

PROCESSING OF CUMIN BISCUIT



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



- It's a fast and quick recipe for cookies or biscuits made with wheat flour and cumin seeds.
- One of the healthiest cookie recipes is this recipe for Jeera biscuits.
- As an alternative to plain flour, the recipe is made with wheat flour and contains no sugar or jaggery for sweetness.
- The recipe is, in truth, a savory cookie and only salt is used to taste it.

- When made with plain flour, the recipes taste fantastic, but may not be liked because Maida is not like everyone, so the use of plain flour or wheat flour is totally dependent on your preference.
- Secondly, tutti-frutti, cherry and even mixed nuts such as cashews, almonds, and walnuts can be added on top of jeera.
- Lastly, these cumin cookies have a longer shelf life and hence it is recommended to preserve in an airtight container.

Market Potential:

- The market research analysts at Technavio expect that by 2021, this market will expand at a CAGR of more than 10 percent.
- The primary demand for biscuits in this area is experienced by the US, with Argentina, Bolivia, Brazil and Chile being the key consumers of biscuits in South America.
- The involvement of a considerable number of players characterizes the business.
- In order to preserve competitiveness and raise their share of sales, market vendors need to distinguish their goods by means of simple value propositions.

- With customers increasingly opting to substitute snacks for their daily meals and raising consciousness of consuming nutritious foods with high-quality ingredients, the market for healthy snack foods has increased considerably in recent years.
- For example, in four different flavors, Way Better Snacks recently released biscuits such as Rosemary Me and Olive Oil, Back in Black Bean and Salsa, Beyond the Sea Salt and Cracked Pepper, and Mustard and Cheddar Way Better.

- Biscuits are considered by most consumers to be healthier snacks, since they have less calories than others.
- Many manufacturers have introduced numerous nutritious biscuits, in addition to conventional saltine biscuits, to meet the demands of health-conscious customers.
- The market for traditional saltine biscuits is also strong alongside healthier biscuits.
- With the rise in demand for biscuits, the numerous biscuit markets around the globe have seen development.

Raw Material Description:

- The cumin biscuit is a type of biscuit made using cumin as a main ingredient.
- The materials are made into a dough, and then the individual biscuits are prepared.
- Fermented dough is used to cook some cumin biscuits. Usually, cumin biscuits are fried.
- Placing cumin on top of warm biscuits is another way of cooking cumin biscuits.
- Cumin biscuits are classified as a "high-calorie snack" because of their higher fat content compared to other forms of biscuits.

Maida (Flour All Purpose):

- 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.

Cumin:

- Cumin is a flowering plant native to an area that includes the Middle East and spreads east to India in the Apiaceae family.
- Its seeds, each found inside a dried fruit, are used both in whole and ground form in the cuisines of many cultures.

Salt:

- In general, salt is important for survival, and saltiness is one of the essential human tastes.
- Salt is one of the oldest and most ubiquitous food seasonings, and an important food preservation technique is salting.

Spices:

- A spice is a seed, fruit, root, bark, or other material of a plant used primarily for food flavouring or colouring.
- Spices are distinct from herbs, which are the plants' leaves, flowers, or stems used for flavouring or as a garnish.

•Butter:

- Butter is a dairy product made from the milk or cream components of fat and protein.
- At room temperature, it is a semi-solid emulsion which consists of about 80 percent butterfat.

•Powder for Baking:

- A dry chemical leavening agent, a mixture of carbonate or bicarbonate and a weak acid, is the baking powder.
- By the addition of a buffer such as corn-starch, the base and acid are prevented from responding prematurely.
- To raise the volume and lighten the texture of baked goods, baking powder is used.

INTRODUCTION

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Cumin

- The dried seed of the herb *Cuminum cyminum*, part of the parsley family, is cumin. The cumin plant reaches a height of 30 to 50 cm (12 to 20 in) and is harvested by hand.



- It is an annual herbaceous plant with a slender, glabrous, branched stem that is 20-30 cm (8-12 in) long and 3-5 cm (1¼-2 in) in diameter.
- There are two to three sub divisions of each branch.
- The same height is reached by all the branches, so the plant has a uniform canopy.
- The stem is grey or dark green in colour.
- The leaves, pinnate or bipinnate, with thread-like leaflets, are 5–10 cm (2–4 in) long.

