WIRBALIT® WS
Tungsten heavy metals

ASTM standard ASTM B777-07 (Tungsten heavy metals)

Tungsten heavy metals are composite materials with a high proportion of tungsten and a nickel-iron or non-magnetic nickel-copper binder phase. The standard products contain between 90% and 95% tungsten, depending on the requirements in properties.

Properties: bending strength, high density, good vibration-damping properties, heat resistance, high absorption capacity of radioactive radiation

Heavy metal alloys can be machined well, as well as cold formed to a certain degree. There are many ways to choose the right joining process. No grain growth occurs when soldering metallic parts. Friction welding of heavy metal with steel is also possible, such as connections by means of shrinking or screw connections.

Because of its high density, it is used where large masses are required in a small space; both in the static and dynamic range.

		W90NiFe W90NiCu	W92,5NiFe W92,5NiCu	W95NiFe W95NiCu	W97NiFe
Tungsten W	%	90	92,5	95	97
Nickel Ni	%	6	5,25	3,5	2,1
Iron Fe / Copper Cu	%	4	2,25	1,5	0,9
Hardness	HRC	24-32	25-33	25-34	30-35
Tensile strength	Rm MPa	750-1200	750-1400	720-1200	680-1000
Yield strength Rp 0,2	MPa	517	517	517	517
Elongation A	%	5-30	5-25	3-15	2-10
E-module	GPA	320-340	340-360	350-380	360-380
Coefficient of linear thermal expansion	10^{-6} K^{-1}	5,8	5,5	5,2	5,0
Spec. el. resistance	10^{-6} Ω m	0,17/0,13	0,15/0,12	0,13/0,11	0,10/0,09
Thermal conductivity	W/m K^{-1}	70/95	75/100	85/105	90/115
Density at 20 °C	g/cm³	16,85-17,25	17,15-17,85	17,75-18,35	18,25-18,85

Application areas:

Automotive and construction industries, aerospace, medical technology

The high absorption capacity for radioactive radiation makes the material suitable for: radiation protection in X-ray technology, shielding elements in reactor technology and for radiation-proof containers.

In metalworking, the vibration-damping properties and the high modulus of elasticity are used for boring bars, long turning tool holders, grinding arbors, shanks for plunge steels and turning tools.

SVS Schweißtechnik GmbH
Fritz-Thyssen-Straße 5
45475 Mülheim an der Ruhr
Germany

Telefon: +49 208 99328-0
Telefax: +49 208 99328-29
info@svs-schweisstechnik.de
www.svs-schweisstechnik.de