

Influence of working members of various configurations on the process of mixing yeast dough

Vitalii Rachok, Volodymyr Telychkun, Yuliia Telychkun,
National University of Food Technologies, Kyiv, Ukraine

There was investigated the influence of the geometric parameters of the main working elements on the intensity and quality of the mixing of the yeast dough.

There was researched the wheat yeast dough, which was mixed by a machine of continuous action using screw, cam and pin work elements. The structural and mechanical properties of the dough were determined by viscosimetry. The porosity of the finished product was determined by analyzing the look of the cut of the finished product and the ImageJ special software package.

With an increase of indicators of the rate of displacement from 0 to 100 s⁻¹, a prompt jump in the bias voltage from 2000 to 6800 Pa occurs, then slowly increases to 6950 Pa in the range of the shift rate from 100 to 800 s⁻¹. As the displacement rate increases from 0 to 800 s⁻¹, the viscosity decreases with degree dependence.

Indicators of the cost of specific work during the mixing of the yeast dough by working elements of various configurations for the parameter of stabilizing grating 2,5%, reach 22-37 J/g.

The intensity of mixing the dough depends on the design of the dough mixing machine, the rotational speed of the mixing element and its configuration. Screw working elements are very intense, intensity indicators range from 0.07 to 0.12 W/g.

The porosity of the bread product after kneading by cam element is 72% and is a high indicator of the product.

It is confirmed the positive effect of enhanced machine processing by cam and screw working elements during the process of mixing the yeast dough. Pin working elements can be used in combination with a screw element at the beginning of the shaft. A comparative analysis confirms the expediency of using cam-shaped working elements.