

Production of composite powders containing metal carbides

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Abstract

In the work the ways for agglomeration and sintering of nano- and submicron metal-clad composite powders that can be realized in the laboratory environment to produce composite grains of decamicron size were investigated. Two ways of agglomeration were considered: ‘briquetting-grinding-classification-sintering’ and ‘roll briquetting-classification-sintering’. The research was carried out involving titanium carbide powder plated with chromium, iron and titanium, and titanium powder in the metal matrix of mixed nano- and superdispersed chromium, nickel, and titanium. Composite powders with the grain size of +40-125 mkm and +40-160 mkm were produced. The phase composition of the composites, consisted of 3d-metal-clad electrolytic TiC and WC powders in metal matrix, was investigated during thermal treatment and sintering. It is shown the optimum agglomerating performance must be selected each time when the chemical composition of the composite has been changed either in term of quality or quantity.