

SOP No: SOP-MILL-002	SOP Description: Dehulling of Rough Rice Samples
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### **SOP-MILL-002: Dehulling of Rough Rice Samples**

Scope:

This process removes the hulls (shells) from rough rice, resulting in a brown rice fraction. This process follows cleaning of rough rice and precedes milling.

Principle:

Rough rice is fed in a steady stream between two rubber rollers that turn in opposite directions and at different speeds. The shearing force applied by the rollers separates the two hulls from the brown rice kernel. The lower density hulls are separated by aspiration and the higher density brown rice falls through the chamber into a collection bin at the bottom of the machine.

Equipment:

THU-35A Satake Rice Machine, Satake Corp., Hiroshima, Japan

Materials:

Rough rice (approx. 12.5% moisture content wet basis; 150 g standard sample size)

Vessel for collecting brown rice fraction

Procedure A – Verifying/Adjusting the Roller Distance:

1. The distance between the rubber rollers should be approximately 0.019". Adjust as necessary.
  - a. Unplug the unit.
  - b. Unscrew six screws around the perimeter of the cover to remove the cover and access the rollers. (A hexagonal wrench is provided for loosening screws.)
  - c. Using a thickness gauge, check the distance between the rollers.
  - d. Adjust the distance by turning the knob on the right side of the machine.
  - e. Replace the cover and plug in the machine before operating.

Procedure B – Dehulling Rice:

1. Weigh 150 g of cleaned rough rice.
2. With the hopper trap door closed, pour rice into the hopper at the top of the machine.
3. Turn power switch, located at bottom right side of machine, to "ON" position.
4. Manually feed rice into the dehulling chamber by sliding open the trap door at the base of the hopper. Rice should move through in a steady stream so as to prevent clumping/jamming of the rollers.
5. The majority of the rice will fall into the larger plastic bin at the base of the unit. Smaller, lighter kernels and particulates will fall into the smaller bin to the left. These kernels may not have hulls removed, and may be sent through the huller an additional time. Once the process is complete, the contents of both bins may be combined. This sum total represents the brown rice fraction of the sample.

6. Transfer the brown rice into a tared container for weighing.
7. Record weight of brown rice fraction for yield calculation. (Reference SOP-MILL-005)
8. Transfer brown rice into another vessel for storage or further processing.
9. Clean the unit using a vacuum cleaner after using.

Special Considerations:

1. Distance between the rollers should be 0.019". With this clearance, it has been observed that approximately 5-7% of kernels remain unhulled. These kernels are generally considered as part of the brown rice fraction, but may be separated from the brown rice manually, depending on the analyses to be performed.
2. Rubber rollers should be monitored for wear and may have to be changed periodically.
3. Be sure that the hose running from the hull housing chamber to the collection bin under the counter is positioned appropriately so that hulls are contained in the bin.
4. Be sure that the bin under the counter which collects hulls is emptied regularly. If the bin is full, debris will blow out through the top of the collection chamber located at the left of the instrument.