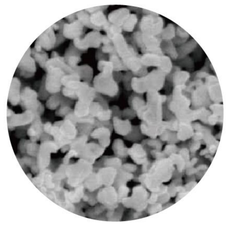
Violet Tungsten Oxide

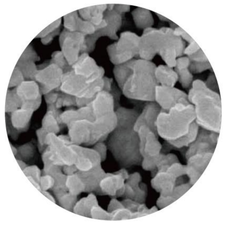
Physical Properties	Chemical Properties
Fsss : 8-18μm Apparent Density : 1.5-3.0g/cm³	Purity: ≥99.95% Ignition loss: ≤0.5%

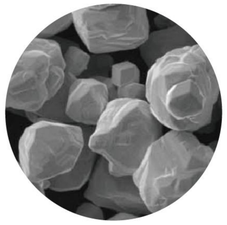
Packing: Inner double plastic bags, outer steel drum, 200kg/piece or as per customer's request.



TUNGSTEN POWDER







Properties

Specification	Grade	Average Particle Size (BET / FSSS)	Oxygen (% , max)
Nano Size	VW01	12.4-20.7m²/g	1.00
	VW02	5.2-12.4m²/g	0.80
Ultra-Fine Size	VW03	3.1-5.2m²/g	0.60
	VW04	2.0-3.5m²/g	0.55
	VW06	0.50-0.70μm	0.40
	VW07	0.60-0.80μm	0.35
	VW08	0.70-0.90μm	0.25
Fine Size	VW10	0.90-1.10μm	0.20
	VW12	1.10-1.30μm	0.15
	VW15	1.30-1.70μm	0.12
Medium Size	VW20	1.80-2.20μm	0.08
	VW25	2.30-2.70μm	0.08
	VW30	2.80-3.20μm	0.06
	VW35	3.30-3.70μm	0.06
	VW40	3.80-4.50μm	0.04
	VW50	4.50-5.50μm	0.04
	VW60	5.50-6.50μm	0.04
	VW70	6.50-7.50μm	0.04
Coarse Size	VW80	7.50-8.50μm	0.04
	VW90	8.50-9.50μm	0.04
	VW100	9.00-11.0μm	0.04
	VW120	11.0-13.0μm	0.03
Ultra-Coarse Size	VW150	13.0-17.0μm	0.03
	VW200	16.0-25.0μm	0.03
	VW300	25.0-35.0μm	0.03
	VW400	35.0-45.0μm	0.03

*Avarage particle size can be adjusted according to customer requirements.

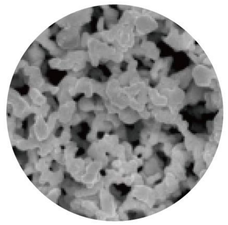
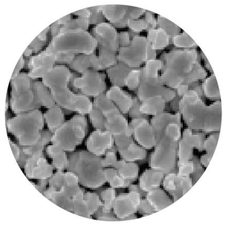
Packing: Inner double plastic bags, outer steel drum, 50kg/piece or as per customer's request.

Impurities:(ppm,max)

Al	As	Bi	Ca
5	10	1	15
Cd	Co	Cr	Cu
1	10	20	3
Fe*	K	Mg	Mn
50	15	10	10
Mo	Na*	Ni*	P
30	15	20	10
Pb	S	Sb	Si
1	10	5	15
Sn	Ti	V	
3	10	10	

*The contents of Fe, Ni and Na in Fsss≥8 μm tungsten powder were slightly different.

TUNGSTEN CARBIDE POWDER

Impurities:(ppm,max)

Al	As	Bi	Ca	Cd	Cu	Fe*	K	Mg	Mn
10	10	1	10	1	5	150	15	10	10
Mo	Na	Ni*	P	Pb	S	Sb	Si	Sn	Ti
30	15	50	10	3	10	5	15	5	10

*The contents of Fe and Ni in Fsss≥9 μm tungsten carbide were slightly different.

