

## **PROCESS OF SUGAR MANUFACTURE**

Cane after weighing is going through preparatory cane devices called kicker, chopper, leveler and fibrizer. In the preparatory cane devices cane is cut and the cells in cane are opened without the extraction of juice and sent for crushing in the milling tandem.

During the crushing in milling tandem measured quantity of water at 60 to 70° C is added in the last two mills for maximum extraction of sugar from the Cane. The water addition is known as Imbibition. The ratio of sugar extraction in mills to sugar in cane is known as Mill extraction. The residue obtained after crushing is called as Bagasse, which is used as fuel in Boilers for producing Steam at Power plant and the produced steam is utilized for running the power Turbines for producing power, the extracted 3 ata & 9 ata steam is utilized for the sugar processing as well as the power is also utilised to run the sugar plant.

The juice obtained from the mills is weighed and in the first stage heated to around 65 to 70° C. and treated with lime of 6° Be. And dry Sulphur Di-oxide to about 7.0 pH. During this treatment Calcium Hydroxide reacts with Phosphate present in the juice forming Tri Calcium Phosphate which is having a property of occluding the impurities (colloids) and adsorbing much of the colouring matters existing in the juice. The Sulphur di-oxide combines with Calcium forming Calcium Sulphite which adsorbs colouring compounds as well as other impurities. The Sulphur Di-oxide added also has a definite bleaching effect. In the second stage the treated juice is heated to boiling point, to accelerate and complete the reactions. After this, it is allowed to settle.

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The clear supernatant liquid called clear juice is taken out and sent to Evaporators for further concentration. The muddy juice at the bottom is taken out and sent to vacuum filters for filtration. The filtrate obtained from filters is taken back to the while the mud is thrown out to be used as manure by the ryots.

During the evaporation, the clear juice 12 Brix concentrations is evaporated in multiple effect evaporators to about 60 Brix concentration which is called as Syrup. This syrup is again treated with Sulphur Di-oxide to around 5.0 pH for better bleaching to obtain good quality of sugar. The vapours obtained from first and second bodies are used in heat exchangers (Juice heaters and Vacuum Pans)

Crystallization takes place in vacuum pans. Pan boiling is carried out in three stages A,B and C boiling. This is for maximum exhaustion of Sucrose in syrup to crystals. The material obtained after boiling is called A, B and C massecuite respectively. These massecuites are cooled in crystallizers for further extraction of sugar into crystals. The next stage is separation of mother liquor in centrifugals. The separated mother liquor called molasses from A and B massecuites is again sent to pans for further extraction of sugar into crystals. The last mother liquor separated from C massecuite called Final Molasses is weighed and sent to steel molasses storage tanks as a bye-product to be disposed to Distilleries, Cattle feed units etc. The final product obtained from A.massecuite called white sugar is dried,graded,weighed,bagged,stitched and marked as per Indian Sugar Standard and sent to Godown for storage.