

THE EFFECT OF K₂CO₃ TREATMENT ON SELF-ADHESIVE CARBON GRAIN PREPARED FROM OIL PALM EMPTY FRUIT BUNCH

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ABSTRACT

Self-Adhesive Carbon Grains (SACG) is carbon powder that can be compacted into shaped by a compression moulding technique without adding any binder. A low temperature pre-carbonization process was used to prepare SACG from oil palm empty fruit bunch. SACG were ball milled for 36 hours and sieved to obtain powder with particle size less than 53 micron. SACG were then treated with different concentration of K₂CO₃. The mixture was dried in oven at 110°C for 24 hours. The effect of K₂CO₃ treatment on SACG has been investigated by thermogravimetric analyzer (TGA), Fourier transform-infra red (FTIR) and CHNO (carbon, hydrogen, nitrogen and oxygen) analysis. The thermogravimetric analysis showed that the addition of K₂CO₃ in SACG has progressively promoted the pyrolysis and accelerated the dehydrogenation of the treated sample at much lower temperature. The FTIR analysis on the treated SACG found that the peak intensity of carboxyl C = O and = C – H bands decreased as the concentration of K₂CO₃ increased. The CHNO analysis showed that the present of K₂CO₃ in the SACG caused a small change in the elemental composition of the mixture. However, the above results indicate that the K₂CO₃ treatment has changed the thermal characteristic and chemical structure of the SACG.

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