

Guide of AGrade catalog

Chapter 1 Company portrait and range of services----

Chapter 2 grade choice guide-----

Chapter 3 stock list----

3.1.1 Carbide rods as sintered and ground----

3.1.2 Carbide rods with a straight hole----

3.1.3 Carbide rods with 2 straight coolant holes----

3.1.4 Carbide flats and squares-----

3.1.5 Carbide blocks-----

3.1.6 Gundrill blanks and inserts---

Company portrait and range of services

AGrade Carbide is located in Dezhou, Shandong, registered in 2007. It is a high-tech enterprise integrating the development, production, and sales of cemented carbide products. Over the years, we have provided efficient solutions for aerospace, automobile manufacturing, mold manufacturing, and medical instruments, chemical equipment, mining, oil and gas, military production and other industries. As one of the biggest tungsten carbide manufacturers in China, we are firm in our original intention, brave to innovate, and continue to move forward, striving to be the first-class carbide manufacturer in China and creating a world-renowned brand!

AGrade Carbide manufactures solid tungsten carbide rods, insert blanks, strips and blocks as well as other shapes in a wide range of carbide grades, lengths, and diameters. We offer both ground and as sintered (unground) solid rods with wide range of diameters, lengths, finishes, and carbide grades.

We also supply our clients with carbide cutting tools such as end mills, reamers, drill bits, inserts in high performance with so many years experience in this industry. Our cutting tools have a perfect brand as "Drillstar".

Our company takes the customer demand as the goal and "honest service, scientific and technological innovation" as the enterprise tenet; first class technology, first-class product quality and first-class service are the eternal commitment and pursuit of AGrade.

Highly specialized products require highly qualified know-how. We have it. Some employees have more than 20 years of professional experience in carbide production. Scientists and engineers work together with technical experts to further develop our products and services.

Our customers can be found all over the world. AGrade is the right partner for your company because our service knows no boundaries. We offer you a broad product portfolio and support you with advice based on partnership, from which tailor-made and economical, individual solutions emerge. Because that and nothing else is what we mean by customer satisfaction - cooperation that makes you satisfied.

Grade selection principle

After selecting various types of alloys for different processed materials, the brand should also be selected according to the processing parameters. Generally speaking, the surface quality of the workpiece should be considered for finishing processing, that is, surface accuracy. During processing, the cutting speed is fast, the depth of cutting is small, the amount of cutting is small, the vibration is small, and the impact is small. It is required that the alloy has good wear resistance, high hardness, followed by strength and toughness, so the alloy with fine grain, high titanium content, and low cobalt content should be selected; The semi finishing wear resistance and strength toughness are moderate, and the alloy with medium particle tungsten carbide, medium Ti content and medium Co content is selected; Rough machining has large cutting depth, large cutting amount, slow cutting speed, large vibration and large impact, so it is emphasized that the impact resistance of the blade is better, followed by the wear resistance. Coarse grained tungsten carbide, alloys with low Ti content and high Co content should be selected.

The grade is designed according to the cutting requirements. The machinability of different processed materials is different. Carbon steel has good plasticity and toughness, and the chips are not easy to break. The chips are discharged from the rake face, causing strong crater wear on the rake face. Therefore, for the cutting of steel, we should choose cemented carbide that resists crater wear. Tic and TAC (NBC) have good anti crater wear effect, so the brand of cutting steel contains tic, TAC (NBC) generally does not choose the brand containing TAC (NBC) for cutting carbon steel due to the increased cost. TAC (NBC) can not only resist crescent wear, but also improve the thermal shock resistance of the alloy. Therefore, the alloy containing TAC (NBC) has good high temperature performance. When machining M-type alloy, due to serious work hardening, large cutting resistance and high cutting temperature, the alloy containing TAC (NBC) should be selected; For brittle materials such as cast iron, the chips are in the form of crumbs or powder, and the wear of the rake face is small, mainly the wear of the rear face. The machining characteristics of brittle materials are that the cutting force and cutting heat are concentrated near the cutting edge, so that the load on the cutting edge is very heavy, which is prone to wear and edge collapse. Generally, tungsten cobalt alloys are selected. Because the alloys containing tic are relatively brittle, W-Co alloys are stronger and more ductile than w-co-ti alloys.

