



# PROCESSING OF COOKIES



**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).

## INTRODUCTION



- 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



## PRODUCT DESCRIPTION

- A cookie is a snack that is usually thin, flat and sweet, which is baked or fried.
- It typically contains flour, sugar and some type of fat or oil. Other could be included components such as raisins, oats, almonds, chocolate chips, etc.
- Most generally, cookies are baked until crisp or only long enough to stay warm, but certain types of cookies are not baked at all.

- Cookies are produced in a wide range of types, using a range of materials, including Sugar, Cookies, sugar, cocoa, peanut butter, almonds, or dried fruit.
- The cookie's softness will be based on how long it is cooked.
- Baked snacks are sweets. Most commonly made of flour, sugar, liquid and fat, a cookie is a small sweet, crispy or cake-like pastry.

They are distinguished by:

- High sugar content
  - High fat content
  - Low moisture
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- The name of the cookie derives from the Dutch word koekje, meaning 'little cake.'
  - The first cookie dates back to the 7th century A.D. In Persia, where it was first grown with sugar.
  - Cookies are also called cookies in England and the British colonies.

There are three main stages in the manufacture of cookie dough:

- Creaming: to capture air cells to create a fluffy appearance, the fat or shortening is creamed with sugar. At this point, other ingredients such as salt, dried eggs, and baking powder are also added to boost the homogenization of the dough.
- Liquid incorporation: At this stage, the addition of liquids helps to disperse and homogenize the dough, and aeration continues.

- Inclusion of dry ingredients: The last stage of flour addition, or folding in of the flour, gently introduces the flour into the dough without destroying the air cells.
  - The addition of flour at the last stage also prevents the formation of a gluten matrix, thus creating a short bite for the cookie. This results in the cookie getting a brief bite.
  - Cookies are manufactured in a variety of formula compositions, in many different shapes and sizes, and by different processes of manufacture.

# INTRODUCTION

## Market Potential:

- India's biscuit market stood at \$3.9 billion in 2016, and is forecast to grow to \$7.25 billion by 2022 at a CAGR of 11.27 percent, in value terms, during 2017-2022.
- The country's biscuit market is being boosted by the increasing number of health-conscious consumers, the expansion of the working population and increasing urbanization.
- The global market size of cookies was valued at USD 30,62 billion in 2018 and is projected to expand from 2019 to 2025 at a CAGR of 5.3 percent.

- Growing product popularity is expected to be the main factor fueling market development, especially in emerging regions.
- In addition, strong demand in industrialized economies such as the U.S., Germany, and the U.K. for chocolate cookies.
- That would help improve the market by creative packaging methods.
- By introducing new flavor varieties, such as pineapple, bakery producers draw buyers.

## Raw Material Description:

The raw materials required for Cookies is as follow:

- Baking Powder
- Castor Sugar
- Eggs
- All Purpose Flour (Maida)
- Vanilla Essence
- Oil
- RO Water
- Butter
- Corn Syrup

## Decoration/Filling:

### Chocolate Chip

- Usually, a traditional cookie recipe contains flour, a kind of sweetener, eggs, some sort of fat, a liquid, a leavening agent to make it rise and flavour (like vanilla, cocoa powder or cinnamon).
- The key instigators of cookies being their own category (separate from breads) were leavening agents, as these allowed baked products to grow literally in ways they never had before.

- To enhance texture, moisture and overall flavor, a **fat source** is commonly used.
- For cookie, **sweeteners** are very important. While alternatives are available, such as honey or artificial sweeteners, plain old sugar binds best with molecules of water, helping to make cookies moist and smooth.
- **Eggs** play a major role, as their intrinsic proteins function to shape the cookies, structure with other ingredients.

- **Flour**, thanks to its proteins which mix with water to form gluten, gives the cookie its strength and keeps all the ingredients together.
- The protein, starch and leavening agents are hydrated by liquids, enabling the chemical changes necessary to create the cookies structure.
- **Chocolate Chips**: Cookies, biscuits, waffles, cookies, pudding, muffins, crêpes, sandwiches, hot cocoa, and assorted pastries can be used with chocolate chips.

- Butter: Butter is a dairy product made from the milk or cream components of fat and protein.
- Powder for Baking: A dry chemical leavening agent, a mixture of carbonate or bicarbonate and a weak acid, is the baking powder.
- To raise the volume and lighten the texture of baked goods, baking powder is used.

# INTRODUCTION

## Types of Raw Material:

### ***Maida***

- Maida is a white flour made of wheat from the Indian subcontinent.
- Finely milled, polished and bleached without any bran, it closely resembles cake flour.

### ***Chocolate Chip***

- Small chunks of sweetened chocolate are chocolate chips or chocolate morsels, used as an ingredient in a variety of desserts.
- They are available in various sizes, usually with a diameter of less than 10 millimeters (0.39 in). Chocolate chips were originally made of semi-sweet chocolate, but there are many flavors nowadays.



# PROCESS & MACHINERY REQUIREMENT

## Raw Material Aspects:

- Maida is Indian subcontinent white flour made of wheat.
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- Maida is commonly used for the processing of fast food, baked goods such as pastries, bread, and various forms of sweet foods.



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## **Choco chips**

- You will also find stocks of a range of chocolate chips, such as mini chips, butter chips, butterscotch chips, cacao chips, white chocolate chips, peanut butter chips, dark chocolate chips, chocolate chips, and caramel chocolate chips, aside from standard chocolate chips.
- Along with other baking goods, you can use these chips to have the sensation of drooling in your mouth.

