Thermophysical Properties of the Marine Microalgae *Nannochloropsis Salina*

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Algae have a variety of uses, including pharmaceutical and cosmetic products. Currently, there are also efforts to provide energy from algal biomass in the form of biodiesel, bioethanol and biogas. To optimize the commercial production and use of algal biomass, production facilities have to be specifically designed to handle the source materials and subsequent products. This requires a knowledge of their thermophysical properties. To that end, density, viscosity, and heat capacity of the marine microalgae *Nannochloropsis salina* were determined experimentally at atmospheric pressure and as a function of temperature and total algal biomass solid content. Density was measured using a vibrating tube densimeter over the temperature range from 293.15 K to 333.15 K. Viscosity was determined via a compact falling needle rheometer from 293.15 K to 323.15 K. Finally, heat capacity was measured with a differential scanning calorimeter over the temperature range from 283.15 K to 333.15 K. The algal samples were measured at ten different total solid contents covering a range from 1.4% to 20.3%. Correlation analyses show a relationship between experimental data, temperature, and total solid content for each of the investigated thermophysical properties. Therefore, equations for calculating these properties as a function of temperature and total solid content were developed. Experimental results, as well as results from the correlation analyses and the developed equations, will be presented.