

WATER DIFFUSION IN BREAD DURING BAKING

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Abstract

A study of heat and water transport in bread during baking was performed. Loaves of bread were fermented twice and baked in a conventional oven at 225°C, with no forced convection, for 35 min. The local water content and two or three different temperatures were measured inside the bread during the baking process. Bread baked from wheat flour was used to investigate the mechanisms of water transport inside a loaf during baking. The water content was measured in the centre, 1 cm from the base, in the bottom crust, 1 cm under the top surface and in the top crust. The temperature was measured on the bottom surface, in the centre, and 1 mm from the optic fibre. The results indicate that up to 70±50C, where a structural change is taking place, the water content in the centre changes little. However, after reaching this temperature the water content in the centre of the loaf rises due to vapour transport from the warmer regions. The water appears to be moving towards the coldest region, and not towards the geometrical centre.