

TECH-KNOWLEDGE

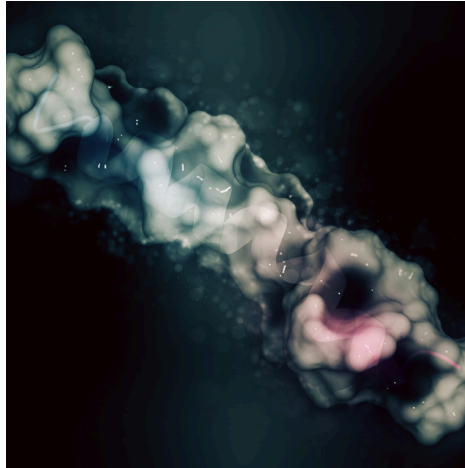
The Official PMG Engineering Newsletter

**FOOD & BEVERAGE
INDUSTRY**

**ENGINEERING
& DESIGN**

**SCIENCE &
TECHNOLOGY**

CONTENTS



1. WHITE PAPER

- A. Meat Analogues
- B. Protein Functionalization

2-5

2. INDUSTRY BUZZ

Latest Food Industry News Updates

6-7

3. WEEKS HIGHLIGHT

A Look Into The Main Events Of The Week

8

4. DID YOU KNOW?

Fascinating Food Facts To Expand Knowledge

9-12



Meat Analogues



Introduction

A meat analog, (also known as a meat alternative, mock meat, fake meat, or imitation meat), approximates sure aesthetic characteristics and chemical traits of the meat. The intake of vegetable proteins in meals products has been growing through the years because of animal diseases, global scarcity of animal protein, sturdy demand for wholesome and religious (halal) food, economic and most importantly environmental motives. A meat-based eating regimen calls for a notably more quantity of environmental sources according to calories compared to a vegetarian meal plan. That is 2 to 15 kg plant foods are needed to produce 1 kg of meat.

Meat Proteins

Meat is considered as the highest quality protein source not only because of its dietary traits especially proteins however additionally due to its attractive taste. The role of meat proteins is two-fold. On one hand, meat proteins have all of the important amino acids carefully equivalent to the human body that, cause them to be exceptionally nutritious. The essential protein functionalities in processed meats are gelation and associated homes (for example, meat particle binding and adhesion, emulsification, and water-conserving ability.

Meat Analogues

Vegetarian foods occupy a larger than ever shelf space in today's market due to the consumers' growing health concerns and the associated environmental problems. Analogue may be defined as the compound that is structurally similar to another but differs slightly in composition. The beef analogue is a meal that is structurally just like meat but differs in composition.

Function of Meat Analogue

The main function of meat analogues is to replace meat in the diet. The market for meat analog does not only includes vegetarians but also the non-vegetarian seeking to reduce their meat consumption for health or ethical reasons, and people following religious dietary laws, such as Kashrut, Halal, and Buddhist.

Usage & Benefits

[READ MORE....](#)



Some meat analogues are based on centuries-old recipes for wheat gluten, rice, mushrooms, legumes, tempeh, or pressed-tofu, with flavoring delivered to make the finished product taste like chicken, red meat, lamb, ham, sausage, seafood, and many others. They can be used to reduce formulation costs due to the fact they may be less expensive than meat. Other attributes include the ability to maintain water and moisture at some point of cooking, reheating, freezing, and thawing makes them exceedingly appreciable.

Types of Food Used as Meat Analogue

1. Soya meat /Textured vegetable proteins (TVP): Soya meat, or textured vegetable protein (TVP), is produced from soybeans primarily in Asian countries. The production method is somewhat laborious but, the end product has a fibrous consistency similar to that of meat. With different seasonings, a great variety of flavours can be achieved.

2. Quorn-the mycoproteins: Quorn is the brand name for a line of foods made from mycoprotein. Quorn products take the form of faux chicken patties, nuggets, and cutlets, as well as imitation ground beef. It springs from a single-celled fungus grown in large fermentation vats which are processed and textured to produce a food that can be easily manipulated for meat.

3. Tofu: Tofu derived from soybeans is perhaps the most widely recognized alternative for Paneer. 'Tofu' prepared by coagulation of soymilk by CaSO_4 or MgCl_2 contains about 8% of total proteins, 4-5% lipids, and about 2% of carbohydrates on a fresh weight basis.

