

# PROCESSING OF BREAD



**AATMANIRBHAR BHARAT**

**PM Formalisation of Micro Food Processing  
Enterprises Scheme (PM FME Scheme)**

# INTRODUCTION

## Industrial Overview: Bakery



- Bakery goods are an integral component of a modern lifestyle.
- Bakery products are not limited to, bread, rolls, cookies, pies, pastries and muffins.
- Categories of bakery and baked goods-
  - Such as bars, breads (bagels, buns, rolls, biscuits and loaf breads),
  - Cookies, sweets (cakes, cheesecakes and pies)
  - Muffins
  - Pizza, snack cakes, tortillas and tortillas (doughnuts, Danish, sweet rolls, cinnamon rolls and coffee cake).

- Items from bakeries are commonly viewed as detrimental to health.
- Health-based bakery products are the products which, when consumed in sufficient quantities, result in special health benefits other than the usual nutritional supply.
- Bakery owners are also selling bakery items with healthy choices.
- In order to preserve good health while enjoying the taste and comfort provided by bakery items, customers need to become aware of the healthier choices.

## ➤ Types of Bakery Products

- Bread
- Cakes
- Bun
- Pastries
- Biscuits
- Cookies
- Doughnuts
- Crackers



# INTRODUCTION

## Product Description:



- Bread is one of the oldest and largest foodstuffs eaten and is consumed by all age groups all over the world.
- The basic dietary minerals, mainly magnesium, calcium, potassium, sodium, and iron, are also given by bread.
- Bread can be represented by a series of processes involving mixing, kneading, proofing, forming, baking as a fermented confectionery product that is produced primarily from wheat flour, yeast, water, sugar, salt and other necessary ingredients.

- Bread is a staple food prepared, usually by baking, from flour and water dough.
- To make good bread, dough created by any process must be sufficiently extensible to relax and expand while it rises.
- If it's going to stretch out when pulled, a strong dough is extendable.
- Bread may be leavened by naturally occurring bacteria, chemicals, yeast developed industrially, or aeration at high pressure.



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- To make good bread, dough created by any process must be sufficiently extensible to relax and expand while it rises.
- Bread may be leavened by naturally occurring bacteria, chemicals, yeast developed industrially, or aeration at high pressure.
- Commercial bread also includes additives in many countries to enhance taste, texture, color, shelf life, nutrition and ease of production.

## Market Potential:

- Global bread market is projected to register a CAGR of 1.43% during the forecast period, 2019 - 2024.
- During the forecast period, 2019 - 2024, the global bread market is expected to register a CAGR of 1.43%.
- The Indian bread market stood at \$640.73 million in 2017, and is projected to rise to \$1024.54 million by 2024 at a CAGR of over 10.70 percent, in value terms, during 2019-2024.
- The bread industry in India is dominated by unorganized players, leading to about 55% of the total market.



- The global market bread product is divided by product type (Loaves, Baguettes, Rolls, Burger Buns, Sandwich Slices, Ciabatta, Frozen Bread, and Others).
- Market factors and demographic patterns are increasingly affecting supply and demand; India's bread market is aided by an expanding working population and a rising number of health-conscious consumers.

# INTRODUCTION

## Raw Material Description:

- Fundamental Structure: Basic Structure: Three main components-
  - Water
  - Gluten proteins
  - Starch granules
  
- The texture of bread and pastries depends 100% on how the "other stuff" interacts with these components.

- Bread has catered to more practical demand, becoming a staple food that is a big part of the regular diet.
- The demand growth was sparked by new low-carb, high-fiber, multigrain, and fortified bread appealing to health-conscious customers.
- In addition to practical health benefits, there is an increase in the incorporation of natural ingredients, such as natural preservatives, antioxidants, and bread enzymes.

- Companies seek to replace Omega-9, Omega-3 shortening and fat, which enhance the profile of fatty acids and support results.
- Cholesterol reduction, weight loss, high protein, and sugar regulation are the main customer trends.
- Owing to their nutritional benefits, the market for functional ingredients in bakery products is growing.

