

## Sesame Seeds Microwave Roasting Machine

Microwave is a form of energy (not heat), a form of electromagnetic wave, which can be converted into heat in a medium. The reactions of materials to microwave can be divided into four situations: (1) penetrating microwave (2) reflecting microwave (3) absorbing microwave (4) partially absorbing microwave



Dielectrics can be divided into non-polar and polar molecular dielectrics. Usually they are arranged irregularly. If they are placed in an alternating electric field, the polar molecular orientation of these media will change with the change of electric field polarity, which is called polarization. The stronger the external electric field is, the stronger the polarization is, the faster the polarization of the external electric field changes, and the faster the polarization is, the more intense the thermal motion of the molecule and the friction between the adjacent molecules are. Thus, the conversion of electromagnetic energy to thermal energy can be realized. A kind of material consisting of polar molecules can absorb microwave well. Water is the best medium to absorb microwave. Therefore, any substance containing water must absorb microwave. The other is composed of non-polar molecules, which basically do not absorb or rarely absorb microwave. These substances include polyvinyl fluoride, polypropylene and other plastic products, glass, ceramics, etc. They can pass through microwave, but not absorb microwave. These materials can be used as containers or supports for microwave heating, or as microwave sealing materials. For conductive metal materials, radio waves can not penetrate into the interior and be reflected, and metal materials can not absorb microwave.



Principle of [Sesame Seeds Microwave Roasting Machine](#):

Generally, the materials processed in the field of processing are mostly dielectric materials, which are composed of polar and non-polar molecules and can absorb microwave in varying degrees. The coupling of dielectric materials and microwave electromagnetic field will lead to various power dissipation to achieve the purpose of energy conversion. There are many ways of energy conversion, such as ion conduction, dipole rotation, interface polarization, hysteresis, piezoelectric phenomena, electrostriction, nuclear magnetic resonance and ferromagnetic resonance, among which ion conduction and dipole rotation are the main principles of microwave heating. A kind of microwave heating is a heating method that depends on material absorbing microwave energy and converting it into heat energy, so that the material itself can be heated at the same time. The commonly used microwave frequencies are 915 MHz and 2450 MHz. Due to its high frequency characteristics, microwave electromagnetic field changes periodically at an astonishing speed of billions of times per second. After absorbing microwave energy, polar molecules in materials (such as water molecules, proteins, nucleic acids, fats, carbohydrates, etc.), they are arranged in an orderly manner under the action of microwave electromagnetic field, which changes the orientation of their original random distribution. Under the action of high frequency electromagnetic field, these polar molecules also make electric field polar motion with the change of alternating electromagnetic field at the same speed, which will cause the movement and rotation of molecules, resulting in frequent collisions between molecules, resulting in a large amount of friction heat, which is expressed in the form of heat in the material, resulting in the rapid increase of temperature, heating or maturation of the material

in a short time.



Characteristics of [microwave roasting machine](#):

(1) Penetrating heating with fast heating speed. The penetration distance is theoretically the same order of magnitude as the wavelength of electromagnetic wave. Microwave heating is to make the heated object itself become a heating object. It is called the whole heating mode. It does not need the process of heat conduction, so it can be heated in a short time. When heated by microwave, the parts of the object, regardless of their shape, can usually penetrate the electromagnetic wave evenly to generate heat, which greatly improves the inefficiency of medium material heating. (2) Heating uniformly. When heated by microwave, all parts of an object, regardless of their shape, can usually penetrate microwave uniformly to generate heat. Therefore, the uniformity is greatly improved. It can avoid the phenomena of endogenous coke, dry coke and wet coke, and improve the quality of food products, which is conducive to the formation of the quality of food materials.