

# Efficient toast loaf production

Industrial toast loaf production is mainly based on the **4-piece-method**. As a further development of this, **Fritsch** is also offering a **6-piece-method** as an alternative.

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*Toast loaves are primarily produced on an industrial scale. Here when examining the loaf more closely, the 4-piece processing method can be seen.*



**1**

Photo: Fritsch 2018



**2**

Photo: Fritsch 2018

**1** Fritsch has developed Impresa Bread for industrial bread production with high quantities of toast loaves, ciabatta, baguette and more as well as the processing of soft doughs. **2** The first module of the line is the extruder with a patented five-roller-mould system which works without liquid release agents such as oil.

In Germany about 650 million toast loaves are sold per year. In the bread segment, one in every five Germans only eats toast. The Toast Atlas produced on behalf of Golden Toast has researched the partiality of the Germans to white bread in more detail. And 48 percent of those questioned would sign the statement “Toast is always okay with me”. 38 percent start their day with a quickly buttered slice. And per toast meal there are on average 2.6 slices on the plate. Toast hunger is even bigger with men, with 29 percent eating four slices or more. For the refinement of white bread 93 percent of households have a toaster making these appliances more widely used than a kettle or coffee machine. However, men are the “softies”

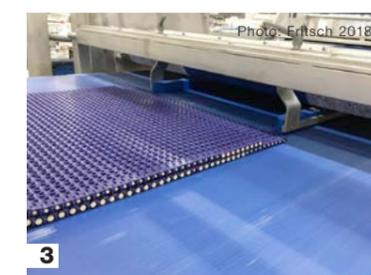
when it comes to toast fans – in comparison to women they tend to prefer their bread untoasted or only slightly browned. Here the sweet flavour carriers are released intensively through the toasting process. Also typical for the bread is that it has a characteristic square shape and almost no crust, like the Italian sandwich bread Tramezzino. The crumb is also elastic with a porosity that is uniformly very dense. Due to its Anglo-Saxon origin the square loaf is primarily known internationally as sandwich bread.

Overall, the toast market has developed rapidly in the last 30

years and according to current GfK research has recently grown even further. The bread is particularly light, soft and easy to chew – and that appeals to the taste of many people and especially to the younger target group. The trend for grilled paninis, focaccia and sandwiches has also ensured that toast is enjoying huge popularity. This market is currently almost 100 percent in the hands of retail outlets and discounters because white bread can be produced particularly efficiently in large quantities and has therefore become a classic industrial product. And last but not least this is thanks to the relatively low end-user price.

### Abstract

The toast loaf is a classic industrial product that can be produced efficiently on a production line. A possible process here is the 6-piece-method.



**3**

Photo: Fritsch 2018

**3** The wrapping agent of the Impresa Bread works with counter-rotating or rotating rounding belts which can be folded up for cleaning. For tightly wrapped products there is a calibrating roller. **4** One specific feature of the line is the toast loaf production using Fritsch's in-house 6-piece-method which can produce toast loaves up to 340 millimetres long.



**4**

Photo: Fritsch 2018



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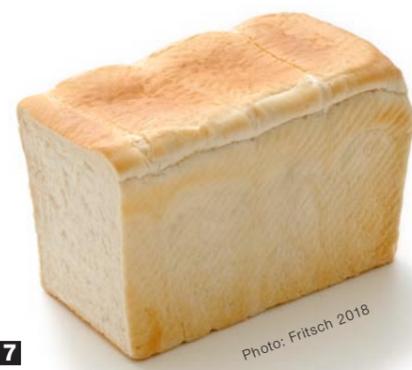
## Dough Production

Toast is a typical pan bread which is baked in a mould with a lid. Its characteristic features of a soft fine-pored and uniform structure imply that the production process is a simple matter. However, as so often, the complexity is in the detail and this starts with the dough production itself. The dough proving must always be young and the dough resting times short, otherwise undesirable big pores appear. Whereas doughs in artisan techniques are always well kneaded or even over-kneaded, in industrial dough production an intensive kneader with vacuum technology is generally used. Through the higher pressure during the kneading process the dough is enriched with oxygen. This then improves

the fermentation stability and reinforces the effect of baking improvers. Gluten and dough development are thereby boosted and speeded up during the kneading process. However, for the faster formation of the gluten framework, the flour treatment agent ascorbic acid must be added. Consequently, the bread rises better, the crust formation is more intense and the porosity finer. The kneading phase in a vacuum also has a positive effect on the desired fine and stable pore structure.

