



KRDC

Kerone Research &
Development Center



KERONE
Kerone Engineering Solutions Limited



48⁺ Year
Of experience

Dehydration treatment for drying of Pulp by Batch Heat Pump



In Association with SVCH-Technologii, Moscow (Russia)
ISO 9001:2015 | ISO 14001:2015 | EMS 14001 | OHSAS 18001:2007

Customer:	
Process:	Batch heat pump dehydration treatment for preparation of pulp sheet.

Test Report No: 251/KRDC/LAB/17 Mum 23/06/2025

Date Sample reception : 10/06/2025

ID : 182/LAB/25

Sample Description:

Sampling : As Requested

Sample Condition : Acceptable

Sampling Date : 23/06/2025

Product : FRUIT PULP / CELLULOSE / STARCH.

End Date Test : 20/06/2025

Laboratory Experimental System –



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Address

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



Specifications –

Heater Power	3.8 Kw
Max Input power	4.8 kw
Convective Power	3.5 KW (airflow 350 I/min at 20°C)
Water proof level	IPXO
Net Weight	115 Kg
Exhaust Power	1 HP
NO. of Trays	6

Laboratory's Environmental Conditions –

Temperature (degree C)	29.4°C (±5°C)
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.

Format: F/R&D/01




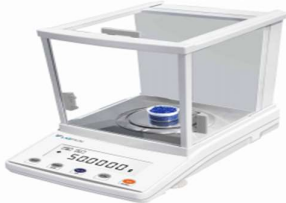
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Laboratory's Environmental Conditions –

Name of Equipment	Picture of Equipment	Specification
Compact Thermal Imaging Camera		Model: FLIR E-30 Resolutions: 160x120IR Thermal Sensitivity of 0.10°C
Thermo Hygrometer		Model No: HTC-2 Temperature accuracy: ±°C (1.80F) Temperature resolution: 0.1°C (0.2°F) Humidity range: 10%~99% RH Humidity accuracy: ±5% RH Humidity resolution: 1% RH
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: ø 80 mm

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Procedure of the Experiment –

- The experiment was performed on fruit pulp to speed up the heating rate.
- For this experimental run, the gives sample was taken and passed in the batch heat pump dehydrator with suitable parameters.
- After the heating treatment, the sample was analyzed.

Analytical Results:

➤	<u>PARAMETERS</u>	<u>PULP SHEET</u>
➤	<u>Tray Weight</u>	<u>660 gm</u>
➤	<u>Tray Material</u>	<u>SS304</u>
➤	<u>Initial Weight</u>	<u>155 gm</u>
➤	<u>Final Weight</u>	<u>22 gm</u>
➤	<u>Initial Moisture</u>	<u>85.5 %</u>
➤	<u>Final Moisture</u>	<u>6.9 %</u>
➤	<u>Bulk Density</u>	<u>1.12 g/ml</u>
➤	<u>Viscosity (B4 CUP)</u>	<u>230 secs</u>
➤	<u>Set temperature</u>	<u>65°C</u>
➤	<u>Residence Time</u>	<u>2 Hrs</u>
➤	<u>Pulp</u>	<u>60ml</u>
➤	<u>Starch</u>	<u>45ml</u>
➤	<u>Cellulose</u>	<u>45ml</u>

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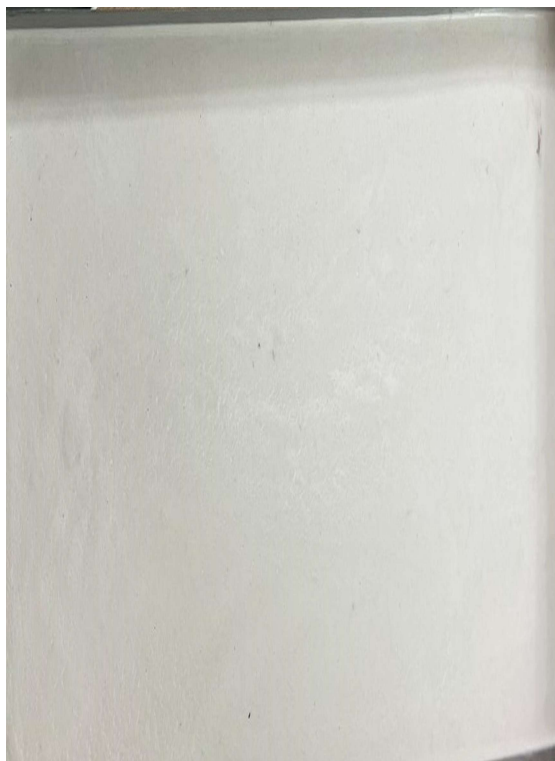
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Images During Trials:

Initial Image



Final Image



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Moisture Analysis Report:

Time : 22:34:51 Model: AGS200 Serial number : 138	Time : 16:36:31 Model: AGS200 Serial number : 138
Drying parameters	
Product : 0	
Drying temperature : 105.0 °C	
Drying profile : standard	
Mode : Short mode	
Calculation : $((m_0 - m) / m_0) * 100\%$	
Finished : 3 samples	
Initial weight : 1.091 g	Initial weight : 1.007 g
Final weight : 0.158 g	Final weight : 0.938 g
Drying time : 00:19:00s	Drying time : 00:03:00s
Sampling interval : 20 sec	Sampling interval : 20 sec
Moisture : 85.5 %	Moisture : 6.9 %
NOTE	
The analysis performed by:	
Signature	

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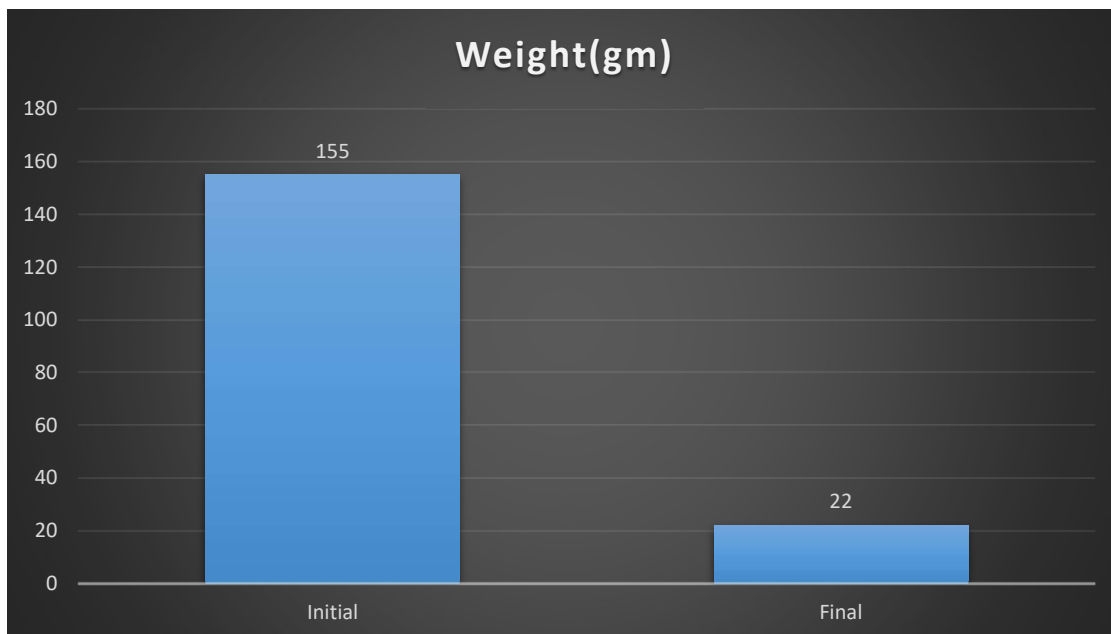
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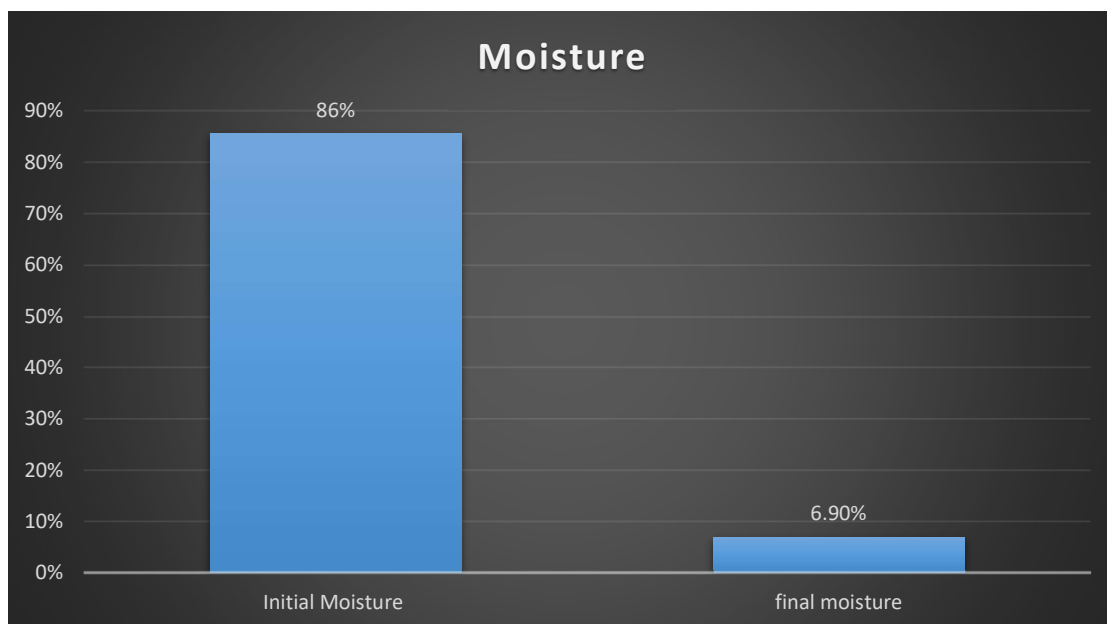
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LOD of Weight in gm:



