



Baking

PIZZA AND FLATBREAD

BAKERguide Vol. 3-3





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INTRODUCTION

What's more popular than bread and rolls in the US? Pizza and flatbreads! These are baked products characterized by their small volume, flat surface, and circular shape. They are all made from a mixture of water and flour with other ingredients such as sugar, salt, yeast, or baking powder for leavening.

The current pizza market is valued at 272.40 billion USD in 2024, and it's expected to reach 409.50 billion USD by 2032 with a compound annual growth rate (CAGR) of 5.42% during the 2025 - 2032 period. Current trends have shifted towards healthier alternatives such as gluten-free and low-calorie options, and the market has exhibited growth due to online ordering and food delivery services.¹

Finally, the flatbread market is valued at 48.1 billion in 2024, and it's expected to grow to 75.6 billion USD by 2033 with a CAGR of 4.88% during the 2025 - 2033 period. Flatbreads are considered to be aligned with current market trends of healthier products with high nutritional value.² When developing flatbreads, vegetarian, low-fat, preservative-free, and microwavable are the highly opted sub-categories.³



Pizza and Flatbread Market Opportunities

- ▶ The current pizza market is valued at **272.40 billion USD in 2024**, and it's expected to reach 409.50 billion USD by 2032 with a compound annual growth rate (CAGR) of **5.42%** during the **2025 - 2032** period.
- ▶ The flatbread market is valued at **48.1 billion in 2024** and it's expected to grow up to **75.6 billion USD** by 2033 with a **CAGR of 4.88%** during the **2025 - 2033** period.
- ▶ Novel current trends are surging due to the consumer's interest in healthier baked goods.

1. Pizza Market Size, Share, Trends, Growth Report, 2032, www.fortunebusinessinsights.com/pizza-market-113456. Accessed 28 Sept. 2025.
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TYPES OF PIZZA AND FLATBREADS

Pizza

Pizza is one of the most popular baked products consumed worldwide, it is an oven-baked flat bread commonly covered with tomato sauce and mozzarella cheese. Other toppings can be added to these products according to consumers' preferences. Its origin can be traced back to Naples in the nineteenth century where it was made from scraps of bread dough. Modern-day pizza is considered to have been developed since 1889 when Queen Margarita requested a pizza made with the colors of the Italian flag, and thus the Margarita pizza was born.⁴

Italian immigrants brought this invention to the United States, where novel developments occurred up to the modern-day products beloved by many around the world.

A wide variety of pizza varieties exist today, ranging from classic Neapolitan pizza passing through New York style, and pan pizza or Chicago style pizza. All of these varieties have been developed to satisfy consumer demands for novel products.⁴

TYPES OF PIZZA

1. **New York Style:** This is a thin-crust pizza usually topped with mozzarella cheese and tomato sauce.⁴
2. **Chicago Style:** This is a thick-crust pizza made in a pan with cheese going in before the sauce.
3. **St Louis Style:** This is a thin crust pizza using provolone cheese instead of classic mozzarella cheese.⁴
4. **Neapolitan pizza:** it is similar to the New York-style pizza but is usually wood-fired.⁵ It is a light product cooked at high temperatures of around 600°C (1112 °F) for short periods.⁴
5. **Gluten-free pizza:** Following the New York-style pizza, gluten-free pizzas can be made from a cauliflower, tapioca, rice, or sorghum base. It is usually made cohesive through the use of eggs, gums, pregelatinized starches, whey or pea proteins, and fibers.⁴