## Castor Sugar

- Powdered sugar is a finely ground sugar made by milling the granulated sugar to a powdered state.
- It is often referred to as 10X sugar or icing sugar.
- It normally contains 2% to 5% of an anti-caking agent, such as maize starch, potato starch, or tricalcium phosphate.
- Moisture absorption, clumping prevention, and flow enhancement.
- Except the castor sugar and all-purpose flour, the other raw material used for cake is given below:
  - Vanilla Essence
  - Baking Powder
  - Corn Starch
  - Castor Sugar
  - Oil
  - Eggs
  - RO Water
  - All Purpose Flour (Maida)

# PROCESS & MACHINERY REQUIREMENT

## Source of Raw Material:

- The main wheat producer states in India are Uttar Pradesh is 9.75% (32%), followed by Madhya Pradesh (18.75%), Punjab (11.48%), Rajasthan (9.74%), Haryana (8.36%), and Bihar (6.82 percent ).
- As wheat is an essential cultivable in northern India, the availability of wheat grain is simple.
- Other raw materials for cookie biscuit is the salt butter, baking soda & Cookies can be easily procured from the markets or local vendors.

## Technologies:

### Dough Making Technique

#### ➤ Short dough

- This is similar to the cake dough but is much less water-related.
- The name refers, with respect to the flour quality, to their high levels of reduction of fat.
- This fat decreases the extensibility of the dough and is more likely to crack these biscuits.
- The paste has high sugar content, the gluten network is given very little mixture so that the strength of the sand can be compared to the watery sand that stays under pressure but collapses easily.

## TECHNOLOGIES

### Baking Technique

#### *Infrared Radiation Baking*

- In order to achieve maximum texture, volume and taste, cookies require steady, gentle radiant heat.
- In addition, heat is easily transmitted from the steel band by conduction, allowing the cookie to expand to its final size in the first oven areas.
- The Indirect Radiant Oven heating system is effectively a closed system and the energy needed from the burner is only necessary for each zone to sustain the cooking temperature.

# PROCESS & MACHINERY REQUIREMENT

## Manufacturing Process:

- First of all, as a raw material bakery shortening is kept at a temperature of 8 degree Celsius to 10 degree Celsius to Colden its raw material, so that there will be no lumps issue arise at the time of mixing.
- After that sugar is grinded with the help of Sugar grinder.
- Then mix well the grinded sugar and bakery shortening together & for mixing use filtered water according to the season type.
- After preparation of mixture add refined wheat flour and flavors as required in it.

- In a separate pan, combine the pastry flour and chocolate chips and add them to the mixer.
- Mix for 15 seconds at the 1st pace; scrape down and mix for 15 seconds at the 2nd speed.
- To achieve a homogeneous mixture without hydration of the flour and gluten forming, the mixing is continued at a low speed for no more than one minute.
- Near to the end of the mix, the chocolate chips or nuts are added and allowed enough time to spread equally over the dough.

- Shift the cookie dough to the depositor. On sheet pans with liners, deposit cookies.
- Then keep ready mixture near dropping machine, where cookies are designed according to size, type by the operator.
- Trays are then loaded to the back of machine, in which cookies start coming on the conveyor drop by drop.

- After that these trays are loaded on trolley and cookies are kept in the open for baking process at 180 degree Celsius for 25 minutes.
- After baking process cookies are send to packaging department.
- The finished product is next packaged and stored for supply.



## Flow Chart:

Machine Name	Description	Machine Image.
Batter mixture	This machine simplify mixes the raw material ingredients i.e. Flour with other raw materials to produce the required batter.	
Baking Oven	It's an oven with integrated conveyor in which food is cooked as it moves through the oven over conveyor belt.	

Machine Name	Description	Machine Image.
Batter Depositor machine	This machine is used to deposit the batter of the cookie in a tray or mould.	
Sugar mixture	This machine is used to grind and mix sugar to the batter.	
Packaging Machine	This machine simply packs the given product into appropriate food grade packaging for sale and distribution, which in this case are biscuits	

## Additional Machine & Equipment:

Machine and Equipment	Uses	Pictures
<b>Sprinkling Machine</b>	As name suggests, this machine belongs to the class of sprinklers, which is designed to uniformly sprinkle appropriate ingredient like sugar or salt on given product.	
<b>Oil Spraying Machine</b>	This machine simply sprays oil over the given product in this case biscuits, in order to improve their appearance.	
<b>Other Machine</b>	A range of small machines are required to perform various small tasks and to support the main machines.	

## 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)

SL.No.	The nutritional value of two big cookies serving 54g	
1.	Calories 171	Calories from fat 80
2.	Total Fat 8.8g	14%
3.	Cholesterol 1mg	0%
4.	Sodium 153 mg	6%
5.	Protein 2.5g	
6.	Total Carbohydrates 22.0g	7%
7.	Dietary Fibre 2.0g	
8.	Vitamin A 0%	
9.	Calcium 2%	Iron 4%

## Export Potential & Sales Aspect:

- Throughout the forecast era, the Global Cookie Market is predicted to report a 5.05% CAGR.
- The cookie has also made the ease of storage and portability a common "on-the-go" snack among consumers.
- The demand for oats and digestive cookies would be boosted by good eating patterns.
- The biggest demand for cookies is Asia-Pacific.
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## 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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