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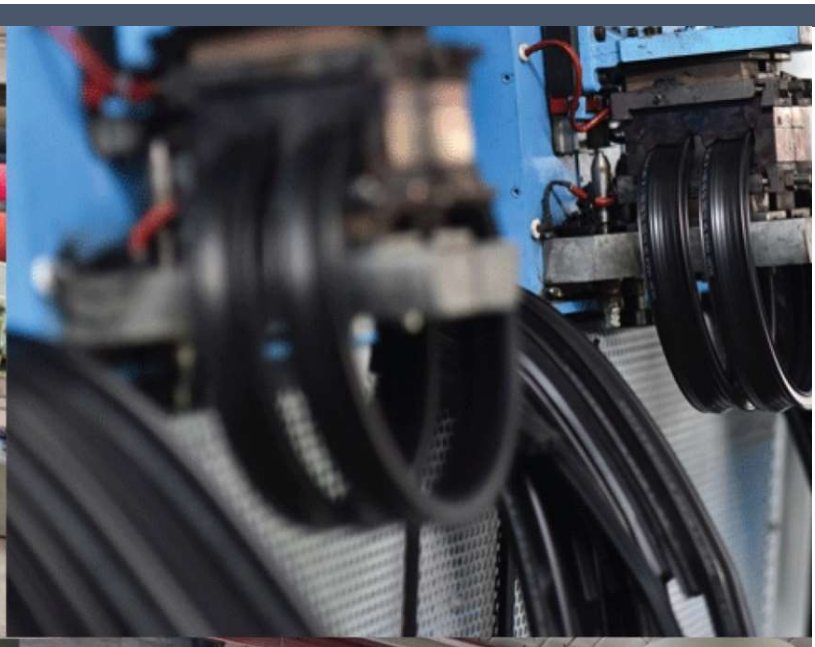
Kerone Research & Development Centre (KRDC)
B/47, Addl. MIDC. Anand Nagar, Ambernath (East), Thane- 421 506, India
Tel- +91-251-2620542/13/44/45/46, Email-info@kerone.com, www.kerone.com



Continuous Infra-Red Heat Treatment for Drying of Calcium Chloride Material

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Customer:	
Process:	**Continuous Rotary Infrared Heat Treatment for Drying of Calcium Chloride Material**

Test Report No*: *248/KRDC/LAB/17 Mum 04/12/2023

Date Sample reception : 18/11/2023
ID : KRDC/R&D/23-24/04/12

***Sample Description*:**

Sampling : As Requested,
Sample Condition : Acceptable
Sampling date : 04/12/2023
Product : Calcium Chloride
Requirement : Final Moisture Below 7%
Start Date test : 04/12/2023
End Date test : 04/12/2023

Laboratory Experimental System -

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System Specifications –

IR Power	5 kW
Type of IR Emitters	Quartz Infrared
Rotary Drum Size	Φ324 mm x 800 mm long x 3mm Thick.
Thermal Monitoring System	Single Channel Fiber Optic: Range -40 to 250ºC
Exhaust	Exhaust port with manual damper
Air Circulation Fan	Radial Fan FHP 0.5HP

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

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Equipment Used -

Name of Equipment	Picture of Equipment	Specifications
Compact Thermal Imaging Camera		**Model: FLIR E-30** **Resolution: 160x 120IR Thermal sensitivity of 0.10°C**
Thermo Hygrometer		**Model No: HTC-2** **Temperature accuracy: ±°C (1.8°F)** **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 0.02/0.05g), 0.1% (Sample 0.5/5g), 0.01%(Sample>5g**
Analytical Balances LINB-A10		**Capacity : 100 g** **Minimum weighing : 0.0004 g** **Resolution : 0.0001 g** **Pan size : ⌀ 80 mm**

Procedure of the Experiment -

- The experiment was performed on the Calcium Chloride to speed up the heating rate.
- For this experimental run, the given sample was taken and then passed in the Continuous IR heating system with suitable parameters.
- After the heating treatment, the sample was analyzed.

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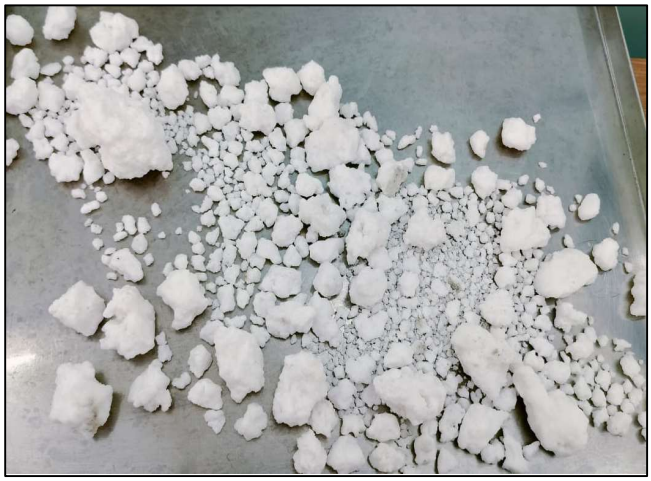
Analytical Results:

