



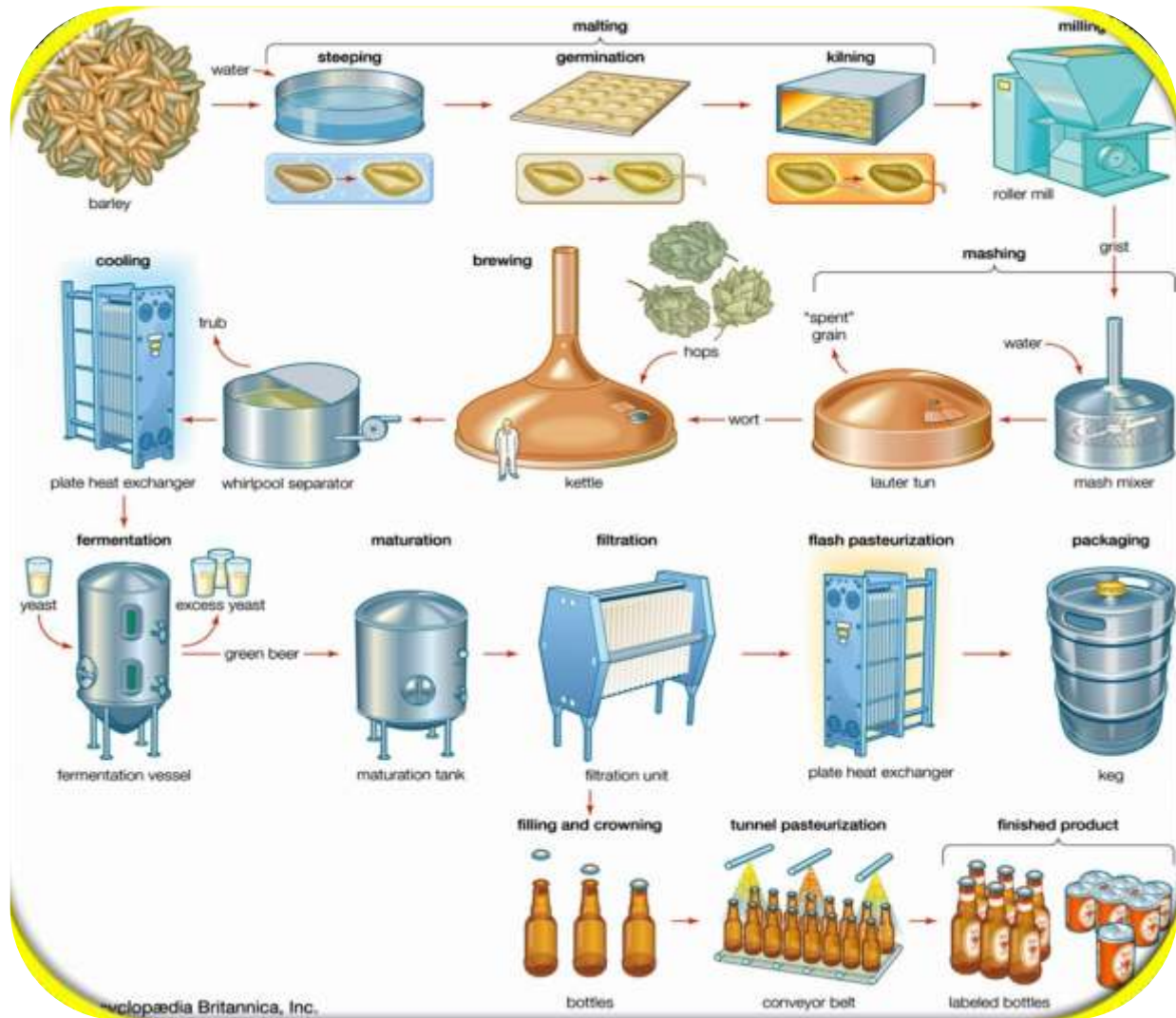
NATBIO
PUTTING NATURE FIRST



BREWING

PRODUCTS FOR THE BREWING INDUSTRY | NATURE BIOCHEM

BREWING - PROCESS CHART



Brewing Enzymes

We supply breakthrough concepts which create value for our customers.

These innovative solutions endow Brewers around the world with:

- Efficient, simple and cost effective process for beer stabilization.
- optimized brewing process providing substantial cost reduction opportunities
- enhanced beer quality (consistency) while processing variable raw materials quality
- increased brewhouse efficiency
- higher productivity

R & D

R&D and Technical Services

Our R&D department works closely with leading brewing institutes, with innovative equipment suppliers and with R&D department of major international brewing groups to shape together the future beer industry.

Our experience, technical and applications knowledge support Brewers in identifying and resolving problems, creating opportunities for new products while reducing cost and improving process.

Quality Assurance

All products are manufactured to meet the highest quality standards and application properties.

