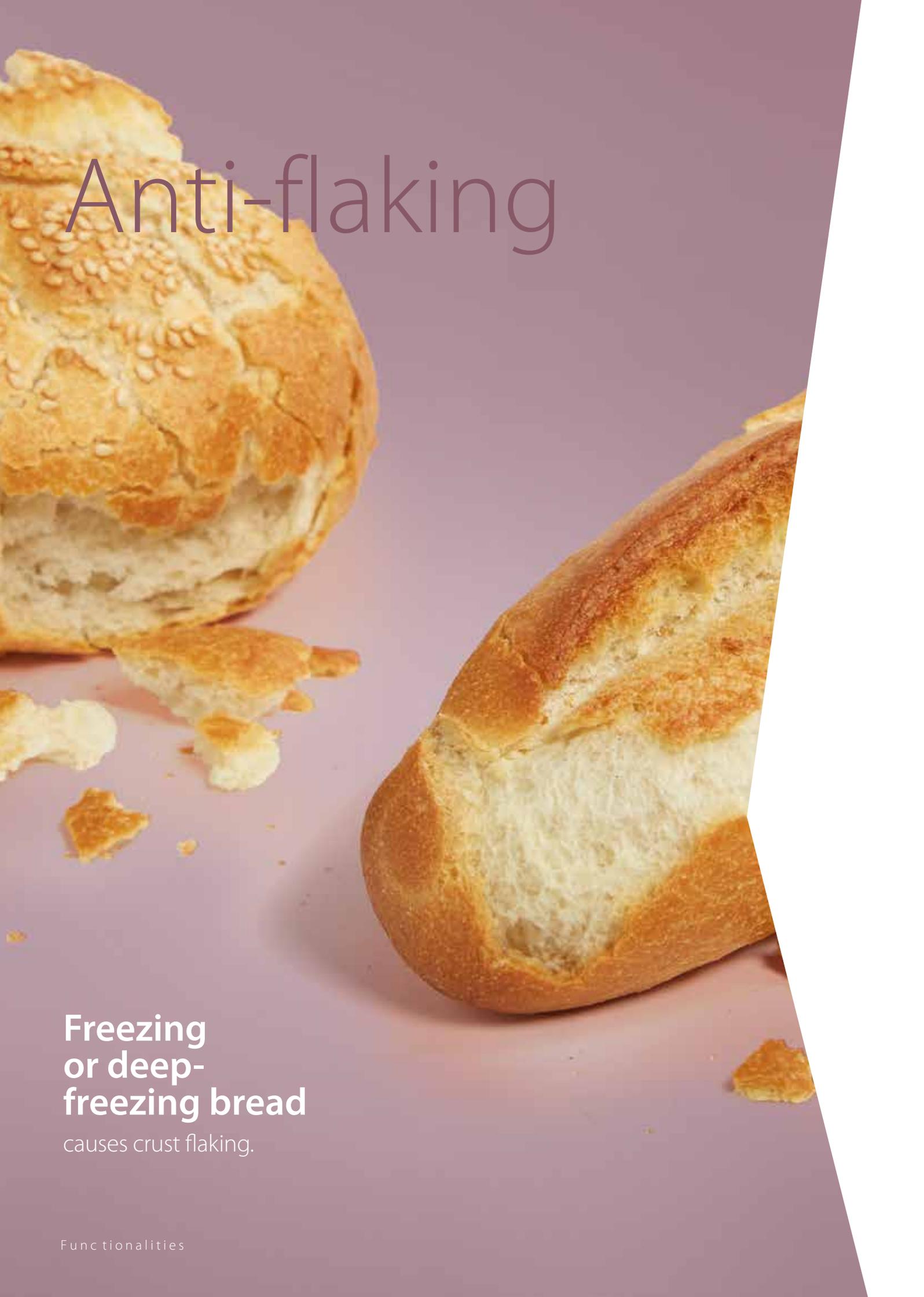


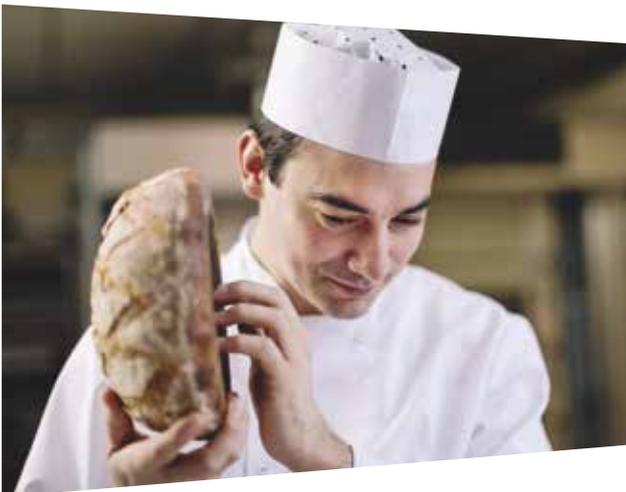
Anti-flaking



**Freezing
or deep-
freezing bread**

causes crust flaking.

In order to always have fresh bread at hand at home without having to go to the bakery each time, consumers often turn to freezing. Bread that is defrosted in the oven or the microwave develops a flaky, crumbly crust. The same applies in the case of part-baked frozen bread if the dough has been a little over-baked and the crust has already browned. Stores that bake off their products can therefore experience major waste, since flaking is enhanced by product handling during packaging and logistics.



WHY DOES FLAKING OCCUR?

Flaking occurs when water crystallizes on the surface of bread where the crumb is moist and the crust is dry. The outward sign of such crystallization is a **white halo on the crumb border**, which creates fragility between crumb and crust. Defrosting or the final bake off will dry out the crust further. **Having lost all its plasticity, the crust cannot tolerate the mechanical changes** which happen due to the pressure of steam generated from reheating and will detach from the loaf.



REDUCING FLAKING

Flaking can be reduced by acting on the following levers:

- **Variation in bread volume:** if major volume increases can be avoided after baking and during crust formation, the contraction of the gases at work during cooling and freezing will have less impact on the crust;
- **Water migration:** the use of hydrocolloids and pre-gelatinised flour will enable to limit the formation of macro-crystals during freezing and storage, while reducing water exchanges;
- **Plasticity of crust:** the use of emulsifiers helps to keep the crust supple to prevent excessive flaking when baking off after freezing.

When using the part-baked frozen process, **moderate part-baking** will minimise drying out and prevent the crust from becoming too hard (white halo).

LESAFFRE SOLUTIONS

Lesaffre's solution comes in the form of improvers, which combine the above-mentioned techniques, reducing the amount of free water, preventing the formation of macro ice crystals, preserving a supple crust and accelerating the browning process with moderate baking.

Lesaffre was the first to understand the flaking phenomena and to offer a patented solution in the form of bread improvers.