

Determination of Master Compliance Curve for Extruded Semolina Pasta

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The dependence of the rate of relaxation of semolina pasta on moisture content and temperature and how it affects shrinkage during drying has not yet been determined. The purpose of this research was to develop an equation that relates moisture content and temperature in order to obtain a master curve for creep of the product. When found, this equation could help to optimize the drying process and increase the quality of the final pasta product. Semolina flour mixed with water and propionic acid to create a 35% wet basis product was extruded on a C.W. Brabender 2523 to obtain a flat, thin pasta. This product was dried in desiccators calibrated at different relative humidities (53.2%, 82.3%, 96.4%) and temperatures (40°C, 80°C) and then run through creep testing with a DMA and Texture Analyzer. Creep testing related the rate of relaxation to the relative humidity, moisture content, and temperature. The pasta that was tested at higher stresses tended to strain more. Also, higher moisture content pastas and pastas dried at higher temperatures tended to strain more. These results will be used in ongoing research relating the creep of semolina pasta to the rate of shrinkage of the product. Eventually, data such as this for other bio products will be collected and analyzed which can lead to better quality products and higher efficiency processes.