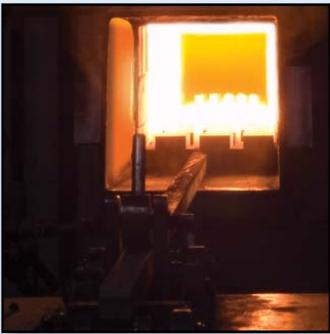


# Tungsten Composites Typical Properties\*



Mi-Tech	Nominal Composition % Weight	Rockwell Hardness	Electrical Conductivity % IACS	Ultimate Tensile Strength PSI	Cross Breaking Strength PSI	Density g/cc	Typical Resistance Welding Applications
<b>CW55</b>	55% Tungsten 45% Copper	79 B	55	63,000	110,000	12.50	Flash and butt welding die inserts requiring high electrical and thermal conductivity. Electrode facings for the welding of stainless steel.
<b>CW68</b>	68% Tungsten 32% Copper	88 B	52	75,000	130,000	13.93	Flash and butt welding die inserts requiring high electrical and thermal conductivity. Electrode facings for the welding of stainless steel.
<b>CW70E</b>	68% Tungsten 32% Copper	88 B	52	75,000	130,000	13.93	Flash and butt welding die inserts requiring high electrical and thermal conductivity. Electrode facings for the welding of stainless steel.
<b>CW70</b>	70% Tungsten 30% Copper	90 B	50	85,000	140,000	14.18	Light duty projection welding dies where weld pressures are medium to light.
<b>CW75</b>	75% Tungsten 25% Copper	94 B	48	90,000	150,000	14.70	Used for facing and inserts for flash and butt welding dies, projection welding electrodes, seam welding bearing inserts, facings for electro-forming and electro-forging dies. Often used for EDM electrodes for greater wear ratios.
<b>CW78</b>	78% Tungsten 22% Copper	96 B	46	94,000	160,000	15.12	Used where a slightly harder material is required for the same applications as CW75.
<b>CW80</b>	80% Tungsten 20% Copper	98 B	44	96,000	170,000	15.56	Heavy duty projection welding electrodes, die facing for electro-forming and electro-forging, also facings for upsetting of rivets & studs.
<b>SW50</b>	50% Tungsten 50% Silver	70 B	65			13.4	Used for arcing contacts and plates, arc runners, and current carrying members
<b>SW65</b>	65% Tungsten 35% Silver	87 B	53			14.5	Used for arcing contacts and plates, arc runners, and current carrying members
<b>SW74</b>	74% Tungsten 26% Silver	90 B	47			15.5	Used for arcing contacts and plates, arc runners, and current carrying members

\* Properties may vary according to size and shape of part.  
Composition shown is typical and may change for manufacturing purposes or to meet physical and/or application requirements.



## Machining Tungsten Composites

Our tungsten composite metal machines like gray cast iron. Its low thermal expansion and other characteristics allow you to hold very close tolerances. Coolant is optional, and carbide tools are recommended in most cases.

**Turning** - Positive rake tooling is suggested. Seco triangle inserts TPG432 or TPG431 grade 883.

**Boring** - No rake or positive rake tooling is suggested. Seco CPMT grade 883.

**Roughing** - Cutting depth of .030" to .125" and .008" to .015" feed, at 200 to 300 SFM.

**Finishing** - .010" to .015" cutting depth and .004" to .010" feed at 250 to 400 SFM.

**Tapping** - Use high-speed steel, two flute plug spiral point taps. A light tapping fluid is recommended or vegetable oil mist. OSG Sossner premium Exotap is suggested.

**Drilling** - Carbide tooling is suggested. Increased clearance angles and automatic feeds are often used to avoid binding and seizing. Carbide drills will give a better tool life.

**Grinding** - Use aluminum oxide or silicon carbide wheels of medium hardness.

**Milling** - Premium uncoated end mills with a regular spiral made from micrograin carbide, such as SGS. Insert cutters-use square multi-edge or single edge cutters, such as Kennametal grade KC730. Also can use positive rake octagon cutters, such as Seco grade 883.

**Roughing** - Feeds of .007" to .015" per tooth at speeds of 200 to 400 SFM.

**Finishing** - Feeds of .003" to .010" per tooth at speeds of 300 to 700 SFM.

**Sawing or Cutting** - When sawing, use a bi-metal blade; blade pitch should be relative to the thickness of the material. Coarse blades can be run at low speeds, and finer blades run at higher speeds. Coolant can be used. Material can also be cut using high-speed abrasive cutoff wheels.

## Contact Us

If you need any further information, please do not hesitate to contact us at: 800-624-1895 (317-549-4290) or visit our website: [www.mi-techmetals.com](http://www.mi-techmetals.com)

