KRDC
Kerone Research & Development Center

KERONE
Kerone Engineering Solutions Limited

48+ Year Of experience

Dehydration Treatment For Drying Of Pulp by Conveyorized IR Oven

In Association with SVCH-Technologii, Moscow (Russia)

ISO 9001:2015 | ISO 14001:2015 | EMS 14001 | OHSAS 18001:2007

Customer:	
Process:	**Continuous IR Treatment for Drying of Pulp.**

Test Report No: 251/KRDC/LAB/17 Mum 12/03/2024

Date Sample reception : 25 /7/2024 ID

: 182/LAB/24

Sample Description:

Sampling : As Requested

Sample Condition : Acceptable

Sampling Date : 25/06/2024

Product : Pulp

End Date Test : 25/06/2024

Laboratory Experimental System –

Kerone Research & Development Center (KRDC) Plot No K2, Industrial Gala F4A, D-Wing, MGN Properties, Opposite Godrej MIDC Anand Nagar, Ambernath (E)- 421506 (India) +91-2512620543/44

Specifications –

IR Medium Wave Emitters	6 Nos (-each having 0.5 kW, 445 mm heating length)
Short Wave IR Emitter with special reflectors	6 Nos (-each having 1 kW, 406 mm heating length)
IR Emitter to Object Distance	120 mm (- in medium wave zone)
IR Emitter to Object Distance	100 mm (- in short wave zone)
IR wavelength range	0.7 to 10 microns
Direct Exposure of MW IR	500 mm
Direct Exposure of SW IR	750mm
Temperature Range	0-400ºC

Laboratory's Environmental Conditions –

Temperature (degree C)	29.4ºC (±5ºC)
Humidity (%)	≤50% RH
Pressure (kN/m2 or kPa)	Not recorded

Note for recommendation: Environmental conditions have a direct impact on test results. Accuracy and consistency of test data are affected by the laboratory conditions.

Laboratory's Environmental Conditions –

Name of Equipment	Picture of Equipment	Specification
Compact Thermal Imaging Camera		Model: FLIR E-30 Resolutions: 160x120IR Thermal Sensitivity of 0.10^0C
Moisture Analyzer		Make: Axis Balance Description: Moisture Range: 1% (sample 0.5/5g), 0.01% (Sample>5g)
Analytical Balances LINB-A10		Capacity: 100g Minimum Weighing: 0.0004g Resolution: 0.0001g Pan size: ⦰80 mm
Microscope		Parfocal and Centered Strain free optics Optics with multilayer coating Choice of halogen and LED illumination Easy access for lamp replacement

Procedure of the Experiment –

- The experiment was performed on Tea Leaves and Dust (HUL) to speed up the heating rate.
- For this experimental run, the gives sample was taken and passed in continuous IR heating system with suitable parameters.
- After the heating treatment, the sample was analysed.

Analytical Results:

➢	PARAMETERS	PULP SHEET
➢	Tray Weight	660 gm
➢	Tray Material	SS304
➢	Initial Weight	120 gm
➢	Final Weight	13 gm
➢	Initial Moisture	85.5 %
➢	Final Moisture	3 %
➢	Bulk Density	1.12 g/ml
➢	Viscosity (B4 CUP)	230 secs
➢	Set Temperature	75°C
➢	Residence Time	100 Mins
➢	Pulp	60ml
➢	Starch	45ml
➢	Cellulose	45ml

