

Rice Bran Oil Plant Equipment

Rice bran oil has high nutritional value. Fatty acid composition, vitamin E, sterol and oryzanol in rice bran oil are beneficial to human absorption. They can remove cholesterol from blood, reduce blood lipids and promote human growth and development. The absorption rate after eating is over 90%. They have already become the daily healthy edible oil of Western families.



Physical Characteristics and Processing Characteristics of Rice Bran:

The content of oil in rice bran is about 14%-24%. It is a kind of oil with medium and low oil content. Compared with other oils, it also has the following characteristics: high starch content; many kinds of enzymes, which are easy to deteriorate and unsuitable for long-term survival; containing many colloidal substances, such as phospholipids, furfur wax; small density, fine particles, large powdery degree; many varieties and large changes in composition.

[Rice Bran Oil Plant Equipment:](#)



On the one hand, the powdered rice bran can be expanded into a porous column structure with good air permeability by extrusion treatment, which enhances the density of rice bran and accelerates the penetration rate of solvents, facilitates the penetration of solvents in the leaching process and reduces the residual oil of bran meal; on the other hand, the lipase in rice bran can be fully passivated and inactivated by extrusion treatment, so that the rice bran can be preserved. It is not easy to deteriorate, prolongs the fresh-keeping period of rice bran, greatly reduces the acid value of crude oil leached from rice bran, and effectively improves the quality of crude oil leached from rice bran. Therefore, rice bran can not only increase the output, but also improve the leaching characteristics of materials and the penetration speed of solvents in materials. In the later processing process, it can save energy, reduce the solubility of wet meal, increase the concentration of mixed oil, enhance the desolvation capacity of evaporators and evaporators, reduce various consumption and improve the oil yield of rice bran.



If the rice bran contains iron impurities, the iron impurities will cause serious damage to the screw extruder during the extrusion process, and block the module of the extruder, affecting the extrusion effect of the extruder, so the iron impurities in the rice bran must be removed. Due to

the small grain size and poor fluidity of rice bran, the iron impurities in rice bran are usually removed by means of strip magnets installed at the inlet and outlet of the equipment instead of permanent magnet drum and other iron removal equipment. The conditioning treatment is to preheat the rice bran before it enters the extruder to raise the temperature of the rice bran before it is extruded. After conditioning, the temperature of rice bran is generally controlled at ~65~75, and the moisture content is controlled at ~10~12. In this way, on the one hand, the output of the extruder can be increased, on the other hand, the quality of rice bran extrusion can be improved.

Oil Plant Equipment:

The expansion of rice bran is to increase the temperature and humidity in the extruder by injecting high pressure direct steam and high temperature water into the extruder, and to form a high pressure treatment of rice bran, so that it can form a porous columnar structure from the original crushing state, and extruded by the extruder through the discharge template. During the operation of the extruder, the key factor to ensure the stability of the extruder is to feed continuously and steadily to the extruder, and to ensure the working pressure in the extruder's press chamber. The temperature in the extruder is usually 104~ 130 C, and the water content is 15% ~ 17%. The pressure in the chamber reaches 13 MPa. Such conditions are sufficient to inactivate the lipase in rice bran and deactivate the enzyme. When the material is extruded from the discharging template, part of the moisture in the material vaporizes rapidly, the moisture in the material decreases sharply, and the moisture in the discharging material of the extruder can be reduced to about 14%.

The extruded material from the extruder has too much moisture and too high temperature to be leached directly. It must be dried, cooled and conditioned so that the water content can reach 7%~9% and the temperature can reach 50 55 C to meet the leaching process requirements. Expanded rice bran is usually dried and cooled by flat dryer or airflow dryer. During the design and installation of rice bran extrusion workshop, the characteristics of rice bran such as small particle size, high powder content, poor fluidity, easy adhesion and easy blockage should be fully taken into account before extrusion. The hopper, conveyance channel and conveyance equipment connected by the equipment should adopt larger diameter, size and verticality as far as possible in order to facilitate the flow of rice bran and prevent the blockage and adhesion of materials in the production process. ? After extrusion, it should be fully considered that the newly extruded materials are characterized by high temperature, high moisture content, low hardness and fragility of columnar materials. Therefore, the screw conveyor which is easy to break particles should not be used in the transportation of extruded rice bran, but chain bucket elevator scraper conveyor should be used to make the materials not easy to break.

The leaching process of expanded rice bran is similar to that of soybean and cottonseed cake. The whole leaching process is divided into four systems: material leaching, wet meal desolvation, mixed oil evaporation and solvent recovery. However, the material characteristics of expanded rice bran determine that the leaching process of expanded rice bran has its own characteristics.

There are a lot of solid impurities in rice bran concentrated oil mixture. If these solid impurities are not cleaned up, the evaporator and stripper will be blocked, the solvent in the mixture will not be completely removed, the volatile matter of crude oil will increase, and the solvent consumption in the leaching workshop will increase. Therefore, the solid impurities in the concentrated mixture must be removed before it enters the evaporation system. One or more of these methods are usually used, such as continuous filters, mixed oil filters, cyclone separators and salting out. Among these methods, the cyclone separator has the best effect and is easy to operate. In the process of leaching, the amount of fresh solvent spraying increased, so the amount of concentrated mixed oil increased accordingly. In the process of equipment selection, evaporation area of evaporator should be increased appropriately to meet the requirements of production process.