LOD of Moisture in %:



Format: F/R&D/01

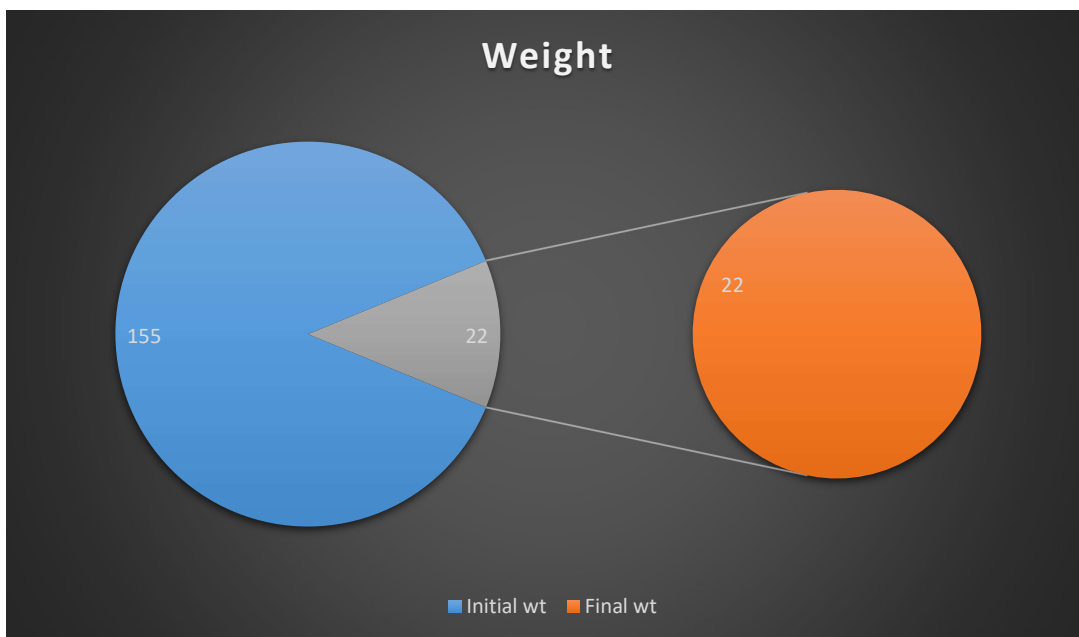
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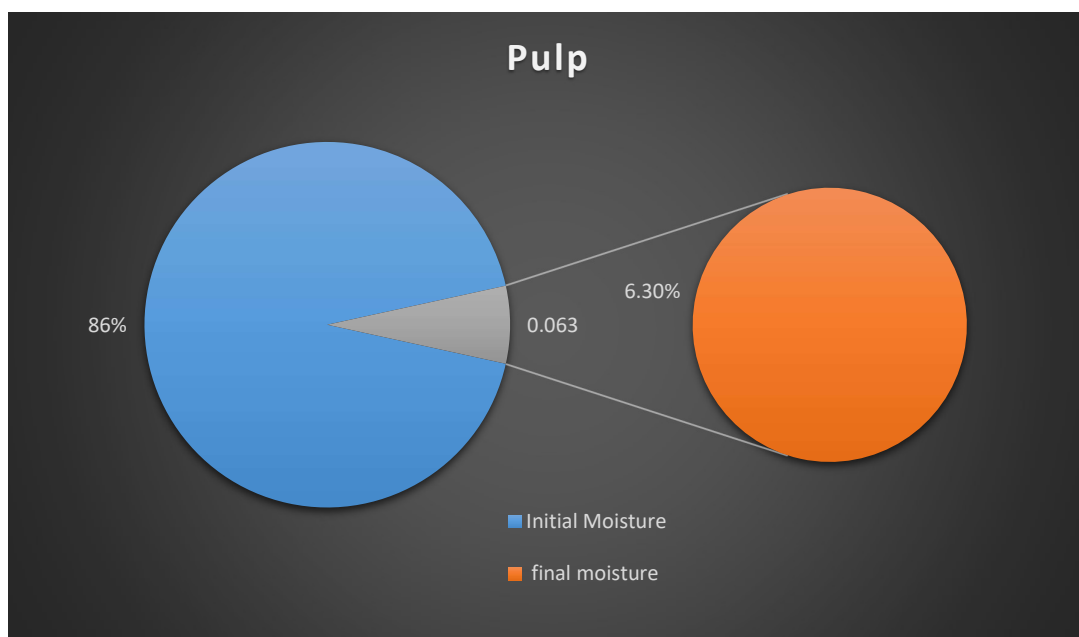
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Pie Chart of Weight(gm)



Pie Chart of Moisture (%)



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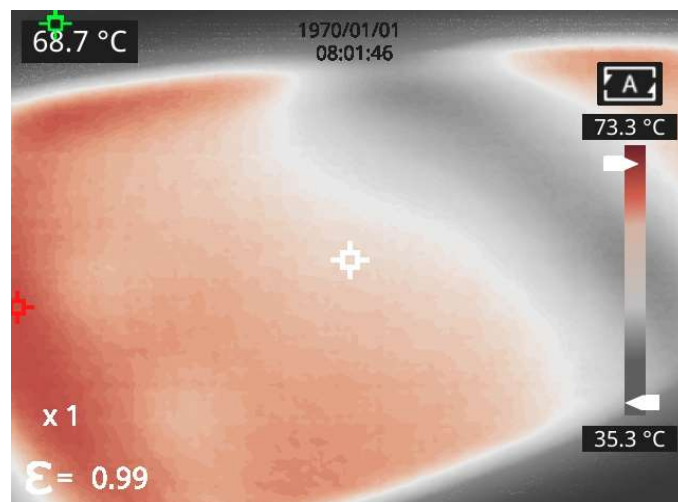
Thermal Images:

Measurements

SP1	56.6°C
SP2	55.5°C
SP3	49.1°C

Parameters

Emissivity	0.99
Temperature	58°C



Measurements

SP1	56.2°C
SP2	54.6°C
SP3	48.8°C

Parameters

Emissivity	0.99
Temperature	59.8°C

Observations:

The heating behavior of pulp was investigated under the heat pump 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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