# INTRODUCTION

## Types of Raw Material:

- White Breads-
  - White breads are breads made of refined wheat flour.
  - This form is commonly consumed internationally, but individuals have moved to other healthier alternatives with the advent of health care options.
- Whole-wheat baking goods-
  - Whole-wheat flour is a powdery material that is obtained by grinding or mashing the whole grain of the wheat.
  - Whole-wheat flour is more nutritious than white flour that has been processed.

➤ Multigrain bakery products-

- These are bakery products comprising two or more grain varieties, in particular for the provision of health benefits and fiber.
- Bread generated with multiple grains such as oats, crushed wheat, buckwheat, barley, millet and flax is multigrain bread.

➤ Bakery high fiber goods-

- Fiber refers to a category of substances that are immune to digestive enzymes, including plant polysaccharides and lignin.

➤ Sugar-free baking products-

- There is no sugar in sugar-free foods and they are typically chemically sweetened.
- These need to look like their sugar counterparts, taste like, and have the same consistency in order to please the customer.

➤ Natural Sweeteners-

- Honey: Honey is 25% to 50% sweeter and has a distinctive taste than sugar.
- Honey baked goods are damp, dense, and appear to brown faster than those made with granulated sugar.

➤ Organic Bakery Goods-

- Organic foods are farming system products that prohibit the use of man-made fertilizers, pesticides, growth regulators, and additives for livestock feed.

➤ Good Fat Baking Goods-

- A healthy substitute such as olive oil, which is healthy, can be substituted by trans-fat containing margarine or butter used in cakes.



# PROCESS & MACHINERY REQUIREMENT

## Raw Material Aspects:

- Maida is Indian subcontinent white flour made of wheat. Fine milled, processed, and bleached without any bran, it closely resembles cake flour.
- Maida is commonly used for the processing of fast food, baked goods such as pastries, bread, and various forms of sweet foods.
- It is often labelled and sold as "All-purpose Flour," although distinct from all-purpose Meal, due to this vast range of uses.



- The endosperm is Maida and it is formed by the starchy white portion of the grain.
- The bran is isolated and refined with the germ by passing through 80 mesh per inch (31 mesh per centimeter).
- Though yellowish by default because of wheat pigments, Midget is normally blanketed by either of the floral bleaching agents, either naturally due to atmospheric oxygen.
- While it is milled from winter wheat that has a high gluten content, the heat generated during the milling process results in denaturing of the protein, limiting its use in the preparation of leavened bread.

## Source of Raw Material:

- Uttar Pradesh is the largest producer of wheat in an area with 9.75 million hectares (32%), followed by Madhya Pradesh (18.75%), Punjab (11.48%), Rajasthan (9.74%), Haryana (8.36%), and Bihar (6.82%).
- As wheat is a major grown crop the availability of wheat grain is easy in the northern states of India.
- Various mandis are available in every district for wheat. Raw material can be procured from these local vendors, or direct from the farm milled to form the Maida.

## Technologies:

### ➤ **Whole-meal bread**

- Breads made of whole meal and wheat meal are common.
- Any bread that includes full-meal flour can be called 'total meal,' as long as it is a characteristic ingredient of the bread and is included in the list of ingredients.
- These vary in the production of white bread in two respects.
- Whole meal bread is more mineral and vitamin rich than white bread because of the protection of the wheat bran and germ. It is an outstanding source of nutritional fiber with two times as much white bread as multigrain bread.

➤ **Rye Breads processing technology**

- Rye flour is different from ordinary flour. Meal of rye is not popular for daily meal.
- It only contains small quantities of proteins that reinforce dough, which creates weak dough.
- Rye meal also has more enzymes of amylase which decompose starch into sugars.
- Rye dough is made from simple ordinary flour, which means it is steep and forms itself with less water than dough.

## Manufacturing Process:



- The production of bread begins with mixing of the ingredients.
- For this purpose, 32-45% Maida, 50-64% water, 2% yeast, 2% salt and optionally fat, emulsifiers and sugar are combined.
- After mixing the ingredients, the dough is kneaded.
- The dough is kneaded after the components have been combined.
- The dough creates the gluten network and creates air bubbles that can absorb carbon dioxide (CO<sub>2</sub>), created by fermentation.



