

Title Moisture sorption isotherms of sorghum malt at 40 and 50 °C
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Abstract

The desorption and adsorption equilibrium moisture isotherms of sorghum malt at the temperatures of 40 and 50 °C, over the water activity range of 0.1–0.9, were determined using the static gravimetric method. A non-linear regression programme was used to fit five moisture sorption isotherm models [Modified Henderson, Modified Chung-Pfost, Modified Guggenheim–Anderson–de Boer (GAB), Modified Halsey and Modified Oswin] to the experimental data. The models were compared using the standard error of estimate, mean relative percentage deviation, fraction explained variation and residual plots.

The Modified Chung-Pfost model was found to be the best for predicting the desorption equilibrium moisture content, while the adsorption equilibrium moisture content was best predicted by the Modified Oswin model. The desorption and adsorption water activities were found to be best fitted by the Modified Oswin model.

The moisture sorption isotherms were sigmoidal in shape and showed a marked effect of temperature. The span of the moisture sorption hysteresis loop formed, decreased with increase in temperature, while the size increased with increase in temperature.