

# The Ultimate Guide to Industrial Tunnel Wasabi Powder Microwave Sterilization Drying Machine in 2024

## Detail Introduction :

Introduction

Understanding Microwave Sterilization and Drying Technology

Technical specifications

Features of the Industrial Tunnel Wasabi Powder Microwave Sterilization Drying Machine

Installation and Setup

Maintenance and Upkeep

Benefits of Using the Industrial Tunnel Wasabi Powder Microwave Sterilization Drying Machine

Production Process for Wasabi Powder

Conclusion

References

## Introduction

In the dynamic landscape of food processing, the demand for efficient and reliable sterilization and drying methods continues to grow. The [industrial tunnel wasabi powder microwave sterilization drying machine](#) emerges as a cutting-edge solution, revolutionizing the way wasabi powder is processed to ensure both safety and quality.

This comprehensive guide delves into the intricacies of this state-of-the-art machine, exploring its functionalities, benefits, and applications in the context of microwave technology. Let's embark on a journey to uncover the transformative capabilities of the [industrial tunnel wasabi powder microwave sterilization drying machine](#).



# Understanding Microwave Sterilization and Drying Technology

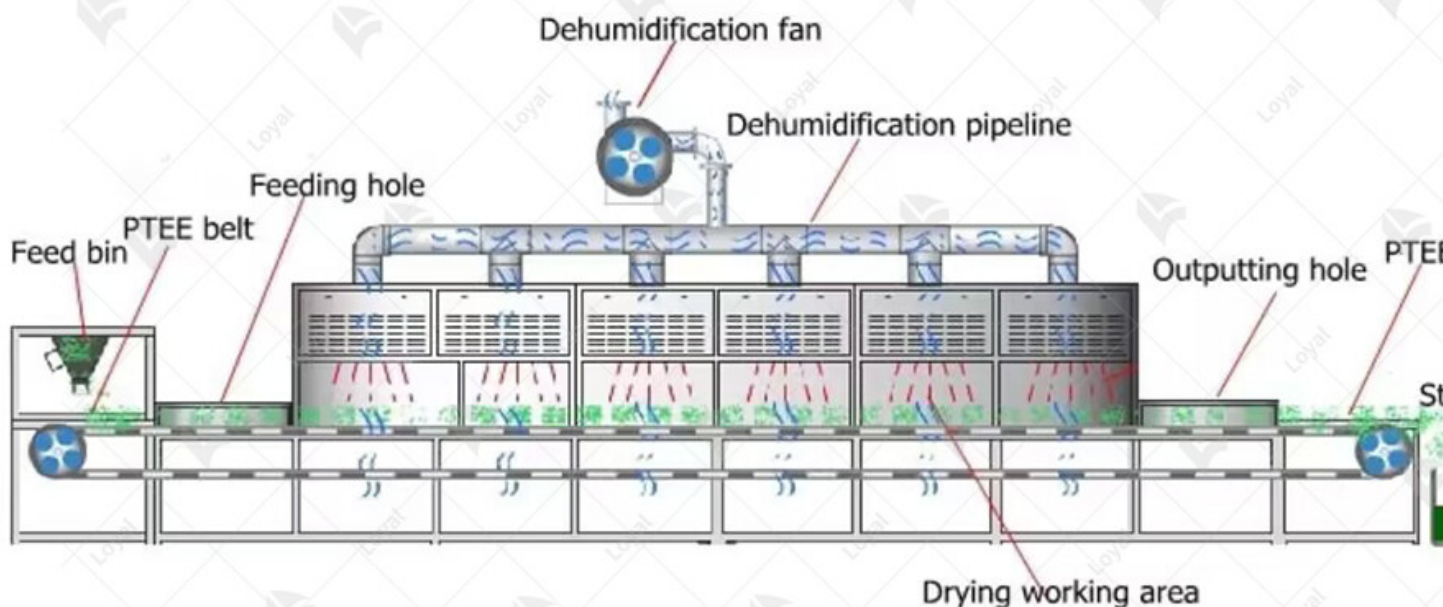
Microwave sterilization and drying technology play a crucial role in the food processing industry, offering numerous benefits over traditional methods. In this chapter, we'll delve into the fundamentals of microwave technology and its application in sterilizing and drying food products like wasabi powder.

Microwave technology utilizes electromagnetic waves to generate heat within the food product, unlike conventional methods that rely on external heat sources. This unique heating process enables rapid and uniform sterilization and drying, resulting in improved product quality and reduced processing time.

