

# THE STABILITY OF DICARBOXYLIC ACIDS IN SUBCRITICAL WET AIR OXIDATION (WAO) CONDITIONS

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Aliphatic dicarboxylic acids (DCA) are valuable substances for making polymers, plasticizers and lubricating oils. There are lack of environmental friendly routes for production of DCA with longer aliphatic chain, so partial WAO of highly polymerized organic matter and product extraction from industrial process water can be an option. Understanding the chemistry and main effluents would help to evaluate the conditions at which DCA could be attainable as (by)products from different WAO processes. This information would aid to design more profitable WAO plants which subsequently lead to reduction in their greenhouse gases, due to avoiding complete oxidation. The objective of this work was to study stability of DCA in WAO process at subcritical conditions. The influence of oxygen pressure, temperature, pH, various metal salts and the presence of other compounds in the same solution was established. DCA (n=2-8) showed high stability at 175 °C and at high pressure of oxygen (40 bar) in neutral and acidic conditions. Adding alkali hydroxides or homogeneous metal catalysts proved to increase the oxidation of these DCA and led to low recovery (in some cases less than 10%). Co-oxidation by phenolic compounds decreased the stability of DCA in large scale and is investigated more closely.