- Proofing is the process of leaving the dough in the machine for 30 to 50 minutes at a steady temperature of 27°C.
- The rising of the dough will take about 30 minutes, at a humidity of 85% and a temperature of 34°C.
- During this process the dough can rest and this will make it easier to (pre) shape later.




- After the folding, the dough is shaped for use in a baking tin.
- The forming of the dough into a long roll is called shaping.
- During the shaping process the dough ball is rolled into a slab.
- This slab is then rolled back up to fit into the backing tin.
- The bread needs to cool down before it is cut and packed.
- Packing it before the bread is cooled down will lead to condensation in the bag.





## Flow Chart:

Machine Name	Description	Machine Image.
Dough Kneader	Kneading machine to knead bread dough for you, or you could go with a heavy duty stand mixer with a dough hook attachment.	
Mixer machine	A mixer, depending on the type also called a hand mixer or stand mixer, is a kitchen device that uses a gear-driven mechanism to rotate a set of "beaters" in a bowl.	

Machine Name	Description	Machine Image.
Moulding frames	The container used to give the dough of the breads, it's shape.	
Thermal Chamber	The process of fermenting bread in order to make the dough of bread rise is leavening & appropriate environment control chamber are used for this task.	

Machine Name	Description	Machine Image.
Baking Oven	An oven is a thermally insulated chamber used for the heating, baking, or drying of a substance	
Bread Slicing machine	Bread slicing machine cuts loaves of bread evenly, thus used for bread slicing. Bread slicing machines represent a milestone in the food processing business.	
Impulse sealer	Impulse sealing is typically used to seal the barrier sacks and sack bags with many layers, metal and oxygen.	

## Additional Machine & Equipment:

Machine and Equipment	Uses	Pictures
<b>Material handling Equipments</b>	<p>These Equipments are used for material handling.</p>	
<b>Food Grade Conveyor</b>	<p>These are conveyors with food grade belt to maintain food safety standards set by monitoring authorities.</p>	

## General Failures & Remedies:

General Failures	Remedies
Ball bearing failure of various machine	1. Proper periodic lubrication of all bearings in various machines.
Power Drive Overload	1. Ensure proper weighing & metering specially in case of semi-automatic plant.
Mechanical Key Failure	1. Ensure that mechanical keys are replaced as per there pre-defined operational life. 2. Prevent Overloading.
Loss of Interface	1. Provide proper physical shielding for the connections.

## Nutritional Information: (100 gram)

S. No	White bread 1 slice (25 grams)	
1.	Calories	67
2.	Total fat	1 gram
3.	Carbs	13 grams
4.	Protein	2 grams
5.	Fibre	0.6 grams
6.	Thiamine	8% of the RDI
7.	Folate	7% of the RDI

8.	<b>Sodium</b>	7% of the RDI
9.	<b>Manganese</b>	6% of the RDI
10.	<b>Selenium</b>	6% of the RDI
11.	<b>Riboflavin</b>	5% of the RDI
12.	<b>Niacin</b>	5% of the RDI
13.	<b>Iron</b>	5% of the RDI

## Export Potential & Sales Aspect:

- The Indian bread sector has risen by ~9 percent in the past three years at an INR 33 billion (USD 0.51 billion) in FY 2015.
- The industry is forecast to rise by ~10% to INR 53 billion (USD 0.82 billion) by 2020.
- White bread continues to dominate the market with a market share of 75 percent, while Indians are more health-conscious.
- Although the demand is expected to increase for brown and nutritious bread, this segment accounts for only 20% of the overall share.
- Therefore due to the breads short life & local market in various countries, they are generally not a product which is exported to other countries except for some traditional breads.



## PM-FME Scheme

- Support for capital investment for up-gradation and formalization with registration for GST, FSSAI hygiene standards and Udyog Aadhar;
- Capacity building through skill training, imparting technical knowledge on food safety, standards & hygiene and quality improvement;
- Hand holding support for preparation of DPR, availing bank loan and up-gradation;
- Support to Farmer Producer Organizations (FPOs), Self Help Groups (SHGs), producers cooperatives for capital investment, common infrastructure and support branding and marketing.



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