Microwave sterilization works by targeting microorganisms' cellular structure, disrupting their integrity, and rendering them inactive. This process effectively eliminates harmful bacteria, viruses, and fungi, ensuring food safety and extending shelf life without compromising nutritional content or flavor. Similarly, microwave drying involves removing moisture from the food product by heating it from within. The electromagnetic waves penetrate the product, causing water molecules to vibrate and evaporate, resulting in quick and efficient drying. This method preserves the product's color, texture, and flavor while reducing the risk of microbial contamination.

The advantages of using microwaves for sterilizing and drying food products like wasabi powder are manifold. Not only does it offer faster processing times and energy efficiency, but it also minimizes the risk of overheating and product degradation. Additionally, microwave sterilization and drying result in superior microbial reduction, ensuring the safety and quality of the final product.

## Continuous Microwave Equipment Working Process



## Technical specifications

# Technical Parameters Of Continuous Microwave Dryer Industrial Microwave Dryer Machine

Model	Size LWH(Can be customized according to the customer's requirements)	Output power	Dewaterability	Sterilization capacity	Baking, Roasting capacity (Depends on different raw materials)
LY-10KW	5000mm825mm1750mm	≤10KW	10KG/Hour	100KG/Hour	30-50KG/Hour
LY-20KW	8000mm825mm1750mm	≤20KW	20KG/Hour	200KG/Hour	60-100KG/Hour
LY-30KW	8500mm1160mm1750mm	≤30KW	30KG/Hour	300KG/Hour	90-150KG/Hour
LY-40KW	10000mm1160mm1750mm	≤40KW	40KG/Hour	400KG/Hour	120-200KG/Hour
LY-50KW	12500mm1160mm1750mm	≤50KW	50KG/Hour	500KG/Hour	150-250KG/Hour
LY-60KW	13500mm1450mm1750mm	≤60KW	60KG/Hour	600KG/Hour	180-300KG/Hour
LY-70KW	13500mm1500mm1750mm	≤70KW	70KG/Hour	700KG/Hour	210-350KG/Hour
LY-80KW	13500mm1650mm1750mm	≤80KW	80KG/Hour	800KG/Hour	240-400KG/Hour
LY-100KW	16800mm1650mm1750mm	≤100KW	100KG/Hour	1000KG/Hour	300-500KG/Hour
LY-150KW	22400mm1850mm1750mm	≤150KW	150KG/Hour	1500KG/Hour	450-750KG/Hour
LY-200KW	27000mm1850mm1750mm	≤250KW	250KG/Hour	2500KG/Hour	750-1250KG/Hour
LY-300KW	32000mm1850mm1750mm	≤300KW	300KG/Hour	3000KG/Hour	900-1500KG/Hour
Power Supply		380V±10% 50Hz±1% Three-Phase Five-Wire			
Microwave Output Frequency		2450±50Mhz			
Microwave Input Apparent Power		≤168Kva			
Microwave Output Power		≤120Kw			

Microwave Power Adjustment Range	0-30Kw(Adjustable)
Ambient Temperature	-5-40°C
Relative Humidity	?80%, Surrounding Environment:No Corrosive Gas, Conductive Dust And Explosive Gas
Transmission Speed	0-10m/Min(Adjustable)

### 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.



#### 02 HEATING UNIFORMITY

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



#### 03 EASY TO OPERATE

Microwave heating just have the need of water, electricity, as long as the microwave which can realize the control of heating process is.



#### 04 SMALL FOOTPRINT SAFE AND HARMLESS

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.

# Features of the Industrial Tunnel Wasabi Powder Microwave Sterilization Drying Machine

The Industrial Tunnel Wasabi Powder Microwave Sterilization Drying Machine represents a peak of technological advancement in the food processing industry. Let's delve into its key features, Key Components and Their Functions

- **Microwave Generator:** This component generates microwave energy used for sterilization and drying processes.
- **Conveyor System:** Responsible for transporting wasabi powder through the tunnel, ensuring exposure to microwave energy.
- **Temperature and Moisture Sensors:** Monitor and regulate the conditions inside the tunnel to optimize drying efficiency.
- **Control Panel:** Allows operators to adjust settings and monitor the machine's operation in real-time.
- **Safety Features:** Includes emergency stop buttons, overload protection, and automatic shut-off mechanisms to ensure operator safety.

