

ABSTRACT

The work contains: 92 pages, 39 figures, 13 tables, 53 references to literary data.

In the literary review, modern information on quasi-binary eutectic composite materials based on refractory compounds, their properties, structure and methods of construction of melting patterns are presented. The advantages and perspectives of using materials of $\text{Cr}_3\text{C}_2\text{-MeB}_2$ systems are described.

The purpose of the work is to clarify the coordinates of the eutectic alloys of the $\text{Cr}_3\text{C}_2\text{-Me}^d\text{B}_2$ systems by using the dependence of the melting temperature of the eutectic on the molar content of the diboride.

Object of research: quasibinary eutectic alloys ($\text{Cr}_3\text{C}_2\text{-TiB}_2$, $\text{Cr}_3\text{C}_2\text{-ZrB}_2$, $\text{Cr}_3\text{C}_2\text{-ScB}_2$, $\text{Cr}_3\text{C}_2\text{-CrB}_2$).

Subject of research: coordinates of eutectic alloys of quasibinary systems ($\text{Cr}_3\text{C}_2\text{-TiB}_2$, $\text{Cr}_3\text{C}_2\text{-ZrB}_2$, $\text{Cr}_3\text{C}_2\text{-ScB}_2$, $\text{Cr}_3\text{C}_2\text{-CrB}_2$).

Methods of investigation: metallographic analysis, X-ray diffraction analysis, durometric analysis.

Alloys of $\text{Cr}_3\text{C}_2\text{-TiB}_2$, $\text{Cr}_3\text{C}_2\text{-ZrB}_2$, $\text{Cr}_3\text{C}_2\text{-ScB}_2$, $\text{Cr}_3\text{C}_2\text{-CrB}_2$, and their microhardness and eutectic coordinates were determined. The dependence of the melting temperature of the eutectic on the molar content of the diboride, the chromaticity diagram of $\text{Cr}_3\text{C}_2\text{-TiB}_2$, $\text{Cr}_3\text{C}_2\text{-ZrB}_2$, $\text{Cr}_3\text{C}_2\text{-ScB}_2$, $\text{Cr}_3\text{C}_2\text{-CrB}_2$ systems was constructed. Also, the constant of the ratio of the melting point of the eutectic to the sum of the melting points of the components was determined and the theoretical method for determining the coordinates of the eutectic in the $\text{Cr}_3\text{C}_2\text{-CrB}_2$ system, based on the calculated data, was used. The structures of alloys of $\text{Cr}_3\text{C}_2\text{-MeB}_2$ systems are investigated.

Key words: COMPOSITE MATERIALS, CARBIDE, BORIDES, EQUIPMENT, TEMPERATURE OF FLOW, MICROHARDNESS, STRUCTURE OF ALLOY.