

Long Shelf Life

Rademaker Technology

When it comes down to long shelf-life production lines, the first important question that arises is how long the desired shelf life should be. Shelf life of laminated bakery items can range from 7 days to 6 months. This shelf life will determine the recipe but also the procedure of dough development. The way the croissant is cooled and packed too, is of great influence on the shelf life of the product.

According to the Rademaker long shelf life technology, four factors determine the quality and the product's shelf life:

Recipe

The recipe for long shelf life products is unique. Long lasting softness is created by making use of mother dough technology combined with a rich recipe with margarine, sugar, eggs, glucose syrup and a special blend of enzymes. The enzymes blend can be used in combination with a bread improver to contribute tolerance and volume. The combination of these ingredients, in its specific mixture, will reduce the amount of free water inside of the dough (aW).

Next to this, other crucial aspects for creating shelf life:

- Quality and type of fat (margarine, shortening, butter)
- Whether or not calcium-propionate (cp) or other preservative is used
- Quality and type of filling

Process/Procedure

Long shelf life products are produced with very long final fermentation times. This is thanks to the rich recipe, in combination with the low amount of free water. Also the usage of preservatives, like calcium propionate, will contribute to long fermentation times. This long fermentation time is however necessary to give the dough the right development in terms of flavor, taste and softness after baking.

The upscaling of the mother-dough can be done in several fermentation steps depending on recipe costs, desired quality, pH, production equipment and dough handling.

pH

Mother dough is necessary to, besides taste and crumb softness development, lower the pH of the dough. By doing so, natural preservatives (various types of lactic acid, citric acid, etc.) are created. During the fermentation of the mother dough, the pH will decrease to levels of < 4. After mixing and final proofing, the pH can reach 4,5 to 5.



Dough equipment

Rademaker offers laminators and make-up production lines to produce long shelf life pastries and croissants. Capacities starting from 800 kg up to over 2,000 kg per hour leading to a product quantity of 10,000 pieces an hour up to 70,000 pieces per hour. Capacities depend on the size and weight of the products.

The Rademaker Laminator will provide the correct laminated dough sheet. This dough sheet is fed towards the Rademaker croissant- or make-up production line. Because of the Low Stress Sheeter it is possible to handle doughs very gentle: ensuring that dough structure thanks to gluten formation, is not destroyed. This structure is crucial to deal with the long fermentation times that are required for long shelf life croissants.

Also because the high level of automation, Rademaker equipment ensures the bakery to work in the most hygienic way.

Handling - Proofing, Baking, Packaging

The final proofing time is very long due to the usage of mother dough, the rich recipe, the usage of preservative and the very limited amount of water. Final proofing times can run up from 180 minutes to over 300 minutes. This is important with regards to the choice of equipment for the final fermentation.

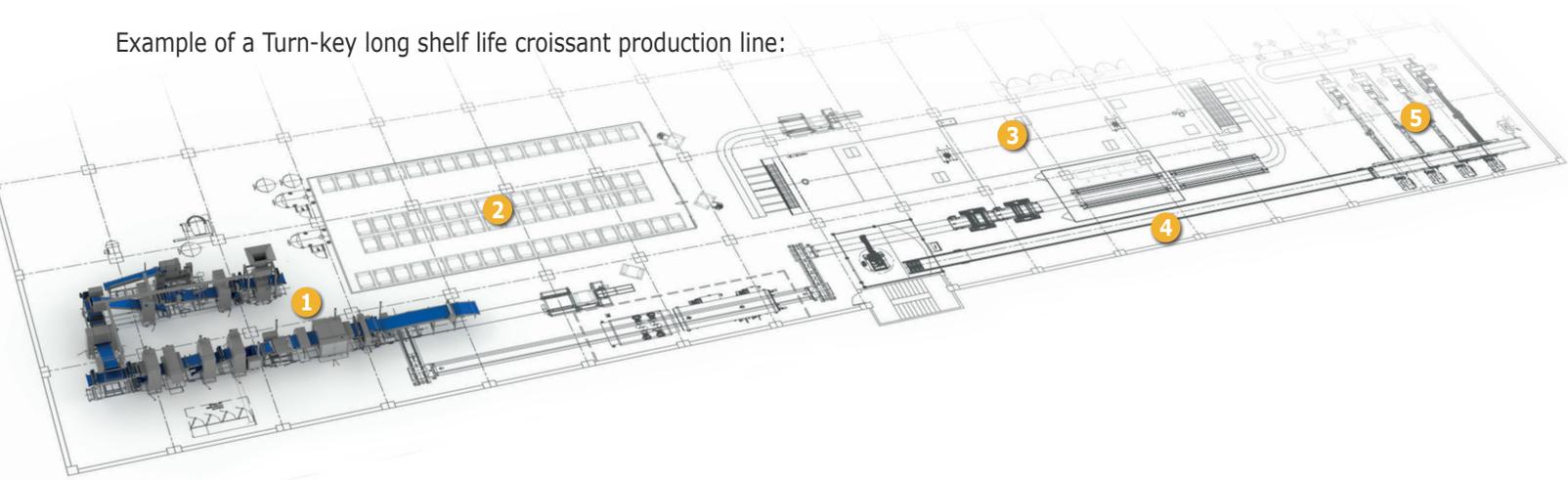
To avoid drying of the product and to keep the maximum of moisture inside of the product, the product should be baked with limited convection and maximum radiation and conduction. Baking time depends heavily on the size of the product.

Assuming that the products are packed in flow-pack (horizontal) or trans wrap (vertical) packaging, there is the possibility to increase shelf life by making use of gas flushing. For this procedure, it is necessary to use special equipment and special foil.

Long shelf life production solution

The long shelf life technology expertise can be carefully applied in Rademaker's production solutions. As the global leader in Laminating production lines we can assure that our production lines will enable you to achieve the taste, texture, shape, and capacity that you and your customers expect.

Example of a Turn-key long shelf life croissant production line:



1 Production



2 Proofing



3 Baking



4 Cooling



5 Packaging

Product specs:



Dough weight range:

9 - 150 gram

Capacities:

up to 120 stroker per minute

Example unfilled 10 gr dough:

50x70 mm/ 10 gram dough / 12 rows on working width 1000/1200 = max cap. 86.400 pcs/hr

Example unfilled 20 gram dough:

70x90 mm/ 20 gram dough / 10 rows on working width 1000/1200 = max cap. 72.000 pcs/hr



Specialists in food processing equipment

HEAD OFFICE

Rademaker B.V.
 Plantijnweg 23, P.O. Box 416
 4100 AK Culemborg, The Netherlands
 T +31 345 543 543
 F +31 345 543 590
 www.rademaker.com