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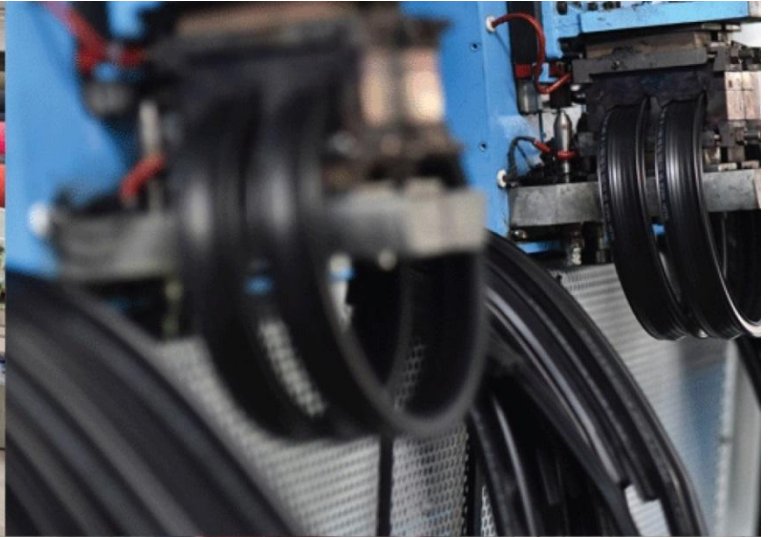
A.M.P.E.R.E(EUROPE)

In Association With



ELECTRO MAGNETIC innovative technologies

Kerone Research & Development Centre (KRDC),
B/47, Addl. MIDC. Anand Nagar, Ambarnath (East), Thane- 421 506, India
Tel- +91-251-2620542/43/44/45/46, Email-info@kerone.com, www.kerone.com



**BATCH IR HEAT TREATMENT FOR
DRYING OF RAW ALUMINA POWDER**



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Customer :	M/s. CILICANT CHEM PRIVATE LIMITED
Process :	Batch IR heat treatment for drying of Raw Alumina Powder

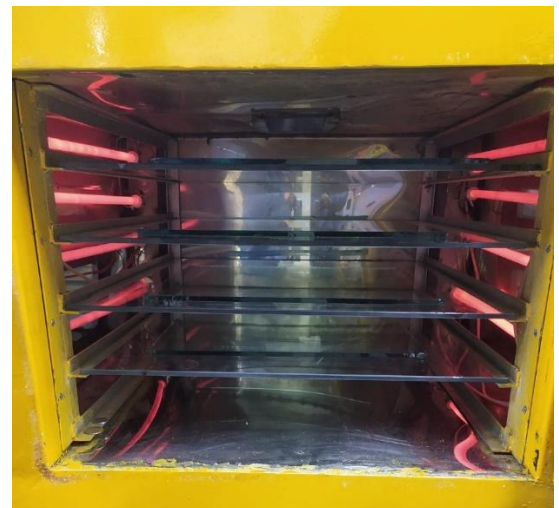
TEST REPORT No: 65/KRDC/LAB/17 Mum 22/04/2022

Date Sample reception : 13/04/2022
ID : 65/LAB/22

SAMPLE DESCRIPTION:

Sampling : As Requested
Sample Condition : Acceptable
Sampling date : 21/04/2022
Product : Raw Alumina Powder
Requirement : Heating of raw Powder for 3hours
Start test Date : 21/04/2022
End test Date : 21/04/2022

LABORATORY EXPERIMENTAL SETUP: LAB BATCH IR HEATING SYSTEM



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LAB BATCH IR HEATING SYSTEM SPECIFICATIONS:

Heating Zone (width*height*depth)	1300*615*925 mm
IR Medium Wave Emitters	8 Nos (-each having 0.5 kW, 445 mm heating length)
IR wavelength range	0.7 to 10 microns
Temperature Range	0-400°C
Capacity	8kg
Tray size (width*height*depth)	813 x 407 x 30

ENVIRONMENT-LABORATORY AMBIENT CONDITIONS:

Temperature (degree C)	30°C (±5°C)
Humidity (%)	≤67% 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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EQUIPMENTS USED:

Name of Equipment	Picture of Equipment	Specifications
<p>Compact Thermal Imaging Camera</p>		<p>Model:FLIR E-30 Resolution: 160x 120IR Thermal sensitivity of 0.10°C</p>
<p>Thermo Hygrometer</p>		<p>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</p>
<p>Moisture Analyzer</p>		<p>Make: Axis Balance Description: Moisture range: 1%(sample 0.02/0.05g), 0.1% (Sample 0.5/5g), 0.01%(Sample>5g)</p>



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SAMPLE PREPARATION AND METHOD/PROCEDURE:

The experiment has been performed on given sample i.e. Raw Alumina Powder for drying treatment. For this experimental run, powder sample were places on the tray and treated in Batch IR heating system. Multiple passes are given to achieve desired output. The observations are made on the basis of moisture reduction and physical changes in product samples.

