

Application of Microwave Dryer in Tobacco Drying

Microwave is a form of energy that can be converted to heat in a dielectric. The material that can absorb microwave energy is placed in a high-frequency alternating electric field, and the particles in the material undergo repeated reversal movement, which causes the collision to be intensified, resulting in heat dissipation (or Joule heat), and energy conversion occurs.



Therefore, the [microwave drying machine](#) is a kind of dielectric drying. During the dielectric drying process, heat is generated inside the material, and the mass transfer driving force is mainly a vapor pressure gradient rapidly generated inside the material.

Compared with ordinary drying heated by hot air and steam, the main advantage of microwave drying is that the energy is effectively utilized and the material is not destructive (drying at a lower ambient temperature, no high surface temperature is required), The loss of other volatile substances is small and the effect is uniform (can form a more uniform humidity field and humidity distribution), and the drying is rapid (the drying time can be shortened by 50 or more), which is beneficial to improve the quality of the spinning (such as avoiding the surface hardening of the tobacco). . Since the installation of the first microwave dryer in our factory, the actual application effect has been tracked and tested. The results show that the use of microwave drying has a certain effect on the expansion of tobacco.

Different shapes and different structures of [microwave dryers](#) have different drying effects. The process manufacturing capability of the microwave dryer must match the process flow of the entire wire, and it must also be considered that the tobacco passing through the microwave cannot be spread too thick, otherwise it will affect the absorption of microwave energy by the tobacco.

Microwave radiation has certain damage to human health. Therefore, using microwave drying, how to prevent microwave radiation leakage is the first problem to be considered. Our factory has installed a shield to prevent microwave energy leakage in the microwave device itself, and has a protective cover and a protective net for shielding at the entrance, exit and around, which better solves the radiation leakage problem.

The above application and analysis show that microwave drying has a certain expansion effect on cut tobacco, especially after the improvement of the original microwave drying equipment, the filling value of cut tobacco is further improved. We believe that under the joint efforts of microwave equipment manufacturers and tobacco researchers, microwaves will have more room for expansion in lossless drying, improved tobacco filling performance, and energy saving and defocusing.