

## Small Scale Palm Oil Refining Machinery

Palm oil is currently the second largest edible vegetable oil in the world. Because of the low cost of palm planting and the low price of palm oil, palm oil has a strong competitiveness in the world edible oil market. China has a large population, and the demand for vegetable oil is also increasing. The demand for vegetable oil in China will maintain a growth rate of 5%. By 2010, the total demand will reach 28 million tons.



### [Oil Refining Machinery:](#)

The purpose of oil refining is to remove impurities and meet the standard of finished edible oil. The main process is: crude oil degumming neutralization decolorization deodorization separation. Water hydration degumming, alkali neutralization or vapor distillation deacid,

adsorbent activated clay or activated carbon decolorization, high temperature and negative pressure deodorization and removal of low boiling point volatile fumes.

#### Crude Oil Filtration:

The crude oil purchased from the company needs to be filtered to remove suspended particulate impurities and other impurities before the following production can be carried out.



Glue is a mixture of phospholipids, sugars, proteins, trace metals and other impurities.

Degumming is the removal process of these impurities. The quality of raw oil largely determines the quality of the final product. The gum in raw oil is an important factor affecting the quality of oil. These impurities make the oil not contact with the catalyst, which reduces the cracking speed. Without degumming, it will directly neutralize the oil which is difficult to operate and increase the oil loss due to emulsification. Gum is also the cause of oil foaming, which has a negative impact on the stability and color of the product. The company adopts the top degumming method and adopts the equipment of Westphalia Company in Germany. Main process flow: crude oil heat exchanger mixer tundish mixer centrifuge mixer intermediate centrifuge refining oil. This method mixes crude oil heated to 90 105 C with phosphoric acid for about 3 minutes then neutralizes part of phosphoric acid with dilute alkali separates all the grease by centrifuge and then heats the water. Centrifugal separation is carried out at very high gravitational acceleration. Finally, the content of phospholipids in degummed oil can be less than  $5 \times 10^{-6}$ . The top-level degumming method is a new degumming method developed by Vandermottle Company of Belgium and Westphalia of Germany. It needs to be separated by two centrifuges. The better the centrifugal separation effect, the better the degumming effect

and the higher the quality of the refined oil.



[Small Scale Palm Oil Refining Machinery:](#)

Neutralization deacidification is a process which has a great impact on product quality and price. If there is a problem in neutralization process, it will bring difficulties to all processes after decolorization and reduce product quality and yield. There are two methods of neutralization, physical and chemical. In principle, physical refining, stripping distillation and deacidification should be the preferred process for oil refining. Chemical neutralization, i.e. using sodium hydroxide to neutralize free fatty acid in crude oil, will produce soap-feet and wastewater. But the choice of physical refining or chemical refining depends mainly on the quality of crude oil. In view of many problems in reality, Current grease processing plants are often equipped with two sets of equipment, Chemical refining method is still indispensable. Adding caustic soda or soda to the oil to neutralize the free fatty acids in the oil. This is a very important operation. Because caustic soda can not only react with fatty acid to form soap feet, but also react with neutral oil. The use of caustic soda in batch alkali refining can reduce the consumption of free fatty acid. However, its reaction performance is weak. Therefore, it can not remove some impurities that can only act on caustic soda, such as pigments, proteins, chlorophyll and heavy metals. The separation of soap foot can be done by centrifugation.

Decolorization:

Decolorization is one of the most important processes in the process of oil refining. In addition to

removing pigments from oil, it can also reduce the content of phospholipids, peroxide value, soap and metal ions, thus improving the color, flavor and oxidation stability of oil, and providing good conditions for further hydrogenation and deodorization of oil. Fat decolorization is the most commonly used method at present. Active clay adsorptive decolorization method is to remove pigments dissolved in oil or dispersed in oil with colloidal particles and other impurities under certain conditions by using clay as a material with strong selective adsorption.

The control items of refining process include: raw oil needs to be tested for acid value, water content and phospholipid content. Quality management departments need to report the test results of raw materials to the production department in time, so that the production department can adjust the amount and concentration of phosphoric acid and sodium hydroxide according to the test results. Degumming and deacidification processes in refining production need to be tested or controlled, including acid value, soap content and phosphorus content of the desoaping oil, the main purpose of which is to check whether the oil is fully degummed, deacidified and washed; the decolorization process in refining production needs to detect the color of the decolorized oil, mainly to determine whether the amount of clay is added and whether the decolorization effect is good; the deodorization process in refining production needs roots. The acid value, color, odor and peroxide value of deodorized oil (finished oil) were detected according to the set internal control standards. The refining process also needs to test the degumming, deacidification, decolorization and deodorization waste materials, determine the free fatty acid content of soap foot and distilled fatty acid, to evaluate the neutral oil content of soap foot and distilled fatty acid, and check the oil content of washing water and waste clay. When a certain item does not meet the set standards, it is necessary to contact the process department in time to check whether each item meets the process standards and whether the equipment is running normally. After troubleshooting, a new round of quality inspection is needed. If there is switching in refining production, it is necessary to do a good job of switching control. The quality department needs to test the switched raw materials in time so that the production department can adjust the production process parameters, and the switched products need to be tested to determine the adequacy of the switching by testing the iodine value, odor and other indicators of the products.