Properties

Specification	Grade	Average Particle Size (BET / FSSS)	Oxygen (% , max)	Total Carbon (%)	Free Carbon (% , max)
Nano Size	VWC01	3.0-5.0m^2/g	0.60	6.20±0.05	0.15
Ultra-Fine Size	VWC02	2.5-3.0m^2/g	0.50	6.20±0.05	0.15
	VWC03	2.2-2.7m^2/g	0.45	6.20±0.05	0.13
	VWC04	2.0-2.5m^2/g	0.40	6.20±0.05	0.12
	VWC05	0.50-0.60μm	0.35	6.20±0.05	0.10
	VWC06	0.60-0.70μm	0.30	6.13±0.05	0.10
	VWC07	0.70-0.80μm	0.25	6.13±0.05	0.08
	VWC08	0.80-0.90μm	0.20	6.13±0.05	0.07
Fine Size	VWC10	0.90-1.10μm	0.15	6.13±0.05	0.06
	VWC13	1.10-1.40μm	0.15	6.13±0.05	0.06
	VWC15	1.30-1.80μm	0.10	6.13±0.05	0.05
Medium Size	VWC20	1.80-2.20μm	0.07	6.13±0.05	0.05
	VWC25	2.30-2.80μm	0.07	6.13±0.05	0.05
	VWC30	2.80-3.20μm	0.07	6.13±0.05	0.05
	VWC35	3.20-3.80μm	0.05	6.13±0.05	0.05
	VWC40	3.80-4.20μm	0.05	6.13±0.05	0.05
	VWC45	4.20-4.80μm	0.05	6.13±0.05	0.05
	VWC50	4.50-5.50μm	0.05	6.13±0.05	0.05
	VWC55	5.00-6.00μm	0.05	6.13±0.05	0.05
	VWC60	5.50-6.50μm	0.04	6.13±0.05	0.05
	VWC65	6.00-7.00μm	0.04	6.13±0.05	0.05
	VWC70	6.50-7.50μm	0.04	6.13±0.05	0.05
	VWC75	7.00-8.00μm	0.03	6.13±0.05	0.05
	VWC80	7.50-8.50μm	0.03	6.13±0.05	0.05
	VWC90	8.50-9.50μm	0.03	6.13±0.05	0.05
Coarse Size	VWC100	9.00-11.0μm	0.03	6.13±0.05	0.05
	VWC120	11.0-13.0μm	0.03	6.13±0.05	0.05
	VWC150	13.0-18.0μm	0.03	6.13±0.05	0.05
	VWC200	16.0-26.0μm	0.03	6.13±0.05	0.05
Ultra-Coarse Size	VWC300	26.0-36.0μm	0.03	6.13±0.05	0.10
	VWC400	36.0-46.0μm	0.03	6.13±0.05	0.15

*Avarage particle size, total carbon, free carbon and doped elements can be adjusted according to customer requirements.
Packing: Inner double plastic bags, outer steel drum, 50kg/piece or as per customer's request.

