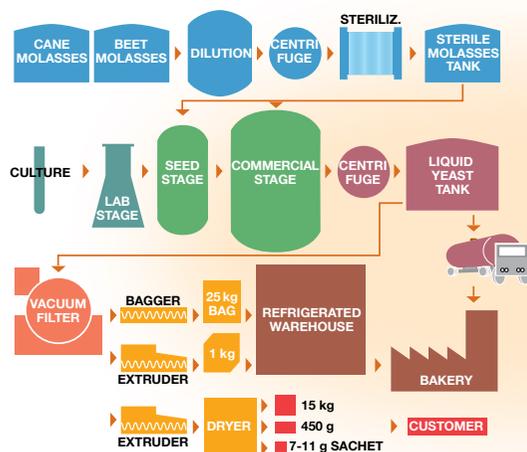


# PRODUCTION PROCESS



## COMMERCIAL YEAST PRODUCTION

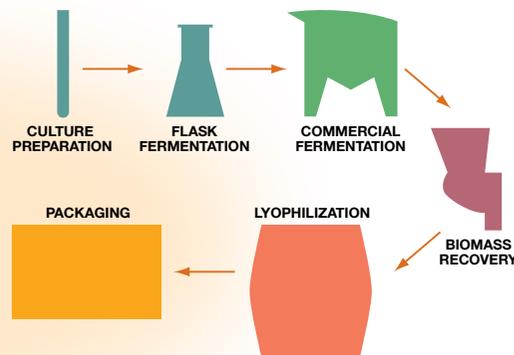
Yeast is produced by a controlled aerobic fermentation (growth with air) where yeast biomass – and not alcohol – is the result. Pure strains of the “mother” culture are maintained in the laboratory and then transferred to the plant process, where they are grown in a nitrogen-enriched sugar medium, fortified 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 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 dried or it can be treated to produce a fully soluble yeast extract.



Schematic flowchart of a commercial yeast plant

## COMMERCIAL BACTERIA PRODUCTION

Bacteria are cultivated in fully aseptic conditions. Bacterial cell biomass inoculum is prepared in the laboratory and then transferred to industrial fermenters. Parameters of fermentation (pH, temperature and aeration) may vary depending on the yeast strains used. Several different growth media can be used and are, in some cases, dairy-based. After growth, the cells are harvested through centrifugation, then either frozen or lyophilized for package and sale. Dry bacteria can be sold as a bulk powder or in dosage form (capsule or sachet).



Schematic flowchart of commercial bacteria plant

## YEAST PLANTS

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### In North America:

- Montréal, Québec (Préfontaine plant)
  - Fresh bakers yeast and distilling yeast
  - Dry bakers and specialty yeasts
  - Bulk for inactive yeast
- Baltimore, Maryland
- Memphis, Tennessee
  - Fresh bakers yeast
- Rhineland, Wisconsin
  - Inactive dry yeast (*Torula*)

### In Europe:

- Vienna, Austria
  - Fresh baker yeasts (cream)
  - Dry bakers and specialty yeasts
  - Microencapsulation of yeast and bacteria
- Schwarzenbach and Passau, Germany
  - Fresh bakers yeast
- Tallinn, Estonia (Salutaguse)
  - Fresh bakers yeast, inactive dry yeast
- Grenaa, Denmark
  - Fresh bakers yeasts
  - Dry specialty yeast (oenology)
  - Yeast autolysates and extracts
- Trencin, Slovakia
  - Fresh bakers yeast (packaging)
- Josefow, Poland
  - Fresh bakers yeast
- Setúbal, Portugal
  - Fresh and dry bakers yeasts
- Felixstowe, United Kingdom
  - Fresh bakers yeasts
  - Dry bakers yeasts
  - Distilling yeasts

### In Africa:

- Johannesburg, South Africa
  - Fresh and dry bakers yeasts
  - Fresh and dry specialty yeasts
- Durban, South Africa
  - Fresh bakers yeasts (cream)

## BACTERIA PLANTS

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### In North America:

- Montréal, Québec (Institut Rosell plant)
  - Especially for human health and nutrition
- Milwaukee, Wisconsin
  - Especially for animal nutrition

### In Europe:

- Aurillac, France
  - Especially for human nutrition and pharmaceutical industry

## OTHER PLANTS

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### In North America:

- Valleyfield, Québec (Macco Organiques)
  - Organic acid salts
- Cuautitlán, Mexico
  - Baking powder and dough conditioners
- Bakersfield, California
  - Warehouse, standardization and distribution centre for cream yeast

### In Europe:

- Burton-upon-Trent, U.K.
  - Brewing ingredients
- Bruntál, Czech Republic (Macco s.r.o.)
  - Organic acid salts
- Fredericia, Denmark
  - Dry yeast packaging and warehousing
- Panevėžys, Lithuania
  - Distribution centre
- Krakow, Poland
  - Distribution centre

## OTHER SITES

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Sales offices and/or sales representatives in the above-mentioned countries, as well as

### In South America:

- Argentina
- Brazil
- Chile

### In Asia-Pacific:

- Australia
- New Zealand
- China
- Japan
- India
- Malaysia

### In Europe:

- Croatia
- Spain
- Italy
- Lithuania
- Netherlands
- Romania
- Switzerland
- Sweden
- Serbia

Plus various distribution centres in many of the above countries.