

What Is The Microwave Sterilization

Germicide is an essential step in food processing. The commonly used bus sterilization can not kill all some heat-resistant bacillus in food, and heating will destroy the nutrients in food and the natural characteristics of food to varying degrees. Microwave sterilization equipment is the result of the combined effect of the thermal and biological effects of the electromagnetic field. The thermal effect of microwave on bacteria is to change the protein, make the bacteria lose nutrition, reproduction and livelihood conditions and die. The biological effect of microwave on bacteria is that the microwave electric field changes the potential spread of the cell membrane section, affects the concentration of electron and ions around the cell membrane, and then changes the permeability function of the cell membrane, so the bacteria malnutrition, can not bring forth the new normally, the cell layout function is unbalanced, the growth and development is hindered and die. In addition, microwave nucleic acid RNA and deoxyribonucleic acid DNA, which can make bacterial normal growth and stable genetic reproduction, are caused by several hydrogen bonds slack, cracking and recombination, and then induce genetic gene mutations, or chromosome aberration and even cracking.



Advantages Of Microwave Sterilization

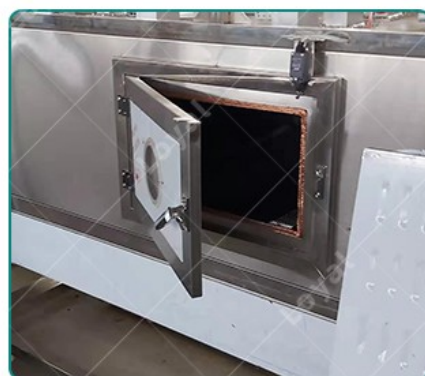
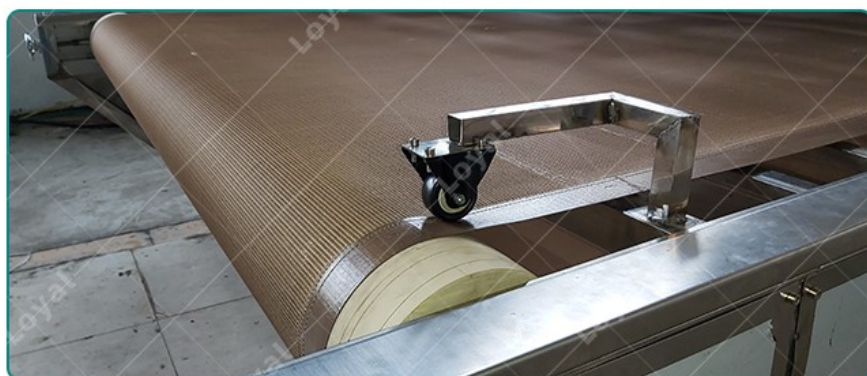
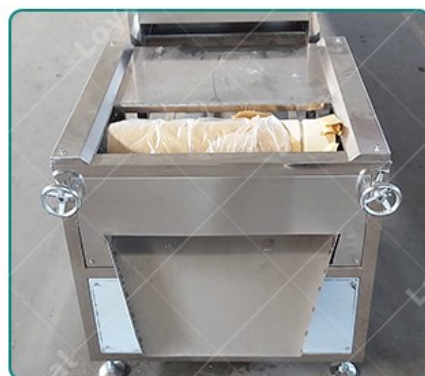
1. Times are short and fast

Conventional thermal sterilization is to transfer heat from the outside of the food to the inside through heat conduction, convection or radiation, usually requiring long hours to reach the sterilization temperature. Microwave sterilization is the direct mutual effect of microwave energy

and food, bacteria and other microorganisms, thermal effect and non-thermal effect together, to reach the intention of rapid heating sterilization, disposal time is greatly shortened, the sterilization effect of various materials is usually 3-5 minutes.

2.Low-temperature sterilization adheres to the nutritional composition and traditional flavor

Microwave sterilization is a particularly hot and non-hot effect sterilization, compared with the conventional thermal sterilization, can achieve the desired sterilization effect at a low temperature and a short time. Usually sterilization temperature in 75-80 degrees Celsius, can reach the effect, in addition to the microwave disposal of food can preserve more nutrients and color, aroma, taste, shape and other flavors, with swelling effect. For example, the vitamin C of vegetables is 46% -50%, while microwave treatment is 60% to 90%; vitamin A of pig liver is 58%, while microwave heating is 84%.



3.Determination of sterilization

Conventional thermal sterilization is from the appearance of the material, through the heat conduction from the table and inside broken heating! The penetration of the microwave makes the appearance and internal heat and the thermal effect and non-thermal effect act at the same time, and the sterilization effect is good.

4.Energy conservation

Conventional thermal sterilization usually has heat loss in the environment and equipment, and microwave is directly effective on food, so there is no rated heat consumption. By comparison, it usually saves 30-50 percent of electricity.

