

Abstract

This bachelor's thesis deals with monitoring the stability of chlorine dioxide of native and methylated cyclodextrins in the presence of hydrogenating agents. It is believed that using cyclodextrins and carboxymethylcellulose can improve the stability of chlorine dioxide and slow its release from the solution. UV spectroscopy was used to monitor any changes in absorbance over time and to determine the concentration of chlorine dioxide in the solution.

When the rate of chlorine dioxide loss from solution was monitored, it was found that the presence of native and permethylated cyclodextrins slowed the loss of chlorine dioxide from solution, with the slowest decomposition observed in the presence of permethylated cyclodextrin. The addition of carboxymethylcellulose to the chlorine dioxide solution slows the rate of chlorine dioxide loss from the open vial the most, by almost three times, compared to ClO_2 itself. This study's results can help optimize chlorine dioxide product formulation for various applications and contribute to the development of more stable and effective chlorine dioxide-based products that can be used to control or eliminate harmful microorganisms in different environments.

Key words: chlorine dioxide, CDS, cyclodextrins, carboxymethylcellulose, biocides, UV-Vis spectrophotometry, stability