The Characterization of Sec-Butylbenzene Hydroperoxide Reactivity by Adiabatic Calorimetry

M.E. Levin, N.O. Gonzales, L.W. Zimmerman, and J. Yang
Shell Global Solutions (US) Inc.
Westhollow Technology Center, PO Box 4327,
Houston, TX 77210, United States of America

Abstract:
The reactivity of sec-butyl benzene hydroperoxide (sBBHP) and sBBHP-cumene hydroperoxide blends, when subjected to various conditions and additives, has been examined by adiabatic calorimetry. Thermal decomposition is found to resemble that for CHP in cumene. Addition of sulfuric acid to sBBHP lowers the onset temperature for reaction to below ambient temperature, as also seen for CHP. Ammonium hydroxide modestly lowers the onset temperature, as well, whereas little impact is seen for sodium hydroxide and sodium carbonate at comparable levels. Exposure to copper metal appears to result in an extra, prominent reaction feature toward the end of the thermal decomposition exotherm. However, nickel metal does not induce this behavior. Sparging and pressuring the sample cell with air at the start of a test does not seem to impart any additional activity.