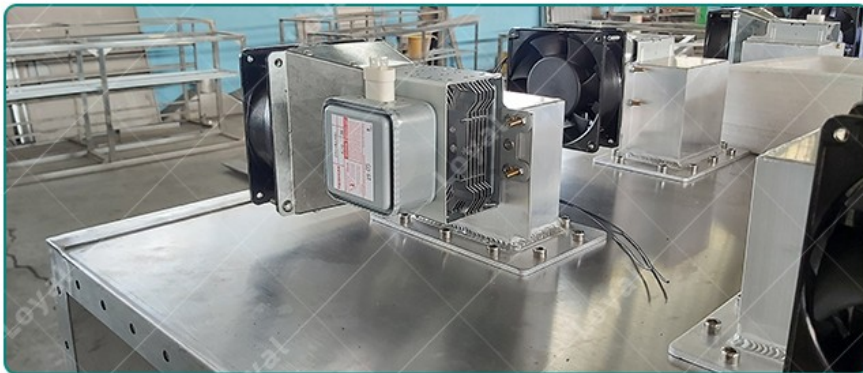
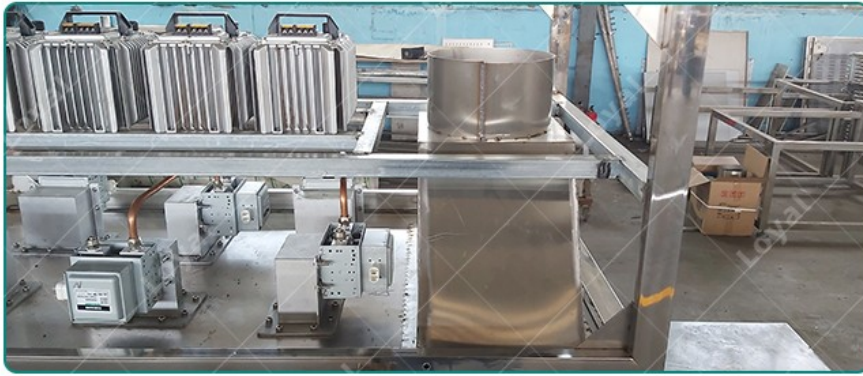


5. Even complete

Routine thermal sterilization begins from the appearance of the material, but through heat conduction to the inside, there is a temperature difference in the surface. In order to stick to the food flavor, shorten the disposal time. Usually the food does not reach the internal temperature and affect the sterilization effect. Because the microwave can have a penetration effect, when the whole disposal of food, the appearance and the inside of the effect, so the sterilization is uniform and complete.

6. Easy to control

Microwave dry operation sterilization disposal, equipment can be on, no conventional thermal sterilization thermal inertia, sensitive and convenient operation, microwave power adjustable, transmission speed from zero can be adjustable, easy to operate.



7.Simple equipment, leading technology

Compared with the conventional method, microwave equipment does not require boilers, messy pipeline system, coal yard and transport vehicles, and only needs the basic conditions of water and electricity.

8.Safety and environmental protection

Because microwave can be controlled in the heating room made of metal and wavepipe work, microwave leakage is effectively controlled, there is no radiation hazard and harmful gas emission, no waste heat and dust pollution, neither food pollution, nor pollution of the environment.

9.Improve working conditions and save land area

The environment of the equipment is low and low noise, which greatly improves the working conditions. The operation of the whole set of microwave equipment only needs 2-3 people. Widely used in beef jerky, dried pork, fish fillet, sauce meat, duck meat, chicken and other products of heating, drying and sterilization. Meat products after microwave sterilization, its freshness, tenderness, flavor are intact, health indicators can be lower than the national food hygiene standards, shelf storage time up to 1 to 2 months, microwave successful application of meat sterilization, preservation technology, from the original preservation period 3 days, extended to 1 to 2 months, has increased the technical achievements to a new stage.

The Application Of Microwave Sterilization

Microwave sterilization technology can greatly maintain the nutritional composition of food materials, sterilization effect is significant, can make the food do not add preservatives and extend the preservation period. The advantages of microwave sterilization technology gradually by people's attention, the application is also popularized grain and oil products, condiments, poultry products, soybean products and dairy products, fruits and vegetables sterilization preservation, aquatic products and other aspects.



1.The application in grain, oil and food products

The shelf life of general grain and oil products is relatively short. Because it contains a large number of nutrients, easy to breed bacteria and corruption become bad. In general conventional heating sterilization, bacteria inside food are difficult to kill, resulting in a shorter shelf life and lower quality. And make microwave has a strong penetration, can product the appearance and inside the bacteria are killed, and make its preservation period increased several times.



2.Application in fruit and vegetable foods

The application of microwave sterilization technology in fruit and vegetable preservation has two main functions: sterilization and extermination. In the process of picking, transportation and processing of fruits and vegetables, they will not be prevented from some mechanical damage. Due to the action of bacteria and enzymes, fruits and vegetables will soon lose their nutritional value and market value. Assuming that the thermal sterilization method is adopted, the flavor and taste will become worse after high temperature and long heat treatment. Using microwave sterilization in a short time can kill bacteria but also can inactivate enzymes, and maintain the value of fruits and vegetables.



