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R. Palanivel, I. Dinaharan, R.F. Laubscher



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## Assessment of microstructure and tensile behavior of continuous drive friction welded titanium tubes

R. Palanivel<sup>a\*</sup>, I. Dinaharan<sup>a</sup>, R.F. Laubscher<sup>a</sup>

<sup>a</sup>Department of Mechanical Engineering Science, University of Johannesburg, Auckland Park Kingsway Campus, Johannesburg 2006, South Africa.

rpalanivelme@gmail.com

dinaweld2009@gmail.com

rflaubscher@uj.ac.za

\*Corresponding author

### Abstract

Friction welding process has been applied to join Grade 2 titanium alloy tubes of outer diameter 60 mm and wall thickness 3.9 mm. In this research work, five different friction times (24, 28, 32, 36 and 40 s) were used to evaluate the ultimate tensile strength (UTS) and microstructure of welded tubes. Recording of the process parameters during welding was done. Optical microscopy, electron back scattered diagram and transmission electron microscopy were used to study the microstructure. The results showed that the friction time had a significant influence on the microstructure and UTS. The rate of deformation increased with friction time and refined the grains in the weld zone. Coarse grain structure was observed from the center of the weld zone towards the flash. Identical grain

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