

DEGRADATION OF DIISOPROPYL METHYLPHOSPHONATE IN AQUEOUS SOLUTIONS BY ULTRASONIC IRRADIATION COMBINED WITH OXIDATION PROCESS

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Abstract. The degradation of diisopropyl methylphosphonate (DIMP) in aqueous solutions was studied using ultrasound irradiation with a fixed frequency of 26.2 kHz, following the first-order kinetic model. The study's primary goal was to determine the influence of the following experimental parameters: the pH (at different values of 2, 7 and 10), the initial concentration of DIMP (at different concentrations: 7, 14, 30, 50, 80 mg/L), the processing time (at different periods: 15, 30, 45, 60, 80, 90 min), and the concentration of the additive CCl₄ (at different concentrations: 0.002, 0.004, 0.006, 0.008 mg/L). A DIMP removal efficiency of 98% from aqueous solution was obtained at pH 10 and 0.008 mg/L CCl₄, after an ultrasound irradiation time of 45 min, pointing out the influence of the above-mentioned experimental parameters on the DIMP degradation process.

Keywords: organophosphorus compound degradation, ultrasonic irradiation, advanced oxidation process, model solution treatment.

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