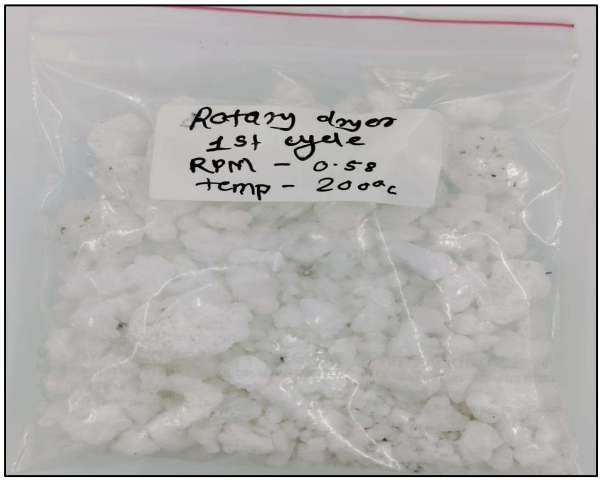
Trial - 01

Trials	Cycle time	Initial weight	Initial Moisture	System Specifications	Final weight	Final Moisture	Remark
C1	40 min	1000 gm	24.7%	Set temp:200˚C; Drum speed: 0.58.rpm	-	4.0%	Drying Started
C2	40 min	-	-	Set temp:200˚C; Drum speed: 0.58.rpm	-	2.8%	Drying Continue
C3	40 min	-	-	Set temp:200˚C; Drum speed: 0.58.rpm	777 gm	1.4%	Dried as desired

Before and After images:



Untreated Sample



Treated Sample (Cycle 01)

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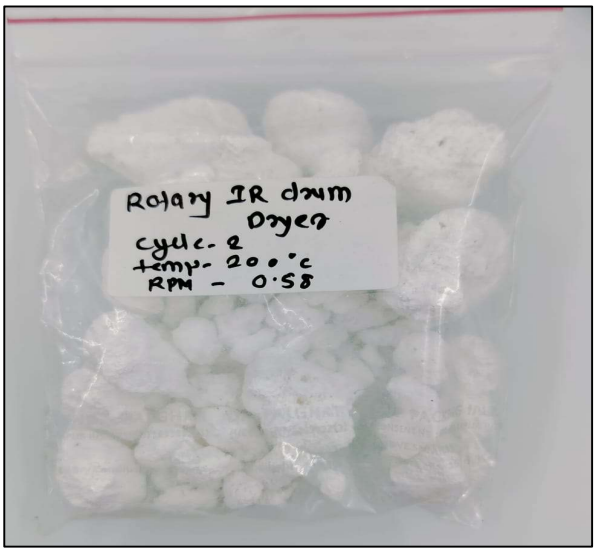
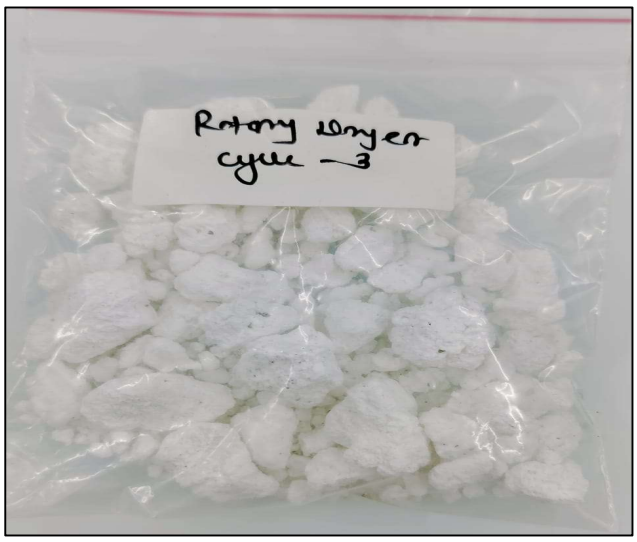
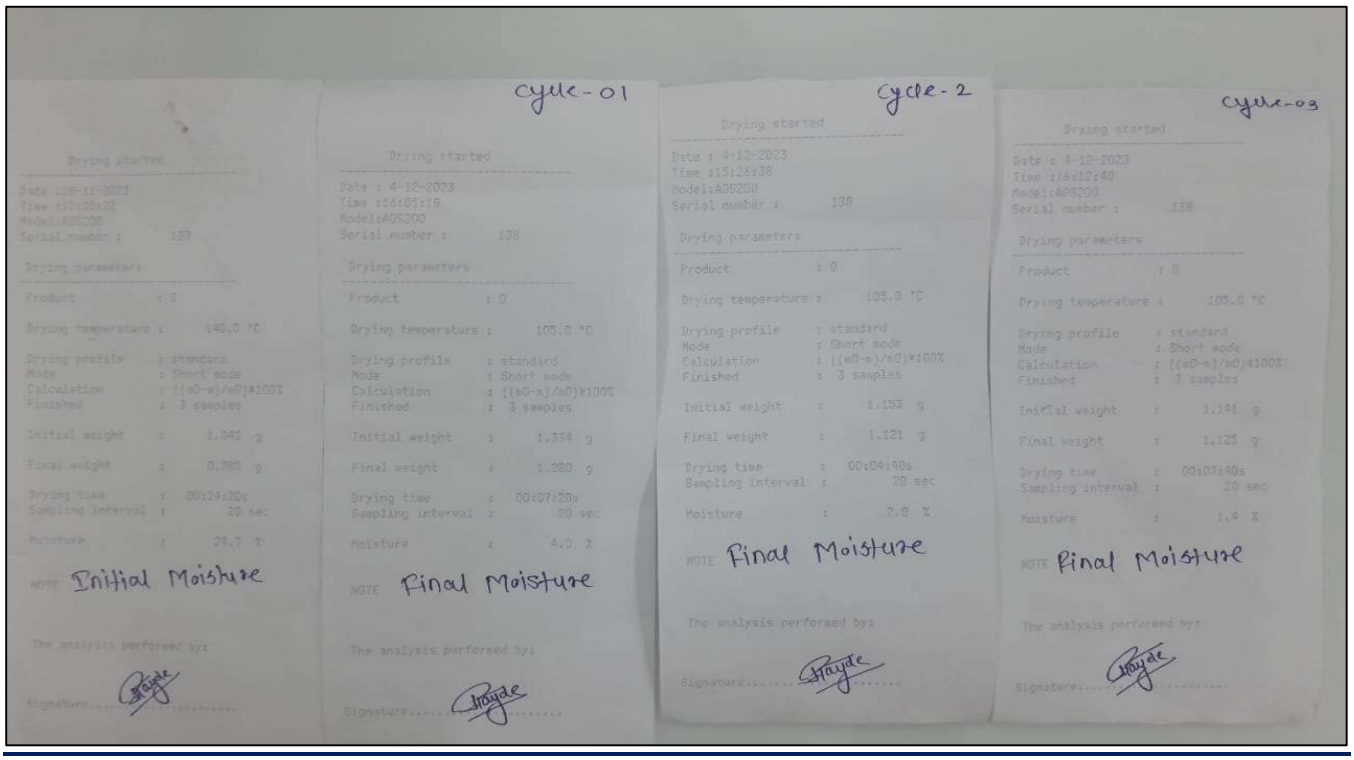


