

Title Sorptional Parameters of Sunflower Seeds of Use in Drying and Storage Stability Studies
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Abstract

The sorption characteristics of sunflower seeds cv. Paraíso 30 were measured and analysed to provide a means for evaluating stability conditions preventing microbial spoilage and oil acidification. Water activities a_w were measured at three temperatures in a wide moisture content range and the data interpreted with isotherm models, presenting the modified Halsey equation with the higher coefficients of determination. Using a water activity of 0.7 as threshold for microbial stability, the resulting safe moisture was studied as a function of temperature, and compared with values for other cultivars of different oil content.

The Other method was applied to the experimental isotherms to obtain the heat of sorption, in turn compared with predictions by a model based on the modified Halsey isotherm and the Clapeyron equation. Agreement was good, since the ratio of heat of sorption to heat of vaporisation of pure water L_b/L_w was predicted with a standard error of 0.016. Latent heats calculated for assumed drying conditions at the surface grain moisture were between 18 and 59%, as high as those evaluated at the average grain moisture. As most bulk drying models assume surface evaporation, use of the higher latent heat may reduce their typical tendency to overestimate grain heating.