

Powder characteristics of attrition milled Cr₃C₂ and Cr₃C₂ – Ni-Cr

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Chromium carbide powders with and without nickel-chromium alloy were attrition milled in nitrogen as well as in hexane for 1, 2, 4, 8 and 16 hours. The rotation speed and ball to powder mass ratio were maintained constant. Crystallite size of the milled powders as a function of milling time and environment was determined by x-ray diffraction analysis. A marked decrease in crystallite size with milling time was observed in nitrogen. Milling in hexane did not result in any significant reduction in crystallite size. Average crystallite size was 65 nm after 16 hours of milling. The average particle size of the powders milled for different duration also decreased significantly in nitrogen, compared to that in hexane. The extent of iron contamination in the milled powders was determined from x-ray fluorescence analysis. Details of powder characteristics of the two types of powders will be presented and discussed in the light of their use as feed stock to obtain thermal sprayed nanocrystalline coatings.

Palavras-Chave:

chromium carbide, attrition milling, powder characteristics