Flatbread

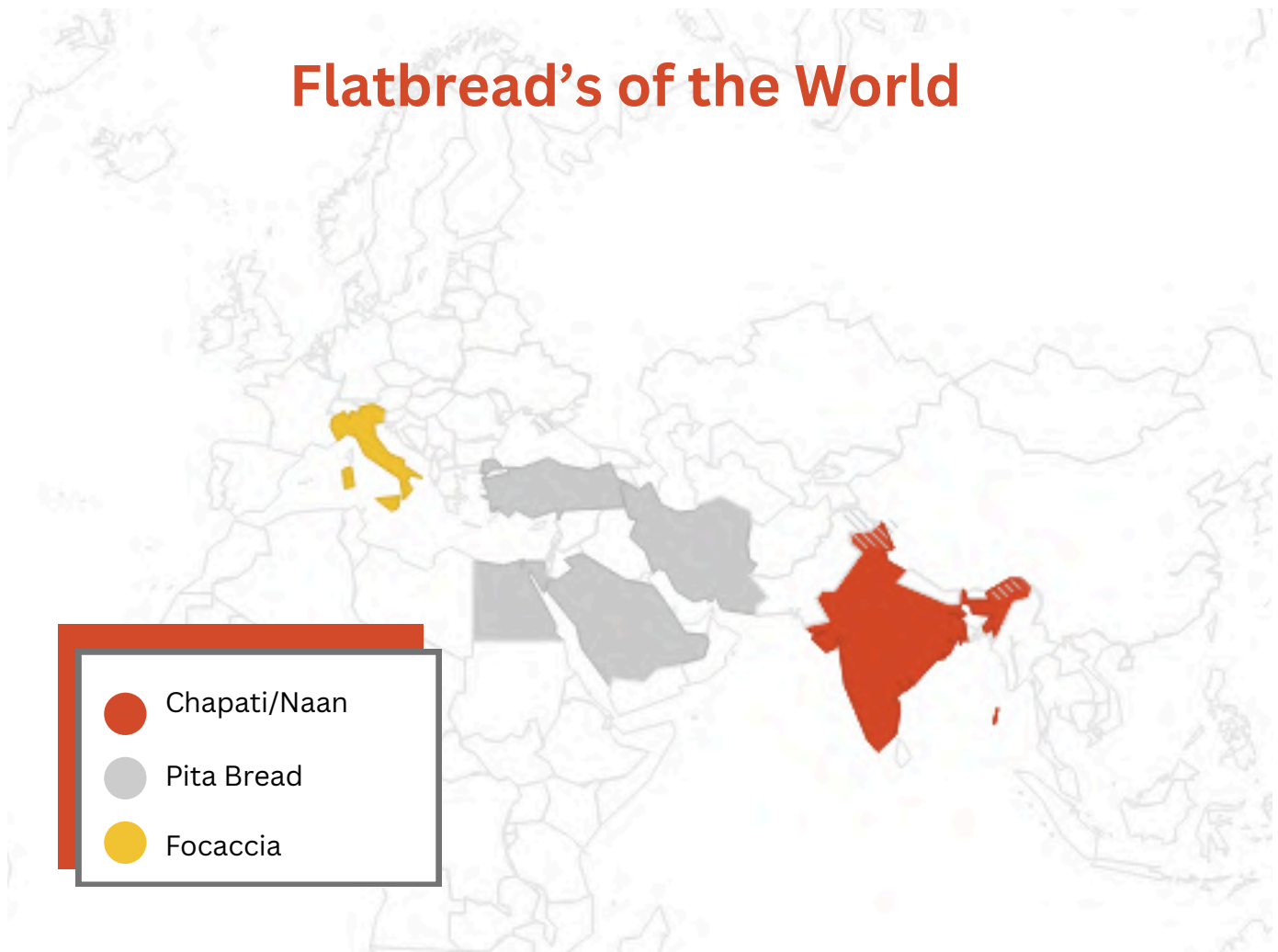
Flatbreads are flat sheets of dough usually placed on a hot griddle or baking stone so that the dough can be cooked. A wide variety of products considered flatbread are available worldwide.

TYPES OF FLATBREAD

1. Pita Bread from the Middle East
2. Naan bread from India
3. Chapati bread from India
4. Focaccia bread from Italy



Flatbread's of the World



They can be classified into two categories: single-layered bread which can be both leavened or unleavened, and double-layered bread.

Focaccia

Focaccia is a typical flatbread from Italy. Its name comes from the Latin word focus which means fireplace. Its earlier origin sets back to 234 - 149 BC when a type of focaccia was offered during weddings. This baked product is characterized by its open crumb and crispy crust, it's often topped with olive oil, rosemary, fresh tomatoes, sage, and oregano among other toppings.

