

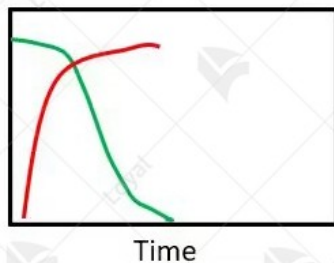
Everything You Need To Know About Microwave Sterilizing Machine

Introduction to Spice Seasoning and Its Processing Needs

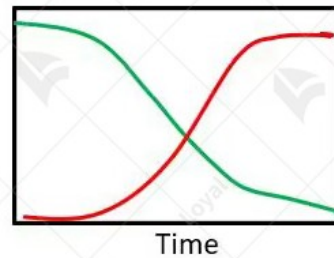
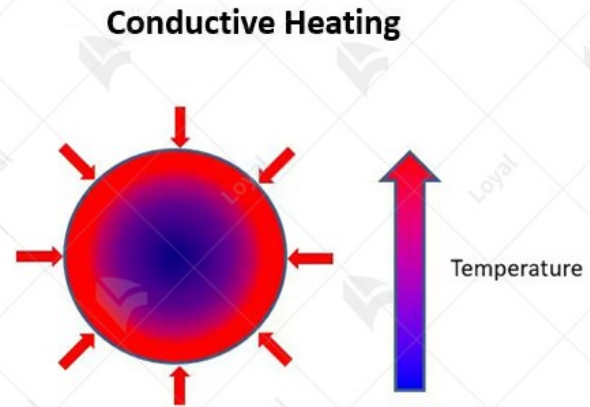
Spice seasoning, particularly turmeric, chili, and black pepper powder, is an essential ingredient in global food production. These spices not only enhance the flavor profile of various foods but also carry significant health benefits. The increasing demand for high-quality, finely processed spice powders has driven innovations in the food processing industry. To meet this demand, food manufacturers and processors require highly efficient and reliable machinery.

The processing of spices like turmeric, chili, and black pepper involves several stages, including drying, grinding, sterilization, and packaging. The right processing machinery plays a critical role in ensuring the final product retains its rich aroma, flavor, and nutritional value. A significant challenge in spice processing is maintaining the integrity of the natural compounds in spices while removing moisture and ensuring the product is free from contaminants such as bacteria and mold.

LOYAL'S MICROWAVE ADVANTAGES



FASTER, MORE EVEN



SLOWLY...

Spice Seasoning Processing: Drying, Sterilization, and Grinding

The processing of spices such as turmeric, chili, and black pepper powder is a multi-step procedure that involves careful handling at each stage to preserve the integrity and quality of the product. Three of the most crucial steps in this process are drying, sterilization, and grinding. Each of these steps requires specialized machinery to ensure that the spices retain their potency and flavor while meeting safety standards.

1. Spice Drying Machines

Drying is one of the most important stages in spice processing, as it helps to reduce moisture content and prevent the growth of harmful

microorganisms. A moisture level above a certain threshold can lead to spoilage, mold growth, or even fermentation, which significantly reduces the shelf life of the product. Spice drying machines, such as microwave drying machines, hot air dryers, and vacuum dryers, are designed to efficiently reduce moisture content without compromising the quality of the spices.

Microwave Drying: Microwave drying technology has become increasingly popular for spice drying due to its ability to preserve the flavor, color, and aroma of spices. The microwave machine uses electromagnetic waves to heat and dry the spices quickly, ensuring that volatile compounds such as essential oils are not lost during the process.

2. Sterilization of Spice Powders

Sterilization is a critical step in ensuring the safety of spice powders. Spices, being harvested from plants, are vulnerable to contamination by bacteria, molds, and insects. Without proper sterilization, these contaminants can not only degrade the quality of the spice but also pose serious health risks to consumers. The primary goal of sterilization in spice processing is to eliminate pathogens and preserve the natural flavor and nutritional content of the spice.

Microwave Sterilization: Microwave sterilization is a highly effective and efficient method for sterilizing spices. The microwave machine generates heat rapidly, killing harmful microorganisms without subjecting the spices to high temperatures for extended periods. This method is advantageous because it minimizes flavor and nutrient loss while ensuring that the spices are free of contaminants.

Steam Sterilization: Another common method involves steam, which is used to kill pathogens at relatively lower temperatures compared to dry heat. The process involves exposing the spices to high-pressure steam, which rapidly sterilizes the product without damaging its aromatic

properties.

