2.6 Anti-blistering

Defects can appear during retarded proofing

Affecting the aspect of the crust, especially due to blistering. Such defects are more noticeable in dough lacking strength.

Retarded bread-making techniques, such as retarded proofing, slow proofing and ready-to-bake, make it possible to interrupt the process of a direct manufacturingand delay the baking step. This method relies particularly on the use of fermentation chambers in which programmable temperatures can slow down or even stop fermentation.

Advantages are clear: a more flexible organisation of the baker's work who no longer has to get up at 2 a.m. in order to bake at 7 a.m.. He can supply fresh crispy breads all day long. However, such retarded proofing techniques can result in defects in the crust's aspect, especially blistering.

WHAT CAUSES BLISTERS?

Blisters are pockets of air or gas, which deform the outer dough membrane. They are caused by:

- **Lack of dough resilience** strength (excessive extensibility, poor elastic resistance and resilience), which increases defects;

- **Higher fermentation activity on the dough's surface** where such activity is visible during long fermentation times (such is the case in deferred baking techniques) and excessively high oven or dough temperatures (poorly regulated ovens, excessively high dough temperature after mixing).

REDUCING THE AMOUNT OF BLISTERING

There are several solutions to optimise technological results of retarded baking:

- **Emulsifiers,** mainly containing fatty acid mono- and diglycerides. These have a dual function: they ensure improved gas retention and dough tolerance, they also stabilise the air pockets inside the dough to prevent the formation of blisters;

- **Oxidants** (including ascorbic acid), increase dough strength, thus resulting in improved tolerance;

- **Enzymes** including:
  - Lipases, which hydrolyse triglycerides and catalyze the formation of fatty acid mono- or diglycerides;
  - Glucose-oxidase, catalyst of glucose oxidation, its effects are comparable to those of ascorbic acid, although the level of activity is less intense. This enzyme helps to increase dough consistency and reduce stickiness, offering true advantages to retarded fermentation techniques.

LESAFFRE SOLUTIONS

Lesaffre was the first to understand the bio-chemical processes behind the formation of blisters. The group now offers a comprehensive range of functional solutions incorporating the anti-blistering principle, with visible results at every step of the production process: extensibility, freshness, preservation, etc.