## Technical Specifications

- **Microwave Power Output:** Typically ranges from 10 kW to 100 kW, depending on the size and capacity of the machine.
- **Conveyor Belt Speed:** Adjustable to accommodate different processing requirements, typically ranging from 1 to 10 meters per minute.



- **Tunnel Dimensions:** Varies based on the specific model, with standard sizes available to suit production needs.
- **Material Construction:** Typically constructed from stainless steel for durability and ease of cleaning.
- **Control System:** Utilizes advanced PLC (Programmable Logic Controller) technology for precise control and automation.

#### Innovations and Advancements in the 2024 Model

- **Enhanced Sterilization Efficiency:** Incorporates advanced microwave technology to achieve higher levels of microbial reduction, ensuring product safety and shelf stability.
- **Improved Drying Performance:** Optimized airflow and temperature control mechanisms result in faster and more uniform drying of wasabi powder.
- **Energy Efficiency:** Utilizes innovative power management systems to minimize energy consumption while maximizing throughput.
- **User-Friendly Interface:** Features a modern, intuitive control panel with touchscreen functionality for ease of operation and monitoring.
- **Remote Monitoring and Control:** Allows operators to remotely monitor machine performance and make adjustments as needed, enhancing operational efficiency and convenience.



## Installation and Setup

Installing the Industrial Tunnel Wasabi Powder Microwave Sterilization Drying Machine requires careful consideration of site requirements and meticulous preparation to ensure optimal performance. Below is a step-by-step guide to the installation and setup process:

### Site Requirements and Preparation

Before installation, assess the designated site to ensure it meets the necessary requirements for an industrial tunnel system. Consider factors such as space availability, ventilation, and access to utilities like electricity and water.

1. **Space Availability:** Ensure the chosen location has sufficient space to accommodate the industrial tunnel system without obstruction. Allow ample clearance around the machine for maintenance and operation.
2. **Ventilation:** Adequate ventilation is essential to dissipate heat generated during operation. Choose a well-ventilated area or install additional ventilation systems if necessary to prevent overheating.
3. **Utilities Access:** Confirm access to electricity and water sources near the installation site. The machine may require specific voltage and water connections for proper functioning.

#### Installation Process

Follow these steps to install the Industrial Tunnel Wasabi Powder Microwave Sterilization Dryer Machine:

1. **Unpacking and Inspection:** Carefully unpack the machine and inspect all components for any signs of damage or missing parts. Report any issues to the manufacturer immediately.
2. **Positioning:** Position the industrial tunnel system in the designated location according to the manufacturer's recommendations. Ensure it is placed on a level surface for stability during operation.
3. **Assembly:** Assemble the various components of the machine according to the provided instructions. This may include installing conveyor belts, mounting microwave emitters, and connecting control panels.
4. **Electrical and Water Connections:** Connect the machine to the electrical supply and water source per the manufacturer's specifications. Follow proper safety procedures and consult a qualified electrician if needed.

#### Initial Setup and Calibration

After installation, perform the following setup and calibration procedures to optimize the performance of the industrial tunnel system:

1. **Power On:** Switch on the machine and verify that all components are functioning correctly. Check for any error messages or malfunctions.
2. **Calibration:** Calibrate the machine's settings, including temperature, humidity, and conveyor speed, to suit the specific requirements of sterilizing and drying wasabi powder. Refer to the user manual for detailed instructions on calibration procedures.
3. **Test Run:** Conduct a test run of the machine with a small batch of wasabi powder to ensure it operates smoothly and efficiently. Monitor key parameters such as temperature and moisture levels to confirm they meet the desired standards.

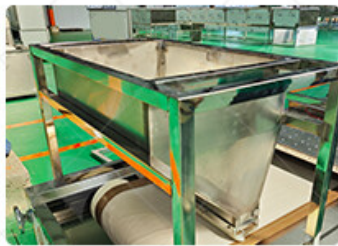
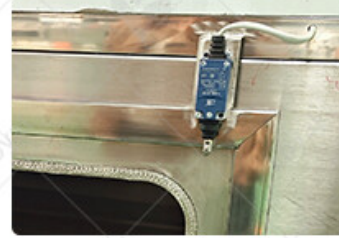
**1. PLC control system**



