

# Grade Chart

Vista Metals is committed to quality manufacturing and takes many steps to guarantee that you receive the highest quality tungsten carbide preforms available.

## WIRE EDM + Process Guarantee

Our WIRE EDM PLUS Process Guarantee is available on all of our grades of tungsten carbide. Extensively tested against cracking, you can utilize on every die and wear part application.

## In-House SINTER HIP

Our In-House SINTER HIP process is available upon request.

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Vista Grade	Average Density (g/cm3)	Rockwell "A" Hardness (average)	Grain Size	WC	Co	Ni	Ta/Nb	OTHER	Characteristics/Applications
<b>COBALT BINDER</b>									
VM-3	15.19	93.3	Fine	97.0	3.0	---	---	---	Extremely Hard for Severe Wear. Compacting Dies, Wear Applications, EDM Wire Guides, Sand Blast Nozzles, Fine Wire Dies.
VM-6	14.83	91.9	Fine	94.0	6.0	---	---	---	Excellent Wear, Light Impact. Seal Rings, Compacting Powder Metal, Blades, Wear Rolls, Valve Components.
VM-6T	14.89	91.8	Medium	94.0	6.0	---	---	---	High Hardness for Wear Applications. Light Impact. Oil Field Tooling
VM-9	14.60	91.1	Fine	91.0	9.0	---	---	---	High Wear, Light Impact. Tab Tooling, Draw Dies, Stamping Dies, Compacting Dies, Can Forming Dies, Shearing Knives.
VM-12	14.32	90.1	Fine	88.0	12.0	---	---	---	Good Wear, Medium Impact. Stamping Dies, Lamination Dies, Extrusion Dies, Compacting Dies, Can Tooling, Draw Dies, Draw Mandrels.
VM-13	14.23	89.7	Fine	87.0	13.0	---	---	---	Good Wear, Medium Impact. Stamping Punches & Dies, Lamination Dies, Extrusion Dies, Compacting Dies, Draw Dies, Draw Mandrels.
VM-15	14.05	89.1	Fine	85.0	15.0	---	---	---	Good Wear. Lamination Dies, Scroll Dies, Stamping Dies & Punches, Cut Edge Rings, Form Rolls, Crush Rolls.
VM-17	13.85	87.4	Medium	83.0	17.0	---	---	---	Medium Wear, Medium to Heavy Impact. Punching Thick Materials, Pulverizing Hammers, Heavy Punch Operations, Heavy Coining, Form Rolls.
VM-20	13.57	85.5	Medium	80.0	20.0	---	---	---	Heavy Impact. Heavy Coining and Blanking Operations, Crushing Hammers, Cold Heading and Forming.
VM-23	13.28	84.0	Medium	77.0	23.0	---	---	---	High Impact. Cold Heading and Forming, Nail Dies.
VM-25	13.10	83.4	Medium	75.0	25.0	---	---	---	Severe Impact and Shock. Cold Heading and Forming, Nail Dies.
VM-30	12.72	81.0	Medium	70.0	30.0	---	---	---	Extreme Impact. Cold Heading and Forming, Nail Dies.
VM-20H	13.38	85.5	Medium	77.0	20.0	---	3.0	---	Heavy Impact Gall Resistant. Cold Heading and Forming.
VM-25H	13.03	83.3	Medium	72.0	25.0	---	3.0	---	Severe Impact Gall Resistant. Cold Heading and Forming, Nail Dies.
VM-3M	15.19	94.2	SubMicron	97.0	3.0	---	---	---	High Hardness, Extreme Wear, Very Ligh Impact. Can Tooling, Ironing Dies.
VM-6M	14.90	93.0	SubMicron	94.0	6.0	---	---	---	Extremely Hard for Severe Wear, Light Impact. EDM Wire Guides, Blades, Special Rotary Drilling Blades, Reamer Blanks, Ironing Rings, Crush Rolls.
VM-10M	14.51	91.5	SubMicron	90.0	10.0	---	---	---	High Wear and Edge Strength. Stamping Dies, Draw Dies, Compacting Dies, Rotary Drilling, Saw Blades, Slitter Rings, Shearing Knives, Ironing Rings.
VM-12M	14.32	90.8	SubMicron	88.0	12.0	---	---	---	High Wear and Edge Strength. Stamping Dies and Punches, Lamination Dies, Shearing Knives, Can Tooling.
VM-15M	14.14	90.1	SubMicron	86.0	14.0	---	---	---	High Wear and Edge Strength. Lamination Dies, Blanking Dies, Stainless Steel Blanking, Silicon Steel Stamping, Blades.
VM-6C	14.90	90.4	Coarse	94.0	6.0	---	---	---	High Wear, Light to Medium Impact. Compacting Dies.
VM-11C	14.42	89.7	Medium	89.0	11.0	---	---	---	Good Wear and Strength. Impact Punches, Extrusion Punches, Coining Dies, Deep Draw Dies, Rolls, Cold Forming, Stamping Dies, WEDM Blanks.
VM-12C	14.32	88.0	Coarse	88.0	12.0	---	---	---	Good Wear, Heavy Shock. Impact Punches, Punches and Dies for Extruding, Cold Forming, WEDM Blanks, Compacting Dies, Swaging Dies
VM-14C	14.14	87.2	Coarse	86.0	14.0	---	---	---	Medium Wear, Heavy Shock. Impact Punches, Compacting Dies, Extrusion Dies, Draw Dies, Blades.
VM-17C	13.90	86.5	Coarse	83.0	17.0	---	---	---	Medium Wear. Heavy Shock. Impact Punches, Compacting Dies, Draw Dies, Cold Forming.