Carbide grade	Grain Size	Binder	Binder	Density	Hardness		Transverse	Pressure	Fracture	Special Properties/
			% w/w	g/cm	HV30	HRA	Rupture**	Resistance**	Toughness***	Applications
							N/mm²	N/mm²	N/mm². m ^{1/2}	
AU8	ultrafine	Cobalt	8.0	14.5	1860	93.2	4100	6300	8.5	ideal for high performance milling
AU12			12.0	14.0	1680	92.2	4400	6000	9.5	
AS3	submicron	Cobalt	3.3	15.2	2000	94.0	3400	6500	7.8	for extreme wear applications
AS6			6.0	14.8	1820	93.1	3800	6400	8.5	our main grade for metal cutting
AS7			7.5	14.7	1740	92.7	4100	6300	9.0	
AS10			10.0	14.4	1600	91.9	4300	6000	9.8	
AS15			15.0	13.9	1390	90.3	4500	5500	12.5	gearing, paper knives
AF6	fine	Cobalt	6.5	14.8	1690	92.5	3600	5700	9.2	slitting saws, gun drills
AF12			12.0	14.3	1390	90.3	4200	5200	11.2	wear protection
AM6	medium	Cobalt	6.5	14.8	1590	91.9	3600	5500	9.5	for wear applications with higher toughness requirements
AM8			8.5	14.6	1500	91.2	3800	5300	10.4	
AM11			11.0	14.4	1390	90.3	4000	5000	11.8	
AM15			15.0	14.0	1230	88.7	4200	4500	14.5	
ANC8	medium	Cobalt	8.5	14.5	1550	91.6	3700	5400	10.0	EDM grades with corrosion inhibitor, optimal stress crack reduction
ANC12			12.0	14.2	1380	90.3	3900	5000	13.0	
AMC15			15.0	13.9	1260	89.1	4100	4500	17.5	
AC10	coarse	Cobalt	10.0	14.5	1300	89.5	3800	4600	12.5	high toughness;for mining and road construction,hot forming
AC11			11.0	14.3	1600	87.6	2700	4200	14.5	
AC15			15.0	14.0	1080	87.2	4000	4000	18.5	
AC22			22.0	13.4	890	84.7	3800	3500	20.0	
ASN6	submicron	Nickel	6.0	14.8	1770	92.9	3400	6000	8.1	corrosion restistant,

ASN8			8.5	14.5	1650	92.2	4000	5800	8.5	non-magnetisable
AFN8	fine		8	14.5	1600	91.9	3900	5500	8.3	
AFN12			12	14.2	1350	90.0	4200	5000	11.0	
AFNC11			11	14.2	1600	91.9	2100	4500	8.0	
AMN15	medium		15	14.0	1100	87.3	3800	4000	13.0	corrosion restistant
ACT9	coarse	Cobalt	9	14.6	1260	89.0	2800	4800	11.0	For tunnel Boring
ACT11			11	14.3	1070	87.0	2850	4300	13.5	

