

Arts, Science And Commerce College, Kolhar

Department of Chemistry

Name of the teacher-Prof. Miss.Shirsath.P.B

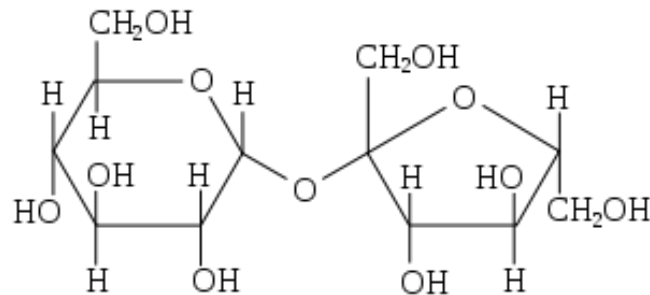
Subject:Industrial Chemistry(T.Y.BSc)

Topic: Sugar & Fermentation Industry



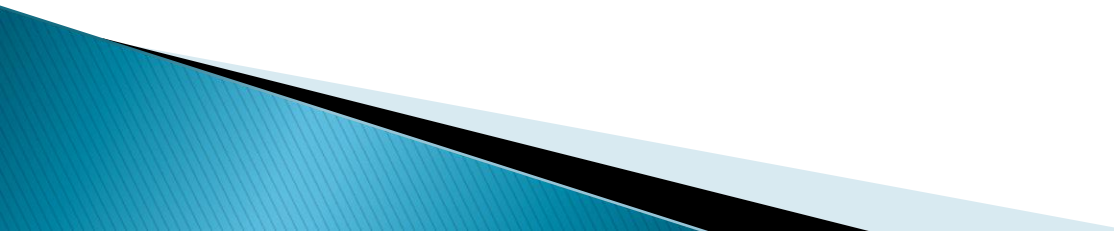
SUGAR INDUSTRY

- ▶ Occurrence
- ▶ Sugar is the generic name for sweet-tasting, soluble carbohydrates, many of which are used in food. Table sugar, granulated sugar, or regular sugar, refers to sucrose, a disaccharide composed of glucose and fructose. Scientifically, *sugar* loosely refers to a number of carbohydrates, such as monosaccharides, disaccharides, or oligosaccharides. Monosaccharides are also called "simple sugars", the most important being glucose.

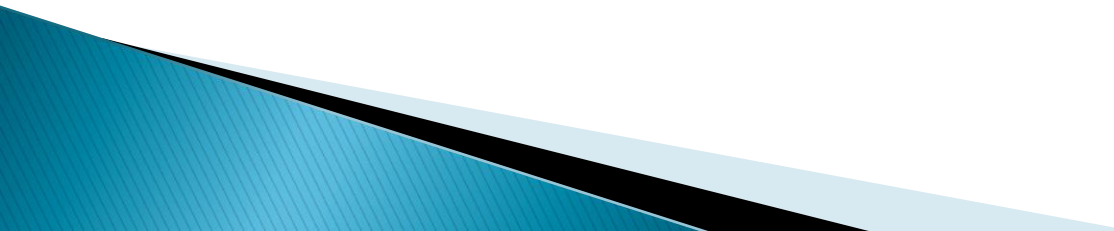


- ▶ Sucrose: a disaccharide of glucose and fructose important molecules in a body.

IMPORTANCE OF SUGAR INDUSTRY:

1. Cane sugar is used all over the world as sweetening agent.
 2. Sugar Supplies man with about 13% of the energy for existence.
 3. About half of the world production of sugar is from sugarcane.
 4. The molasses obtained in sugar industry is also used for the manufacturing of alcohol by fermentation process.
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Manufacturing of Canesugar

- ▶ Raw Material
 - ▶ Extraction of Juice
 - ▶ Purification of juice
 - ▶ Evaporation
 - ▶ Crystallization
 - ▶ Centrifugation
 - ▶ Drying
 - ▶ Packing
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Raw Material:

- ▶ The Raw material used in the manufacture of sugar is sugarcane.

Extraction of Juice

CRUSHING

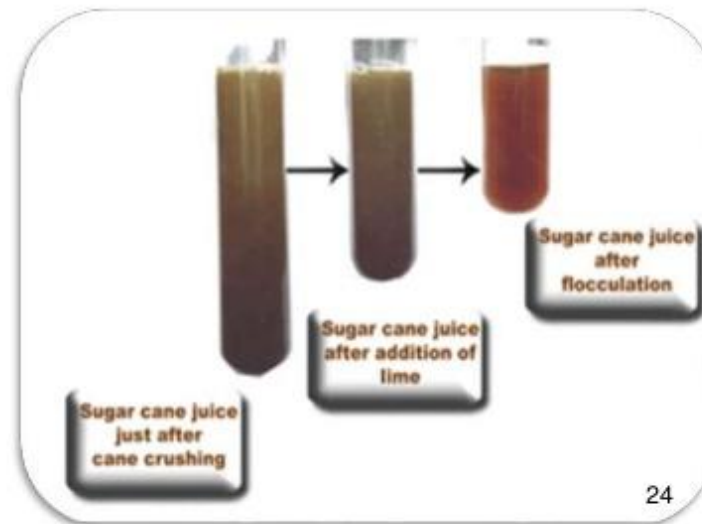
- Cane crushed to break hard structure
- Cells containing juice are ruptured
- No juice extracted
- Increase efficiency of juice extraction
- Subjected to crusher with corrugated blades



