BASIC PROVISIONS AND RESEARCH OF CONTINUOUS DOUGH KNEADING

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Nowadays, the baking industry is concerned with improving the quality of bakery products, which can be achieved through the improvement and intensification of individual stages of the baking process, namely the mixing stage. One of the effective methods of accelerating the dough maturation and the quality of bakery products improvement is amplified mechanical process through dough mixing, which allows to influence its structure and physico-chemical parameters.

The research was carried out on FARINOGRAPH®-AT (Fig. 1.), produced by German company BRABENDER®, the next generation of high-precision instruments for the flour quality and the doughbehavior study during its mixing determining, depending on the dipping time and the rotation frequency of the working part.

Fig.1.FARINOGRAPH®-AT and work camera

We investigated the first stage (Fig. 2) of yeast dough components stirring. The graph shows that the first stage is linear. As the rotation frequency increases, he time required for components mixing decreases. On the moisture content of the dough 44,3%at any rotation speed, in the range from 20 rpm to 140rpm.

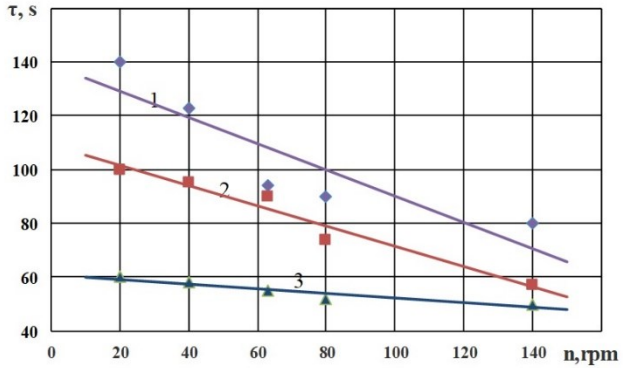

Fig. 2. The first mixing stage duration, depending on the frequency of rotation and the different humidity: 1–40,3%; 2–42,4%; 3–44,3%.

The second stage of mixing, actually the dough dipping (Fig. 3), depending on the rotational frequency and the different dough humidity, is of a power character and is inversely proportional to the first stage in duration.

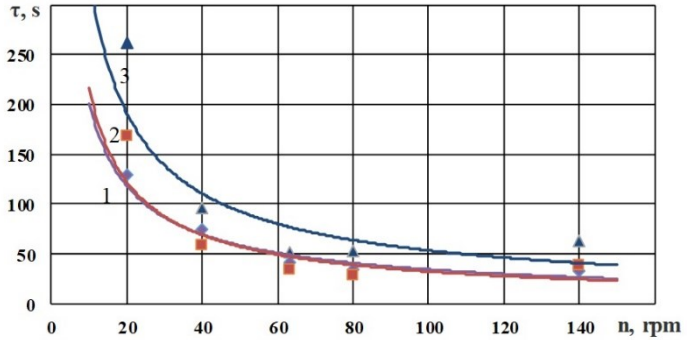

Fig. 3. The second stage of mixing duration depending on the frequency of rotation and the different humidity: 1–40,3%; 2–42,4%; 3–44,3%.

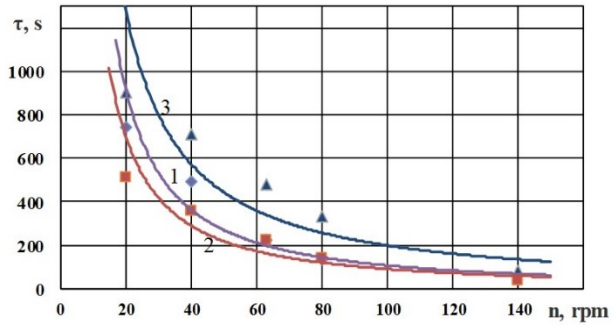

Fig. 4. Duration of mixing the third stage, depending on the rotational speed and humidity: 1–40,3%; 2–42,4%; 3–44,3%.

It was investigated that the physical properties of the yeast dough during mixing are continuously changed as a result of a number of processes that occur when kneading the dough. The time is required for the third stage of the dough plastification with the humidity 40,3-42,4% is 160-180 seconds at a rotational speed of 60-80 rpm.

CONCLUSION. The yeast dough mixing process of should be carried out at relatively high turns of the working part 60-80 rpm, so the humidity in the specified ranges will not significantly affect the process, the gluten macromolecule under the influence of internal stresses appear in the dough, partially destroyed, but due to the internal restructuring of is restored again, and gluten turns out to be elastic.