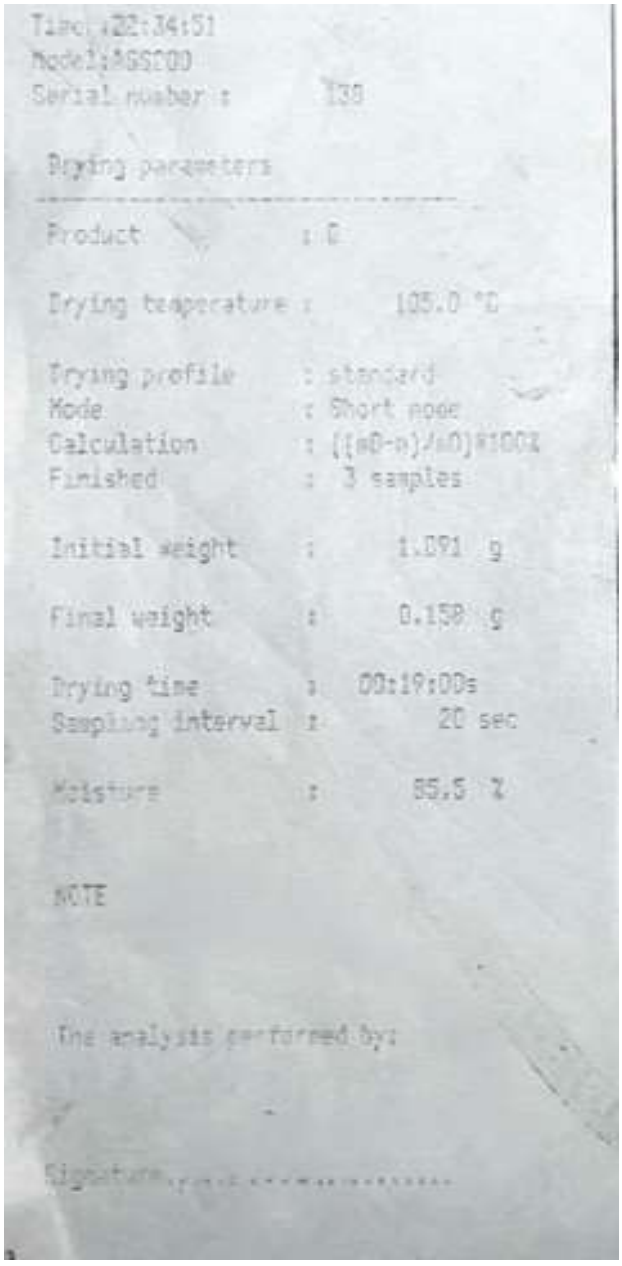
Images During Trials:

Initial

Final

Moisture Analysis Report:

Initial



Time :22:34:51
Model:AGS200
Serial number : 138

Drying parameters

Product : 0

Drying temperature : 105.0 °C

Drying profile : standard
Mode : Short mode
Calculation : ((m0-m)/m0)*100%
Finished : 3 samples

Initial weight : 1.091 g

Final weight : 0.158 g

Drying time : 00:19:00s
Sampling interval : 20 sec

Moisture : 85.5 %

NOTE

The analysis performed by:

Signature.....

Final

Time :11:28:21
Model:AGS200
Serial number : 138

Drying parameters

Product : 0

Drying temperature : 105.0 °C

Drying profile : standard
Mode : Short mode
Calculation : ((m0-m)/m0)*100%
Finished : 3 samples

Initial weight : 1.092 g

Final weight : 1.059 g

Drying time : 00:02:20s
Sampling interval : 20 sec

Moisture : 3.0 %

NOTE

The analysis performed by:

Signature.....

