

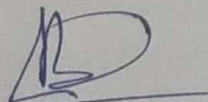
**S.B. ARTS AND K.C.P. SCIENCE COLLEGE
VIJAYPUR**

PG DEPARTMENT OF CHEMISTRY: SEM I & SEM IV

INDUSTRIAL VISIT REPORT

**VENUE : THE NANDI SAHAKARI SAKKARE
KARKHANE NIYAMIT**

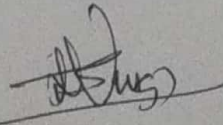
Krishna Nagar, At Post. Hosur , Via
Galagali , Vijaypur Karnataka , India



IQAC, Co-ordinator
S.B.Arts & K.C.P.Science College,
Vijayapur.

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Principal,
S.B.Arts & K.C.P. Science College
BIJAPUR.

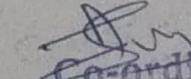
DATE: 19/02/2019

Staff Incharge





Dr. S.N. Unki @ Dr. S.D. Lamani.


Co-ordinator,
P. G. Department of Chemistry,
S.B. Arts & K.C.P. Science College,
BIJAPUR - 586101

NUMBER OF STUDENTS VISITED: 43

STAFF MEMBERS: 04

ABOUT FACTORY:

Established in 1982, The Nandi Sahakari Sakkare Karkhane Niyamit has gained immense expertise in supplying and trading of white sugar, contamination free sugar, fresh sugar etc . The supplier company is located in Vijaypur, Karnataka and is one of the leading sellers of listed products .

SUGARCANE MILL:

A sugarcane mill is a sugar refinery that processes sugar cane to produce raw or white sugar.

PROCESSING:

There are a number of steps in producing raw sugar from cane :

1. Cane receiving and unloading (receive the cane at the factory and unload it from the transport vehicles)
2. Cane preparation (cutting and shredding cane to prepare it for juice extraction)
3. Juice extraction (two techniques are in common use, milling or diffusion) in NANDI sugar factory we saw milling process being carried out.

4. Juice clarification (remove suspended solids from the juice ,typically mud , waxes , fibres)
5. Juice evaporation (to concentrate the juice to a thick syrup at about 65^o)
6. Syrup clarification (remove suspended solids from the syrup , typically colloid size of mud , waxes, fibres, etc)
7. Crystallization
8. Centrifugation (separation of the sugar crystals from the mother liquor , done by centrifugal machines)Sugar drying packing and delivery.

These processing steps will produce a brown or raw sugar . Mill sugar also known as plantation white sugar can be produced by introducing some form of color removal process often Sulphitation . This process is carried between the juice clarification and the juice evaporation stages . The raw sugar is often refined to produce white sugar. This sugar refining can be done either at a completely separate factory or at back end refinery which is attached to a raw sugar factor

JUICE EXTRACTION: MILLING

Juice extraction by milling is the process of squeezing the juice from the cane under a set mills using high pressure between heavy iron rollers .usually mills have 3 to 6 rollers .To improve the milling extraction efficiency , imbibition water is added at each mill.

JUICE CLARIFICATION:

Sugar cane juice has a P^H of about 4.0 to 4.5 which is acidic in nature. Calcium hydroxide, also known as lime water is added to cane juice to adjust p^H to 7. The lime helps to prevent sucrose's decay into glucose and fructose. The limed juice is then heated above its boiling point. The superheated limed juice is allowed to flash to its saturation temperature: this process precipitates impurities which get held up in the calcium carbonate crystals. The flashed juice is transferred to clarification tank to make solid particles to settle down.

JUICE EVAPORATION :

The clarified juice is concentrated in a multiple effect evaporator to make a syrup of about 50% sucrose by weight.

CRYSTALLIZATION AND CENTRIFUGING:

The syrup is further supersaturated. Finely ground crystals suspended in alcohol are introduced into the vacuum pan. These are let to grow about 1mm in size.

A batch type sugar centrifuge separates the sugar crystals from the mother liquor. These centrifuges have capacity of about 2,200 kilograms per cycle. The sugar from the centrifuge is dried and cooled and then stored or directly packed into bags for shipment.

ENERGY IN THE SUGARMILL:

The remaining fibrous solids, called Molasses are burnt for the fuel in the mill's steam boilers. These boilers produce high-pressure steam, which is passed through a turbine to generate electricity. The exhaust steam from the turbine is passed through

the multiple effect evaporator station and used to heat vacuum pans in the crystallization stage as well as for other heating purposes in the sugar mill.

molasses makes a sugar mill more than energy self-sufficient, surplus molasses goes in animal feed, in paper manufacture, or to generate electricity for sale.

