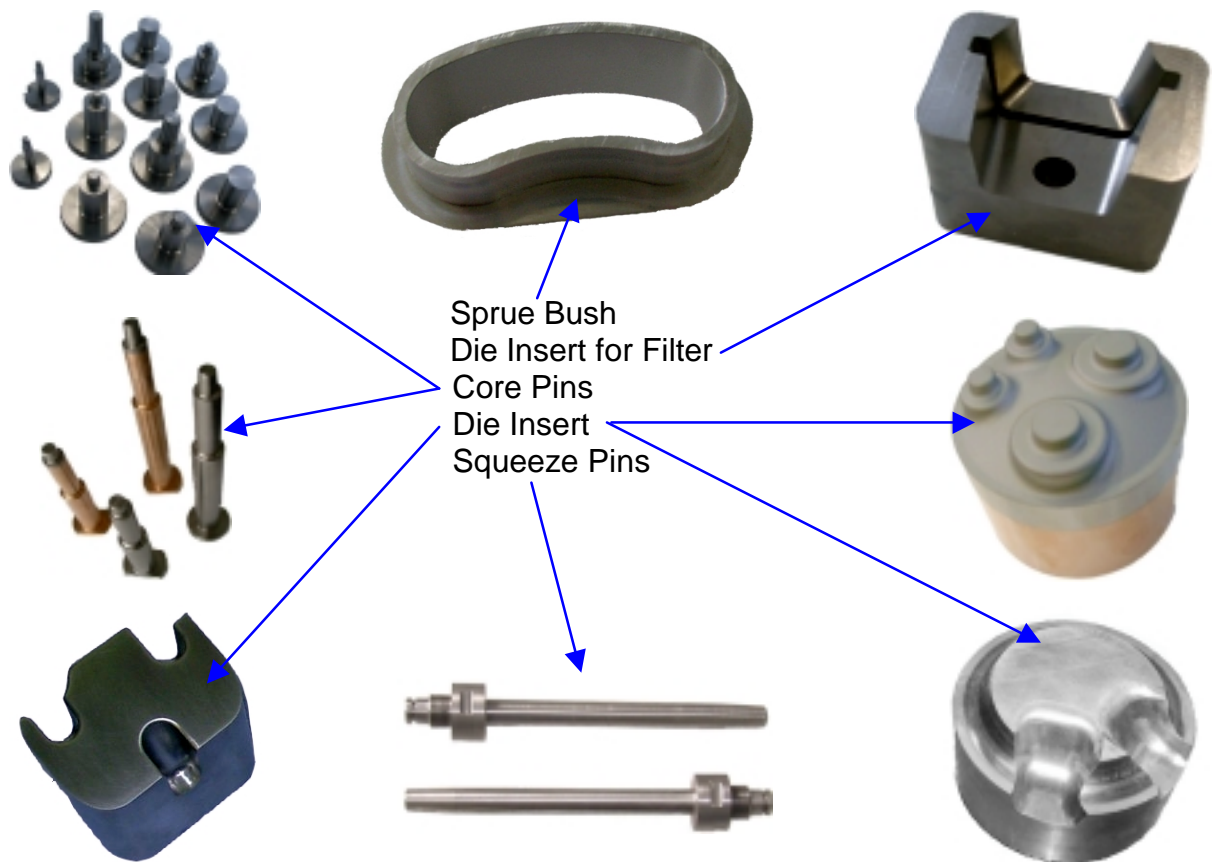


Tungsten - Composites For The Foundry

Tungsten - Composites offer outstanding mechanical – physical properties and have therefore a short payback period due to considerably longer die life, extended service intervals and increased productivity.

Material		W 75	W 80	W 85
Thermal Conductivity	W/mK	75	80	85
Coef. of Thermal Expansion	10 ⁻⁶ 1/K	5,3	5,6	5,0
Tensile Strength	MPa	990	870	800
Yield Strength	MPa	610	620	600
Elongation	%	8	20	5
Modulus of elasticity	GPa	338	360	385
Compressive Strength	MPa	4000	4050	3800
Hardness	HB 30	295	285	320

Tungsten - Composites are especially suited for the use in tools for gravity, low pressure and high pressure die casting of aluminium- and copper- alloys. Dies, core slides, core pins and inserts from these materials have a significantly longer lifetime then those from tool steel.