**6. Machine Material : 304 stainless steel**



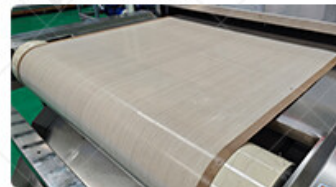
**5. The observation window is equipped with a travel switch to prevent microwave leakage and improve safety**



**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**

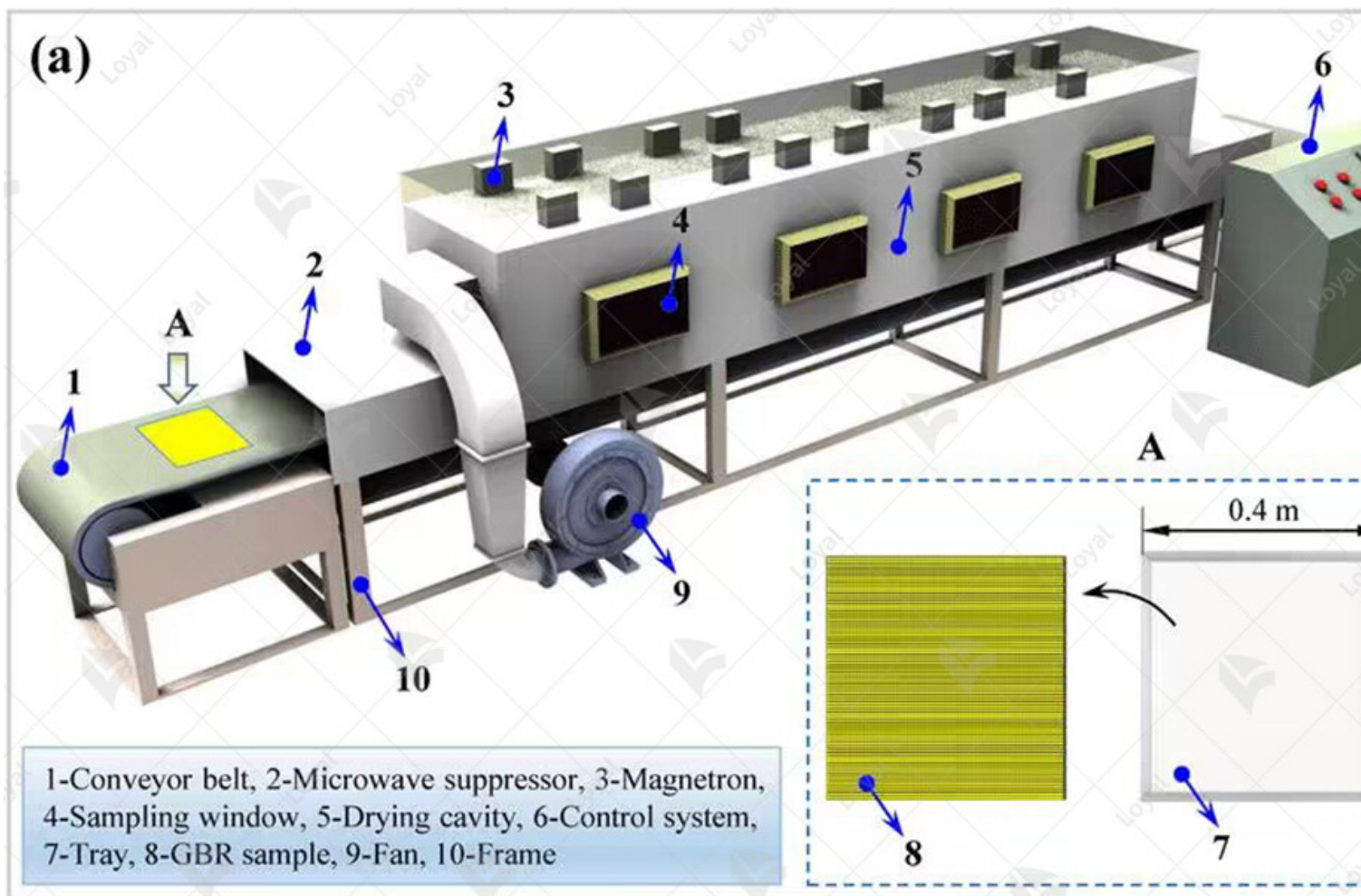


## Maintenance and Upkeep

Maintaining and keeping the Industrial Tunnel Wasabi Powder Microwave Sterilization Drying Machine in optimal condition is crucial for ensuring its efficient operation and longevity. Here are the essential maintenance tasks to uphold the machine's performance:

- **Regular Maintenance Tasks:** Implement a schedule for routine maintenance activities to prevent potential breakdowns and ensure continuous operation. This includes inspecting the machine for signs of wear, lubricating moving parts, and tightening loose bolts and connections.
- **Cleaning Procedures:** Proper cleaning of the tunnel system and microwave components is essential for maintaining hygiene standards and preventing contamination of the wasabi powder. Use appropriate cleaning agents and follow manufacturer guidelines to clean the interior of the tunnel thoroughly, paying particular attention to areas prone to residue buildup, such as conveyor belts and heating elements.
- **Long-Term Care:** In addition to regular maintenance, consider long-term care measures to extend the lifespan of the machine. This may involve periodic calibration of sensors and controls to ensure accuracy in sterilization and drying processes. Keep detailed records of maintenance activities and any issues encountered to facilitate troubleshooting and future maintenance.
- **Replacement of Parts:** Over time, certain components of the machine may wear out or become inefficient. Monitor the performance of critical parts such as heating elements, fans, and conveyors, and replace them as needed to maintain optimal functionality. Consult with the manufacturer or a qualified technician for guidance on sourcing replacement parts and performing repairs.





## Benefits of Using the Industrial Tunnel Wasabi Powder Microwave Sterilization Drying Machine

### Benefits of Using the Industrial Tunnel Wasabi Powder Microwave Sterilization Machine

#### 1. Increased Efficiency and Productivity in Food Processing

- Utilizes microwave technology to rapidly and evenly sterilize and dry wasabi powder
- Continuous processing in the industrial tunnel design ensures high throughput
- Reduces processing time compared to traditional methods, leading to increased productivity

#### 2. Improved Product Quality and Shelf Life of Wasabi Powder

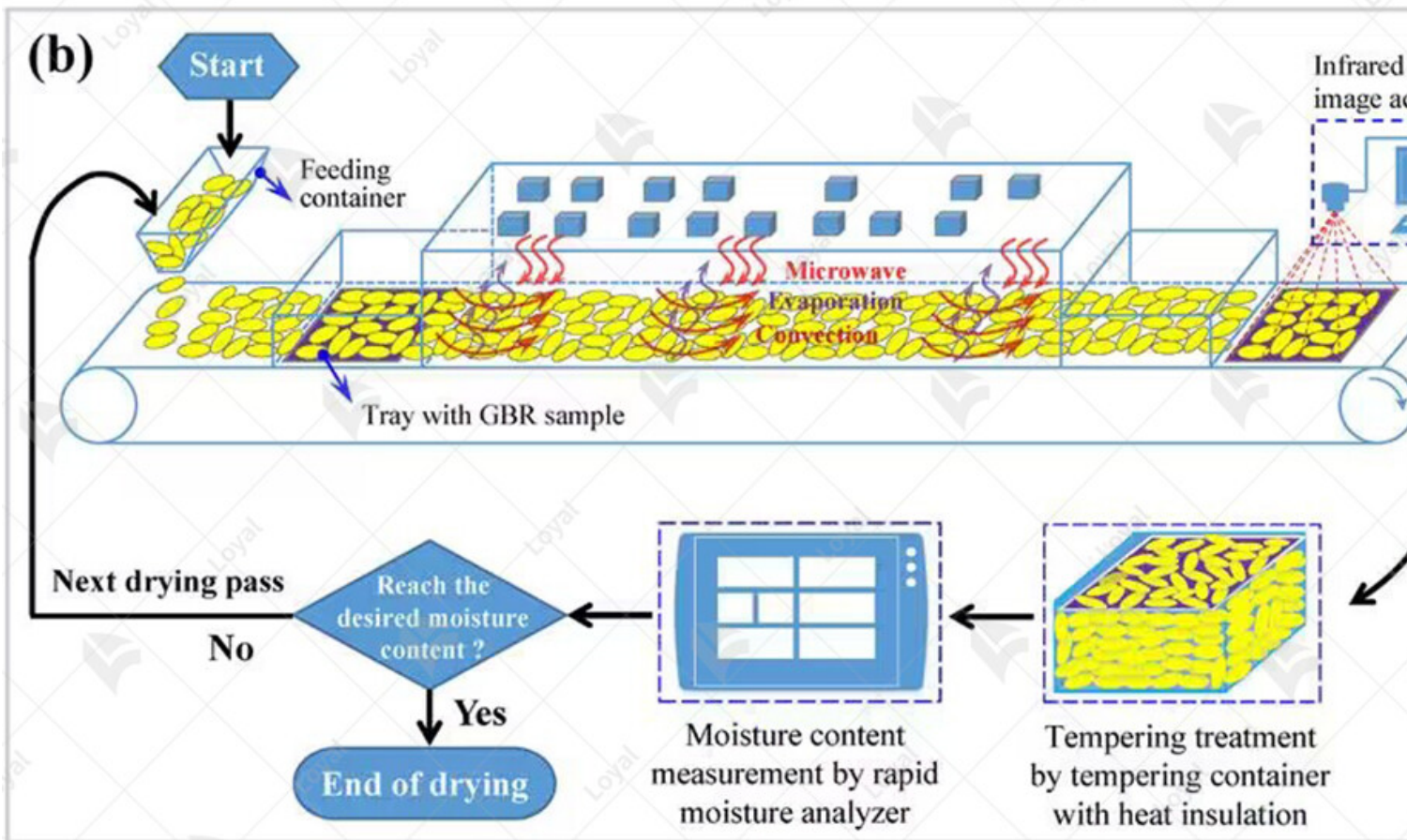
- Gentle microwave sterilization and drying preserve the flavor and color of the wasabi powder
- Eliminates the risk of microbial contamination, ensuring food safety and quality assurance
- Extended shelf life of the product, reducing waste and enhancing customer satisfaction