ANALYTICAL RESULTS:

Trial No. 1:

Initial Weight: 560g

Initial Moisture: 0.8%

Setting temperature: 200°C

Intensity of IR: 100%

Sr. No.	Cycle Time (minutes)	Product Temp. (°C)	Moisture Content. %	Remarks.
1.	After 60 min.	(80-88) °C	0.6	Partially dried.
2.	After 60 min.	(100-144) °C	0.5	Partially dried.
3.	After 60 min.	(150-177)°C	0.4	Dried as desired.

Final weight: 540g

Final Moisture: 0.4%

Total cycle time: 3 hours.

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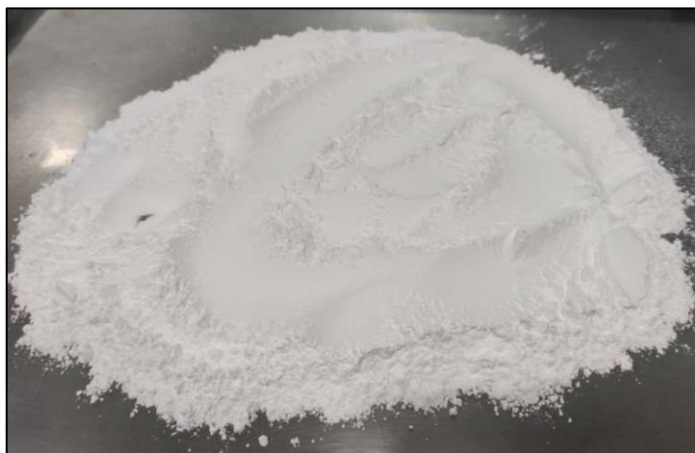
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BEFORE AND AFTER PICTURES OF TREATED SAMPLE:

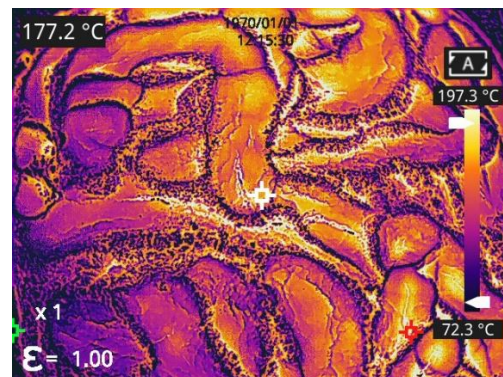
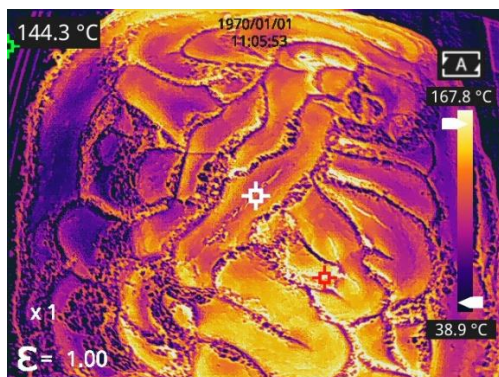
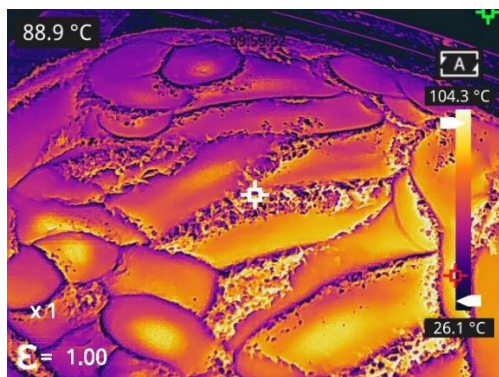


a) Untreated



b) Treated

THERMAL IMAGE HEAT TREATMENT



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MOISTURE ANALYSIS REPORTS:

Drying started	
Date	: 21-04-2022
Time	: 10:57:40
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	: 0.774 g
Final weight	: 0.768 g
Drying time	: 00:01:40s
Sampling interval	: 20 sec
Moisture	: 0.8 %
NOTE	Initial moisture (raw powder)
The analysis performed by:	
Signature	<i>Aswathi</i>

Drying started	
Date	: 21-04-2022
Time	: 14:58:27
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	: 0.929 g
Final weight	: 0.925 g
Drying time	: 00:01:40s
Sampling interval	: 20 sec
Moisture	: 0.4 %
NOTE	Final moisture (raw powder)
The analysis performed by:	
Signature	<i>Aswathi</i>

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OBSERVATIONS:

The heating behavior of Alumina Raw Powder has been investigated under the Batch IR Heating System. The heating rate is found to be increasing with respect to increasing cycle time. It has been found that the moisture content on the dry basis (%) decreases with respect to increase drying time. 3 hours of continuous heating has been provided as per the requirement.

A handwritten signature in black ink that reads "Sayali" with a stylized flourish at the end.

Ms. Sayali Asole

Tested By