

DEGRADATION OF DIISOPROPYL METHYLPHOSPHONATE IN AQUEOUS SOLUTIONS BY ULTRASONIC IRRADIATION

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Abstract. The degradation of diisopropyl methylphosphonate (DIMP) in aqueous solutions was studied using ultrasound irradiation with a fixed frequency of 26.6 kHz, following the first-order kinetic model. The experimental parameters, including the pH (at different levels of 2, 7 and 10), the initial concentration of DIMP (at different levels: 7, 14, 30, 50, 80 mg/L), the processing time (at different values: 15, 30, 45, 60, 80, 90 min), and the concentration of the additive CCl₄ (at different concentrations: 0.2, 0.4, 0.6, 0.8 g/L), were investigated. The best degradation efficiency of 98% was observed at pH of 10, adding 0.8 g/L CCl₄ for a processing time of 45 min. The study's primary goal is to determine the influence of the above mentioned experimental parameters of the DIMP degradation process.

Keywords: ultrasound, diisopropyl methylphosphonate, sonochemical kinetic, aqueous solution, chemical oxidant.