READY-TO-PRESS GRADE POWDERS

Application code	Viper grade	Chemical composition % in weight				Physical properties of powder		Physical and mechanical properties and mirco structure as stintered						Application recommended
		Co	Tic+ TacNbc	WC	Other elements	Hall flow	Apparent density	Density	Hardness HV 30	Transverse Rupture strength	Coercivity	Magnetic Saturation	Porosity	
						s/25cm^3	g/cm^3	g/cm^3		N/mm^2	KA/m	%		
P20	YT14	8.2	14.00	77.80		32	2.83	11.52	1560-1700	≥1400	12.0-15.5	7.5-8.2	A02 B00	For machining long-chip steel, cast steel, forgeable cast iron
P30	YT5	9.3	6.30	84.40		32	3.14	13.02	1370-1560	≥1750	9.5-12.5	8.6-9.2	A02 B00	
M10	YW1	6.1	16.30	77.60		35	3.13	13.30	1600-1800	≥1290	16.5-20.5	5.4-6.1	A02 B02	For machining steel, cast steel, manganese steel, grey cast iron
M20	YW2	8.2	16.35	75.45		35	3.01	13.10	1530-1680	≥1460	15.0-19.0	7.3-8.2	A02 B02	For machining steel, cast steel, austenitic steel, manganese steel, grey cast iron
K05	YG6X	6.0	0.30	93.70		35	3.45	14.94	1650-1750	≥1560	19.5-24.5	5.1-5.9	A02 B02	For machining super-hard grey cast steel, hardening steel, chilled iron, high silicon-aluminum alloy, high wear-resistant plastic, hard paper plate ,ceramic
	YG6A	6.0	2.00	92.00		35	2.85	14.95	1350-1500	≥1600	21.5-26.5	4.1-5.9	A02 B02	
K30	YG8	7.8		92.20		35	3.44	14.75	≥1300	≥1900	10.2-15.0	6.5-7.7	A02 B02	For machining low hardness grey cast iron, low strengthen steel, compact wood
G10	YG8C	8.3		91.7		36	3.55	14.65	≥1500	≥2000	7.6-9.6	7.1-8.2	A02 B02	For drilling soft or medium hard rock formation with single axis compression strength of 60~120MPa
G20	YG11C	11.5		88.5		36	3.40	14.30	≥1050	≥2400	6.0-8.0	9.5-11.4	A02 B00	For drilling soft or medium hard rock formation with single axis compression strength of 120~200 Mpa
G30	YG13C	13.0		87.0		35	3.35	14.22	≥980	≥2500	5.5-7.0	11.7-13.0	A02 B02	
G50	YG20C	20.0		80.0		37	3.13	13.50	≥760	≥2480	3.5-4.5	17.0-19.8	A02 B02	For drilling hard or super hard rock formation with single axis compression strength higher than 200 Mpa
LS20	YG6X	6.0		93.5		35	3.45	14.94	≥1550	≥1700	21.5-26.5	4.9-5.9	A02 B02	For making dies used for making metal wire of diameter less than 20mm,tube of diameter less than 10mm and seal ring
	YG6	6.0		94.0		35	3.55	14.95	1400-1560	≥1670	12.5-16.0	5.0-6.0	A04 B02	
	YL10.1	6.0		94.0		35	3.55	14.95	1530-1630	≥1530	15.3-17.7	5.0-5.8	A02 B00	
LS25	YG8	7.8		92.2		35	3.44	14.75	≥1300	≥1900	10.2-15.0	6.5-7.7	A02 B02	
LS30	YG10	10.0		90.0		37	3.28	14.55	≥1200	≥2300	9.0-12.0	9.0-10.0	A02 B02	For making sealing ring, dies used for making metal wire of diameter less than 50mm,tube of diameter less than 35mm
	YG11	11.0		89.0		38	3.26	14.44	≥1100	≥2000	8.0-13.0	9.5-11.0	A02 B02	
	YG12	12.0		88.0		38	3.25	14.30	≥1200	≥2500	7.0-11.0	11.0-12.0	A02 B02	
LS40	YG15	15.0		85.0		39	2.96	14.04	≥1050	≥2220	7.5-10.5	13.0-14.6	A02 B02	For making drawing dies under the conditions of big stress and compression
LS50	YG20	20.0		80.0		39	2.71	13.55	≥850	≥2480	7.0-8.6	18.0-19.8	A02 B02	
LS60	YG25	25.0		75.0		43	2.56	13.13	≥850	≥2800	4.2-5.8	22-25	A02 B02	
LV10	YG15C	15.0		85.0		37	3.15	14.00	950-1100	≥2160	4.8-6.3	13.5-15.0	A02 B02	For making rollers used in the high quality finishing rolling stands of high speed mills of wires
LV20	YG20C	20.0		80.0		37	3.13	13.50	≥760	≥2480	3.5-4.5	17.0-19.8	A02 B02	

Packing: Inner double plastic bags, outer steel drum, 50kg/piece or as per customer's request.