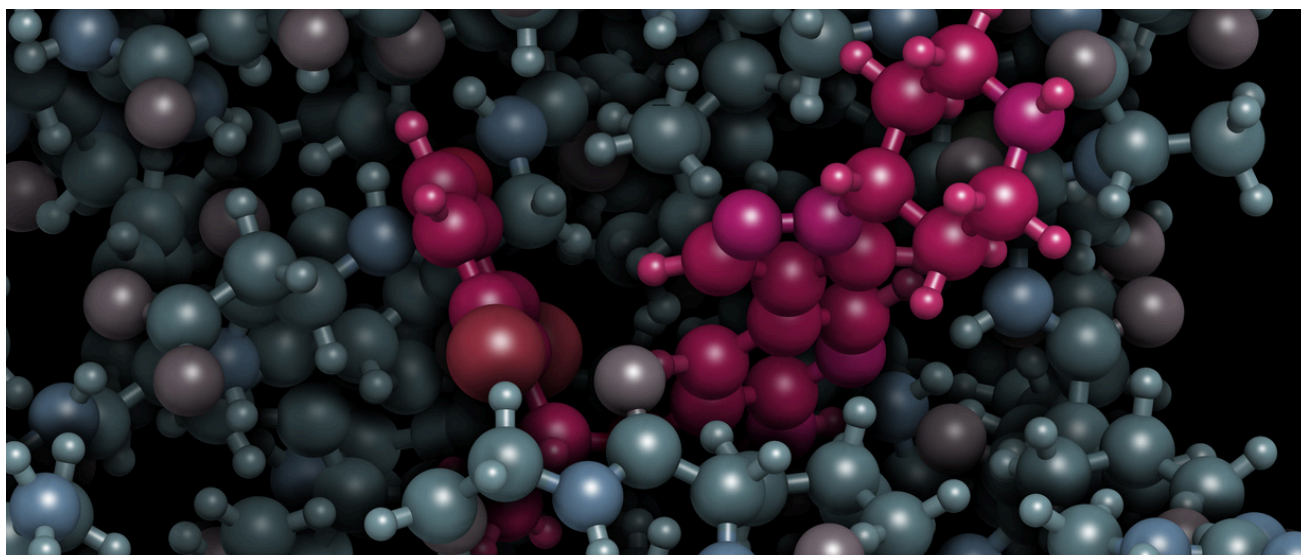


4. Tempeh: Tempeh is made from soybeans that have been soaked and cooked to soften them. Like sourdough bread, tempeh requires a starter culture/inoculum (*Rhizopus oligosporus*), which is added to the cooked beans. This mixture is left for 24 hours and the result is a firm-textured product with a somewhat nutty flavor and a texture similar to a chewy mushroom.

Conclusion

New plant-based meat analogues should taste, feel and smell better, or at least as good as animal meat according to the perceptions of the majority of consumers. Probably, flavor (umami flavor associated with meat) and texture (fibre like as in meat products) are the most important keys to success, and at the same time, the biggest challenges for the researchers. It can be concluded that there is a demand as well as bright future of such products in the market keeping aside a few constraints which need a solution but with a heap of opportunities.

Protein Functionalization



Introduction

Proteins are the engines of a living cell. Within and around cells they perform a magnificently diverse set of functions. They do most of the work in cells and are required for the structure, function, and regulation of the body's tissues and organs. Besides providing structure and stability, proteins are involved in cell signalling, catalysing reactions, storage & transport, and are therefore extensively studied. Over the years, tools have become available for researchers to reveal structure and function relationships, as well as localization and their interactions with other proteins.

Selective Chemical Protein Modification

Chemical modification of proteins is an important tool for probing natural systems, creating therapeutic conjugates, and generating novel protein constructs. Site-selective reactions require exquisite control over both chemical and regioselectivity (regioselectivity occurs in chemical reactions where one reaction site is preferred over another), under ambient, aqueous conditions.

Constraints of Protein Functionalization

While many past examples of so-called 'bioconjugation' exist, those that teach a strong strategic lesson are rarer. The rigour of the chemical approach (including proper characterization) has been lacking—supplanted perhaps by a pragmatic desire for a useful product. In an era now hungry for precise molecular knowledge of protein function, historical examples of precise protein chemistry become vital.

Strategies of Functionalization

Regardless of the functionalization strategy, careful consideration must be paid to the reaction conditions for protein modification. Due to the fragility and massive size of most full-length proteins, the chemistries employed must occur under mild, aqueous conditions and proceed relatively rapidly on substrates at very low-molar concentrations. Owing to the diversity and arrangement of amino acid residues within each species, the protein targets display a diverse array of chemical functionalities with varying physicochemical parameters.

