

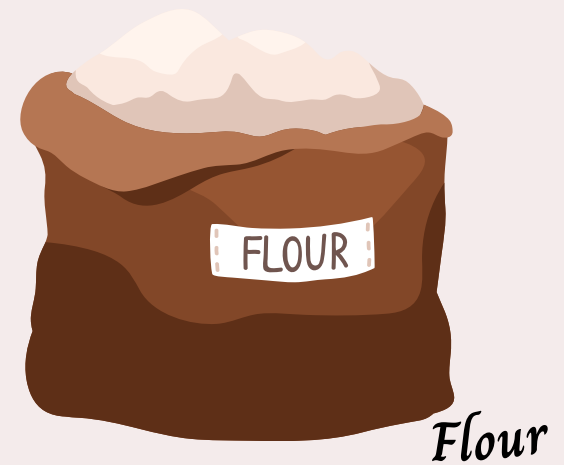
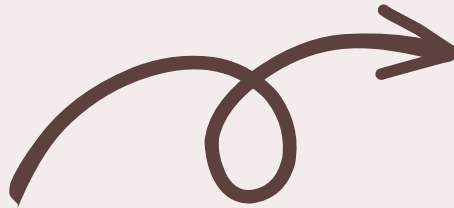


MILLING PROCESS

SEPARATES THE ENDOSPERM FROM THE OTHER KERNEL PORTIONS



Milling is the process of dehulling and grinding grains such as oats, wheat, rice, and corn into smaller pieces or flours to improve palatability, reduce cooking time, and create food products.



3 stages

Cleaning & conditioning



Crushing or breaking



Reduction



1. Cleaning & conditioning

Removing all impurities from the grain and preparing it for milling.

