

## Sample Abstract

# MATERIALS FOR ADVANCED ELECTRIC CURRENT COLLECTING TECHNIQUE

by

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## ABSTRACT

An experimental study was carried out on the performance of graphite brushes, both pure and composite materials containing 50% by weight of silver, sliding against noble metals (silver, gold, palladium, platinum, ruthenium, rhodium, rhenium and iridium). The current was 24.5 A (a current density of 500 A/in<sup>2</sup>) and the sliding speed 12.8 ft/s. The test atmosphere was either wet CO<sub>2</sub> or dry wintertime air. The tests were also done on copper and nickel for comparison. A pin-on-disc tester was used.

The results from the silver-graphite brush tests showed a positive correlation between wear and the compatibility of the noble metals against carbon, and a negative correlation between wear and friction. The passage of 24.5 A of current did not affect the wear rate in air but did affect the wear rate in wet CO<sub>2</sub>. In wet CO<sub>2</sub>, the wear rate increased as the current level was increased in the range of 0 to 50 A. More data was needed for the pure graphite tests.

Among the noble metals, palladium, platinum and rhodium showed the lowest brush wear rate. The brush wear rate for these metals was only half of that of copper.

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