[READ MORE....](#)



Protein Functionalization in Food

During extraction and food processing, proteins can be modified in multiple ways. Physical modifications (for example thermal treatment) and chemical modifications (for example ingredient interactions) can not only influence each other but also significantly affect the structural properties and functionality of proteins. To obtain pure proteins or to design food products that contain (added) proteins, it is necessary to separate the desired protein from unwanted proteins and non-protein components present in the starting material.

Sources of Food Proteins

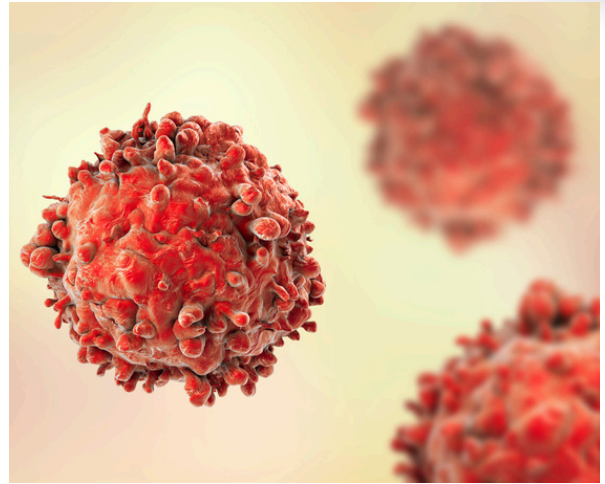
1. Conventional

Plants: Food proteins and their component bioactive peptides have been isolated from a variety of plant foods.

Animals: Animal proteins are an important and often essential component of various food products where their physicochemical and biological characteristics serve to enhance the nutritional, organoleptic, and even health-promoting properties of those foods.

2. Novel

Insects: Although the heightened demand for high-quality food proteins and growing food security concerns in recent years have contributed to the increased use of proteins from insects for both food and feed, the consumption of insects, or entomophagy, is hardly a novel idea given that insects were a part of the diet of the evolutionary precursors of humans.



Algae: Factors contributing to the growing use of algae include their relative ease of cultivation even on non-arable lands, high sunlight utilization efficiency and capacity to be grown using seawater and on residual nutrients. Apart from their protein content, algae are known to contain substantial amounts of other nutrients such as B vitamins and polyunsaturated fatty acids. Proteins from algal sources have also been used to produce health-promoting bioactive peptides.

Conclusion

The growing demand for protein foods presents both opportunities and challenges for researchers and food product developers. For instance, in seeking to produce sustainable, more affordable but also nutritious protein-rich foods from insects, scientists must also confront the microbiological, chemical, physical, and allergenic risks inherent in using members of the class Insecta for food. Although the use of emerging green technology for food processing continues to enjoy growing popularity, there is a need to increase efforts towards scaling up reported beneficial results. It is also important to understand the mechanisms by which the alteration of protein structure results in functional changes.



INDUSTRY BUZZ

Sabarkantha Dairy, Tetra Pak construct eco-friendly cow-shed roofs with recycled cartons.

Sabarkantha Dairy, a leading dairy cooperative, and Tetra Pak, a global authority in food processing and packaging solutions, have forged a pioneering partnership. This alliance is dedicated to propelling sustainability in the dairy sector. Their first joint venture is a pilot project that uses recycled beverage cartons to create polyAl roofing for a 40-cow shed. The manufacturer of these innovative polyol sheets is Eastern Cargo, a recycling partner of Tetra Pak operating in Gujarat since 2016. They specialize in producing roof tiles and flat sheets.

PolyAl, a combination of aluminium and polyolefins, is the non-fibre component of carton packaging. These layers provide a protective barrier for the contents of aseptic carton containers, shielding them from oxygen and moisture. The resulting polyAl roofing sheets are a cost-effective and sustainable alternative to traditional materials like cement and galvanized iron. They are lightweight, waterproof, rust-proof, and temperature-regulating.

Zydus Wellness begins testing Glucon-D Activors, a ready-to-drink beverage.

With the launch of Glucon-D Activors, Zydus Wellness, a science-backed FMCG company, has announced the extension of its renowned brand Glucon-D into the electrolyte energy ready-to-drink (RTD) beverage market.

The demand for energy on the go and consumers' hectic, fast-paced lifestyles are changing the RTD beverage market. With an estimated market value of Rs 1200 crore, the RTD electrolyte beverage category is one of the fastest-growing in India's FMCG industry. A sizeable portion of this volume is generated by Southern India, which accounts for around 50% of national sales.