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<b>NICKEL BINDER</b>									
VM-N6	14.90	91.7	Fine	94.00	---	6.00	---	---	Excellent Wear and Corrosion Resistance. Sleeves, Nozzles, Valve Trim, Seat Rings.
VM-N8	14.74	91.0	Fine	92.00	---	8.00	---	---	Corrosion Resistant, High Wear, Light Impact. Nozzles, Cutting Blades
VM-N10	14.52	89.5	Fine	90.00	---	10.00	---	---	High Wear and Corrosion Resistance. Seal Rings, Blades, Form Rolls.
VM-N12	14.33	89.0	Fine	88.00	---	12.00	---	---	Good Wear and Corrosion Resistance. Aluminum Can Tooling (where drawing lubricants are a problem).
VM-NM12	14.33	89.0	Fine	88.00	---	12.00	---	---	Good Wear and Corrosion Resistance. Non-Magnetic. Die liners and Aluminum Can Tooling (where magnetism presents a problem).
VM-N15	14.06	87.0	Fine	85.00	---	15.00	---	---	Corrosion Resistant, Medium Wear, Medium Impact. Rolls, Cutting Blades.
<b>CORROSION RESISTANT</b>									
VM-K309	14.23	90.8	Coarse	86.50	9.00	---	3.00	1.50	Good Wear Resistance and Strength, Self Lubricating. Stamping Dies, Long-Immersion WEDM blanks.
VM-K311	14.00	89.5	Coarse	84.50	11.00	---	3.00	1.50	Good Wear Resistance and Strength, Self Lubricating. Punches, Stamping Dies, Compacting Dies, Long-Immersion WEDM blanks.
VM-K313	13.80	88.5	Coarse	82.50	13.00	---	3.00	1.50	Medium Resistance and Impact Toughness, Self Lubricating. Punches, Compacting Dies, Long-Immersion WEDM blanks.
<b>MIXED BINDER</b>									
VM-L501	11.85	92.1	SubMicron	78.00	---	---	---	22.00	High Hardness, High Wear Resistance, Corrosion Resistance, Light Weight, Mixed Binder Carbide. Can Tooling.
VM-S101	14.65	92.6	Fine	92.50	0.50	6.00	---	1.00	Mixed Binder, Corrosion Resistant, High Hardness for Wear Applications, Light Impact. Sleeves, Cutting Blades.
VM-S102	14.45	91.8	Fine	91.00	0.50	8.00	---	0.50	Mixed Binder, Corrosion Resistant, Medium Hardness and Wear Resistance, Medium Impact. Sleeves, Cutting Blades.
VM-S103	14.33	90.7	Fine	89.00	0.50	10.00	---	0.50	Mixed Binder, Corrosion Resistant, Good Wear Resistance, Higher Impact. Sleeves, Cutting Blades.
VM-S303	14.17	89.9	Medium	87.25	1.75	10.00	---	1.00	Mixed Binder, Excellent Corrosion and Improved Toughness. Can Tooling.

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