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A B S T R A C T

This paper is focused on the analysis of the changes in the structure and properties of metal matrix composites (MMCs) based on iron (Fe) material with tungsten carbide (WC), silicon carbide (SiC) and graphite microadditives. The synergy effect of the content of different carbides and graphite on MMCs properties was investigated using the simplex lattice design method. It was found that with the addition of carbides, namely WC and SiC, the ferrite content increases from 5–8 % in the base material to 45 % and 70 % respectively. Depending on the percentage and the composition of reinforcing particulates MMCs hardness may decrease up to 25 % or increase up to 30 % in comparison with the base material. The residual porosity changes slightly, no more than 10 %, even with an increased content of carbides and graphite, and relative volume changes of samples are between −2 to +1 %.