Based on this attractive prospect and the brand's significant market share in the energy sector, the business has started a trial programme for Glucon-D Activors in Telangana and Andhra Pradesh.





Compass Gr. asserts that addressing global food waste requires comprehensive measures.

Compass Group India believes the worldwide food waste epidemic requires comprehensive methods to be addressed. They should cover every aspect of the food chain, from distribution and production to consumption and disposal. Food waste reduction boosts sustainability, resilience, and equity in our food systems while also resulting in considerable cost savings, resource conservation, and improved food security that benefits businesses and consumers alike. It necessitates actions like cutting waste at the source, enhancing the effectiveness of the supply chain, developing technology-driven solutions, educating consumers, and implementing efficient recycling procedures.

Food waste has become a major worldwide issue with numerous negative effects on the environment, society, and economy.

SMART researchers developed sensor multiplexing for decoding real-time plant stressors.

In partnership with Temasek Life Sciences Laboratory (TLL) and Massachusetts Institute of Technology (MIT), researchers from the Disruptive & Sustainable Technologies for Agricultural Precision (DiSTAP) Interdisciplinary Research Group (IRG) of Singapore-MIT Alliance for Research and Technology (SMART), MIT's research enterprise in Singapore, have created a state-of-the-art nano-sensor that enables real-time monitoring of salicylic acid (SA) during the early stages of stress response.

The remarkable advances that SMART researchers made in plant health monitoring are detailed in a report that was just published in the Nature Communications journal under the title "Decoding early stress signalling waves in living plants using nano-sensor multiplexing." First, the creation of the first-ever nanosensor that can precisely identify SA, a plant hormone essential for mediating plant stress response and adaptability, was confirmed in-planta in living pak choi, also referred to as Chinese cabbage.



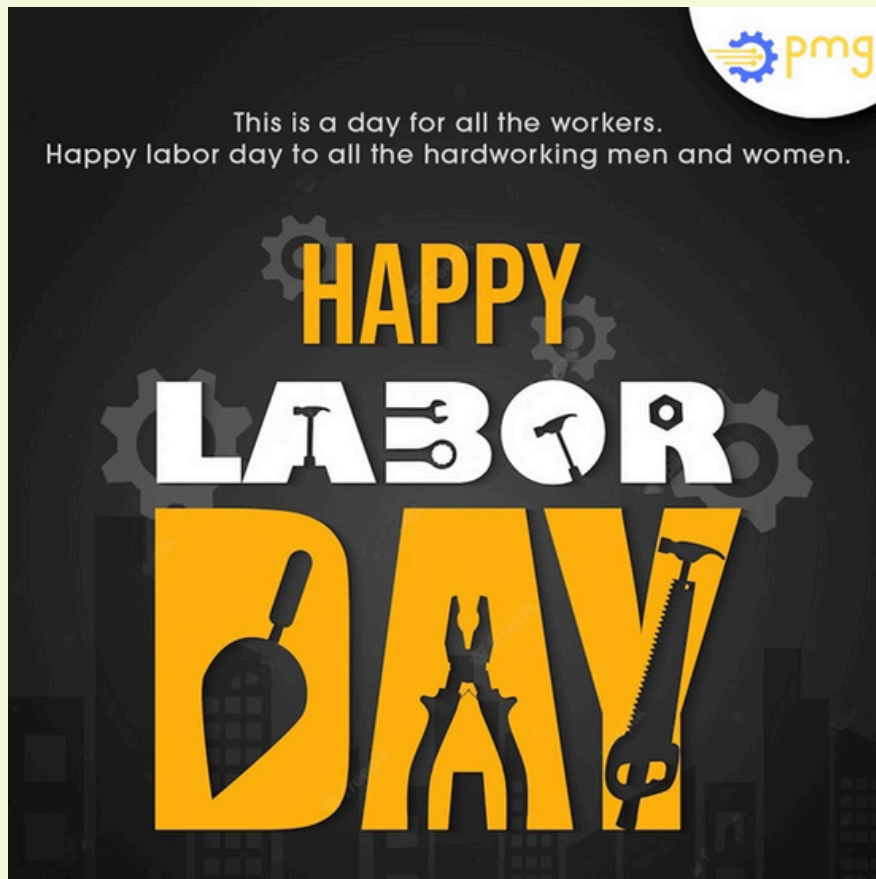
PepsiCo releases its first-quarter 2024 financial figures and confirms its 2024 forecast.

