

Tungsten & Molybdenum Additives

Application:

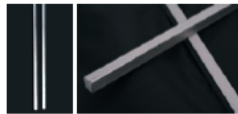
Tungsten is used as an additive for making special steel, mainly: high speed steel for making turning inserts with higher hardness and good wear resistance at high temperature; alloy tool steel for making all kinds of tools, such as drill bits, milling cutters, dies and pneumatic support tools; and hard magnetic materials with a property of high saturation magnetization and coercive force.

Molybdenum is widely used as an additive for making various types of alloy steels, such as: stainless steel; heat-resistant steel; tool steel; cast iron; rollers; super alloys; and special steel. It dramatically improves alloy steel's high temperature strength, hardness, wear resistance, heat resistance and corrosion resistance.

Appearance: Pure greyish metallic luster with no contamination on the surface.



Tungsten bar



Molybdenum bar

Grade and Application

Name	Grade	Size (mm)		Main content (wt%)	Application
		Cross-section size	Length		
Tungsten bar	TW-1	Square bar : 12×12	30-350	≥99.97	Used as additives for special alloy steel
		Round bar : ø(15-30)	30-400		
Tungsten bar	TW-4	Square bar : 12×12	30-350	≥99.8	Used as additives for alloy steel, high speed steel, and hard magnetic material
		Round bar : ø(15-30)	30-400		
Tungsten end	WQT	-	≥10	≥99.0	
Molybdenum bar	Mo-1	Square bar : 16×16	150-540	≥99.95	Used as additives for special alloy steel
		Round bar : ø(15-30)	150-950		
	Mo-2	Square bar : 16×16	150-540	≥99.8	Used as additives for special alloy steel, stainless steel, heat resistant steel, tool steel, cast iron, rollers, super alloys, and non-ferrous metals
		Round bar : ø(15-30)	150-950		
Mo-3	Round bar : ø(15-30)	150-950	≥99.5		
Mo-4	Round bar : ø(15-30)	150-950	≥99.0		
Molybdenum end	MQT	-	≥10	≥99.0	

Chemical Composition

Grade	TW-1	TW-4	WQT	Mo-1	Mo-2	Mo-3	Mo-4 /MQT	Analysis (Equipment)		
Main content (wt%, ≥)	99.97	99.8	99.0	99.95	99.8	99.95	99.0			
Impurities (ppm, ≤)	Fe	30	300	---	50	300	800	---	AAS: Fe, Ni, Si in TW-1 and TW-4. ICP: Others	
	Ni	20	500	---	30	500	500	---		
	Si	20	50	---	30	50	50	---		
	Al	20	50	---	20	50	50	---		
	Ca	20	50	---	20	40	50	---		
	Mg	10	50	---	20	40	40	---		
	Mo/W	40	500	---	---	---	---	---		
	Pb	1	5	---	10	15	15	---		
	Bi	1	5	---	10	15	15	---		
	Sn	3	5	---	10	15	15	---		
	Cd	---	---	---	10	15	15	---		
	Sb	10	10	---	10	15	15	---		
	As	15	20	---	---	---	---	---		Colorimetry
	P	10	30	---	10	50	50	---		C/S analyzer
	C	30	100	---	50	500	500	---		O/N analyzer
	O	20	70	---	60	80	800	---		
	N	20	50	---	30	---	---	---		ICP
La+Y	--	--	--	--	--	3000	--			
Standard	GB/T3459	ZGCC's specification	GB/T3462	ZGCC's specification						

Remarks: The main content is calculated by deducting the impurities content (gas element is excepted).

Packaging:

Products are packaged in wooden cases (fumigation is available) or iron drums, with plastic foam in between.

Instruction for Storage:

Customer can choose the shape, size, and chemical composition according to the requirements and application. We can decide the details after discussion.

Products should be stored in a dry, ventilated, acid & alkali free environment to prevent it from moisture, oxidation and corrosion of active chemicals. The storage period should not exceed half a year.

Molybdenum Penetrator

Application: Used to produce seamless steel tube, such as stainless steel, bearings, and high temperature alloy steel.

Features: Excellent high temperature strength, good oxidation and corrosion resistance with long life cycle.

Appearance: Metallic grey (silver grey after processing) without delamination and cracks.

Chemical Property

Grade	Main content	Doping element (wt%)			
	Mo (wt%)	Ti	Zr	CeO ₂	C
MDT	≥96	1.0-1.7	0.2-0.4	1.0-1.7	0.2-0.5
Analysis (equipment)		ICP			C/S analyzer

Type and Physical Property of Molybdenum Penetrator Blanks

Type	Diameter (mm)		Length (mm)		Density (g/cm ³ , z)	Hardness (HRB)
	Size	Tolerance	Size	Tolerance		
RC020-RC070	20~70	+2 -0	60~200	+4 -0	9.3	≥85
RC071-RC085	71~85	+3 -0	160~200	+4 -0	9.25	
RC086-RC100	86~100	+3.5 -0	180~260	+4.5 -0	9.2	
RC101-RC150	101~150	+4 -0	200~300	+5 -0	9.2	
RC151-RC200	151~200	+5 -0	250~350	+6 -0	9.1	

Size of Finished Molybdenum Penetrator

Type	Diameter (mm)		Length (mm)	
	Size	Tolerance	Size	Tolerance
RC020-RC100	20~100	+0.2 -0	60~250	+1 -0
RC101-RC200	101~200	+0.5 -0	200~350	+2 -0

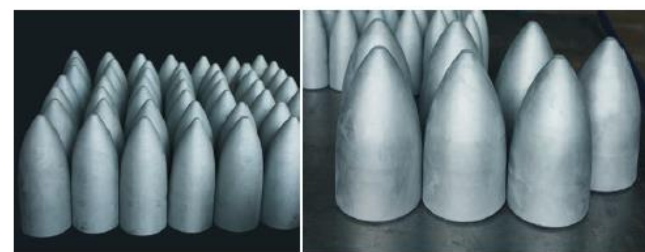
Recommended Process

Preheating temperature of molybdenum penetrator: 900~1000°C, heating temperature of billet: 1120~1200°C. Glass powder is highly recommended to sprinkle on the surface of the molybdenum penetrator to prevent the steel sticking to the molybdenum.



penetrator

penetrator



Molybdenum Penetrator

Production Equipment

1. Isostatic Press



2. Medium Frequency Sintering Furnaces



3. CNC Lathes

