

## Documents

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**Influence of ceramic particles size on the incorporation of SiC into stainless steel material using 480 J/mm heat input for tribological applications**

(2023) *Jurnal Tribologi*, 37, pp. 15-28.

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**Abstract**

The objective of the present study is to deposit highly wear resistant silicon carbide (SiC) ceramic particles on Duplex-2205 using tungsten inert gas (TIG) torch arc cladding at a heat input of 480 J/mm. The influence of various SiC ceramic particles size ranging from 20 µm to 100 µm on microstructure, hardness and linear motion reciprocating wear test was studied. It was found that the hardness properties for 60 µm and 100 µm samples were generally higher than 20 µm and this was believed owing to the presence of the dendrite microstructure. Furthermore, it was found that wear rate and friction coefficient of larger particle size produced better wear resistance. The tribological properties of the clad layer were increased further due to the well dispersion of the dendrites structure in the SiC-DSS layer. The strongest clad layer consisted of 100 µm SiC particle size and had a hardness value of 750 Hv, wear rate of 4.13 mm<sup>3</sup>/Nm and friction coefficient of 0.49. © 2023, Malaysian Tribology Society (Mytribos). All rights reserved.

**Author Keywords**

Duplex stainless steel; Hardness; SiC ceramic particles; Tribological; Wear

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**Publisher:** Malaysian Tribology Society (Mytribos)

**ISSN:** 22897232  
**Language of Original Document:** English  
**Abbreviated Source Title:** J. Tribol.  
2-s2.0-85165632514  
**Document Type:** Article  
**Publication Stage:** Final  
**Source:** Scopus

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