PepsiCo, Inc. released the first quarter of 2024 results. "Our businesses performed well and stayed flexible during the first quarter, with our foreign business putting up a solid showing. Despite the impact of several product recalls at Quaker Foods North America and a challenging net revenue growth comparison from the previous year, we delivered a sequential improvement in our volume trends and year-over-year growth in our net revenue, operating profit margin, and EPS, according to chairman and CEO Ramon Laguarta.

Laguarta went on, "Going forward, we'll keep concentrating our efforts on performing well in the market and providing delicious products that give consumers convenience and good value." In order to finance ongoing investments in our brands, capabilities, and pep+ projects, we will also keep stepping up and quickening our efficiency measures. Because of this, we still project at least a 4% increase in organic revenue and 8% growth in core constant currency EPS by 2024.

WEEKS HIGHLIGHT

NON-TECHNICAL CONTENT



1 MAY

LABOR DAY

Labor Day, celebrated on May 1st, honors workers' contributions and achievements. Originating in the late 19th century, it advocates for workers' rights, fair wages, and better working conditions globally

MAY

DID YOU KNOW?



EQUIPMENT FOR MANUFACTURING POTATO FLAKES AND GRANULES

1/4



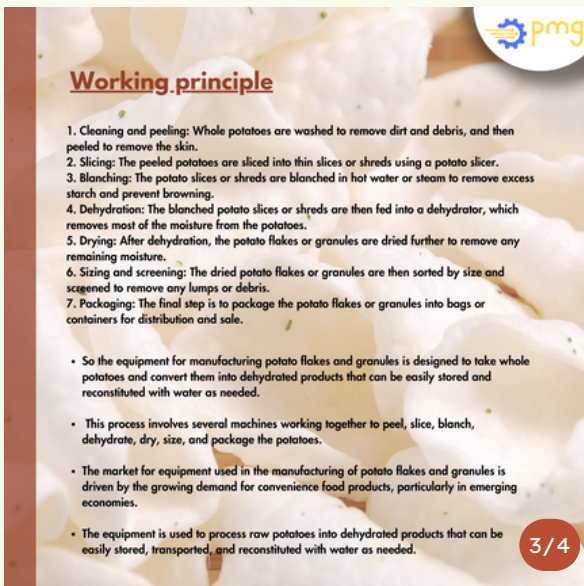
Equipment used

1. Potato washing and peeling machines: These machines are used to remove dirt, debris, and skin from potatoes.
 2. Potato slicers: Slicers are used to cut potatoes into thin slices or shreds.
 3. Blanching equipment: Blanchers are used to cook the potato slices briefly in hot water or steam to remove excess starch and prevent browning.
 4. Dehydrators: These machines remove most of the moisture from the blanched potato slices to create potato flakes or granules.
 5. Dryers: After the dehydration process, the potato flakes or granules are dried further to remove any remaining moisture.
 6. Sieves and screens: These machines are used to separate potato flakes or granules into different sizes and shapes.
 7. Packaging machines: The final step is to package the potato flakes or granules into bags or containers for distribution and sale.
- Some manufacturers may also use additional equipment such as steam peeling machines, belt conveyors, and storage silos to streamline the production process and increase efficiency.

Primarily used for

- Dehydrated potato products such as:
1. Instant mashed potatoes
 2. Potato flakes for use in soups, stews, and other recipes
 3. Potato granules for use in baking, snacks, and processed foods
 4. Potato powder for use in snack foods and seasonings
- Potato flakes and granules are often used as a convenient and shelf-stable alternative to fresh potatoes in a variety of food applications. They are particularly popular in food service and industrial production settings, as they can be stored for long periods and easily reconstituted with water.

2/4



Working principle

1. Cleaning and peeling: Whole potatoes are washed to remove dirt and debris, and then peeled to remove the skin.
2. Slicing: The peeled potatoes are sliced into thin slices or shreds using a potato slicer.
3. Blanching: The potato slices or shreds are blanched in hot water or steam to remove excess starch and prevent browning.
4. Dehydration: The blanched potato slices or shreds are then fed into a dehydrator, which removes most of the moisture from the potatoes.
5. Drying: After dehydration, the potato flakes or granules are dried further to remove any remaining moisture.
6. Sizing and screening: The dried potato flakes or granules are then sorted by size and screened to remove any lumps or debris.
7. Packaging: The final step is to package the potato flakes or granules into bags or containers for distribution and sale.

