



WHITE PAPER

The Role of *Ingredient Quality* in Industrial Bakery Production

Industrial bakeries today use complex, computer-controlled systems, artificial intelligence, robotics, and many other advanced technologies to get the most out of their production lines and achieve the best quality in finished goods. However, even with improved processes and high throughput, optimal ingredients and procedures must be used, because even the most cutting-edge technology cannot produce great taste and texture at high volume without the right combinations.

In these highly automated bakery systems, ingredient quality translates into finished goods that have uniform physical attributes, sensory characteristics, and consistent performance on and off the grocery store shelf. High-volume baked goods manufacturers conduct daily tests at the production line for factors like flour quality because they understand that changes in the quality of ingredients are the enemy of efficiency and consistency.





Achieving *Quality* in Baking Ingredients



Ingredient manufacturers' influence on the quality of baked goods occurs in several ways, such as by carefully sourcing raw materials, applying technologies for improved fermentation, and ensuring consistency in the process to maintain uniform rheological properties during production. Therefore, the highest quality baking products come from manufacturers that submit their ingredients to rigorous evaluation and thorough research.

Before being chosen for commercial use, ingredients that meet quality specifications and desirable functionality will undergo extensive testing in the lab and in commercial production test facilities. Saf Pro® is a longtime leader in the science of baking, and its diverse portfolio of bakery ingredient solutions, technical expertise, and global supply chain makes it an excellent partner to reliably deliver consistent quality in baking ingredients.

For Lesaffre R&D, developing ingredients that can help a customer improve a product, solve a challenge, or make the process easier for the baker is always at the forefront.

The important steps in development are:

- Understanding how the baker will use the product
- What processes and application it will be used in
- Having the right ingredients at the optimal dosage to achieve the desired end characteristics

When designing ingredients, Lesaffre R&D uses equipment that is similar to what is used in industrial production to replicate the process as well as state-of-the-art analytical equipment to characterize the final product quality. The whole process is continuously analyzed to see the impact on dough rheology and attributes such as how treatments affect not only volume, but also crumb cell size and sensory attributes.

Quality In, Quality Out: *Buns and Pan Breads*

Inconsistencies in finished goods are costly for any bakery, but especially so for high-volume production of buns and pan breads. In addition to being a partner in a bakery's supply chain, ingredient manufacturers must deliver consistency at scale to maintain optimal output with minimal waste. Saf Pro offers bakery operators purpose-built solutions and technical expertise to consistently produce buns and pan breads at high volume.

■ Sensory Analysis

Large-scale commercial bakeries often use “look and feel” observations to make important decisions on the production line. However, techniques like sensory and texture analysis provide precise measurements of the textural and taste characteristics of baked goods. High-quality baking ingredients will be evaluated

through instrumental techniques on how they affect textural characteristics like hardness, crumb, and cohesion. At the same time, descriptive sensory data will be used to measure tastes like bitterness or sourness (such as in sourdough applications).

Through its international network, Saf Pro's parent company, Lesaffre, offers sensory analysis laboratories and global and regional R&D teams to help bakeries and bakers design and utilize the highest quality baking ingredients in ready-to-use formats and custom solutions for commercial bakeries. Lesaffre operates 63 application centers around the world, including 51 Baking Centers™, where producers can fine-tune their understanding of how their ingredients perform in mixing, during baking, and on the shelf.



Quality In, Quality Out: *Bagels*

A bakery scientist's goal is to fully understand how their ingredients interact with others, such as yeast or chemical leavening agents, emulsifiers, or dough improvers. In bagel applications, mismatches in ingredients can result in visual flaws like blistering, off-tastes, and poor texture. Using the right combinations can help improve and maintain the quality of the finished goods. Saf Pro offers ready-to-use solutions specifically formulated to ensure quality in bagels.

■ Lesaffre Baking Centers

As a part of our commitment to quality, Lesaffre has opened Baking Centers on five continents over the past 50 years. Every day, year-round, Lesaffre hosts our customers, including production managers and product developers, at one of

Lesaffre's Baking Centers to be trained on using Saf Pro solutions to get the most out of their ingredients and to solve challenges. Here, customers can tap into the Lesaffre technical team's broad scientific expertise in ingredients and baked goods production.

With Baking Centers around the world, Lesaffre offers expertise on a wide variety of products and processes including Saf Pro solutions and technical guidance at every stage of product development. Beyond quality assurance, Baking Centers are where new, innovative formulations can be tested and perfected in collaboration with top technical experts in industrial baking.



Quality In, Quality Out: *Artisan-style Breads*



Artisan-style breads are all the rage, but using unconventional ingredients like ancient grains presents numerous challenges to producers. Saf Pro's expansive sensory analysis lab network and Baking Centers make it possible to test innovative formulations using artisan ingredients, on every continent. From crumb analysis to reformulation advice, Saf Pro's experts are available to commercial bakers everywhere to achieve quality and efficiency in artisan-style breads.

■ **Saf Pro: Committed to Quality**

Behind every high-quality bakery application are high-quality ingredients. And behind the best baking ingredients are countless trials and refinements in production. High-quality ingredients are chosen from many hours of research by R&D, sensory testing, lab analysis, test production, and more.

At Lesaffre, we understand that great ingredients are no accident. That's why our Saf Pro portfolio of ingredients only

includes solutions designed and thoroughly tested to deliver the highest quality in baked goods. Plus, our team of food scientists and manufacturing experts are well-versed in how to get the most out of our ingredients. Every day, we work with the world's leading bakeries to solve some of the toughest challenges in baking.

Lesaffre also understands that having high-quality ingredients is only half the battle. That's why we offer support through sensory analysis and analytical testing at our laboratories, application facilities, and Baking Centers around the world. Our technical team works with our customers to ensure they are trained to use their Saf Pro ingredients to achieve their goals. And, as the global leader in fermentation technology, we offer a wide range of baking solutions that are unique to our portfolio, including clean label dough improvers, enzyme-based MDG replacers, ingredients for shelf-life stability and softness extension, and much more.