AGrade tungsten carbide rods, as sintered and ground h6, L=330mm

Dimension			As sintered				Ground			
As sinter mm 毛坯直径	Ground mm 精磨直径	length mm 长度	AS6	AU8	AS10	AU12	AS6	AU8	AS10	AU12
1.7	1.5	330			x				x	
2.2	2.0	330	x		x		x		x	
2.7	2.5	330	x		x				x	
3.2	3.0	330	x	x	x	x	x	x	x	x
3.7	3.5	330	x		x		x		x	
4.2	4.0	330	x	x	x	x	x		x	x
4.7	4.5	330			x				x	
5.2	5.0	330	x		x	x	x		x	x
5.7	5.5	330			x				x	
6.2	6.0	330	x	x	x	x	x		x	x
6.7	6.5	330	x		x		x		x	
7.2	7.0	330	x		x				x	
7.7	7.5	330			x				x	
8.2	8.0	330	x	x	x	x	x		x	x
8.7	8.5	330			x				x	
9.2	9.0	330	x		x				x	
9.7	9.5	330			x				x	
10.2	10.0	330	x	x	x	x	x		x	x
10.7	10.5	330			x				x	
11.2	11.0	330			x				x	
12.2	12.0	330	x	x	x	x	x		x	x
13.2	13.0	330	x		x		x		x	
14.2	14.0	330	x		x	x	x		x	x
15.2	15.0	330	x		x				x	
16.2	16.0	330	x	x	x	x	x		x	x
17.2	17.0	330			x				x	
18.2	18.0	330	x	x	x	x	x		x	x
19.2	19.0	330								
20.2	20.0	330	x		x	x	x		x	x
21.2	21.0	330			x				x	
22.2	22.0	330			x				x	
23.2	23.0	330			x				x	
24.2	24.0	330			x				x	
25.2	25.0	330			x	x			x	x
26.2	26.0	330			x				x	
28.2	28.0	330			x				x	
30.2	30.0	330			x				x	
31.2	31.0	330			x				x	
32.2	32.0	330			x				x	

X: delivery from stock, according general conditions

Other: Special executions, grades or dimensions upon request

AGrade tungsten carbide rods with a straight hole, as sintered, L=330mm

Dimension			As sintered stock
Out diameter mm	Hole diameter mm	Length mm	AS10
2.2	0.8	330	x
3.2	0.6	330	x
4.2	0.6	330	x
6.2	1.0	330	x
6.2	1.5	330	x
7.2	1.1	330	x
8.2	1.2	330	x
8.2	1.3	330	x
8.2	1.5	330	x
8.2	2.0	330	x
10.2	1.0	330	x
10.2	1.6	330	x
10.2	2.0	330	x
12.2	1.5	330	x
12.2	2.0	330	x
12.2	3.0	330	x
14.2	2.0	330	x
14.2	2.5	330	x
14.2	3.0	330	x
16.2	2.0	330	x
16.2	3.0	330	x
18.2	3.0	330	x
20.2	2.0	330	x
20.2	3.0	330	x
20.2	3.5	330	x
22.2	3.0	330	x
24.2	4.0	330	x
25.2	4.0	330	x
26.2	4.0	330	x
28.2	4.0	330	x
30.2	5.0	330	x
32.2	5.0	330	x