## Processing

There are three methods for the artisan production of toast loaves. Widely used is the 4-piece-method in which the pores formed during the lengthways shaping of the



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5 Typical for the toast loaves are their characteristic square shape, little or no crust which is why they are baked in bread pans, sometimes even with a lid. 6 The classic toast loaf consists 100 percent of wheat flour. However, many other whole grain and seeded varieties are now also available. 7 A typical toast loaf stands out due to its soft, finely-porous and uniform crumb structure. The bread should not look to have a waist formation.

dough are laid crosswise by turning the four dough pieces by 90 degrees. This results in lower pore depth in the subsequent cut slices and the crumb is lighter. This stabilisation in the lateral direction is also an effective prevention against the very frequent toast loaf error of a waist-shape being formed. For processing in artisan production the 10-piece-method and twist-method are also used, but in the industrial production of toast loaves from a dough sheet, the 4-piece-method is generally used. This starts with the creation of a homogeneous dough sheet. Through the pre-portioning the dough is carefully and uniformly guided to the extruder. Depending on the dough and the output required, various different extruders are used, all of which carefully shape a consistent dough.

## Soft Processing Technology

With its Soft Processing technology Fritsch guarantees particular-

ly careful dough processing in all process steps, and not only in the production of toast loaves.

The dough sheet for the toast loaves is created with a five-roller-mould system. The central element of the technology, however, is the eight-roller satellite head, which like the mould system with the dough-repellent coated rollers, gently reduces the dough sheet to the desired strength. Downstream a cross roller ensures the correct width of the dough sheet that will subsequently be laminated. The power-driven fold channels of the lamination module then create the layers. At least two layers are recommended in toast loaf production. However, no upward limits are set on the number of layers, because many layers can be advantageous to the very fine porosity desired. For optimisation the dough sheet is repeatedly rolled lengthways and crossways because a stable dough sheet and controlled process times are crucial for the fine crumb structure in a toast loaf.

## Cutting and Shaping

So the dough strands do not compress when cutting lengthways, Fritsch uses power-driven knives on its lines. The dough pieces are then cut crossways using a belt weighing scale and a check weigher. This ensures that a weight deviation of under two percent is achieved. To shape the toast loaf dough pieces a drag chain folds them after calibration in the next step and rolls them lengthways. Then every long-rolled dough-piece is subdivided according to the pan length: In the 4-piece-method, as the name suggests, it is divided into four pieces. These are then turned by 90 degrees before

they are placed as a unit into a baking tin. This process ensures the toast loaf has the desired porosity structure and crumb stability. The preceding, multi-stage mechanical processing of the dough also supports the desired fine porosity, in particular when the dough sheet is folded into several layers.

Depending on the output, up to four-rows of production lines are usual in the market for this process. Fritsch is, according to its released statements, the only provider to have developed its system to such an extent that its 6-piece-method is being used successfully by customers. This enables toast loaves 340 millimetres long to be produced.

## Dough Divider versus Dough Sheet

Traditional toast loaf production has six steps:

1. Portioning of small dough pieces
2. Rounding of the dough pieces
3. Proving of the dough pieces
4. Rolling into flat dough pieces
5. Twisting into longish toast loaf dough pieces
6. Cutting and placing into the baking tins

Because often rounded dough pieces are the basis for the loaves, traditional systems produce a slightly conically shaped dough piece which they then roll into sheets. This results however in an inconsistent porosity and weight distribution of the dough pieces in the mould set. The Fritsch production line therefore produces a cylindrical dough piece from a dough sheet which ensures significantly better porosity and weight distribution. A crucial benefit over the dough divider method is the

## The Benefits of Impressa Bread

The Soft Processing technology enables an oil-free toast loaf production that has many benefits:

- » A very soft and smooth crumb structure because not using oil prevents the formation of cavities and uneven porosity.
- » Reduced operating costs due to the much lower use of oil and the corresponding lower cleaning effort required.
- » Lower investment and spare parts costs as no pre-prover is required. This saves considerable space and reduces energy consumption.
- » A high hourly capacity of 50 cycles per minute.
- » The possibility of a multi-row production of toast loaves.

In comparison to the dough divider method the Fritsch process also offers a high degree of flexibility which can also cover a very wide weight range. Many other pan and bread products such as ciabatta and baguette can also be produced on the same system.

production security of the process of Impressa Bread. The reasons for this are, on the one hand, the compact and clear system design through the lack of an intermediate proving chamber and, on the other hand, the considerably reduced cleaning effort thanks to the dough divider not being required. The accessibility of the system components is also very good in the Fritsch solution.