Valid from: 04.10.24
Revision: 3

Product: DensM® 170 (WNiFe)

Manufacturing: Powder metallurgy (mixing, pressing, sintering), heat treatment, and mechanical processing.
Material properties are measured at room temperature on separate test specimens.

1. Chemical Composition

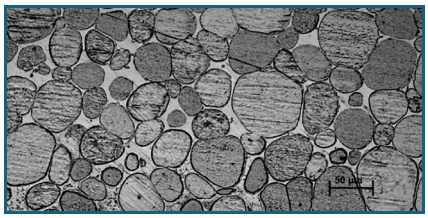
Element	Range (Min. – Max.)	Typical Value
Tungsten	90.0 – 90.5 %	90.2 %
Binder (Ni+Fe)	9.5 – 10.0 %	9.8 %

2. Mechanical and Physical Properties

Property	Range (Min. – Max.)	Typical Value
Tensile strength [Mpa]	770 – 1000	920
Fracture elongation [%]	5 - 30	22
Modulus of elasticity [Gpa]	320 – 340	330
Hardness [HV10]	280 – 320	300
Density [g/cm^3]	16.9 – 17.15	17.0
Thermal conductivity [W/mK]	97 – 103	100
Coefficient of thermal expansion [1/K]	6.3 – 6.5 x 10^{-6}	6.4 x 10^{-6}

3. Metallography

The microstructure consists of two phases: a tungsten-rich phase (spherical phase) and a NiFe-rich phase (binder). Both phases are homogeneously distributed, as clearly visible in the photograph. The particle size of the spherical tungsten-rich phase ideally ranges between 10 and 70 µm, ensuring optimal material properties.



4. Applications

Material for tool holders and high-speed spindles
Material for radiation shielding (e.g., in medical diagnostics and radiation therapy)
Material for mass balancing in rotating systems (avionics, radar, crankshafts, etc.)
Casting Molds for die casting of aluminium, magnesium, zinc, and copper
Tools for hot forging

5. Standards and Certificates

Our DensM® products fully comply with the ASTM B777 standard.
Upon request, we are pleased to provide factory certificates in compliance with EN 10204, available as either a 2.2 or 3.1 inspection certificate.

6. Delivery program

Rods (in stock), bars, plates, and finished parts according to technical drawings

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