



NATIONAL SUGAR INSTITUTE
Government of India
KANPUR
Proforma B : Sugar Technology

Name of the Factory :

Type of Survey :

Dates of visit :

1. Juice weighment:	
(a) Juice weighing scale, if juice is weighed i. Type ii. Capacity iii. Whether integrated counter provided?	Yes/No
(b) Juice measuring tank, if juice is measured. i. Number of tanks ii. Dimension and capacity of tank	Yes/No
(c) Whether any check weighbridge provided? if yes, i. Type ii. Capacity iii. Frequency of calibration per day iv. Whether calibration possible without stopping the mills? v. Any problem in calibration vi. Variation in the weights recorded at different times	Yes/No
(d) Final juice receiving tank i. Dimensions ii. Capacity (m ³)	Yes/No
(e) Whether T.S.P. solution is added to mixed juice? If yes, i. Whether supernatant solution or slurry used? ii. Brix of T.S.P. solution iii. P.O. content of raw juice before addition. iv. P.O. content after addition	Yes/No

(f) Whether heavy and light filtrates of vacuum filter added to mixed juice receiving tank?	Yes/No
(g) M.J. Pumps i. Total number in working order ii. Capacity (m ³ /hr) iii. Head (m) iv. Number in operation v. Type/Make.	
(h) Mixed juice temperature i. Before addition of filtrate return. ii. After addition of filtrate return.	
2. Lime Kiln	
i. Number of kilns ii. Type iii. Capacity iv. Draught at bottom v. Draught at middle vi. Draught at top vii. Size of limestone pieces viii. Size of coke pieces ix. Proportion of limestone and coke x. Make & type of limestone Grader xi. Analysis of limestone	
3. Milk of lime preparation	
(a) Lime Slaker i. Type ii. Dimension (m/feet) iii. Active CaO in quick lime iv. Whether slaking done with v. Cold water, hot water or sweet water?	
(b) Lime classifier: i. Type ii. Dimension (m) iii. Mesh. size iv. R.P.M/Vibrations etc.	
(c) Lime storage tanks i. Number of tanks ii. Dia. (m/feet) iii. Height (m/feet)	

iv. Volume (m ³ /ft ³) v. R.P.M. of stirrer vi. Shape of bottom	
(d) Milk of lime pumps i. No. of pumps in working order. ii. Capacity of pump (m ³ /hr.) iii. Head of pump (m) iv. Brix/Baume of milk of lime	
4. SO₂ Generation	
(a) Sulphur Burners i. No. of burners in working order. ii. Type of burners iii. Tray area (m ²) iv. Burning Capacity v. Whether stirring arrangement provide? vi. Type of stirring arrangement, motor driven or manual. vii. R.P.M. of stirrer if motor driven viii.H.P. of motor for stirrer ix. Temp. of water on sulphur burner.	Yes/No
(b) Air Compressor i. No. of compressor in working order. ii. Make/type of compressor iii. Capacity iv. Distribution of compressor v. Maximum air pressure	
(c) Air drying chamber i. Number of chambers. ii. Size of chambers iii. No. of shelves in each chambers iv. Whether trays are perforated v. Interval of replacement of lime.	Yes/No
5. Juice Sulphiters	
i. Type/make ii. SO ₂ recovery tower provided or not. iii. Correction tank provided or not iv. Diameter (m) v. Cylindrical height (m) vi. Cone height (m) vii. Working height (m)	Yes/No Yes/No

<ul style="list-style-type: none"> viii. Working volume (m²) ix. Retention time (min) x. R.P.M. of stirrer xi. Dia of SO₂ pipe inside and outside vessel. xii. Dose of milk of lime with its Baume/Brix. xiii. Sulphited juice pH xiv. Position of milk of lime entry (above or below SO₂ lime) xv. Type of milk of lime proportioning device and working facility. xvi. Maximum and minimum flow rate/minute of milk of lime. 	
6. Clarifier	
<ul style="list-style-type: none"> i. No. of clarifiers. ii. Type iii. Diameter (m/ft) iv. Height (m/ft) v. Capacity (HL) vi. No. of compartments and distances vii. pH and temperature of clear juice (compartment wise) viii. Whether clear juice is withdrawn from overflow or through liquidation? ix. R.P.H. of shaft and H.P. of drive 	
7. Vacuum Filter	
<ul style="list-style-type: none"> i. No. of vacume filters ii. Make iii. Diameter (m/ft) iv. Length (m/ft) v. Filter area (m²/ft²) vi. Time per revolution of drum vii. Vacume in heavy zone viii. Vacume in light zone ix. Quantity of bagacillo added per minute. x. Bagacillo screen area available in operation xi. Number of holes/Sq. inch and size of holes. xii. Bagacillo blower 	