Different Italian regions have developed their interpretation of the focaccia going from the Focaccia Novese from Piedmont to Schiacciata from the Lombardy region, each one has its unique spin on the traditional Italian flatbread.⁷



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INGREDIENTS

Flour

Flour is the essential building block in the creation of pizza and flatbreads, playing a pivotal role in shaping their texture, flavor, and structural integrity.⁴

In pizza dough, flour serves as the primary ingredient, providing the foundation for the dough's elasticity and chewiness. In conventional dough, the wheat gluten proteins in the flour create a network of interconnected strands that give the dough its characteristic stretchiness, allowing it to rise during baking and form the airy, tender crust that pizza enthusiasts crave. In gluten-free doughs, the intricacies of its flour quality are supported by a combination of proteins, pre-gelatinized starches, and/or hydrocolloids and emulsifiers.⁴

In flatbreads, flour is also the central ingredient, often combined with water, yeast, salt, and sometimes oil or other flavorings. The flour provides the foundation for the dough's structure, allowing it to be rolled out into thin, flat shapes before being baked or cooked on a hot surface. The gluten in the flour contributes to the flatbread's chewy texture and helps it develop a crisp, golden crust during cooking.

For gluten-free alternatives, chia flour⁴ or citrus fiber can be used with potato, cauliflower, tapioca, rice, or sorghum flour to form a cohesive dough.

In summary, flour serves as the cornerstone of pizza and flatbreads, providing the essential structure, texture, and flavor of these products.⁷



Water

Water is an elemental ingredient in the preparation of pizza and flatbreads, contributing to the hydration and elasticity of the dough, as well as playing a crucial role in the cooking process.⁴

In pizza dough, water acts as a binding ingredient for the flour, facilitating the formation of gluten. In gluten-free doughs, water hydrates the pre-gelatinized starches and gums. In both systems, water gives the dough its stretchy and elastic texture. Additionally, the moisture from the water helps activate the yeast, allowing the dough to rise and develop its characteristic airy crumb when baked. Proper hydration is essential for achieving the desired balance of crispiness and chewiness in the finished crust.⁴

In flatbread recipes, water serves as a binding agent, helping to bring together the flour and other ingredients into a cohesive dough. The hydration level of the dough influences its consistency and ease of handling, as well as the final texture of the baked flatbread. Additionally, water plays a crucial role in the cooking process, helping to create steam within the dough as it bakes, creating that pocket in pita bread. Lastly, water also contributes to the rise and development of a crisp crust.⁴

In summary, water is an indispensable component in the preparation of pizza and flatbreads, providing essential hydration and facilitating the formation of dough with the desired texture and structure.⁴



Fat

Fat, whether in the form of oil, butter, or lard, serves multiple important roles in the preparation of pizza and flatbreads, contributing to texture, flavor, and overall quality.

In pizza dough, fat is often added in the form of olive oil or another vegetable oil. The fat helps to tenderize the dough, resulting in a softer and more delicate crust. It also adds richness and depth of flavor, enhancing the overall taste of the finished pizza. Additionally, fat helps to improve the dough's extensibility, making it easier to stretch and shape without tearing.

Similarly, fat plays a crucial role in the preparation of flatbreads, where it adds moisture and richness to the dough. Whether it's olive oil, butter, or another type of fat, the addition helps to improve the texture and flavor of the flatbread, resulting in a softer and more tender crumb. Additionally, fat aids in the browning process during baking, giving the flatbread a golden, crispy crust.

To improve the shelf life of flatbreads, fat and oils play a very important role in maintaining their rollability and preventing surface cracks.

Recent research shows olive oil as superior in anti-oxidative function when making focaccia. If you feel that your fat level is too high, Quinoa and amaranth can help lower it down and help improve protein at the same time. Fat is a key ingredient in pizza and flatbread manufacturing, contributing to texture, flavor, and overall quality. Its inclusion enhances the dough's tenderness, flexibility, and richness, resulting in delicious and satisfying baked goods.



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Sugar

Sugar is used in smaller quantities than flour, water, and fat, however, it plays a significant role in pizza and flatbread production, contributing to flavor, texture, and browning.⁴

In pizza dough, sugar is often added to provide food for the yeast during fermentation. Yeast feeds on sugar to produce carbon dioxide, which helps the dough rise and develop its characteristic airy texture. Additionally, sugar contributes to the browning of the crust during baking, resulting in a beautifully golden color and adding depth of flavor to the finished pizza.⁴

In flatbreads, sugar is often added to the dough to balance the flavors and promote browning during baking. The caramelization of sugar at high temperatures contributes to golden crust development, enhancing the visual appeal and flavor of the finished flatbread. Additionally, sugar can help to tenderize the dough and improve its overall texture, resulting in a softer and more enjoyable eating experience.⁴