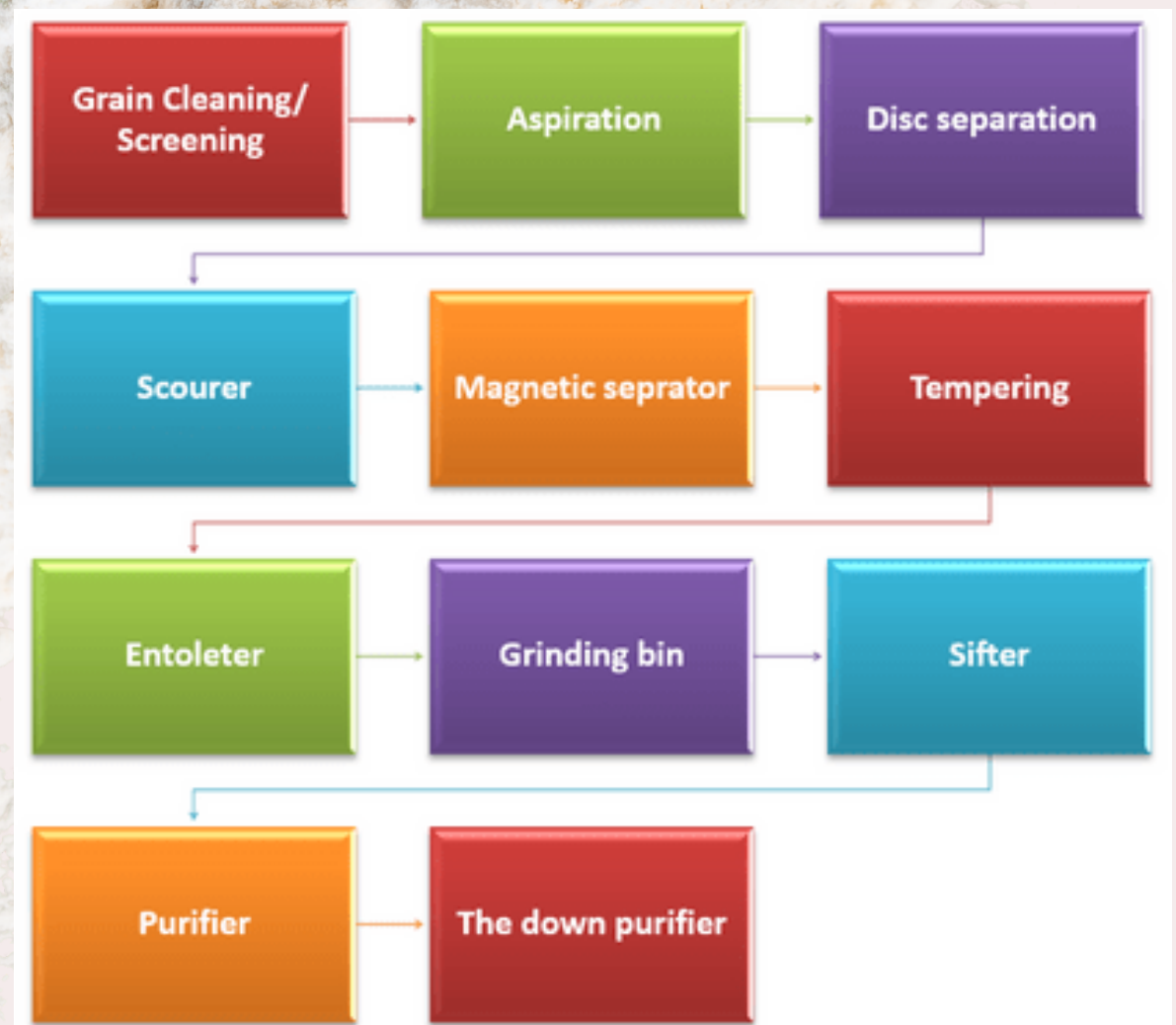
2. Crushing or breaking

Breaking down the grain in stages to release its constituent parts.

3. Reduction

Rollings and siftings are used to refine the flour and separate it into different categories, which are referred to as streams.

Steps involved in milling process



Processing machinery



Grinding equipment:

'Roller flour mill' - The wheat is ground between two cast rolls (break rolls) that rotate against each other.



Roller Mill

Screening equipment:

'Square plansifters & rotary sieves' - Generally used for screening and grading after grinding. It can also be used as checking sifter.

Flour purifier:

'Purifier' - Separates clean farina, or coarse endosperm, from fine bran or compound particles to feed the primary reduction rolls.

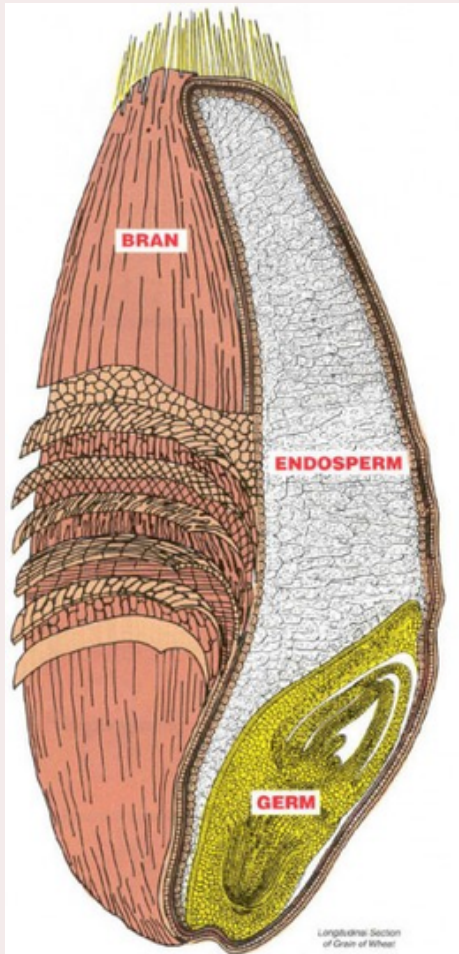


Flour Purifier



Plansifters

ANATOMY OF GRAIN



Bran

The bran is the outermost layer of the kernel, making up about 14.5 percent of total kernel weight.

Endosperm

The endosperm makes up the majority of the kernel weight – 83 percent.

Germ

The germ is the smallest part of the kernel – 2.5 percent of total weight. It is the embryo of the wheat plant.

- Most flours are made from the endosperm after removal of the bran and germ.

Milling reduces the nutritional value of flour by removing a large proportion of the minerals and vitamins, found in whole-wheat kernels. Flour is enriched with nutrients to compensate for the loss of nutrients during the milling process.

The flour yield, or percentage extraction rate, is the number of parts flour by weight produced per 100 parts wheat milled.



Milling By-Products

- The by-products from wheat milling process are known as **wheatfeed**.
- It comprises of :
 1. Bran
 2. Coarse residue from break grinds
 3. Fine feed, purifier particles
 4. Reduction grinding. Compound animal feeds contain bran and fine wheat feed.



Follow

We deliver End-to-End Engineering Design and Construction Management
Projects in Food and Beverage Industry

PMG Engineering

———— Meeting Global Benchmarks ————



Process Engineering



Project Management



Food Safety



Automation



Mechanical & Electrical



www.pmg.engineering