Tungsten Carbide Core Pins

Superhard parts for industrial performance

Crafts Technology engineers and manufactures high precision, complex form, tungsten carbide core pins, inserts, ejectors, and other injection molding tooling with the exacting level of tolerances and design features that high-precision part molders require.

The tooling is harder and more rigid than any other mold tooling material on the market, significantly reducing core shift/deflection, which allows for the highest possible precision and repeatability with injection molded parts.

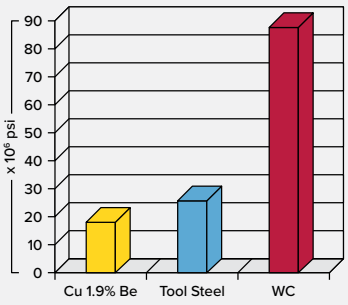
To further advance this technology, Crafts Technology balances the hardness and rigidity of tungsten carbide tooling by incorporating a metallic cobalt binder, which imparts a level of ductility that produces a very robust tooling system.

MINIMUM DEFLECTION

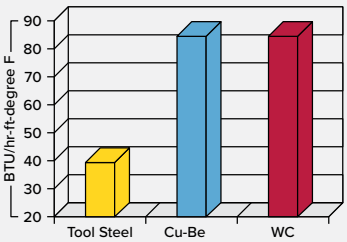
MAXIMUM HEAT TRANSFER

MAXIMUM WEAR LIFE

Young's Modulus of Elasticity



Thermal Conductivity



Tungsten carbide tooling is primarily used to produce high precision molded parts, as the material typically allows for higher molding speeds due to its superior heat transfer characteristics.

Rounding out the advances that tungsten carbide material regularly presents to molders is the overall wear life of tungsten carbide tooling. Molders of components molded from Peek and glass-filled type materials have experienced significantly improved wear life of their tooling when migrating from steel and copper alloys to tungsten carbide.

Our engineering team is ready to discuss your application and offer solutions.

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CRAFTSTECH.NET
MATERIALS SCIENCE - STATE OF THE ART MANUFACTURING

Core Pin Material Properties

Material Type			Zirconia Ceramic			Alumina Ceramic				Sialon	Silicon Carbide	Tungsten Carbide			
Material Callout			MG-PSZ	3Y-TZP	8Y-FSZ	ZTA	96% AL2O3	99.7% AL203	99.9% AL2O3	SSN	SSC	H6N	H10F	H15F	S805
Detailed Material Description			Magnesia Partially Stabilized Zirconia	Tetragonal Polycrystalline Zirconia	Fully Stabilized Zirconia	Zirconia Toughened Alumina	96% Alumina	99.7% Alumina	99.9% Alumina	Silicon Nitride with Aluminum Oxide Additives	Carbon + Silicon	WC 6% Cobalt @ Fine Grain Size	WC 6% Cobalt @ Micron Grain Size	WC 15% Cobalt @ Micron Grain Size	WC 10% Nickel, 4% Tantalum, 2% Titanium, 2% Chromium @ Fine Grain Size
Density		g/cm^3	5.6	6.05	5.7	4.6	3.67	3.89	3.92	3.25	3.12	15	14.5	14	13.6
		lb/in^3	0.2023	0.2186	0.2059	0.1662	0.1326	0.1405	0.1416	0.1174	0.1127	0.5416	0.5238	0.5058	0.4913
Grain Size		Microns	-	-	-	-	-	-	-	-	-	2-4	.8	.8	1
Flexural Strength	20 C	Mpa	545	800	180	900	360	330	350	800	410	3300	4696	4579	-
	800 C	Mpa	354	250	270	-	250	250	250	450	410	-	-	-	-
Compressive Strength		Mpa	1700	2000	1500	2500	2100	2100	2500	2000	2000	7000	6300	5300	4100
Modulus of Elasticity		Gpa	205	205	160	330	275	330	350	290	450	634.1	583	532	-
Poisson Ratio			0.31	0.3	0.3	0.23	0.22	0.22	0.22	0.24	0.17	0.22	0.22	0.23	-
Hardness		HV 0.3	1120	1400	700	1650	1590	1600	1700	1850	2800	1675	1675	1400	1600
Fracture Toughness	ISO 28072	Mpa*m^.5	6	6	3.5	7.3	3.5	4	4.5	8	4	10.5	10.5	10.5	-
Raw Material	$	$$$$$	$$$	$$$	$$$	$$$	$$	$$	$$$	$$$$	$$$$$	$$	$$	$$	$$
EDM Machinability			-	-	-	-	-	-	-	-	-	EDM	EDM	EDM	EDM

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