



# Technical Paper

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## THE PROCESSING AND MOULDING OF FERMENTED DOUGHS

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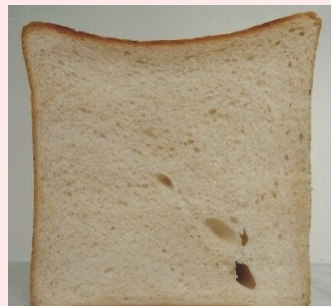
# THE PROCESSING AND MOULDING OF FERMENTED DOUGHS

## The Processing and Moulding of Fermented Doughs

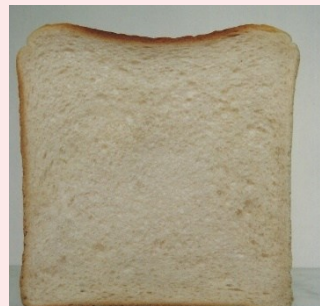
The initial preparation of fermented doughs based on wheat and other grains is mostly carried out by batch mixing at different scales of the various ingredients included in the recipe. This is key step during which the gluten network is developed and the ultimate cell structure which will be part of the final product, is created. The general view is that around 90% of final bread quality is determined by the end of the mixing stage. In some breadmaking methods mixing and dough development are delivered in one step, while in other methods a period of fermentation of the dough in bulk may be used to augment dough development during mixing.

Whatever the chosen breadmaking method, the bulk dough which is created requires further processing into individual unit sized pieces for the final conversion to the required product shape. There are many variations to the processing of fermented doughs from the initial bulk, but each one can make a positive or negative contribution to final product quality. Because of its importance to final product quality, dough mixing has been extensively studied but less is known about the contribution of the individual processing steps after mixing to the moment that the dough enters the final prover.

A legitimate question is “After dividing, do individual dough pieces have to undergo any further processing before proving and baking into bread?”. The short answer is “No, but it depends on what quality characteristics you are looking for”. For example, you can bake a loaf of sandwich bread by simply putting a piece of dough in a pan but as the images below show, the appearance of the crumb structure is quite different without processing and this in turn, leads to differences in important crumb quality characteristics, such as appearance, texture and softness.



No processing



Full processing

# THE PROCESSING AND MOULDING OF FERMENTED DOUGHS

## An Overview of the Processing of Dough Pieces After Mixing and Before Final Proof

The key processing steps for fermented dough pieces are:

- ***Division of the bulk dough into individual pieces of a size and shape suitable for processing into the final product.***

Often the unit weight of the individual dough pieces reflects local legislation which proscribes the weight of bread at the point of sale. This legal need to meet a standardised final bread weight means that a slightly higher dough piece weight is required to allow for baking and cooling losses. Pan breads are perhaps the most strictly controlled of all bread types, with smaller products like rolls and buns being less strictly controlled in terms of unit weights.

- ***A first shaping of the unit pieces for processing.***

The action of dividing the bulk dough can influence the requirement for and nature of an initial shaping method. Mechanical dividers will deliver a more uniform shape for the first shaping step which in turn, delivers a more uniform shape to the final moulding stage.

- ***The modification of the rheological properties of the dough with a resting period.***

The stresses and strains of dividing and first shaping change the rheological properties of the dough pieces and for many fermented products, it has become common practice to allow a short period of 'rest' between the first and final moulding stages. Bakers often refer to allowing the dough to 'relax'. In essence the changes in dough rheology in this intermediate stage (sometimes called intermediate, or interproof, to distinguish it from final proof which is carried out after the final shaping of the dough pieces) may contribute to improved final bread quality. Significant variations in the length of time and conditions for this intermediate resting stage exist for different products and characteristics.

- ***The final shaping of the individual dough pieces.***

In many ways this final shaping (moulding) step is the most important of the processing stages. It is at this stage that the dough pieces will be moulded into their final configuration but under conditions which need to preserve a range of final, often traditional, bread characteristics.

As already noted, significant variations of the 4 steps identified above are encountered in commercial practice. Some of those variations seen in commercial bread production simply reflect traditional methods of processing the dough pieces by hand and the long-standing tradition of many of the different bread shapes. Other process variations reflect the need to influence specific quality characteristics in the final loaf, such as its crumb cell structure (texture), softness and appearance.