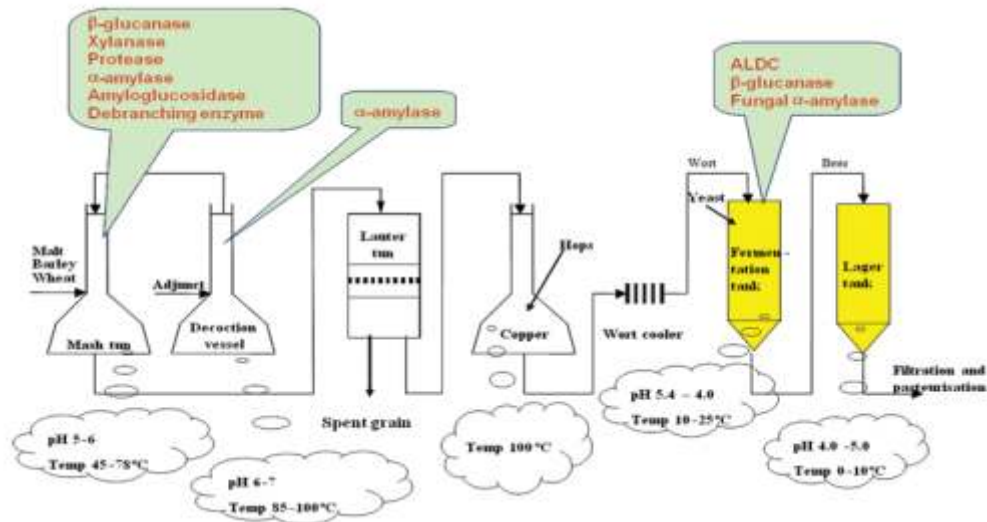


PRODUCT CHART

OPERATION	ENZYMES	ENZYME ACTION	FUNCTION
Decoction vessel (cereal cooker)	α -amylase (NZYM - HTAA)	Hydrolyse starch	Adjunct* liquefac-tion. Reduce viscosity
	β -glucanase (NZYM-BG)	Hydrolyse glucans.	Aid the filtration.
Mashing	α -amylase (NZYM-BAA)	Hydrolyse starch.	Malt improve-ment.
	Amylo-glucosidase (NZYM-AMG)	Increase glucose content.	Increase % fermen-table sugar in "light" beer.
	Debranching enzyme (Pullulanase)	Hydrolyse α -1,6 branch points of starch.	Secures maximum fermentability of the wort.
	Proteases (NZYM- NP)	Increase soluble protein, and free amino- nitrogen (FAN).	Malt improve-ment Improved yeast growth.
	β -glucanase (NZYM-BG)	Hydrolyse glucans.	Improve wort sepa-ration.
	Pentosanase/xylanase (NZYM-XYP)	Hydrolyse pen-tosans of malt, barley, wheat.	Improve extraction and beer filtration.
Fermentation	Fungal α -amylase (NZYM-FAA)	Increase maltose and glucose content.	Increase % fermen-table sugar in "light" beer.
	β -glucanase (NZYM-BG)	Hydrolyze glu-cans.	Reduce viscosity and aid filtration.
	α -acetolactate- decarboxylase (NZYM-ALDC)	Converts α -ace-to lactate to ace-toin directly.	Decrease fermenta-tion time by avoid-ing formation of diacetyl.
Conditioning tank	Protease (NZYM-PAP)	Modify protein-polyphenolic com-pounds.	Reduce the chill haze formed in beer.

* Adjunct is starchy cereals such as maize, rice, wheat, sorghum, barley or pure starch materials added to the mash.

PROCESS



Finings both in the brewhouse and cask:

N-FINE is purified isinglass in a convenient pre-hydrolyzed powder form. It is added to beer at the end of fermentation to speed maturation and improve filtration by removing yeasts and protein particles. For the purposes of rapid dissolving, enhanced performance, and long shelf life, the isinglass in N-Fine also contributes to the actions of both silica gels and PVPP.

N-FLOC is used for a bright and flocculent kettle break. N-FLOC consist of kappa carrageenan derived from the red seaweed *Eucheuma cottonii*. Addition of N-FLOC into kettle 10 minutes before the end of boil gives a brilliantly clear wort at knockout and beer will benefit from this product from wort cooling through filtration.

N-FOAM used as a beer foam stabiliser has the highest level of esterification available on the market, giving superior head retention and greater protection against foam collapse caused by foam-negative contaminants. The conversion of alginate/alginate acid to its propylene glycol alginate (PGA) changes the behavior of the polymer in many ways compared to standard alginate.

NATURE BIOCHEM

304/2/I, Seetharam Industrial Estate, MES Road
Jalahalli Village, Bangalore 560013

Telefax: +91-80-23451779, M: +91-9845211481

E-mail: naturebiochem@gmail.com , www.naturebiochem.com