Accepted Manuscript

Potential of niobium carbide application as the hard phase in cutting tool substrate

Paula Montenegro, Jefferson Gomes, Ronnie Rego, Anderson Borille

PII: S0263-4368(17)30328-1

DOI: doi:10.1016/j.ijrmhm.2017.09.017

Reference: RMHM 4526

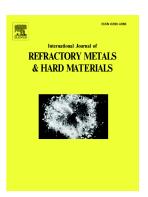
To appear in: International Journal of Refractory Metals and Hard Materials

Received date: 24 May 2017

Revised date: 21 September 2017 Accepted date: 24 September 2017

Please cite this article as: Paula Montenegro, Jefferson Gomes, Ronnie Rego, Anderson Borille, Potential of niobium carbide application as the hard phase in cutting tool substrate. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Rmhm(2017), doi:10.1016/j.ijrmhm.2017.09.017

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



ACCEPTED MANUSCRIPT

POTENTIAL OF NIOBIUM CARBIDE APPLICATION AS THE HARD PHASE IN CUTTING TOOL SUBSTRATE

Paula Montenegro a,*, Jefferson Gomes a, Ronnie Rego a, Anderson Borille a
a Aeronautics Institute of Technology (ITA), Competence Center in Manufacturing (CCM),
Praça Marechal Eduardo Gomes 50, 12228-900, São José dos Campos, Brazil
* Corresponding Author: Paula Montenegro, Aeronautics Institute of Technology (ITA),
CCM, Praça Marechal Eduardo Gomes 50, São José dos Campos, SP, 12228-900, Brazil.

Abstract

Niobium carbide (NbC) exhibits important properties which make it an alternative for cutting tool material. Nowadays, the cutting tool market is dominated by the tungsten carbide, which is used in cemented carbide grades of tool materials. However, the research of a novel substrate material for cutting tool application requires mainly two aspects of study. The assessment of the cutting tool characteristics which influence the machining performance, and the machining experiments themselves. Thus, the features evaluating of the cutting tool made of niobium carbide, which indicate its potential application as the main hard phase in cutting tool substrates, were performed. Cutting tools analyses were carried out in parallel with machining experiments. Tool life experiments were carried out in external cylindrical turning conditions, in order to evaluate tool lifetimes and tool wear evolution of the cutting tools in study.

Keywords: Niobium carbide; Substrate material; Cutting tool; Machining.

1 Introduction

Email: paula@ita.br

Improvement researches in coatings and geometries of the cutting tools are in constant discussion, although developments in new cutting tool substrate materials sector still have much to progress. Tungsten carbide (WC) is the main carbide used in hardmetals dispersed in a ductile binder, commonly the cobalt. Gant *et al.* [1], [2] have been simulating the abrasion

Download English Version:

https://daneshyari.com/en/article/5457874

Download Persian Version:

https://daneshyari.com/article/5457874

<u>Daneshyari.com</u>