X: delivery from stock, according general conditions

Other: Special executions, grades or dimensions upon request

AGrade Tungsten carbide rods with 2 straight coolant holes, as sintered, L=330mm

Dimension				Stock		Dimension				Stock
D mm	L mm	TK mm	D mm	AS10		D mm	L mm	TK mm	D mm	AS10
4.2	330	1.8	0.8	X		16.2	330	8.0	2.0	X
5.2	330	1.9	0.8	X		17.2	330	6.0	2.0	X
6.2	330	1.5	0.9	X		17.2	330	7.9	2.0	X
6.2	330	3.0	1.2	X		18.2	330	6.0	2.0	X
7.2	330	1.4	0.8	X		18.2	330	8.9	2.0	X
7.2	330	3.4	1.0	X		19.2	330	6.0	2.0	X
8.2	330	2.6	0.9	X		19.2	330	8.8	2.0	X
8.2	330	2.8	1.0	X		20.2	330	6.0	2.0	X
8.2	330	3.3	0.9	X		20.2	330	9.8	2.5	X
9.2	330	2.5	1.0	X		21.2	330	6.0	2.0	X
10.2	330	3.5	1.5	X		21.2	330	9.8	2.5	X
10.2	330	4.9	1.4	X		22.2	330	6.0	2.0	X
10.2	330	5.0	1.2	X		22.2	330	10.8	2.5	X
11.2	330	3.4	1.2	X		23.2	330	7.3	2.0	X
11.2	330	4.9	1.4	X		23.2	330	10.8	2.5	X
12.2	330	3.5	0.9	X		24.2	330	7.3	2.0	X
12.2	330	6.2	1.5	X		24.2	330	11.8	3.0	X
13.2	330	3.4	1.2	X		25.2	330	7.3	2.0	X
13.2	330	5.9	1.8	X		25.2	330	11.8	3.0	X
14.2	330	3.5	1.5	X		26.2	330	12.8	3.0	X
15.2	330	4.9	1.5	X		28.2	330	13.8	3.0	X
15.2	330	6.9	2.0	X		30.2	330	13.8	3.0	X
16.2	330	5.0	1.5	X		32.2	330	13.8	3.0	X
16.2	330	6.2	2.0	X		34.2	330	13.8	3.0	X

X: delivery from stock, according general conditions

Other: Special executions, grades or dimensions upon request

AGrade Tungsten carbide gun drill blanks and inserts, as sintered

type	dimension								grade
	Outside Diameter:mm		Hole diameter mm		T mm		Picth: mm		
	ØD	Tol.	Ød	Tol.	T	Tol.	Pitch	Tol.	AS10
Ø6*330	6.0	+0.60 ~ +1.00	0.70	±0.10	2.60	-0.4	32.70	±0.85	◎
Ø8*330	8.0	+0.70 ~ +1.10	1.00	±0.15	4.00	-0.4	43.53	±1.05	◎
Ø10*330	10.0	+0.70 ~ +1.10	1.40	±0.15	4.80	-0.6	54.41	±1.25	◎
Ø12*330	12.0	+0.70 ~ +1.10	1.40	±0.15	6.25	-0.6	65.30	±1.45	◎
Ø14*330	14.0	+0.70 ~ +1.10	1.75	±0.20	7.10	-0.8	76.18	±1.65	◎
Ø15*330	15.0	+0.70 ~ +1.10	1.75	±0.20	7.70	-0.8	81.62	±1.75	◎
Ø16*330	16.0	+0.70 ~ +1.10	1.75	±0.20	8.30	-0.8	87.06	±1.85	◎
Ø18*330	18.0	+0.70 ~ +1.10	2.00	±0.25	9.55	-0.8	97.95	±2.15	◎
Ø20*330	20.0	+0.70 ~ +1.10	2.50	±0.25	10.40	-1.0	108.83	±2.45	◎

