

PRODUCTION PROCESS PRODUCTION SITES

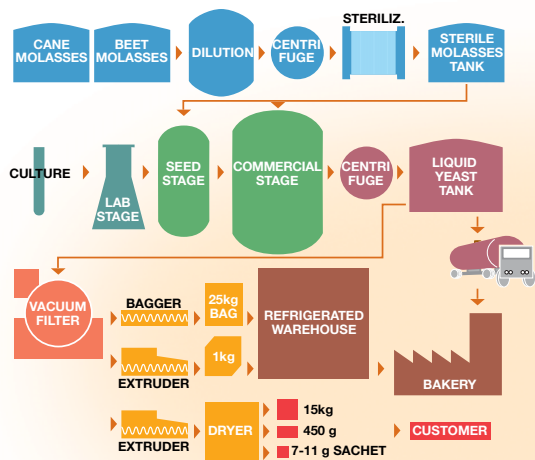


COMMERCIAL YEAST PRODUCTION

Yeast is produced by a controlled aerobic fermentation (growth with air) where yeast biomass, and not alcohol, is the result. Pure strains of the "mother" culture are maintained in the laboratory, then transferred to the plant process, where they are grown in a nitrogen-enriched molasses medium, fortified with vitamins and minerals for optimum cell activity.

After the appropriate number of generations, the mature cell mass is separated from the spent liquid, then delivered as liquid cream yeast, filtered and sold as compressed block yeast, or filtered and dried into instant dry yeast.

Another process step is autolysis (self-digestion) of the yeast cells to liberate the cell nutrients. The autolyte can be simply



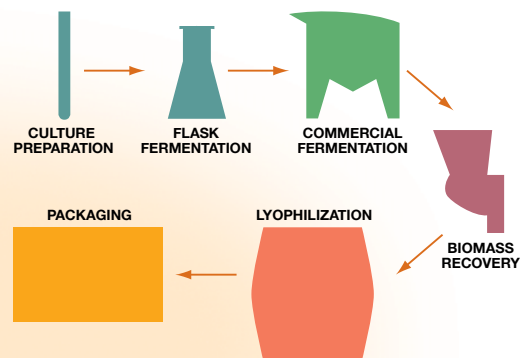
Schematic flowchart of a commercial yeast plant

dried to yield inactive yeast, or it can be treated to produce a fully soluble yeast extract.

COMMERCIAL BACTERIA PRODUCTION

Bacteria production varies between aerobic fermentation to the opposite end of the scale, total anaerobiosis, depending on the type of organism used. Bacterial cell biomass is enlarged in the laboratory, then transferred to the plant where it is grown under fully aseptic conditions. The growth media can be either synthetic or dairy-based.

After growth, the cells are concentrated through centrifugation, then either frozen or lyophilized for packaging and sale. Dry bacteria can be sold as a powder or in capsule form.



Schematic flowchart of commercial bacteria production



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YEAST PLANTS

In Canada:

Montréal, QC (Préfontaine plant)
Fresh bakers yeast and distilling yeast
Dry bakers and specialty yeasts
Bulk for inactive yeast

In the U.S.A.:

Baltimore, MD
Memphis, TN
Fresh bakers yeast

In Europe:

Vienna, Austria
Dry bakers and specialty yeasts
Microencapsulation of yeast and bacteria
Schwarzenbach, Passau and Heilbronn, Germany
Fresh bakers yeast
Tallinn, Estonia (Salutaguse)
Fresh bakers yeast, inactive dry yeast
Grenaa and Fredericia, Denmark
Dry specialty yeast (œnology) and yeast autolysates
Trencin, Slovakia
Fresh bakers yeast (packaging)
Josefow and Lublin, Poland
Fresh bakers yeast

In Africa:

Cape Town and Johannesburg, South Africa
Fresh & dry bakers yeasts
Fresh & dry specialty yeasts

BACTERIA PLANTS

In Canada:

Montréal, QC (Rosell plant)
Especially for human health & nutrition

In the U.S.A.:

Milwaukee, WI
Especially for animal nutrition

In Europe:

Aurillac, France
Especially for human nutrition and pharmaceutical industry

OTHER PLANTS

In Canada:

Valleyfield, QC (Macco Organiques)
Organic acid salts

On the American continent:

Tultitlàn, Mexico
Chemical yeast and mix conditioning
Bakersfield, CA
Warehouse, standardization and distribution center for cream yeast.

In Europe:

Burton-upon-Trent, U.K.
Brewing ingredients
Bruntal, Czech Republic (Macco SRO)
Organic acid salts
Fredericia, Denmark
Dry yeast packaging
Panevezys, Lithuania
Distribution center
Krakow, Poland
Distribution center

OTHER SITES

Sales offices in the above mentined countries, as well as

In Latin America:

Argentina
Brazil
Chile

In Asia-Pacific:

Australia

In Asia:

China

In Europe:

Croatia
Spain
Italy
Lithuania
Netherlands
Switzerland

Plus various distribution centers in Canada and the U.S.