

# Wet Mill Corn Processing

## FEEDSTOCK CLASSIFICATION

Starches & sugars, plant-based oils, plant-based proteins

## FEEDSTOCK EXAMPLES

[Field corn](#)

## PROCESS DESCRIPTION

Corn is soaked for 30-50 hours in a dilute sulfur dioxide solution, which dissolves the soluble nutrients. Germ is removed from the kernel, and the kernel is screened to remove the bran. The gluten and starch is then passed through a screen, and both are separated by centrifuges. The starch is then processed into various products, such as sweeteners, ethanol or food starch. For more technical information, please see the [fermentation of 6-carbon sugars and starches](#).

## PRIMARY BIOBASED PRODUCTS

[Ethanol](#), [corn syrup](#), [high fructose corn syrup](#), [corn oil](#), [corn gluten feed](#), [corn gluten meal](#), [brewers yeast](#), [crop fibers](#), sugars, starches, alcohols, germ, dextrins, bran

## PROCESS BYPRODUCTS

Steepwater/wastewater, dust

## MAJOR EQUIPMENT

Steep tanks, grinding mills, washing screens, centrifugal separators, germ extractors

## ENERGY REQUIRED

Corn wet milling is the most energy intensive industry within the food and kindred products group, using 15 percent of the energy in the entire food industry. A typical corn wet milling plant in the United States spends approximately \$20 to \$30 million per year on energy. However, given available resources and technology, there are opportunities to reduce energy consumption cost-effectively in the corn wet milling industry while maintaining the quality of the products manufactured.

## CAPITAL AND OPERATING COST

The net unit cost of ethanol production is higher with [dry mill corn processing](#) because the co-products from this process are less valuable than from the wet mill process. A typical plant processing 100,000 bushels per day costs \$250 to \$300 million and requires approximately \$15 to \$25 million per year in energy.

## COMMERCIALIZATION STATUS

Established

## COMMERCIAL SUPPLIERS

The Corn Refiners Association, at <http://www.corn.org/>, the Renewable Fuels Association, at <http://www.ethanolrfa.org/>, and the National Corn Growers Association, at <http://www.ncga.com/ethanol/main/>, can direct you to commercial suppliers.

## REFERENCES

Inglett, G.E. (ed.) 1970. Corn: Culture, Processing, Products. Avi Publishing Co., Westport, CN.

Renewable Fuels Association. 2000. How Ethanol is made.

[http://www.ethanolrfa.org/student\\_made.html](http://www.ethanolrfa.org/student_made.html) (21 April 2004)

Davis, Kelly S. 2001. "Corn Milling, Processing, and Generation of Co-products." Minnesota Nutrition Conference: Minnesota Corn Growers Association Technical Symposium.

<http://www.ddgs.umn.edu/davis-processing.pdf> (12 April 2004).