

Abstract

Desorption isotherms at 5, 30 and 40°C were determined gravimetrically for Deglet Noor and Alig dates. The products have been hydrated then equilibrated over saturated salt solutions in the range of relative humidity from 11 to 92 %; 21 days were necessary to reach the thermodynamical equilibrium. Deglet Noor and Alig dates exhibited S-shaped isotherms which departed from each other and the discrepancy got more pronounced with decreasing temperature and increasing relative humidity. The Guggenheim-Anderson-de Boer equation (GAB), regressed using indirect non-linear regression method, described the sorption behaviour satisfactorily. Estimated GAB parameters and constants were in good agreement with what the model dictates and with literature. Critical moisture content was estimated to be 28.3 and 5.5 % dry basis at 5°C for Deglet Noor and Alig dates respectively. These values are smaller than what the FAO/OMS Codex Alimentarius ONU-DF-08 imposes for commercial whole dates. Heat of desorption estimated using the Clausius-Clapeyron equation was 68.87 and 62.66 KJmol⁻¹ for Deglet Noor and Alig dates, respectively.