- So the equipment for manufacturing potato flakes and granules is designed to take whole potatoes and convert them into dehydrated products that can be easily stored and reconstituted with water as needed.
- This process involves several machines working together to peel, slice, blanch, dehydrate, dry, size, and package the potatoes.
- The market for equipment used in the manufacturing of potato flakes and granules is driven by the growing demand for convenience food products, particularly in emerging economies.
- The equipment is used to process raw potatoes into dehydrated products that can be easily stored, transported, and reconstituted with water as needed.

3/4



Market scope

- The market for potato flakes and granules is expected to grow at a significant pace due to factors such as increasing demand for processed and convenience foods, as well as the growing popularity of vegetarian and vegan diets.
- The equipment used in the manufacturing of potato flakes and granules is typically manufactured by a few key players who specialize in the design and production of such equipment.
- Some of the leading companies in this market include Bühler AG, Idaho Steel Products, Inc., Kiremko B.V., and others. These companies offer a wide range of equipment for potato processing, including peeling machines, slicing machines, blanchers, dehydrators, dryers, and packaging equipment.
- The market for equipment used in the manufacturing of potato flakes and granules is expected to grow in the coming years, driven by increasing demand for convenience foods, the growth of the food service industry, and the rising popularity of snack foods.
- The key players in this market are likely to continue investing in research and development to improve the efficiency and quality of their equipment and to expand their reach into new and emerging markets.

4/4

Fact 1

Potato flake and granule manufacturing equipment comprises sophisticated machinery, including steam peeling systems, rotary slicers, and continuous belt dryers, ensuring precise control over processing parameters such as temperature and humidity.

CANE SUGAR EXTRACTION PLANTS

1/4

Cane sugar extraction plants are industrial facilities that process sugarcane, a tall perennial grass, to extract sucrose, which is used to produce refined sugar, brown sugar, molasses, and other sugarcane-based products. The process of cane sugar extraction involves several stages, including juice extraction, juice clarification, juice evaporation, and crystallization.

The basic steps involved in the process of cane sugar extraction are as follows:

- 1. Juice extraction:** The sugarcane is crushed to extract the juice, which is then collected and stored in tanks.
- 2. Juice clarification:** The juice is then treated with lime and other chemicals to neutralize any acids present and remove impurities, such as dirt and fiber.
- 3. Juice evaporation:** The clarified juice is then heated to evaporate the water content and increase the concentration of sucrose.
- 4. Crystallization:** The concentrated juice is then cooled and seeded with sugar crystals to initiate crystallization, which results in the formation of sucrose crystals.
- 5. Separation:** The sucrose crystals are then separated from the remaining liquid through a centrifugation process.
- 6. Refining:** The raw sugar is then further refined and processed to produce various grades of refined sugar, brown sugar, molasses, and other sugarcane-based products.

2/4

Some of the food products that are commonly processed using cane sugar extraction plants include:

- Refined sugar
- Brown sugar
- Molasses
- Rum
- Caramel
- Confectionery

Working Principle

- 1. Juice extraction:** The sugarcane is first harvested and transported to the processing plant, where it is crushed using heavy machinery to extract the sugarcane juice.
- 2. Juice clarification:** The sugarcane juice contains impurities, such as dirt, fibers, and organic acids, which need to be removed before further processing. Lime and other chemicals are added to the juice to neutralize the acids and remove the impurities.
- 3. Juice evaporation:** The clarified juice is then heated in evaporators to remove the water content and increase the concentration of sucrose.
- 4. Crystallization:** The concentrated juice is then cooled and seeded with sugar crystals to initiate crystallization, which results in the formation of sucrose crystals.
- 5. Separation:** The sucrose crystals are then separated from the remaining liquid through a centrifugation process.
- 6. Refining:** The raw sugar is then further refined and processed to produce various grades of refined sugar, brown sugar, molasses, and other sugarcane-based products.

3/4

Market Scope

- According to a report by Zion Market Research, the global sugar market was valued at USD 77.78 billion in 2019 and is expected to reach USD 116.22 billion by 2026, growing at a CAGR of 5.5% during the forecast period.
- The growing demand for sugarcane-based products, such as sugar, molasses, and rum, is one of the key factors driving the growth of the cane sugar extraction plant market.
- The rising population, increasing disposable income, and changing food habits of consumers have led to an increase in demand for sugarcane-based products globally.
- In addition, the growing use of sugarcane-based ethanol as a biofuel has also contributed to the growth of the cane sugar extraction plant market. The increasing focus on renewable energy sources and the growing need for cleaner fuels has led to the increased use of sugarcane-based ethanol in the transportation sector.
- Geographically, Asia Pacific is the largest market for cane sugar extraction plants, driven by the high demand for sugar and sugarcane-based products in countries such as India, China, and Indonesia.
- Other regions such as South America, Africa, and the Middle East are also expected to witness significant growth.