3.In meat and poultry and other food applications

The sterilization of meat products generally adopts high temperature and high pressure sterilization, long sterilization time, large energy consumption, large loss of nutrients and flavor substances, and the use of microwave sterilization is not only fast, good effect, but also can better solve the sterilization problem of soft packaged meat products.



4.Applications in liquid foods

Microwave sterilization has now been widely used in liquid food, such as dairy products, fruit and vegetable drinks, beer, condiments and so on. Liquid food is prone to mildew and bacterial content of excessive phenomenon, microwave sterilization with low temperature, fast speed point, can not only kill all kinds of bacteria in drinks, but also prevent mildew in the storage process.



5. Disinfection and sterilization of medical and care devices

At present, the microwave disinfection and sterilization of medical nursing equipment in hospitals are mostly used with microwave irradiation of 2450 MHz.



6. Sterilization of food and tableware

Because microwave disinfection is fast, convenient, clean and reliable in effect, there are many reports of microwave application in food and tableware disinfection. As long as the application is proper, microwave disinfection is expected to be used as the preferred method of food disinfection.



7. Disinfection of clothing and fur

It can effectively kill the bacteria on the clothes and fur under certain fixed conditions.



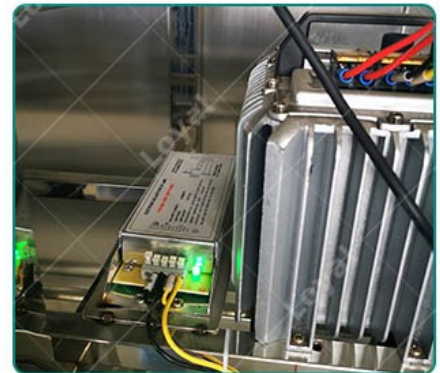
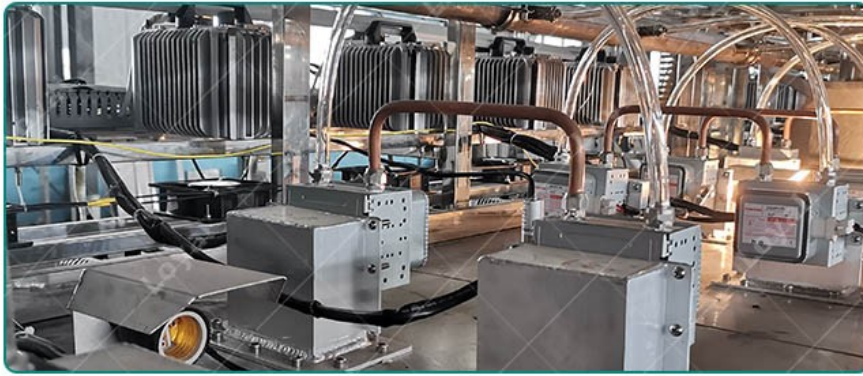
8. Disinfection of waste materials, etc

It can effectively kill the pathogenic microorganisms in the waste, and the transmission microwave treatment is one of the methods to kill the pathogenic microorganisms.



Parameters Of The Microwave Sterilization Equipment

Model	Size(L*W*H)	Output Power (Kw)	Dewaterability	Sterilization Capacity	Baking And Roasting Capacity
LY-10KW	5000mm*825mm*1750mm	?10KW	10KG/Hour	100KG/Hour	30-50KG/Hour
LY-20KW	8000mm*825mm*1750mm	?20KW	20KG/Hour	200KG/Hour	60-100KG/Hour
LY-30KW	8500mm*1160mm*1750mm	?30KW	30KG/Hour	300KG/Hour	90-150 KG/Hour
LY-40KW	10000mm*1160mm*1750mm	?40KW	40KG/Hour	40KG/Hour	120-200KG/Hour
LY-50KW	12500mm*1160mm*1750mm	?50KW	50KG/Hour	500KG/Hour	150-250KG/Hour
LY-60KW	13500mm*1450mm*1750mm	?60KW	60KG/Hour	600KG/Hour	180-300KG/Hour
LY-70KW	13500mm*1500mm*1750mm	?70KW	70KG/Hour	7000KG/Hour	210-350KG/Hour
LY-80KW	13500mm*1650mm*1750mm	?80KW	80KG/Hour	800KG/Hour	240-400KG/Hour
LY-100KW	16800mm*1650mm*1750mm	?100KW	100KG/Hour	1000KG/Hour	300-500KG/Hour
LY-150KW	22400mm*1850mm*1750mm	?150KW	150KG/Hour	1500KG/Hour	450-750KG/Hour



Microwave sterilization is a new kind of contemporary technology, it has a short heating time, fast heating speed and uniform sterilization, not only conducive to maintain the physiological activity of food functional ingredients, but also conducive to maintain the color, aroma, flavor and nutrients of raw materials, and no chemical residue, safety is improved. Therefore, it is important to improve the sterilization effect of food and improve the quality of food after sterilization.