READY-TO-PRESS GRADE POWDERS

Note:

1. General grade

1) All above data are typical.
2) P, M, K indicate cemented carbide used for long-chip machining, long-chip or short-chip machining and short-chip machining respectively.
3) G indicates cemented carbide used for geology prospect and mining.
4) LS, LT, LQ, LV indicate cemented carbide used for drawing dies, punching dies.

2. The relationship of flowability between different units(s/25m3 and s/50g) of carbidegrade powder:

Given that:
X hall flow meansured by s/25cm3.
Y hall flow meansured by s/50g.
Z apparent density of that lot of powder.
then: Y=(50 × X) / (25 × Z)

COBALT POWDER

Physical Properties	Chemical Properties
Fsss : 1.01-1.50μm Bulk Density : 0.6-1.4g/cm³ Tap Density : 1.4-3.0g/cm³	Co Content: ≥99.8%

Packing: Inner double plastic bags, outer steel drum, 50kg/piece or as per customer's request.

Impurity content (% , Max)

Ni	Fe	Ca	Cu
≤0.030	≤0.008	≤0.008	≤0.008
Zn	Mn	Mg	Al
≤0.008	≤0.008	≤0.008	≤0.008
Na	Pb	Si	C
≤0.008	≤0.002	≤0.008	≤0.030
S	O		
≤0.005	≤0.5		

TANTALUM CARBIDE POWDER

Grade			FTaC-1	FTaC-2	FTaC2-1
Chemical composition	Ta(Nb)C		≥99.5	≥99.0	≥99.0
	T.C		≥6.20	≥6.20	6.25±0.25
	F.C		≤0.100	≤0.15	≤0.15
Impurity content,%,max	Nb		0.3000	1.000	1.000
	Fe		0.0500	0.100	0.100
	Si		0.0080	0.010	0.015
	Al		0.0050	0.005	0.010
	Ti		0.0085	0.015	0.050
	O	1 Level	0.3500	0.350	0.350
		2 Level	0.3000	0.300	0.300
		3 Level	0.2000	0.200	0.200
		4 Level	0.1500	0.150	0.150
	N		0.0250	0.050	0.050
	Na		0.0050	0.008	0.020
	Ca		0.0050	0.008	0.020
	Mn		—	—	0.070
Fsss (μm)	1 Level		0.8~1.0		
	2 Level		1.0~1.2		
	3 Level		1.2~1.5		
	4 Level		1.5~3.0		

Packing: Inner double plastic bags, outer steel drum, 50kg/piece or as per customer's request.

NIOBIUM CARBIDE POWDER

Grade			FNbC-1	FNbC-2
Chemical composition	T.C		10.8-11.4	11.0-11.6
	F.C		≤0.15	≤0.30
Impurity content,%,max	N		0.150	0.250
	Ta		0.250	0.250
	W		0.150	0.200
	Mo		0.100	0.100
	Ti		0.020	0.050
	Si		0.010	0.020
	Mn		0.050	0.050
	Na		0.008	0.008
	Fe		0.100	0.150
	Co		0.100	0.150
	Cr		0.100	0.150
	O	1 Level	0.400	0.400
		2 Level	0.300	0.300
	Sn		0.010	0.050
	K		0.008	0.008
	Ca		0.010	0.020
Fsss (μm)	1 Level		1.0~1.5	
	2 Level		1.5~4.0	

Packing: Inner double plastic bags, outer steel drum, 50kg/piece or as per customer's request.