Overall, while sugar may not be as prominent in the preparation of pizza and flatbreads as other ingredients, its inclusion can significantly impact flavor, texture, and appearance. Whether used to feed yeast, promote browning, or enhance sweetness, sugar plays a valuable role in the creation of these beloved baked goods.⁴



Yeast

Yeast is a fundamental ingredient in pizza, focaccia, and flatbreads, serving as the leavening agent responsible for their characteristic rise and airy texture.⁴

In pizza dough, yeast plays a crucial role in fermentation, converting sugars present in the dough into carbon dioxide gas and alcohol. This process produces bubbles of gas that expand, causing the dough to rise and develop its characteristic light and airy texture. The yeast also contributes to the development of complex flavors during fermentation, adding depth and richness to the finished crust.⁴

In flatbreads, yeast is the primary leavening agent, helping the dough rise and develop a light and airy crumb. The fermentation process initiated by yeast produces carbon dioxide gas, which creates bubbles in the dough, resulting in a soft and tender texture. Additionally, yeast contributes to the development of complex flavors in the flatbread, enhancing its overall taste and aroma.⁴

Overall, yeast plays a vital role in the preparation of pizza and flatbreads, contributing to their texture, flavor, and overall quality. Its ability to leaven dough and create light, airy structures is essential for achieving the desired characteristics of these beloved baked goods.⁴



PROCESSING

Pizza

MIXING & KNEADING

The process starts with the mixing of flour and water in a stainless steel bowl. This initial step is crucial for forming the dough, which serves as the foundation of the pizza crust. Other ingredients such as sugar, starch, and yeast are added later, ensuring precise measurement and uniform distribution throughout the dough. Kneading the dough thoroughly helps to develop gluten, resulting in a smooth, elastic texture that is essential for achieving the desired consistency and structure of the crust. ¹⁰

BULK FERMENTATION

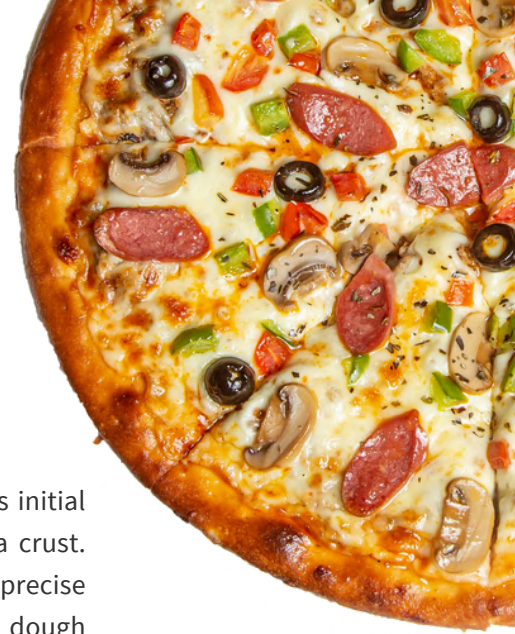
Pizza dough can be bulk fermented from 20 minutes to 24 hours, depending on the output of the bakery. Recent research has shown that a longer fermentation time, even if bulk fermentation is under refrigeration, yields a more extensible pizza that has better digestibility. ⁵

SHEETING

Once the dough is rested or bulk fermented, it undergoes a process known as sheeting. The dough is passed through several rollers, which gradually reduces its thickness while simultaneously folding and stretching it to create layers. This process enhances the texture of the dough, resulting in a flaky and tender crust that is both crisp and chewy. After sheeting, the dough sheet is introduced to a cutting machine, where it is precision-cut into various shapes and sizes to serve as the bases for the pizzas. ¹⁰

TOPPING

With the bases prepared, the next step in the pizza-making process involves the addition of toppings. This is typically done using automated systems, where a conveyor belt carries the prepared bases to stations where toppings such as tomato sauce, cheese, meats, vegetables, and other ingredients are automatically dispensed onto the surface of the pizzas. The toppings are carefully portioned and evenly distributed to ensure consistency in flavor and presentation across all pizzas. ¹⁰



BAKING

Once topped, the pizzas are transferred to a conveyor belt and passed through a baking oven set to temperatures ranging from 150-232°C (300-450°F). The high heat of the oven quickly cooks the dough and melts the cheese, creating a golden-brown crust and bubbling, gooey toppings. The precise temperature and baking time may vary depending on the size and thickness of the pizzas, as well as the specific characteristics desired by the manufacturer.¹⁰

