ENHANCED ARCING AS A FUNCTION OF ORGANIC EXPOSURE AND ARC CURRENT Pd AND Pd/Ag ELECTRODES

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ABSTRACT

We report the existence of a region within which enhanced arcing (activation) exists for palladium and palladium/ silver contacts, as a function of arc current and of exposure to organic vapors. The current range where activation exists is from ~0.1 to ~1.2 A, where the range of exposures (partial pressure times time) used for diethyl phthalate was from ~10^{-3} to ~10 Pa s. At very low organic exposure levels (depending upon the organic vapor and the electrode metal), arc duration statistics show an exponential behavior. Under moderate to high organic exposure levels, arc duration statistics show a log-normal distribution similar to that obtained under clean conditions when the arc current exceeds the minimum arc sustaining current. At sufficiently high currents arc duration statistics become independent of organic exposure. The envelope of the activated curves is predicted by the activation theory of Gray, Uhrig and Hohnstreiter.