

Specific Heat of Pistachio as a Function of Temperature and Variety

S.M.A. Razavi and M. Taghizadeh

Department of Food Science and Technology, University of Ferdowsi, Mashad PO Box: 91775-1163, Iran

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Abstract

The pistachio nut is an agricultural strategic product, which has an important role in the national economic and processing industry development of Iran. The understanding of the physical properties of agricultural materials as a function of processing conditions and physico-chemical properties of product are necessary for the design of a new unit operation or analysis of present processes. Specific heat of pistachio is one of the most important thermal properties, which is used for design / analysis of drying process. In this paper, the specific heat of pistachio was determined as a function of variety (Ohadi, Kalle Ghochi, Momtaz and Sefid) and temperature (25, 40, 55 and 70°C). The results showed that the specific heat of each pistachio variety increased slightly with increasing temperature, so that the specific heat increased 0.175 to 0.347 kJ.kg.^oC⁻¹ for increasing in temperature from 25 °C to 70 °C. The maximum and minimum values of specific heat were obtained for Momtaz and Sefid varieties respectively, however the specific heat of the Ohadi, Sefid and Kalle Ghochi varieties were almost the same with respect to their different moisture contents.