PACKAGING

After baking, the freshly prepared pizzas are ready for packaging. They are carefully transferred to an automatic packaging machine, where they are flow-packed and sealed to ensure freshness and preserve quality. The packaging process is automated to maintain efficiency and consistency, with each pizza securely sealed in airtight packaging to prevent contamination and prolong shelf life.¹⁰



Flatbread

MIXING

The selected ingredients are uniformly mixed and kneaded to form a cohesive dough. Mixing is a critical step to ensure that all ingredients are evenly distributed and fully incorporated, resulting in a consistent texture and flavor throughout the dough.¹¹

RESTING

After mixing, the dough is allowed to rest for approximately 30-60 minutes. This resting period allows the gluten in the dough to relax and develop, making it easier to shape and work with during subsequent processing steps.¹¹

FERMENTATION

Following the resting period, the dough undergoes fermentation to further develop flavor and texture. Various time-temperature combinations can be used for fermentation, with dough typically left to proof for 1-3 hours at temperatures ranging from 20-35°C (68-95°F). During fermentation, the yeast or leavening agents produce carbon dioxide gas, causing the dough to rise and become light and airy. The longer the fermentation, the more the proteins relax and the better extensibility you obtain from the dough.¹¹

SHEETING

Once fermented, the dough is portioned into balls and formed into flat, circular shapes through a process known as sheeting. This can be done manually or using specialized equipment such as dough sheeters or rollers. The dough is flattened to the desired thickness, ensuring uniformity and consistency in the final product.¹¹



BAKING

The flatbreads are then baked in an oven at high temperatures ranging from 350-550°C (662-1022°F). The precise temperature and baking time may vary depending on the type of flatbread and desired characteristics. During baking, the high heat causes rapid expansion of the steam, which produces pockets in the bread, resulting in a crispy exterior and soft, tender interior.¹¹

COOLING

After baking, the freshly baked flatbreads are transferred to a cooling rack or conveyor to allow them to cool down to room temperature. Cooling is essential to prevent moisture buildup and maintain the desired texture of the flatbreads. Excessive cooling may result in drying out the flatbread and increasing mold contamination.¹¹

PACKAGING

Once cooled, the flatbreads are packaged according to their intended use and storage requirements. They may be packaged in common bags for immediate consumption, vacuum-sealed for extended shelf life, or frozen for future use. Proper packaging helps to preserve the freshness and quality of the flatbreads until they reach the end consumer.¹¹



Conditions	Pita Bread	Chapati	Naan
Leavening agent	Yeast	Baking Powder	Yeast
Proofing Time	20 min	Short Time	5 min
Temperature	350-550 °C (662-1022°F)	220 °C (428°F)	315 °C (599°F)
Cooking Time	<20 s	45 s on one side and 90 s on the other side	2 min
Cooking Method	Oven	Hot plate	Oven

Table 1. Common flatbreads processing parameters.

Focaccia

MIXING ¹²

Focaccia uses a straight dough method with multiple folds to get that airy pocket look and open crumb texture. Mix all the ingredients until it comes together.

DOUGH PREPARATION

The dough does not need to be mixed for full development. It will remain sticky and runny. Keep the dough in containers, and let it bulk ferment for 2 hours. For the next hour, fold the dough multiple times, every 15 -30 mins. The more folds you give it, the less sticky it becomes due to the gluten development and alignment. The more fermentation and folds would also result in larger bubbles.

MAKE-UP

Bulk dough is sheeted to target thickness (dusting flour may be needed to ease handling of dough). Then the bulk dough is divided into rectangles (the scaling weight of dough per full sheet pan depends on pan dimensions and product specifications). The dough is deposited on oiled pans, stretched out to the edges. Finally, tomato slices or other inclusions are added.

FINAL PROOFING

After the final proof, the dough is dimpled by punching the dough with your fingers. It is then given the final look by drizzling olive oil, and topped with sea salt, rosemary, tomatoes or sliced olives.

BAKING

Focaccia dough is baked at 215°C (425°F) until lightly browned (approximately 20 minutes). The higher the oven temperature, the shorter the baking time.