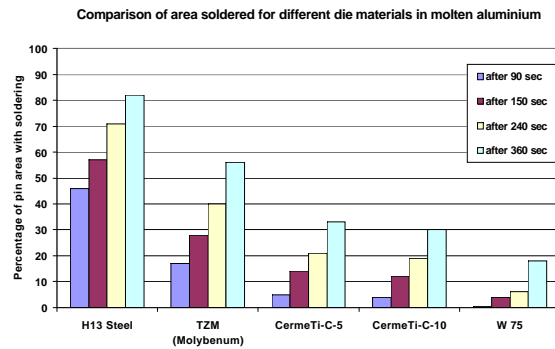
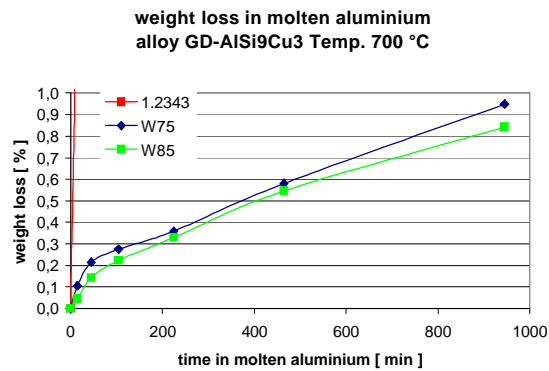
Examples for the application of tungsten-base materials

InterGuss supplies finished components according to customer requirements.

Benefits From Using Tungsten - Composites

Tungsten is insoluble in liquid Al- and Cu- alloys. Therefore, opposite to steel dies, tungsten-composites **have nearly no erosion**. This applies especially to areas with high flow speed.

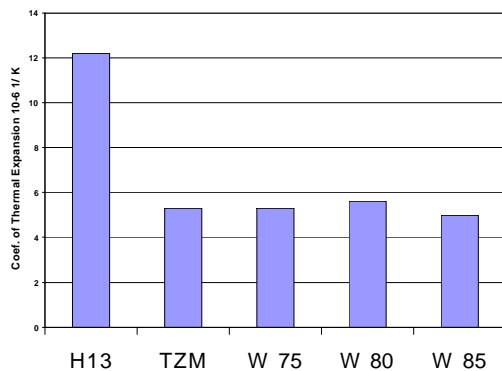
Core pins and inserts from tungsten- composites **prevent a soldering** of the casting and increase therefore the service intervals.



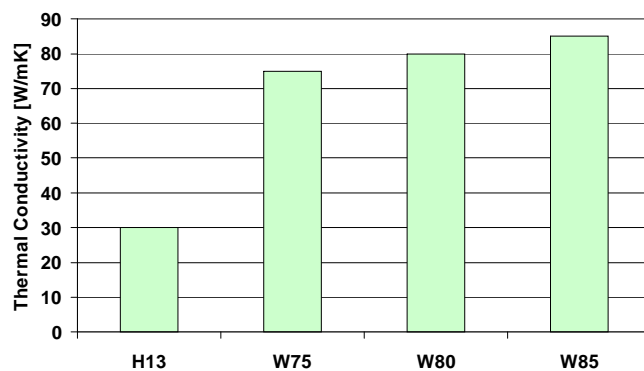
Due to the low coefficient of thermal expansion (40% of steel), high strength at elevated temperature and ductility tungsten - composites have an **extremely low trend for heat checks**. This reduces the fettling costs of the casting and expands the die life.

In areas of thick cross-sections there must be a sufficient cooling **to avoid shrinkage and porosity**. Compared to tool steel, tungsten - composites have a 3 - 4 times higher thermal conductivity and therefore a **considerably better chill effect**. For this reason a **finer microstructure** can be achieved.

Thermal Expansion



Thermal Conductivity



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