BIOETHANOL PRODUCTION:

Bio ethanol is simply ethanol which is renewable energy source made by fermenting the sugar and starch (Molasses)

PREPARATION OF SUGARCANE MOLASSES:

The remaining solid after sugar production is called molasses. It is washed and cut into small pieces. These are dried for 3 days.

FERMENTATION OF SUGARCANE MOLASSES:

In fermentation process, *Sacchromyces cerevisiea* (baker yeast) is used to ferment the simple sugar to ethanol and carbon dioxide.

temperature is kept constant while p^H is varied. Fermentation is continued for 48 hours.

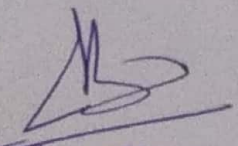
DISTILLATION OF ETHANOL:

After 48 hrs, the sample was filtered. The residue is removed. The bio ethanol is distilled using rotator evaporator. The sample is heated at 80^0 to get bio ethanol which is 99.5% pure.

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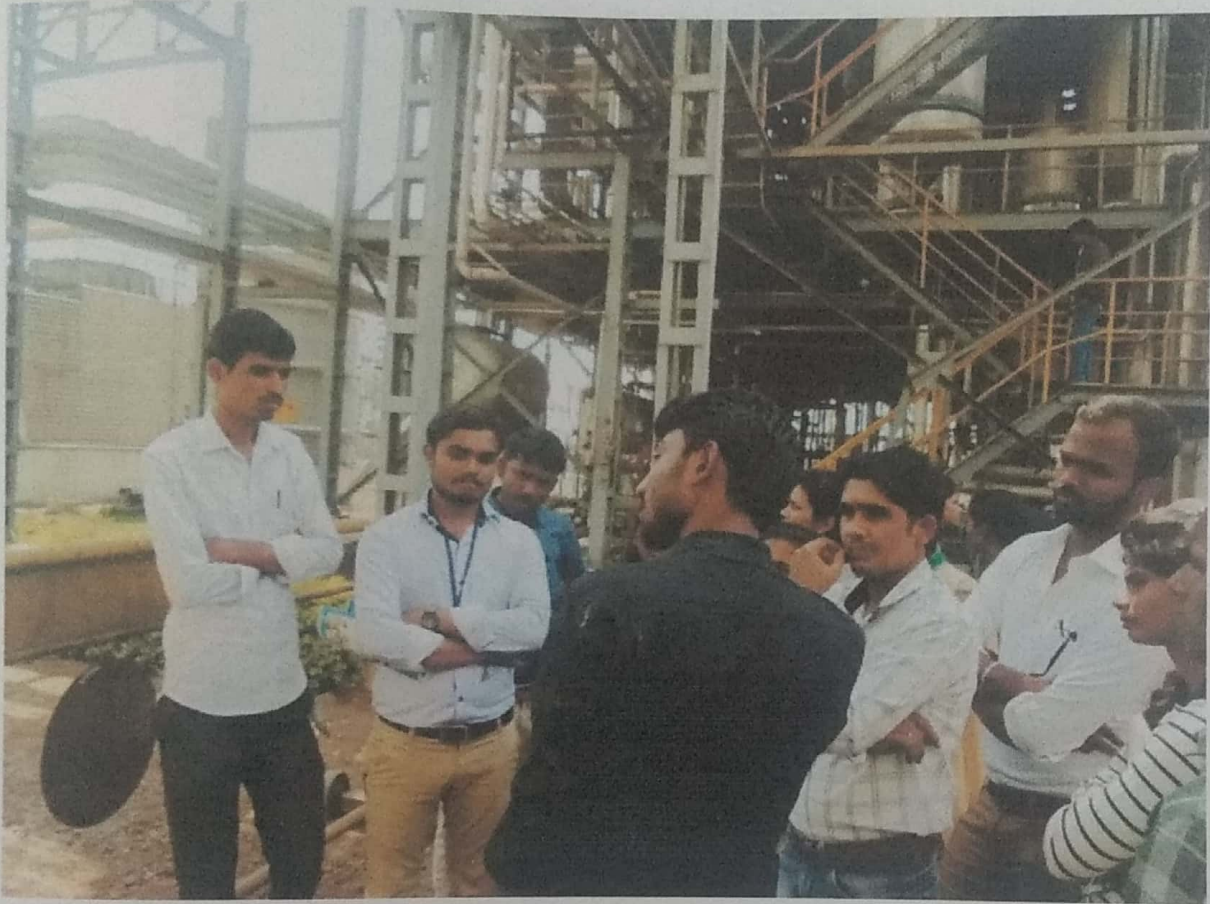
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FACTORY INSIGHT



STUDENT INTERACTION



PICTURE PERFECT



BIOETHANOL MONITORING UNIT

