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AQUEOUS SUSPENSION BASED ABRASION RESISTANCE ASSESSMENT FOR PARTICULATE ACTIVATED CARBON

M. J. A. Vennekens and B. M. van Vliet

National Institute for Water Research, Council for Scientific and Industrial Research, P.O. Box 395, Pretoria 0001, South Africa

A generalized technique for assessing abrasion resistance has been developed, which is applicable to all types of particulate activated carbons, including extruded and granular particle forms. The method is based on measuring the abrasion losses (i.e. particles <0.25 mm) incurred when an aqueous suspension of activated carbon is agitated by a rotating plunger. The direction of rotation is alternated on a cyclical basis, and all other operating conditions are fixed at predetermined values, e.g. suspension concentration at 40 vol. %, peak rotation speed at 1,200 r/min and duration of agitation at 12 hr. The results can be used to compare different particulate carbon types in terms of expected abrasion resistance, and shed light on the likely resistance to abrasion of different carbons during hydraulic transport conditions (when carbon-metal interactions predominate) and during such operations as adsorber filling and backwashing (when carbon-carbon interactions predominate).