4/4

Fact 2

Cane sugar extraction plants employ a series of mechanical and chemical processes, including milling, diffusion, and carbonation, to extract sucrose from sugarcane juice. Through precise control of temperature, pH, and chemical additives, impurities are removed, and sucrose is crystallized and separated.

SUGAR PRODUCTION EQUIPMENT

1/4

Sugar production equipment refers to a wide range of machinery and equipment used in the production of sugar from sugarcane or sugar beets. This includes machines for crushing and grinding sugarcane or sugar beets, extracting juice, clarifying the juice, evaporating and crystallizing the sugar, and drying and packaging the final product. The production process involves a series of steps, each of which requires specific equipment.

- Large-scale industrial sugar production involves processing large quantities of sugarcane or sugar beets to produce refined sugar for commercial sale. Small-scale artisanal sugar production, on the other hand, involves processing sugarcane or sugar beets on a smaller scale, often using traditional methods and equipment.
- **Some examples** of sugar production equipment include cane crushers, diffusers, evaporators, vacuum pans, centrifuges, crystallizers, and sugar dryers.
- Primarily used for processing sugarcane or sugar beets to produce refined sugar, which is then used in a wide range of food products. Refined sugar is common in many processed foods, including baked goods, candy, beverages, and processed snacks.

Uses

- Granulated sugar used in baking, cooking, and as a sweetener in beverages.
- Confectionery products
- Syrups and toppings
- Soft drinks and other beverages.
- Processed foods such as baked goods, desserts, and snacks.

2/4

- Sugar production equipment is also used in the production of other sugar-based products such as molasses, brown sugar, and powdered sugar.

Working principle

- 1. Extraction:** The first step is to extract the sugar juice from sugarcane or sugar beets. This is typically done by crushing or pressing the raw material to extract the juice.
- 2. Clarification:** The sugar juice is then clarified to remove impurities such as dirt, debris, and plant matter. This is often done using a series of filters and settling tanks.
- 3. Evaporation:** The clarified juice is then heated and evaporated to remove excess water and concentrate the sugar content. This process is typically done in a series of evaporators, with the juice passing through each one to remove more water.
- 4. Crystallization:** Once the juice has been concentrated, it is seeded with sugar crystals and cooled to promote the growth of new sugar crystals. This process is known as crystallization and produces raw sugar.
- 5. Refining:** Raw sugar is then transported to a sugar refinery where it is processed further to remove impurities and produce refined sugar. This process can include a range of techniques such as carbonation, filtration, and decolorization.
- 6. Packaging:** The final step is to package the refined sugar into bags or other containers for distribution and sale.

Sugar production equipment is designed to handle large quantities of raw material and process it efficiently to produce high-quality refined sugar. The specific equipment used can vary depending on the scale of the operation and the specific processes involved.

3/4

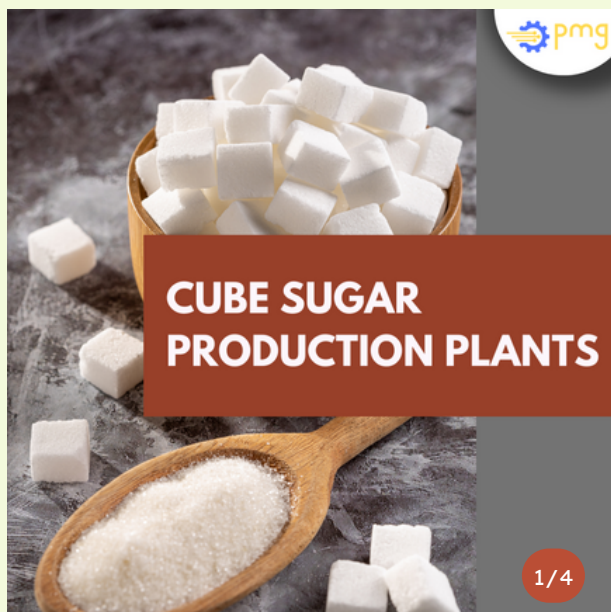
Market Scope

- Sugar production equipment is used in the sugar industry to process sugarcane and beet into granulated sugar, liquid sugar, and various sugar derivatives such as molasses and brown sugar.
- The global sugar production equipment market is driven by factors such as the increasing demand for processed food, especially sweetened food products, and the growing popularity of alternative sweeteners such as stevia and monk fruit.
- The market for sugar production equipment is also influenced by the increasing demand for sustainable and energy-efficient manufacturing processes, as well as the need to comply with stringent regulations and safety standards.
- In addition, the rising focus on reducing production costs and increasing operational efficiency is driving the adoption of advanced sugar production equipment with enhanced automation and control capabilities.
- Geographically, the Asia-Pacific region is expected to dominate the sugar production equipment market in the coming years, owing to the high consumption of sugar and the presence of major sugar-producing countries such as India, China, and Thailand.