(a) Capacity (air delivery/minute) (b) Horse power.	
8. Syrup Sulphitation Particulars	
i. Diameter (m) ii. Cylindrical height (m) iii. Cone height (m) iv. Working height (m) v. Retention time vi. Working volumer ³ vii. Baffle plates (a) Number and position (b) Hole size viii. Distance between working level and SO ₂ pipe ix. Analysis of: Unsulphured syrup and sulphured syrup x. Recovery tower provided or not? xi. SO ₂ pipe diameter xii. Whether melt sulphitation is done (a) Inside vessel (b) Outside vessel	Yes/No Yes/No
9. Pans	
(a) Total strike capacity	
(b) Massecuite % cane A m/c B m/c C m/c D m/c	
(c) Boiling scheme	
(d) Equipment particulars i. Pan sl. no. ii. Make iii. Type (calandria/coil/low head/straight) iv. Used for (A, B, C m/c or graining) v. Capacity (tonnes) vi. Heating surface (m ²) vii. H.S./Volume ratio (Sq.ft/cu.ft.) viii. Tube material ix. Number of tubes x. Dia of tubes	

<ul style="list-style-type: none"> xi. Length of tubes xii. Steam pipe dia (ID in mm) xiii. Vapour pipe dia of each pan xiv. Venting arrangement (vacume or atmospheric venting) xv. Type of condenser xvi. Steam/Vapur pressure xvii. Vaccumin each pan xviii. Pan boiled on exhaust/vapour xix. Condensate extraction system from each pan. xx. Mechanical circulator H.P./R.P.M 	
10. Syrup and Molasses tanks (at pan floor)	
<ul style="list-style-type: none"> i. Number ii. Size and capacity of each tank. iii. Distribution 	
11. Crystallizers	
<ul style="list-style-type: none"> i. Number. ii. Capacity (tons) iii. Type iv. Used for v. H.P. of drive vi. Stirrer revolutions vii. Situation/layout viii. Type of treatment in A/B/C/ masse cuite cryctallizers ix. Give particulars of heat exchange elements: either type of heating surface and the number of crystallizers in which they are fitted <ul style="list-style-type: none"> (a) Air cooling (b) Water cooling (c) Reheating x. Temperature of circulation water <ul style="list-style-type: none"> (a) Cold (b) Hot xi. Maximum temperature attained after cooling. xii. Maximum temperature attained after reheating. xiii. Condition of cooling and 	

heating coils in each crystallizer	
12. Centrifugals	
<ul style="list-style-type: none"> i. Number ii. Make/Type iii. Size. iv. Capacity for batch (per charge) or for continuous (per hour) v. Drive. vi. Speed vii. Used for viii. Time cycle. 	
13. Grass Hopper	
<ul style="list-style-type: none"> i. Number ii. Length iii. Width iv. Situation/layout. v. Hot/Cold air arrangement. vi. Bagging sugar temperature vii. Whether multi tray hopper? 	
14. Graders	
<ul style="list-style-type: none"> i. Number ii. Capacity Give particulars iii. Mesh numbers, grading of retained sugars, & usage of dust sugars etc. iv. % Grade wise sugar production 	
15. Ball mill for seed slurry	
<ul style="list-style-type: none"> i. Number of ball mills ii. Dia, height and angle of inclination. iii. No. and size of balls iv. Revolution per minutes v. Quantity of slurry taken per tonne massecuite. vi. Method of preparation of slurry. 	

16. General condition at all stations and details of problems faced at any per station

17. Attach drawings of juice & syrup sulphites, m/c boiling scheme steam/bleeding arrangement, Condensate usage/disposal.