3.Grinding and Pulverizing Spices

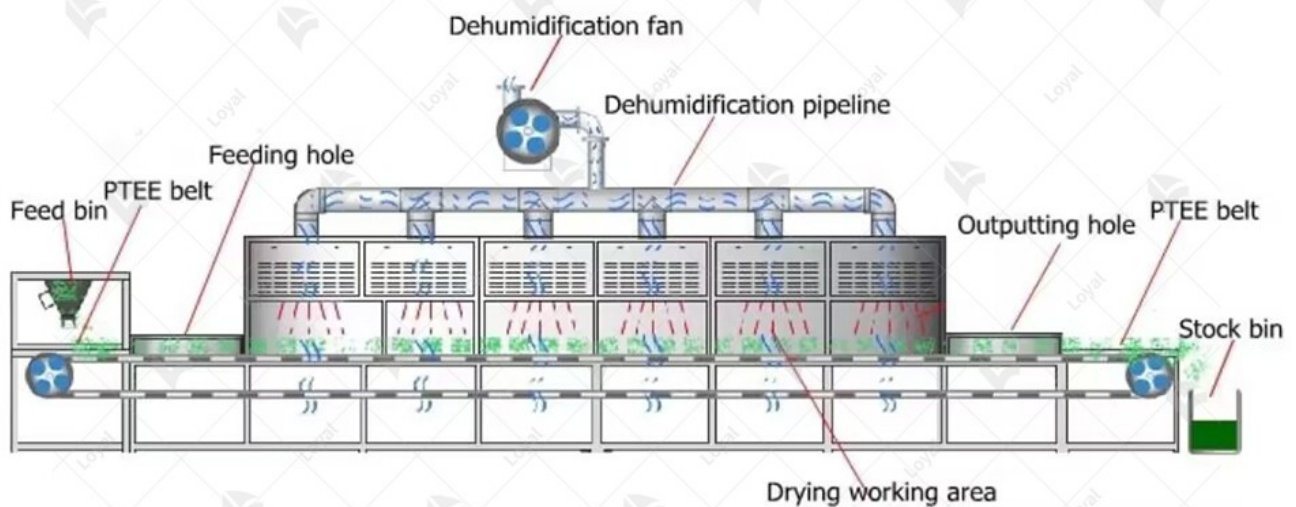
Once the spices are dried and sterilized, the next step is grinding them into powder form. This stage requires precise machinery to achieve the desired particle size and consistency. Inconsistent grinding can result in spices that are too coarse or too fine, which affects the product's quality and shelf life.

Spice Grinding Mills: These mills use mechanical forces, such as rotating blades or disks, to crush and grind the dried spices into fine powder. For turmeric and chili, specialized mills with adjustable grinding settings are used to control the final texture of the powder.

Hammer Mills and Roller Mills: These are often used in combination for larger-scale spice grinding. Hammer mills are ideal for coarse grinding, while roller mills ensure the desired fine texture, especially for spices like black pepper, which require uniform particle sizes for packaging.

Each of these machines, from dryers to sterilizers and grinders, plays a pivotal role in ensuring that the final spice powder is of the highest quality. By using advanced processing machinery, manufacturers can achieve the ideal balance between preserving the natural essence of the spices and ensuring product safety.

Continuous Microwave Equipment Working Process



Role of Advanced Microwave Technology in Spice Processing

Microwave technology has revolutionized many industries, including food processing, where it is particularly beneficial for the drying and sterilization of spices. In the context of turmeric, chili, and black pepper powder production, microwave machines have become indispensable due to their efficiency, speed, and ability to preserve the quality of spices.

1. Microwave Drying Technology for Spices

One of the most significant advantages of microwave drying machines is their ability to quickly and uniformly dry spices while maintaining their aroma, flavor, and color. Traditional drying methods, such as hot air drying, can lead to uneven moisture reduction, causing spices to lose their volatile compounds or change color. In contrast, microwave drying uses electromagnetic waves to heat spices directly, ensuring uniform moisture removal.

Preserving Aroma and Nutrients: Spices like turmeric and chili contain essential oils that are sensitive to heat. Excessive exposure to high

temperatures can degrade these oils, which are key to the spices' flavor and medicinal properties. Microwave drying significantly reduces the loss of these volatile compounds by drying the spices at lower temperatures and for shorter durations.

Faster Processing: The high efficiency of microwave energy ensures that spices are dried more quickly compared to conventional drying methods. This speed is particularly beneficial for large-scale spice production, where time is critical and faster processing leads to higher throughput.

2. Microwave Sterilization for Spice Safety

Sterilization is a critical step to ensure the safety and quality of spice powders. Microwave sterilization offers several advantages over traditional sterilization techniques like steam or dry heat. The ability to apply controlled microwave energy directly to the spices helps in effectively killing bacteria, molds, and other harmful microorganisms without compromising the flavor and nutritional value.

Energy Efficiency: Microwave sterilization systems are highly energy-efficient, using less power than conventional methods, which helps in reducing operational costs.