SOLID SOLUTION POWDERS OF TANTALUM-NIOBIUM CARBIDE

Grade			90:10	80:20	70:30	60:40	50:50
Chemical composition	Ta		84.4±1.5	71.5±1.5	65.6±1.5	56.0±1.3	46.9±1.3
	Nb		8.85±1.0	21±1.0	26.6±1.2	35.0±1.3	44.3±1.5
Impurity content,%,max	T.C		6.75±0.3	7.3±0.3	7.8±0.3	8.2±0.3	8.8±0.3
	F.C		≤0.15	≤0.15	≤0.15	≤0.15	≤0.15
	Co		0.100	0.100	0.100	0.100	0.100
	Mo		0.100	0.100	0.100	0.100	0.100
	Si		0.020	0.020	0.020	0.020	0.020
	Fe		0.150	0.150	0.150	0.150	0.150
	Ni		0.040	0.040	0.040	0.040	0.040
	K		0.008	0.008	0.008	0.008	0.008
	Na		0.008	0.008	0.008	0.008	0.008
	Mn		0.050	0.050	0.050	0.050	0.050
	Sn		0.010	0.010	0.010	0.010	0.010
	Ca		0.010	0.010	0.010	0.010	0.010
	Al		0.015	0.015	0.015	0.015	0.015
	N		0.250	0.200	0.250	0.250	0.250
	O	1 Level	0.350	0.350	0.350	0.350	0.350
		2 Level	0.250	0.250	0.250	0.250	0.250
		3 Level	0.200	0.200	0.20	0.200	0.200
	Ti		0.200	0.300	0.30	0.300	0.300
	W		0.200	0.350	0.35	0.350	0.350
	Cr		0.100	0.100	0.100	0.100	0.100
Fsss (μm)	1 Level		1.0~1.2				
	2 Level		1.2~1.5				
	3 Level		1.5~3.5				

Packing: Inner double plastic bags, outer steel drum, 50kg/piece or as per customer's request.

Powder

VANADIUM CARBIDE

Grade		FXVC-01	FVC-1	FVC-2
Main content ,%		≥99.4	--	--
Chemical composition %	T.C	17.5~18.0	17.7~18.5	16.0~16.9
	F.C	≤1.50	≤1.25	≤0.50
	Fe	≤0.10	≤0.15	≤0.10
	Ca	≤0.05	≤0.05	≤0.05
	Al	≤0.02	≤0.02	≤0.02
	Si	≤0.15	≤0.20	≤0.20
	Na	≤0.01	≤0.01	≤0.01
	O	≤1.00	≤0.40	≤0.35
	N	≤0.30	≤0.30	≤0.35
Fsss (μm)		≤1.5	1.5~4.0	

Packing: Inner double plastic bags, outer steel drum, 50kg/piece or as per customer's request.

Powder

CHROMIUM CARBIDE

Grade		FXCr_3C_2-01	FCr_3C_2-1
Chemical composition %	T.C	12.8~13.4	12.8~13.4
	F.C	--	≤0.4
	O	≤1.00	≤0.35
	N	≤0.10	≤0.15
	Fe	≤0.15	≤0.10
	Ca	≤0.02	≤0.10
	Si	≤0.05	≤0.08
	Mo	≤0.01	≤0.15
	Na	≤0.01	--
	Al	≤0.02	--
Fsss (μm)		≤2.0	2.0~5.0

Packing: Inner double plastic bags, outer steel drum, 50kg/piece or as per customer's request.

Powder

TITANIUM CARBIDE

Grade		FTiC-1	FTiC-2
Impurity content,%,max	T.C	19.0~19.9	19.0~19.9
	F.C	≤0.300	≤0.500
	O	≤0.350	≤1.000
	N	≤0.350	≤0.400
	Fe	≤0.100	≤0.100
	Al	≤0.015	≤0.020
	Si	≤0.080	≤0.080
	K	<0.005	<0.005
	Na	<0.005	<0.005
Fsss (μm)		2~5	1.0~6.0

Packing: Inner double plastic bags, outer steel drum, 50kg/piece or as per customer's request.