Proceeding Book of ISESER 2021

O 43. THE PARAMETERS AFFECTING FORCED CONVECTIVE MASS TRANSFER OF LIQUID BENZENE AND TOLUENE

Zeynep Cansu Ayturan[1*], Şükrü Dursun[1]

[1]*Environmental Engineering Department, Engineering and Natural Science Faculty, Konya Technical University, Konya, Turkey*

E-mail: *zcayturan@ktun.edu.tr, sdursun@ktun.edu.tr*

ABSTRACT: Benzene and toluene are two of the important chemicals which have adverse effects on environment and human health. These chemicals may be used in dyes, cleaning products, and glues etc. They are in the class of volatile organics and they naturally evaporate easily at room temperature. These chemicals may be also evaporated with the help forced convection flow. This prosses is called as forced convective mass transfer and important indicator of volatile organic pollutants in ambient air. Forced like an air flow may increase the concentration of ambient volatile organic pollution originating from home appliances and cleaning products. In this study, forced convective mass transfer of liquid benzene and toluene was evaluated accordingly the parameters such as temperature, mixing state of chemicals, air flowrate and diameter of liquid container. The experiments were conducted in laboratory environment and the concentrations of evaporation gases were analysed with the gas chromatography with a flame ionization detector (GC-FID). Results of the study indicate that the most important parameter affecting the amount of gas phase concentration has been determined as the air flowrate applied on liquid surface. Furthermore, the diameter of liquid container and the ambient temperature have been found as significant parameters affecting the convective mass transfer of liquid benzene and toluene.

Keywords: *Forced convective mass transfer, benzene, toluene, air flowrate, temperature*