

BREAD PROPERTIES AND CRUMB STRUCTURE

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Abstract

The relationship between bread-crumbs cellular structure and many aspects of quality in a loaf of white bread justifies investigations of how the structure arises during processing of the dough. Following a brief overview of the development of bread cellular structure in the dough, three parts of the literature pertaining to crumb appearance (visual texture) and bread quality are reviewed, with emphasis on the mechanical properties (physical texture) of the crumb. The importance of an objective segmentation of the two macroscopic phases (crumb cells and cell walls solids) is emphasised in digital image analysis studies of bread-crumbs structure. A review of studies where mechanical properties have been measured in fundamental units has section,,on the mechanical properties of the composite structure and on recent analyses of the mechanical properties of the solid phase. Finally, models which have been used to relate structure to mechanical properties. Compared with the rule of mixtures, these bounds represent a good (52%) improvement in the ability to predict values for bread crumb moduli (crumb firmness).