

Use of dirty plastic waste as precursors for activated carbon production—A contribution to the circular economy

The production of activated carbons (ACs) from dirty plastic wastes derived from the mechanical/biological treatment of urban solid wastes, disposable plastics and plastics used in agriculture is reported. The use of these precursors is innovative and contributes to the circular economy by the valorization of dirty plastics that are usually disposed in landfills. ACs were produced by physical activation, with air or CO₂, and chemical activation, with KOH or K₂CO₃. ACs presented a BET (N₂) area and pore volume up to 723 m²/g and 0.32 cm³/g. Selected samples were tested for the 2,4-dichlorophenoxyacetic acid (MCPA) and 4-chloro-2-methyl-phenoxyacetic acid (2,4-D) removal from the liquid phase. PB-K₂CO₃-1:1–700 presented an apparent maximum adsorption capacity of 245 and 289 mg g⁻¹ for MCPA and 2,4-D, respectively.