

What are the properties of milled rice that should be measured?

1. Moisture
2. Grain dimensions
3. 1000-grain weight
4. Milling degree
5. Milling recovery

Milling Degree

6. Dockage
7. Head rice and broken grains
8. Chalkiness
9. Whiteness
10. Grain shape

Measurements

Milling degree is computed on the basis of the amount of bran removed from the brown rice. To obtain the weight of brown rice, dehull the paddy samples using laboratory huller. Estimate the milling degree using the following equation:

$$\text{Milling degree (\%)} = \frac{\text{Weight of milled rice}}{\text{Weight of brown rice}} \times 100$$

Milling recovery

Using an abrasive whitener, mill the dehulled samples. Compute milling recovery by dividing the weight of milled rice recovered by the weight of the paddy sample.

$$\text{Milling recovery (\%)} = \frac{\text{Weight of milled rice}}{\text{Weight of paddy sample}} \times 100$$

Dockage

Select, segregate, and weigh the foreign matter. Record the number of unhulled grains collected from the sample. Determine the percentage of dockage of milled rice using the equation:

$$\text{Dockage (\%)} = \frac{\text{Weight of dockage}}{\text{total weight of milled rice}} \times 100$$

Head rice and broken grain

Using a grain grader, separate the broken grains from the whole grains. Compute the percentage of the milling recovery component using the following equation:

$$\text{Head rice (\%)} = \frac{\text{Weight of whole grain}}{\text{Weight of paddy samples}} \times 100$$

Chalkiness

A visual rating of the chalky proportion of the grain is used to measure chalkiness based on the standard Evaluation System SES scale presented below: Select, segregate and weigh the chalky grains (SES Scale 9). Determine the % chalky grain using the equation:

Scale	% area of chalkiness
1	Less than 10
5	10-20
9	More than 20

$$\text{Chalky grain (\%)} = \frac{\text{Weight of Chalky grains}}{\text{Weight of milled rice}} \times 100$$

Whiteness

- Measure the grain whiteness using the Whiteness Meter.
- Separate and weigh yellow-fermented grains. Calculate the percentage of yellow/fermented grains using the formula:

$$\text{Yellow grain (\%)} = \frac{\text{Weight of Yellow grains}}{\text{Weight of total milled rice}} \times 100$$

Grain Shape

Follow the procedure of determining grain shape of paddy. Based on the length to width ratio, the shape of the milled rice will be determined. The ISO Classification is as follows:

Scale	Shape	L/W ratio
1	Slender	Over 3.0
3	Medium	2.1 - 3.0
5	Bold	1.1 - 2.0
9	Round	1.0 or less

$$\text{L/W ratio} = \frac{\text{Average length of rice}}{\text{Average width of rice}} \times 100$$

$$\% \text{ broken} = \frac{\text{Weight of broken grains}}{\text{Weight of paddy samples}} \times 100$$

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