Minimal Flavor Loss: As microwave sterilization is faster and more targeted, it minimizes the exposure of spices to high temperatures, preserving the delicate flavors and essential oils that are often lost in traditional sterilization processes.

3. Benefits of Microwave Machines in Spice Powder Processing

Microwave technology offers several key benefits in the processing of turmeric, chili, and black pepper powder, making it a preferred option in modern spice processing plants.

Preservation of Active Compounds: Spices like turmeric are rich in

bioactive compounds, such as curcumin, which have medicinal and antioxidant properties. Microwave drying and sterilization help preserve these compounds better than traditional methods, ensuring that the spice retains its full health benefits.

Improved Product Consistency: With microwave machines, manufacturers can achieve greater consistency in the final product. The controlled drying and sterilization processes ensure that every batch of spice powder meets the same high-quality standards, from flavor to texture.

Reduced Contamination Risk: The use of microwave sterilization greatly reduces the chances of cross-contamination during the sterilization process. Because the heat is directly applied to the spice particles, there's less chance of contamination from external sources, making the final product safer for consumption.

In addition to their performance benefits, microwave machines are also relatively compact and easy to integrate into existing production lines. This makes them an excellent choice for companies looking to modernize their spice processing operations.

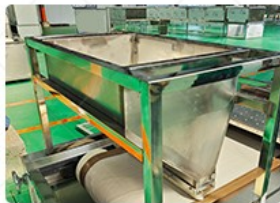
1. PLC control system



6. Machine Material : 304 stainless steel



5. The observation window is equipped with a travel switch to prevent microwave leakage and improve safety.



2. Material Feeder : Customizable according to your materials, both Liquid & Powder & Pellet available



3. Belt: Customizable mesh belts of various materials



4. Control cabinet: Add a control box, neat and easy to clean.



Market Drivers for Microwave Machines in Spice Processing

Microwave machines are increasingly being adopted due to their efficiency and ability to handle spices delicately without compromising their quality. The key advantages of microwave technology, such as faster processing times and better retention of nutrients, have made it a popular choice in spice processing, leading to a significant rise in market demand.

Increased Demand for High-Quality Spice Powders: As consumers continue to demand premium, organic, and freshly processed spices, manufacturers are investing in microwave machines to ensure the highest quality products. These machines offer superior control over temperature and drying times, which is crucial in maintaining the integrity of spices.

Energy Efficiency and Cost-Effectiveness: With energy costs on the rise, microwave technology offers a cost-effective solution. Microwave drying and sterilization systems require less energy compared to traditional methods, making them an attractive option for spice manufacturers looking to optimize their production processes and reduce operational costs.

Faster Processing and High Throughput: The spice industry is highly competitive, and companies are always looking for ways to increase produ

Technical Parameters Of Continuous Microwave Dryer Industrial			
Size L*W*H(Can be customized according to the customer's requirements)	Output power	Sterilization capacity	Baking and (Depends on
5000mm*825mm*1750mm	?10KW	100KG/Hour	30-50KG/H
8000mm*825mm*1750mm	?20KW	200KG/Hour	60-100KG/H
8500mm*1160mm*1750mm	?30KW	300KG/Hour	90-150 KG/H

10000mm*1160mm*1750mm	?40KW	40KG/Hour	120-200KG
12500mm*1160mm*1750mm	?50KW	500KG/Hour	150-250KG
13500mm*1450mm*1750mm	?60KW	600KG/Hour	180-300KG
13500mm*1500mm*1750mm	?70KW	700KG/Hour	210-350KG
13500mm*1650mm*1750mm	?80KW	800KG/Hour	240-400KG
16800mm*1650mm*1750mm	?100KW	1000KG/Hour	300-500KG
22400mm*1850mm*1750mm	?150KW	1500KG/Hour	450-750KG
27000mm*1850mm*1750mm	?250KW	2500KG/Hour	750-1250/H

32000mm*1850mm*1750mm	?300KW	3000KG/Hour	900-1500K
Power Supply	380V±10% 50Hz±1%		
Microwave Output Frequency	2450		
Microwave Input Apparent Power	?1		
Microwave Output Power	?1		
Microwave Power Adjustment Range	0-30Kw		
Ambient Temperature	-5		
Relative Humidity	?80%, Surrounding Environment:No Explosive		
Transmission Speed	0-10m/M		

DETAIL CHARACTERISTICS



01 ENVIRONMENTAL POLLUTION-FREE

Microwave drying equipment does not produce environment of high temperature, dust and noise, without waste water and exhaust gas in the process of operation, no waste is generated.