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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- The herb (*Cuminum cyminum*), which is a member of the parsley family is the dried seed.
- The cumin plant is 30–50 cm long and can be harvested manually by hand.
- It is a medicinal plant annually, with a slender, globous branching stem, 20-30 cm in height and 3-5 cm in diameter.
- There are two or three sub-branches of each branch.
- There is a standardized canopy in each of the branches at the same height.

Source of Raw Material:

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Technologies:

Hard dough technique

- These are savory, unsweetened, or semi-sweet hard-dough classes that include all sorts of crackers, puff-dough biscuits, and semi-dough types like Marie, Rich Tea, and Petit Beurre.
- Biscuits are made out of hard fat, semi-sweet and savoury.
- This is the same with a stiff consistency as bread dough.

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.

Manufacturing Process:



- The raw materials are procured from vendors as per production requirements and stored in the raw material warehouse.
- All types of raw material are brought from the raw material warehouses and fed to their respective holding tanks via appropriate material handling equipment.
- The raw materials for cumin biscuits dough are mixed in a dough mixer which simply mixes the various raw materials with flour to form dough.
- This dough is then fed to a dough sheeter via a dough feeder.
- Multiple dough sheeters are used to reduce the thickness of dough to the required thickness sheet in multiple passes sequentially through multiple sheeters.



- These dough sheets reduced to the required thickness are fed to a biscuit cutter which simply cuts the cumin biscuits out of the dough sheet.
- The cumin biscuit-shaped dough sheet cuts are carried on a conveyor to the tunnel oven, while the excess dough is returned to the dough feeder.
- The oven simply bakes these cumin biscuit-shaped dough into actual cumin biscuits, which are then passed through an oil spraying machine, which simply sprays a layer of oil over the cumin biscuits.
- These cumin biscuits are then passed via sprinkler which simply sprinkles salt over the cumin biscuits.





- A large portion of the conveyor acts as an open-air drier section, over which natural drying and cooling take place, followed by which cumin biscuits are fed to the stacker which simply stacks them for packaging.
- These stacked cumin biscuits are fed to the packaging machine which simply packs them in appropriate packaging for dispatch and sale.






Flow Chart:

Machine Name	Description	Machine Image.
Dough Mixer	This machine simplify mixes the raw material ingredients i.e. Flour with other raw materials to produce the required dough.	
Dough Feeder	As the name suggest it's a simple feed mechanism, used to feed dough from mixer to sheeter efficiently	

Machine Name	Description	Machine Image.
Dough Sheeter	<p>Sheeters are general class of machine used to press given raw material within specified range to required thickness sheets. A dough sheeter similarly forms the given dough into required thickness dough sheet.</p>	
Rotary Biscuit Cutter	<p>The cutter are a class of equipment which are used to cut the given product in this case the dough sheet, this types of cutter use cutting tools mounted on periphery of a roller for continuous cutting.</p>	

Machine Name	Description	Machine Image.
Tunnel Oven	It's an oven with integrated conveyor in which food is cooked as it moves through the oven over conveyor belt.	
Conveyer	Its material handling equipment which used to transport given material from one place to another place.	
Biscuit Stacker	As the name suggests the machine simply stacks the biscuits one over the other for packaging.	
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
Sprinkling Machine	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.	
Oil Spraying Machine	This machine simply sprays oil over the given product in this case biscuits, in order to improve their appearance.	
Other Machine	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)

Nutritional information of Cumin biscuits are per 100g of product approx.

- Calories: 551.93Kcal
- Carbohydrate: 46.6g
- Protein: 61.8g
- Fiber: 0.97g
- Sugar: 23.75g
- Fat: 26.87g

Export Potential & Sales Aspect:

- In 2017-2021 the international demand for packaged bakery products is projected to rise at a CAGR of 4.6%.
- The global biscuits market is projected to reach USD 135 billion in the packaged bakery segment by 2023, with a CAGR of 5%.
- Attracted both small and large players in the industry by the quickly rising demand, which by the end of 2017 amounts to \$76 billion 385 million.
- The global biscuits market is projected to hit US\$ 121 billion by 2021 at the 3.7 percent rate of CAGR, to reach \$164 billion by 2024 at the 5.08 percent rate due to shifts in customer interests and dynamism.

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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