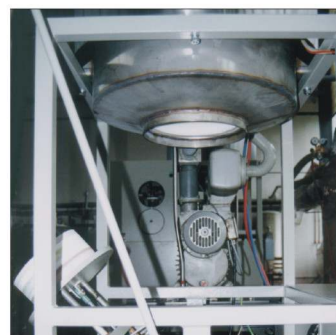
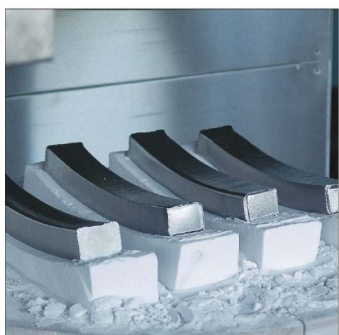


SPECIALIZED MATERIALS

TUNGSTEN PSEUDO-ALLOYS



UJP PRAHA

DESCRIPTION AND APPLICATIONS OF WHA MATERIALS

Tungsten heavy alloys produced by powder metallurgy have a perfectly homogenous microstructure (consisting of two structure components), high density, very good mechanical properties and also good machinability (with hardmetal tools). But their usage is limited by temperatures between 300 and 400°C.

WHA materials are produced from fine metal powder mixtures containing metals such as W, Fe, Ni, Co, Mo and Cu. Materials containing only W, Ni and Cu are non-magnetic. Certain WHA alloys can be swaged, with area reduction up to 50%, which in combination with vacuum heat treatment is used to produce high strength materials suitable for ammunition components.

UJP PRAHA a.s. owns and runs a complete powder metallurgy production line including follow-up operations. Two isostatic pressing machines, together with development and manufacturing of elastomeric moulds, bring wide variety of possible product shapes.

Our company presently offers ten basic types of WHA materials, which contain 90 to 97 % tungsten and have a density of 17.1 to 18.6 g/cm³.

WHA materials have very low thermal expansivity: $\alpha = 5.0 - 5.5 \cdot 10^{-6} \text{ K}^{-1}$

and quite high heat conductivity: $\lambda \sim 80 \pm 10 \text{ W.m}^{-1}.\text{K}^{-1}$.

These materials can be machined by lathe turning and milling using hardmetal tools. Surface quality can satisfy even the highest requirements. Surface roughness Ra 0.2 can be achieved by grinding. Hole drilling and thread cutting is a bit more difficult (threads finer than M5 are not recommended).

Maximum product dimensions: diameter: 360 mm
height: 250 mm

Products with a diameter (or side in case of a square product) not exceeding 150 mm can be up to 600 mm long, and swaged rods up to 800 mm long.

We are able to produce semi-finished or final products according to the customer's specifications.