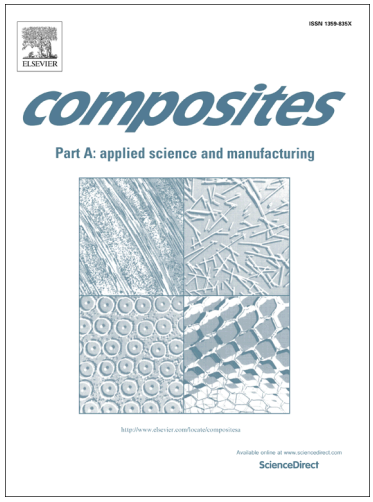

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PII: S1359-835X(17)30120-3
DOI: http://dx.doi.org/10.1016/j.compositesa.2017.03.017
Reference: JCOMA 4607

To appear in: *Composites: Part A*

Received Date: 26 October 2016
Revised Date: 15 March 2017
Accepted Date: 18 March 2017

Please cite this article as: TOURLONIAS, M., BUENO, M-A., POQUILLON, D., Friction of carbon tows and fine single fibres, *Composites: Part A* (2017), doi: http://dx.doi.org/10.1016/j.compositesa.2017.03.017

Friction of carbon tows and fine single fibres

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Abstract

The aim of this study conducted on carbon tows and single fibres is to highlight some friction behaviours to help better understand the friction mechanisms that occur during the manufacture of carbon composites. These mechanisms are responsible for damage that reduces the specifications and lifetime of mechanical parts. An experiment has been developed in order to rub together two carbon tows, or two single carbon fibres (with a diameter down to 5 µm), at an angle of 90°. The influences of friction velocity, normal load, and type of carbon fibre have been studied. For both tows and fibres the friction follows the Coulomb's law because there is no influence of the velocity and the normal load in the tested range. The rearrangement of fibres within the tow has been shown to be fundamental. For the single fibre, the role of the Young's modulus and the sizing treatment is important.

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