

Effect of water volume on the structure and adsorption performance of activated carbon fiber

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The PAN-based pre-oxidized fibers are activated by steam activation with a density of 1.3548 g/cm³. The effects of water vapor volume on the mechanical properties and adsorption capacity of activated fibers are studied by means of uniaxial tension machine and iodine adsorption. The results show that: 1), the increase of water volume has a great influence on the diameter reduction under low water volume, and this effect is low when the water volume increase; 2) with the increase of water volume, the tensile load of the monofilament decreases, the degree of etching of the fiber increases, and the adsorption value of iodine increases continuously; after a short period of activation, the iodine adsorption value reaches 788 mg/g, and the tensile strength reaches 0.72 GPa.