

CARBIDE WEAR PARTS

2007 Update



 **TaeguTec**

P REFORM

- Excellent deformation resistance due to high compressive strength & impact strength.



Properties & Application of Main Grades

Grade	Properties & Application		Micro Structure
K20	Properties	c 6% Co with fine grain tungsten carbide. c Very high wear resistance .	
	Application	c Powder compacting dies, small & medium dia drawing dies, nozzle. c Dies, tube sizing mandrels, and impact extrusion dies, valve & valve seat, bush.	
K30	Properties	c 9% Co with fine grain tungsten carbide. c High wear resistance & medium toughness.	
	Application	c Blanking of very light ferros metals and light nonferros metals, powder compacting dies. c General purpose drawing dies, tube sizing mandrels.	
D20	Properties	c 12% Co with fine grain tungsten carbide. c High wear resistance & toughness.	
	Application	c Light blanking dies, forming dies, guide bush, burnishing rolls. c Stamping dies for stainless steel & alloy steel.	
DX5	Properties	c 16% Co with fine grain tungsten carbide. c Very high toughness.	
	Application	c Wire flattening roll, lamination punches & dies, tube mill roll. c Cut edge dies, medium blanking dies.	

P LATE

- High cutting-edge strength & good wear resistance by using fine & ultrafine WC.
- High deformation & deflection resistance.



● Application

- x Semi-Conductor
- x Lead Frame
- x Connector
- x Switch & Relay

● Grade

- x UF6, UF10, UF12
- x D20, DX2, DX5

P Properties & Application of Main Grades

Grade	Properties & Application		Micro Structure
UF6	Properties	<ul style="list-style-type: none"> c 6% Co with ultrafine tungsten carbide. c High hardness and excellent compressive strength. c Superior wear resistance. 	
	Application	<ul style="list-style-type: none"> c Punch for semiconductor mold. 	
UF12	Properties	<ul style="list-style-type: none"> c 12% Co with ultra-fine grain tungsten carbide. c Excellent wear resistance and toughness. c Easy grinding and good edge stability. 	
	Application	<ul style="list-style-type: none"> c Die & punch for semiconductor mold. c Punch for lead frame & connector mold. 	
D20	Properties	<ul style="list-style-type: none"> c 12% Co with fine tungsten carbide. c High wear resistance and toughness. c Easy grinding and specially designed for dies. 	
	Application	<ul style="list-style-type: none"> c Die for lead frame & connector mold. 	

K NIFE

- Longer tool life due to high impact strength, tensile strength & wear resistance.
- Accurate & precise products can be obtained with minimized burrs.



P roperties & Application of Main Grades

Grade	Properties & Application		Micro Structure
K20	Properties	<ul style="list-style-type: none"> c 6% Co with fine grain tungsten carbide. c Very high wear resistance. 	
	Application	<ul style="list-style-type: none"> c Rotary slitting knives for glass, paper, light foil & nonferros metal plate. c Knives for plastic bar & sheet. 	
DX5	Properties	<ul style="list-style-type: none"> c 16% Co with fine grain tungsten carbide. c High toughness and medium wear resistance. 	
	Application	<ul style="list-style-type: none"> c Rotary slitting knives for medium thickness of steel & stainless steel plates. 	
D65	Properties	<ul style="list-style-type: none"> c 22% Co with fine grain tungsten carbide. c High toughness and medium wear resistance. 	
	Application	<ul style="list-style-type: none"> c Rotary slitting knives for steel, stainless steel plate. c Knives for steel & stainless steel bar. 	

Materials for forging mold



● Application

- x Forging mold in cold & hot working
- x Plug

● Grade

- x DX2, E30, E35, E50, D65

Materials for motor core mold



● Application

- x Motor core mold

● Grade

- x UF10, D20, DX2, DX3, DX5, D65

O **THER TOOLS**



EXTRUSION & DRAWING DIES



POLISHING DISK



PLUNGER



BURNISHING ROLL



LATHE CENTER



NOZZLE



SUCTION ROLL



JAW

Grade of Carbide Wear Parts

● Ultra-Fine Grade

Grade	Composition		TRS (N/mm ²)	Density (g/cm ³)	Young's Modulus (kgf/mm ²)	Hardness (HRA)	Compressive Strength (kgf/mm ²)	Thermal Exp.Coeff. (x 10 ⁻⁶ /°C)	Thermal Conductivity (cal/cm·s·°C)
	WC	Co							
UF6	94	6	2,450	14.90	62,000	94.5	640	5.0	0.19
UF10	90	10	3,325	14.46	58,000	92.0	610	5.4	0.15
UF12	88	12	2,765	14.10	56,000	92.8	630	6.0	0.15

● Wear-Resistant Grade

Grade	Composition		TRS (N/mm ²)	Density (g/cm ³)	Young's Modulus (kgf/mm ²)	Hardness (HRA)	Compressive Strength (kgf/mm ²)	Thermal Exp.Coeff. (x 10 ⁻⁶ /°C)	Thermal Conductivity (cal/cm·s·°C)
	WC	Co							
K20	94	6	2,590	15.00	62,000	92.0	530	5.0	0.19
K30	91	9	2,926	14.70	60,000	90.6	500	5.5	0.18
D20	88	12	3,360	14.30	56,000	90.0	430	6.0	0.15
DX2	88	12	3,360	14.30	56,000	90.1	430	6.0	0.15
DX5	84	16	3,640	13.90	54,000	87.5	410	6.0	0.10
D65	78	22	3,850	13.10	48,000	83.0	370	7.0	0.10

● Other Impact Grade

Grade	Composition		TRS (N/mm ²)	Density (g/cm ³)	Young's Modulus (kgf/mm ²)	Hardness (HRA)	Compressive Strength (kgf/mm ²)	Thermal Exp.Coeff. (x 10 ⁻⁶ /°C)	Thermal Conductivity (cal/cm·s·°C)
	WC	Co							
E30	90	10	2,450	14.60	580,000	88.9	480	5.5	0.17
E35	88	12	2,450	14.40	560,000	88.0	470	5.7	0.15
E50	85	15	2,660	14.10	520,000	86.1	440	6.2	0.14



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