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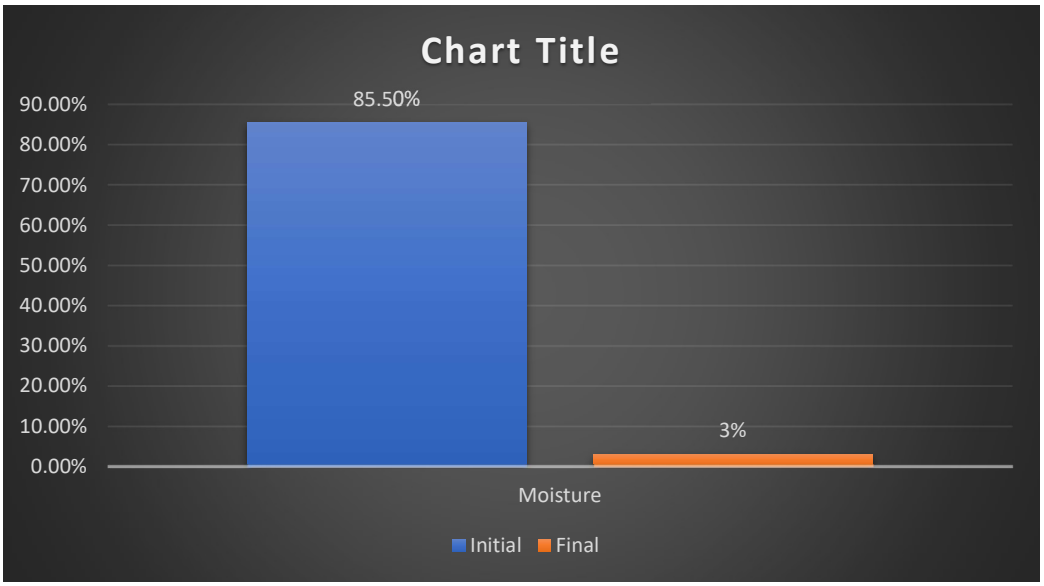
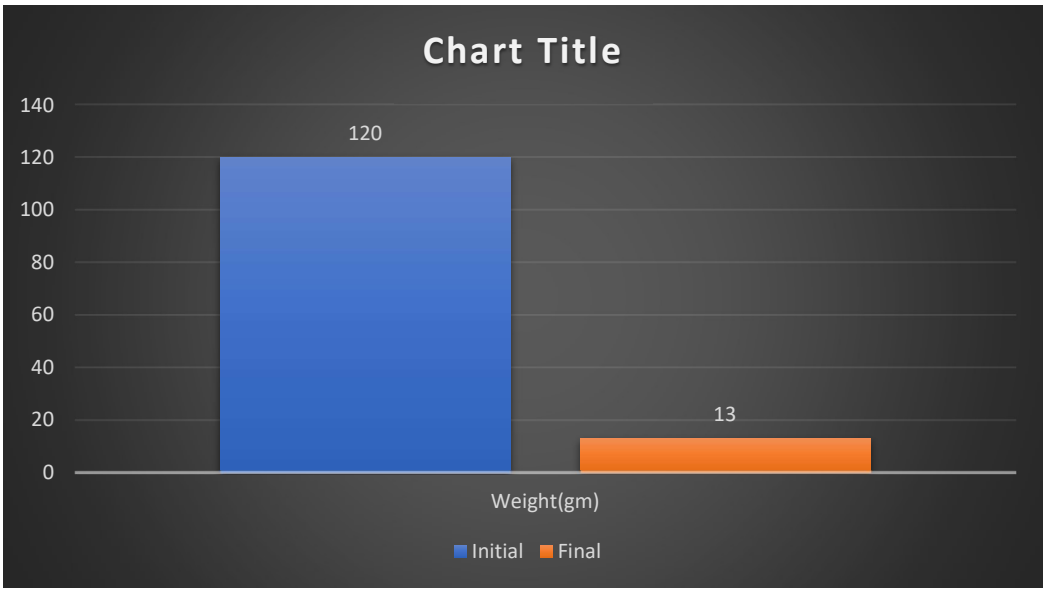
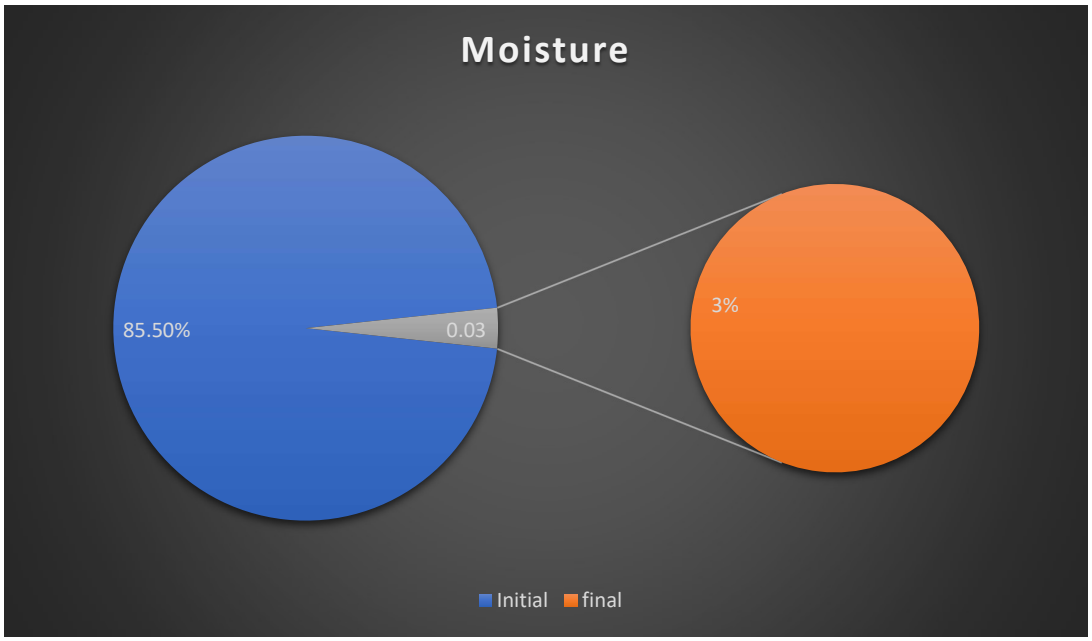
LOD of Moisture in %:



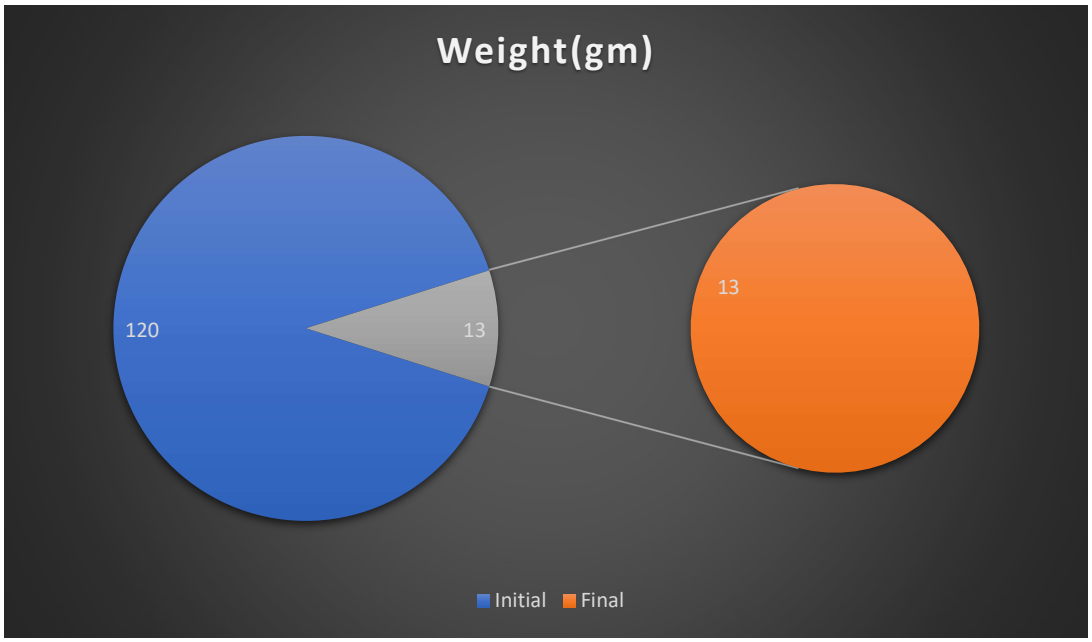
LOD of Weight in (gm):



Pie Chart of Moisture %



Pie Chart of Weight (gm)



Observations:

The heating behaviour of Fruit Pulp was investigated under the continuous IR heating system. The heating rate was found to be increasing with respect to the increase in time. As per the physical investigation it was observed that the product was dries to desired moisture content.

Mr. Pranay Yerunkar

(Tested by)

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