

Modern Rice Milling

The milling process in larger commercial mills combines a number of operations that produces better quality and higher yields of white rice from paddy or rough rice.

The Modern Milling Process

1. Pre-cleaning

When paddy comes into the mill it contains foreign material such as straw, weed seeds, soil and other inert material. If this is not removed prior to hulling the efficiency of the huller and the milling recovery reduced. The capacity of the paddy pre-cleaner is normally 1.5 times milling capacity.

2. Removing the husk (dehusking or dehulling)

Brown rice is produced by removing the husk from the paddy rice. The husk is removed by friction as the paddy grains pass between two abrasive surfaces that are moving at different speeds. After dehusking, the husk is removed by suction and transported to a storage dump outside the mill. Husk accounts for 20% of the paddy weight and an efficient husker should remove 90% of the husk in a single pass.



3. Paddy separation

The paddy separator separates unhusked paddy rice from the brown rice. The amount of paddy present depends on the efficiency of the husker and should not be more 10%. Paddy separators work by making use of the differences in the specific gravity, buoyancy and the size difference between paddy and brown rice.

4. Whitening or polishing

White rice is produced by removing the bran layer and the germ from the paddy. The bran layer is removed from the kernel either abrasive or friction polishers. The amount of bran removed is normally between 8-10% of the total paddy weight. To reduce the number of broken grains during the whitening process, rice is normally passed through two to four whitening machines connected in series.



5. Separation of white rice

After polishing, the white rice is separated into head rice, large and small broken rice and "brewers" by an oscillating screen sifter. Head rice is normally classified as kernels that are 75-80% or more of a whole kernel. To attain a higher degree of precision for grading and separation a length or indent grader is also used.

6. Rice Mixing

A good rice mill will produce 50-60% head rice (whole kernels) 5-10% large broken and 10-15% small broken kernels. Depending on the countries standards, rice grades in the market will contain from 5-25% broken kernels. If rice mixing is to be done properly a volumetric mixer is necessary.

7. Mist Polishing

Mixing a fine mist of water with the dust retained on the whitened rice improves the luster of the rice (polishes) without significantly reducing the milling yield. A friction type-whitening machine, which delivers a fine mist of water during the final whitening process, is used for "final" polishing before sale.



8. Rice Weighing

Rice is normally sold as 50kg sacks which must be accurately weighed and labeled. While most rice mills use manual mechanical weighing system very accurate and fast electronic systems are also available.

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