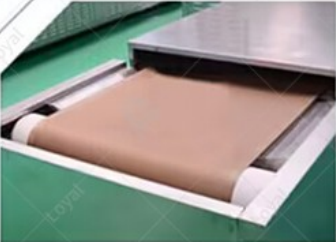
03 ADVANCED TECHNOLOGY EASY TO CONTROL

Microwave heating just have the basic conditions of water, electricity, as long as control power of microwave which can realize the automatic control of heating process immediately.

HEATING UNIFORMITY

02

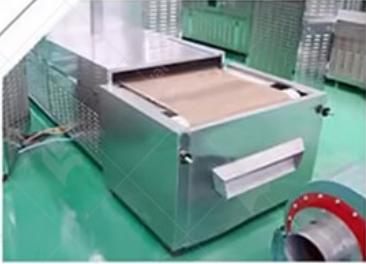
Material can generate heat at the same time under the action of electromagnetic waves from microwave, there will be no coke endogenous phenomenon.



SMALL FOOTPRINT SAFE AND HARMLESS

04

Because the microwave energy is control in metal heating indoor and work in the waveguide tube, so rarely microwave leak, no radiation damage and harmful gas emissions, and does not produce waste heat and dust pollution.



Recommended Company

Shandong Loyal Industrial Co.,Ltd. Is a Manufacturer Of Snacks Extruder Machine , Industrial Microwave Oven , Corn Flakes Production Line , And a Standing Director Of China Food And Drying Equipment Industry Association.

The Self-developed Twin-screw Extruder And Single-screw Equipment of Shandong Loyal Machinery Have Been Used In Production: Puffed Snack Food, Breakfast Cereal Corn Flakes, Fried Pasta, Bread Crumbs, Fruit Chips, Baby Food, Textured Soy Protein (tsp) Food, Fish Feed And Pet Food. a Variety of Snack Production Line Supporting Products.at The Same Time, The Batching, Drying, Flaking, Baking, Frying And Spraying Equipment Matching The Twin-screw Extrusion System Have All Achieved Independent Design And Production.

Our Extrusion System Is Widely Used In: Puffed Snack Foods, Breakfast Cereals, Vegetable Protein Meat Products, Soy Based Nutrition Bars, Reconstituted Rice, Grain Nutrition Powder, Modified Starch, Starch-based Sticky Music Children's Educational Toys, Degradable Starch-based Packaging Filling Materials, Bread Crumbs And Other Food Additives, Pet Food, Aquatic Feed, Biology And Chemical Industries.

Customer-specific Food Processing Plant Project Solutions

As one of the leading manufacturers of food processing equipment, we are always searching for new solutions that benefit our snack food customers. Our experienced frying engineers always find the optimal solution for your industrial batch and continuous frying system line application. That's why we also develop, design and produce custom fried snack production line.

Close collaboration with our customer is important to us even in the early development phase. No matter what the special requirements of instant noodles production line, snack food extruder machine, pasta production line application, we can develop a custom made food

processing equipment to match your needs.

Loyal have a unique and efficient industrial continuous frying equipment for snack food extruder machine that provides the right crunch and desired moisture level.

The Industrial Microwave Sterilization Defrosting Drying Machine can be designed as a dry powder dosing system and a wet slurry dosing system as required.

Some snacks can also be fried according to taste requirements, and we also provide Fried Snack Production Line for the processing and packaging of fried extruded snacks.

Loyal Food Production Line meet the needs of customers to obtain snack food that meet the needs.

In ovens or drying units, electric or gas can be used as heating sources.

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About packaging and after-sales service

Packing: Plastic Film Suitable For Ocean Carriage

Technical Support: The customer can inform machine related problems

to us via telephone, email or fax. All information will be recorded and will be reported to the After-sale Service team. Meanwhile, the sales person will be tracking the case until problem solved.

Service Team: We have a professional After-sale Service team including 10 professional engineers with at least 6 years working experience. They can handle technical consultation about manufacturing process, maintenance, fault diagnosis and troubleshooting, etc.

After-sale Service available : 1. Check & test before delivery
2. Instruction for installation 3. On site commissioning 4. Repair & maintenance

After the receipt the advanced payment, we will provide allocation chart at the buyer's request. When effect the shipment, we'll provide operation manual, etc. in English.

Reference

The following are five authoritative foreign literature websites in the field of Industrial food machinery:

1. Food Engineering Magazine

Website: <https://www.foodengineeringmag.com/>

2. Food Processing Magazine

Website: <https://www.foodprocessing.com/>

3. Journal of Food Engineering

Website: <https://www.journals.elsevier.com/journal-of-food-engineering>

4. Food Manufacturing Magazine

Website: <https://www.foodmanufacturing.com/>

5. International Journal of Food Science & Technology

Website: <https://onlinelibrary.wiley.com/>