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DOUBLE CEMENTED CARBIDE COMPOSITES5 **ABSTRACT OF THE DISCLOSURE**

Double cemented carbide composites comprise a plurality of first regions and a second ductile phase that separate the first regions from each other. Each first region comprises a composite of grains and a first ductile phase bonding the grains. The grains are selected from the group of carbides consisting of W, Ti, Mo, Nb, V, Hf, Ta, and Cr carbides. The first ductile phase is selected from the group consisting of Co, Ni, Fe, alloys thereof, and alloys with materials selected from the group consisting of C, B, Cr, Si, and Mn. A preferred first region comprises tungsten carbide grains that are cemented with a cobalt first binder phase and which are in the form of substantially spherical pellets. The second ductile phase is selected from the group consisting of Co, Ni, Fe, W, Mo, Ti, Ta, V, Nb, alloys thereof, and alloys with materials selected from the group consisting of C, B, Cr, and Mn. A preferred second ductile phase is cobalt. Additionally, additives such as those selected from the group consisting of carbides, nitrides, and borides can be added to the second ductile phase to provide improved properties of wear resistance. The composites are prepared by combining hard phase particles formed from the grains and first ductile phase, with the second ductile phase material under conditions of pressure and heat, and have improved properties of fracture toughness and equal or better wear resistance when compared to conventional cemented tungsten carbide materials.

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