COOLING

Product is cooled to an internal temperature of 35–40°C (95–105°F) before slicing and packaging



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FORMULATION

Several common formulations for pizza and flatbread are shown in the following section:

Pizza

Ingredient	Usage Level	Characteristic
Flour	59%	Fresh: <12% protein content Frozen: 11-14% protein content It has to produce elastic and extensible dough
Water	36%	Excessive water: sticky dough
Yeast	1.50%	Mixing should be done at 24 C (75 F)
Salt	1%	
Sugar	2%	Provides food for yeast and water retention
Oil	0.50%	Required for improvement of frozen dough
Ascorbic Acid	70 ppm	Improve volume and texture
Cheese	As required	A wide variety of cheeses can be used if they have the right elasticity and stringy body
Tomato sauce	As required	Another core ingredient for pizza

Table 2. A basic pizza formulation.¹⁰

Flatbread

Ingredients	Pita Bread	Chapati	Naan
Flour	63.75%	62.50%	61.69%
Water	35.06%	37.50%	21.59%
Salt	0.71%	Optional	0.68%
Yeast	0.48%	-	0.62%
Yogurt	¹¹ -	-	15.42%

Table 3. A basic flatbread formulation



Focaccia



Ingredient	Baker's % (based on flour weight)
Warm water	82.50%
Dry yeast	3.00%
Livendo Durum*	3.00%
Olive oil	3.00%
Sea Salt	1.50%
Bread flour	100.00%

Table 4: Focaccia formulation

*A dried sourdough from Lesaffre

Mix the focaccia ingredients altogether till it forms a rough sticky dough that comes together. Bulk ferment for 2-3 hours with 30 min folds in between. Give a final proof of 30 mins before drizzling olive oil over and dimpling the dough. Bake in the oven at 218oC or (425oF) for 25 mins. Cool and slice.

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TROUBLESHOOTING PIZZA AND FLATBREAD



How do I create bigger holes in my Focaccia bread?

To achieve larger holes in focaccia bread, the first consideration is to target the dough hydration above 80% to loosen the gluten. Weak gluten networks create larger holes. Gentle handling of the dough during mixing and shaping should be ensured to preserve air pockets and avoid excessive degassing. Fermentation time should be extended, particularly overnight fermentation, to develop flavor and improve dough structure. More folds added during fermentation time help keep the dough elastic. Therefore, providing more networks to keep the air bubbles in.

Baking should be done at high temperatures or around 220-230°C (425-450°F) to create steam quickly and encourage oven spring. Steam can be used in the oven during the initial baking phase to keep the crust flexible and promote oven spring.⁴



What are the ways that I could improve the shelf life of my food service pizza dough balls? They mold too fast.

When manufacturing dough balls, to be thawed, refrigerated, and baked at restaurants, care must be taken to make sure that your plant is sanitary. While this seems like a simple concept, food safety measures are usually not followed through due to time constraints and cost concerns.¹³ Therefore, the first step to extending shelf life is to put the right food safety policy in place. You will see an immediate return on your investment with this particular step. Next, proper critical control points (CCP) should be placed at the final dough mixing temperatures and final storage temperatures. Keeping these low and constant will help eliminate the mold issue during storage. If these two steps don't eliminate your problem, calcium propionate or cultured wheat can be added to your formula.¹⁴

SUMMARY

Pizza and flatbreads are among the most beloved baked goods in the current world market. Its production process has gone through several improvements in the last couple of decades to keep up with consumer demands. Formulations have evolved to improve the nutritional profile of these baked goods.

Current health trends like keto and gluten-free have caused the need for novel formulations, and thus bakers around the world have been working on improving their formulations to satisfy current consumers' demands.

Improving pizza and flatbread formulations and processing are two of the challenges confronted by bakers in today's baked goods market. We hope this guide helps you in solving your product issues. Reach out to our sponsors here for more information or if you need samples. If you need additional help, please [consult](#) us.



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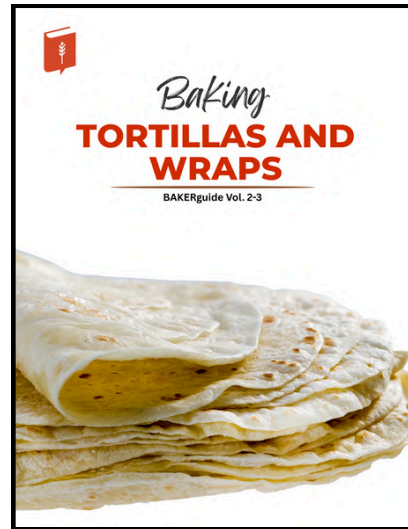
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