4/4

Fact 3

Sugar production equipment comprises an array of specialized machinery, from cane shredders and crushers to centrifuges and vacuum pans. These units facilitate sequential stages such as juice extraction, clarification, evaporation, and crystallization. Advanced technologies like continuous centrifugation and multi-effect evaporators optimize energy efficiency and product quality.



CUBE SUGAR PRODUCTION PLANTS

1/4



Cube sugar production plants are industrial facilities that are designed to produce cube-shaped sugar from granulated sugar. Cube sugar is a convenient and popular form of sugar that is commonly used in coffee and tea, as well as in baking and cooking.

- Cube sugar production plants typically use advanced automation and control systems to ensure the consistency and quality of the final product. The plants also incorporate various safety features to prevent accidents and ensure worker safety.

- Cube sugar production plants are essential components of the sugar industry, providing a convenient and popular form of sugar that is widely used in households, restaurants, and other food service establishments.

Some of the food products that are processed using cube sugar include:

- Coffee and tea
- Baked goods
- Cocktails
- Desserts
- Confectionery

2/4



Working Principle

- 1. Syrup preparation:** Granulated sugar is mixed with water and heated to create a syrup. The syrup is then filtered to remove any impurities and pumped into a batch vacuum pan.
- 2. Crystallization:** The syrup in the batch vacuum pan is boiled under vacuum conditions, allowing the syrup to boil at a lower temperature and prevent caramelization. As the syrup boils, it becomes more concentrated, and sugar crystals begin to form. The mixture is then transferred to a crystallizer, where it is agitated to promote the growth of sugar crystals.
- 3. Cube molding:** The crystallized sugar is then transferred to a cube-forming machine, where it is pressed into cube-shaped molds. The molds are typically made of metal or plastic and have a specific size and shape to produce consistent and uniform sugar cubes.
- 4. Drying:** The molded sugar cubes are then allowed to dry for a period of time to remove any remaining moisture. The drying process can take several hours, depending on the size and shape of the sugar cubes.
- 5. Packaging:** The dried sugar cubes are then packaged and prepared for distribution.

3/4



Market Scope

- The market for cube sugar production plants is highly competitive, with many players vying for market share.
- Some of the key factors that determine success in this market include the ability to produce high-quality, consistent products, as well as the ability to offer competitive pricing and efficient distribution channels.
- In terms of geographical distribution, the largest markets for cube sugar production plants are typically found in developed countries, such as the United States, Canada, and Western Europe.
- However, there is also significant demand for cube sugar in emerging markets, such as India and China, which are experiencing rapid urbanization and a growing middle class.
- Cube sugar production plants are likely to remain an important player in the global sugar industry, as consumer demand for convenient and portion-controlled sugar products continues to grow.

4/4

Fact 4

Cube sugar production plants utilize sophisticated machinery to compress granulated sugar into uniform cubes, employing hydraulic pressure or mechanical force to achieve precise shaping. Controlled moisture content and temperature during molding ensure structural integrity. Advanced drying techniques, such as hot air or infrared radiation, eliminate moisture, optimizing cube hardness and preventing clumping.



PMG ENGINEERING

About PMG

Delivering End-to-End Engineering
Design & Construction Management in
Food & Beverage Industry



Meeting Global Benchmarks

In ENGINEERING DESIGN and PROJECT MANAGEMENT
for FOOD and BEVERAGE Industry with SINGLE POINT ACCOUNTABILITY

Process Engineering | Project Management | Mechanical | Electrical | Automation | Food Safety

PEOPLE DELIVERING RESULTS

Safe-by-choice. First Time Quality. Maximize Value. Objectivity.
Ownership. Reliable and Trustworthy Business.

- MAKING CUSTOMERS THE INDUSTRY LEADERS
- ENGINEERING MUST CREATE BUSINESS VALUE
- MEET THE EXPECTATIONS OF ALL STAKEHOLDERS
- OPTIMAL ENGINEERING

Website Link



Click Here

Follow Us on

