

1. Powder for manufacture of cermet chip and manufacture of the powder from used cermet chip

By Kobayashi, Masaki; Kitada, Hiroshi

From [Jpn. Kokai Tokkyo Koho \(1999\)](#), [JP 11158569 A 19990615](#), Language: Japanese, Database: CAPLUS

The powder mainly contains a hard phase-forming material composed of 10-80 wt.% mixed carbide contg. Co and/or Ni, W, and C and bal. Ti carbide, nitride, and/or carbonitride. The manufg. method involves the following steps: (1) pulverizing cermet chips composed of a Ti-based carbide, nitride, and/or carbonitride as hard phase and Co and/or Ni as binder phase to form coarse grains, (2) adding W into the coarse grains, and (3) heating the obtained mixt. to form the mixed carbide. Used or inferior cermet chips can be recycled as the powder with low impurities, and cermet chips obtained from the powder have toughness and hardness.

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2. Recycling of superhard sintered alloy compositions and preparation of the alloys

By Kobayashi, Masaki; Hojo, Nobuo

From [Jpn. Kokai Tokkyo Koho \(1996\)](#), [JP 08120352 A 19960514](#), Language: Japanese, Database: CAPLUS

Superhard sintered alloys (comps.) are heated in oxidizing atm. at $\geq 1000^\circ$ to generate ≥ 20 wt.% of mixed carbides contg. C, W, and Co and/or Ni; and then pulverized for recycling. Superhard sintered alloys (comps.) are mixed with ≥ 1 additives selected from Co, Ni, W, their oxides, and precursors; heated in inert atm. at $\geq 1000^\circ$ to generate the mixed carbides, and then pulverized for recycling. The pulverized powders may be mixed with C and/or graphite, and then sintered in nonoxidizing atm. at 1200 - 1600° to give superhard alloys contg. planar WC crystals. The recycled alloys show high strength, toughness, and wear resistance.

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3. Phase composition of VK alloy detonation coatings

By Shmyreva, T. P.

From [Poroshkovaya Metallurgiya \(Kiev\) \(1982\)](#), (12), 30-5. Language: Russian, Database: CAPLUS

Detonation coatings $\leq 300 \mu$ thick were obtained from VK-15 [11107-01-0] and VK-20 [11107-00-9] powders and WC-15Ni [79771-70-3] or WC-20%Ni [12792-69-7] mixts. An O:acetylene mixt. in a 1.1 ratio transformed WC to W_2C and to W at a ratio of 1.4. Increasing the gas mixt. ratio from 0.8 to 1.4 formed in VK-20 coatings the transformation sequence WC, W_2C , W and also Co_3W_3C , $Co_3W_9C_4$ and Co_7W_6 [12017-73-1]. Phase compn. of the WC-15 Ni and WC-20% Ni coatings changed similarly to VK coating by changing the O:acetylene ratio. The best ratio was 1-1.2 for the W_2C formation as the base of the detonation coating.

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