

Desorption isotherms of sweetened maturing coconut at different temperatures

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ABSTRACT

The main objective of the study was to obtain the desorption isotherms of sweetened maturing coconut at different temperatures (50, 60 and 70°C). A static gravimetric technique was used for the desorption isotherm determination of the material using a standard procedure.

The desorption isotherms of sweetened maturing coconut were of type III according to the BET classification. The increase in amount of sorbed water at a given water activity with decrease in temperature is consistent with the theory of physical adsorption. A modified Caurie equation can describe the effect of temperature on the desorption isotherms of sweetened maturing coconut. Using this equation for analyses, the results suggest that when drying of sweetened maturing coconut is done at higher temperatures (above 70°C) the equilibrium moisture content (EMC) of the sample is not greatly affected and would attain a value of less than 1% dry basis. However, when drying is done at lower temperatures (below 60°C), the relative humidity of the drying air would be higher and giving higher EMC of the sample. The net heat of desorption for sweetened maturing coconut increases as the moisture content decreases which is expected for most food products. The relationship between the net heat of desorption and moisture content of the product can be expressed by an exponential equation. Using this equation for analysis, the results show that as the final moisture content of the product decreases the energy requirement increases.

Keywords: desorption isotherms. energy requirement. equilibrium moisture content. maturing coconut.

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