Purification / Clarification of juice

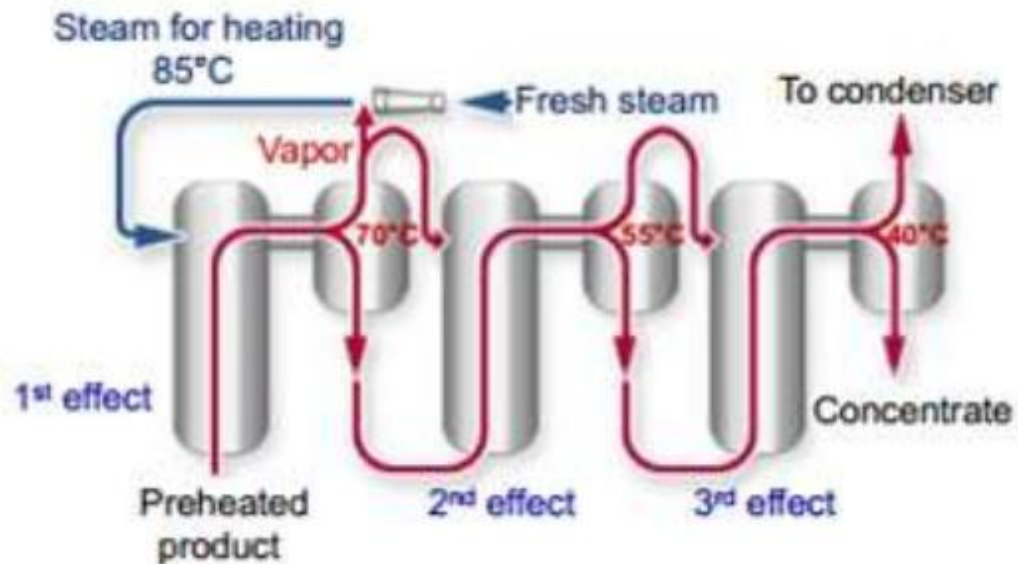
CLARIFICATION/DEFECATION

- To remove non-sugars and impurities
 - Liming
 - Sulphitation
 - Phosphatation
 - Carbonation



Evaporation

MULTI-EFFECT EVAPORATOR



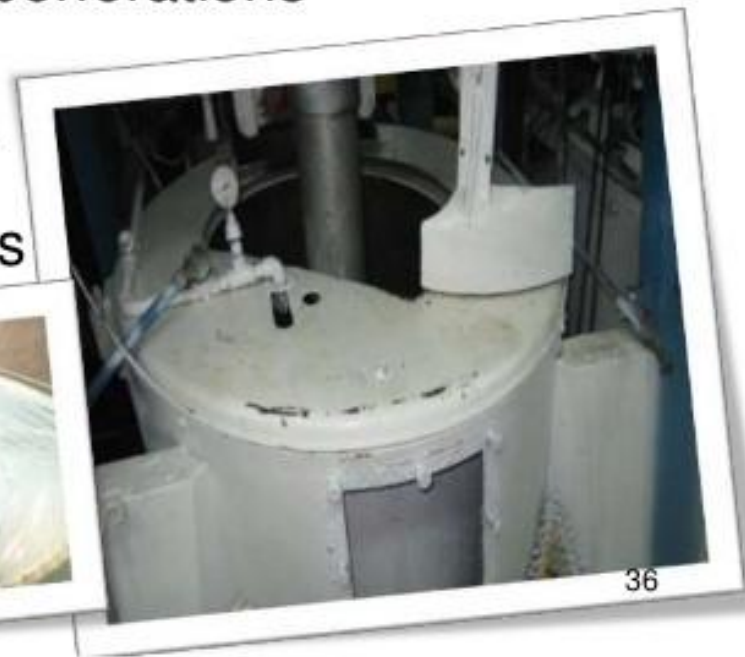
CRYSTALLIZATION



- Carried out in single effect high-vacuum boiling pans
- Brix are increased from 65° to 75° by boiling at 60°C
- Three stages of crystallization
 - Nucleation
 - Initiation
 - elongation

CENTRIFUGATION

- Separate sugar from molasses
- Centrifuge operates at 100-1800 rpm
- Molasses pass through perforations
- Sugar crystals are washed with 85°C water
- Raw sugar and molasses



DRYING AND PACKAGING

- Sugar tumbled through large cylindrical dryers
- Sorting
- Packaging



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