#### 3. Cost Savings and Return on Investment for Manufacturers

- Lower energy consumption and faster processing result in reduced operational costs



- Minimizes the need for chemical preservatives, saving on ingredient expenses
- Long-term benefits include increased market competitiveness and profitability



## Production Process for Wasabi Powder

The production process for wasabi powder is a crucial aspect of ensuring its quality and safety for consumption. Here, we delve into the specific considerations for sterilization and drying of wasabi powder, along with quality control measures to maintain standards throughout the process.

### Sterilization and Drying Considerations

Sterilization and drying are critical steps in the production of wasabi powder to ensure its safety and stability. Industrial tunnel wasabi powder microwave sterilization drying machines play a pivotal role in this process. These machines utilize microwave technology to rapidly heat the powder, effectively eliminating harmful microorganisms while minimizing the loss of flavor and nutrients.

The industrial tunnel wasabi powder microwave sterilization drying machine offers precise control over temperature and moisture levels, ensuring uniform sterilization and drying throughout the product. This not only enhances the safety of the powder but also extends its shelf life, maintaining high quality for an extended period.

### Quality Control Measures

To maintain the quality and consistency of the final product, stringent quality control measures are implemented throughout the production process. This includes regular monitoring of temperature, humidity, and sterilization levels during the drying process. Additionally, samples of the finished powder are periodically tested for microbial contamination and overall quality to ensure compliance with regulatory standards.



## Conclusion

In conclusion, the Industrial Tunnel Wasabi Powder Microwave Sterilization Drying Machine stands as a pinnacle of innovation in the food processing industry. With its advanced microwave technology, this machine offers unparalleled efficiency and effectiveness in sterilizing and drying wasabi powder. By harnessing the power of microwaves, this machine ensures rapid and uniform heating, effectively eliminating harmful microorganisms while preserving the flavor and nutritional integrity of the wasabi powder. Its tunnel design allows for continuous processing, enabling high-volume production without compromising quality.

Furthermore, the precision controls and monitoring capabilities of this machine ensure consistent results, meeting the stringent quality standards of the food industry. Whether used in large-scale production facilities or smaller operations, the Industrial Tunnel Wasabi Powder Microwave Sterilization Drying Machine offers reliability, efficiency, and superior performance.

As we look ahead to the future of food processing, it's clear that microwave technology will continue to play a vital role. With ongoing advancements and refinements, machines like the Industrial Tunnel Wasabi Powder Microwave Sterilization Drying Machine will further revolutionize the way we sterilize and dry food products, ensuring both safety and quality for consumers worldwide.





## References

The following are five authoritative foreign literature websites in the field of industrial micro

1. IEEE Xplore Digital Library

Website: [<https://ieeexplore.ieee.org/>]

2. ScienceDirect

Website: [<https://www.sciencedirect.com/>]

3. SpringerLink

Website: [<https://link.springer.com/>]

4. Wiley Online Library

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

5. PubMed

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