Treated Sample (Cycle 02)



Treated Sample (Cycle 03)

Moisture Analysis Report:



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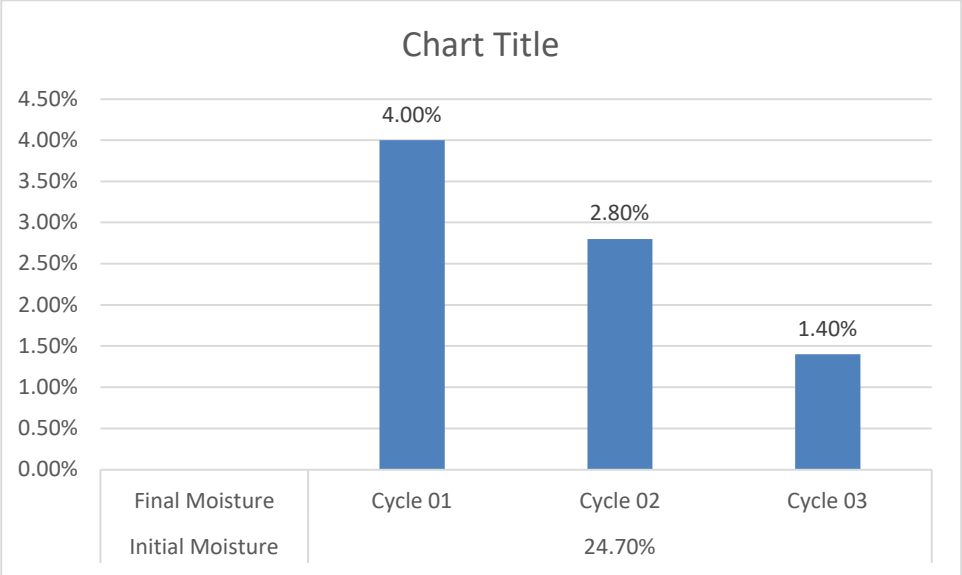
2-D Column:



Observations:

The drying behavior of Calcium Chloride has been investigated under the Rotary IR Heating System. The drying rate is increasing with respect to increasing drying time. It has been found that the moisture content on a dry basis (%) decreases with respect to increased drying time. As per the physical investigation, it has been observed that the loss of moisture after drying was observed.

Mrs. Priya Tayde

(Tested By)