

Texture and rheological evaluation of aerated confectionery

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Abstract. Confectionery industry represents a field that uses a large number of ingredients and techniques to develop unique sweet products. To produce aerated confectionery samples two different procedures were used to incorporate the ingredients in the beating vegetable or dairy cream. The objective of this research was to determine the texture parameters and the viscoelastic properties of aerated confections using compression stress-relaxation test and applying a modified Maxwell model. The highest fat content was presented by dairy cream aerated samples (20.04-20.25%), while the samples based on vegetable cream displayed a lower fat content. By applying the modified Maxwell mechanical model to the relaxation curves the equilibrium stress, σ_e , relaxation time, λ_{rel} , viscosity, η , and modulus of elasticity, G_0 , were determined. The aerated samples' viscosity was greater than 137.96 kPa·s and less than 451.793 kPa·s; furthermore, Pearson correlation showed that density influences positively this rheological parameter ($r = 0.955^*$). Fixing air into the product structure causes a decrease in density (0.388-0.788 g/cm³), leading to a lower equilibrium stress, a lower elasticity modulus and also a decrease of viscosity and relaxation time.

Keywords: aerated confectionery; viscosity; relaxation time; texture; Maxwell model.

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