◎: delivery from stock, according general conditions

Other: Special executions, grades or dimensions upon request

AgradeTungsten carbide flats and squares, in as sintered sizes, L=330mm

Dimension			Stock	
S mm	B mm	L mm	AS7	AS10
1.3	3.3	330	X	X
	4.3	330	X	X
1.8	2.3	330	X	X
	3.3	330	X	X
	4.3	330	X	X
	5.3	330	X	X
	6.3	330	X	X
2.3	8.3	330	X	X
	10.3	330	X	X
	2.3	330		X
	3.3	330	X	X
	4.3	330	X	X
	5.3	330	X	X
	6.3	330	X	X
	8.3	330	X	X
	10.3	330	X	X
	12.4	330	X	X
2.8	15.4	330	X	X
	16.4	330	X	X
	18.4	330	X	X
	20.4	330	X	X
	25.4	330	X	X
	4.3	330	X	X
3.3	6.3	330	X	X
	8.3	330	X	X
	10.3	330	X	X
	12.4	330	X	X
	15.4	330	X	X
	3.3	330		X
	4.3	330	X	X
	5.3	330	X	X
	6.3	330	X	X
	8.3	330	X	X
3.3	10.3	330	X	X
	12.4	330	X	X
	13.4	330	X	X
	14.4	330	X	X
	16.4	330	X	X
	18.4	330	X	X
	3.3	330		X
	4.3	330	X	X
	5.3	330	X	X
	6.3	330	X	X
Dimension			Stock	
S mm	B mm	L mm	AS7	AS10
3.3	20.4	330	X	X
	22.4	330	X	X
	25.4	330	X	X
	30.4	330	X	X
	32.4	330	X	X
4.3	4.3	330		X
	5.3	330	X	X
	6.3	330	X	X
	8.3	330	X	X
	10.3	330	X	X
	12.4	330	X	X
	14.4	330	X	X
	16.4	330	X	X
	18.4	330	X	X
	20.4	330	X	X
	22.4	330	X	X
	25.4	330	X	X
	30.4	330	X	X
	35.4	330	X	X
5.3	5.3	330		X
	8.3	330	X	X
	10.3	330	X	X
	15.4	330	X	X
	16.4	330	X	X
	18.4	330	X	X
	20.4	330	X	X
	22.4	330	X	X
	25.4	330	X	X
	30.4	330	X	X
6.3	35.4	330	X	X
	6.3	330	X	X
	16.4	330	X	X
	20.4	330	X	X
	25.4	330	X	X
	30.4	330	X	X
	35.4	330	X	X
	8.3	330		X
8.3	8.3	330		X
10.3	10.3	330		X
12.4	12.4	330		X

X: delivery from stock, according general conditions

Other: Special executions, grades or dimensions upon request

AGrade Tungsten carbide blocks

thickness (mm)	Width (mm)	Length (mm)	AS10	AS7	AU12	AF12
1.0	100	100	x			x
4.0	100	100	x			x
5.0	100	100	x			x
6.0	100	100	x			x
8.0	100	100	x	x	x	
10.0	100	100				
18.0	100	100				
20.0	100	100				
40.0	100	100				
45.0	100	100				x

X: delivery from stock, according general conditions

Other: Special executions, grades or dimensions upon request

AGrade Tungsten carbide gun drill blanks and inserts, as sintered

T. C. gun drill blanks			T. C. gun drill tips		
Dimension D*L	grade		Dimension D*L	grade	
	AF6	AS10		AF6	AS10
2.4*340mm					
3.5*340mm	x				
4.5*340mm	x				
5.5*340mm	x				
6.5*340mm	x				
7.0*342mm	x		7.0*35mm		
7.5*342mm	x		7.5*35mm		
8.0*342mm	x		8.0*35mm		
8.5*342mm	x		8.5*35mm		
9.0*342mm	x		9.0*35mm		
9.5*342mm	x		9.5*35mm		
10.0*342mm	x		10.0*35mm		
10.5*342mm	x		10.5*40mm		
11.0*342mm	x		11.5*40mm		
11.5*342mm	x		12.5*40mm		
12.0*342mm	x		13.5*40mm		
12.5*342mm	x		14.5*40mm		
13.0*342mm			15.5*40mm		
13.5*342mm	x		16.5*40mm		
14.0*342mm			17.5*40mm		
14.5*342mm	x		18.5*40mm		
15.0*342mm			19.5*45mm		
15.5*342mm	x		20.5*45mm		
16.0*342mm			21.5*45mm		
16.5*342mm	x		22.3*50mm	x	
17.0*342mm			23.3*50mm	x	
17.5*342mm	x		24.3*55mm	x	
18.0*342mm			25.3*55mm	x	
18.5*342mm	x		26.3*55mm	x	
19.0*342mm			27.3*55mm	x	
19.5*342mm	x		28.3*65mm	x	
20.0*342mm			30.3*65mm	x	
20.5*342mm	x		32.3*65mm	x	
21.5*342mm	x		33.3*65mm	x	

X: delivery from stock, according general conditions

Other: Special executions, grades or dimensions upon request