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ISO-9001-2008 COMPANY

Member Of



AIMCAL(USA)



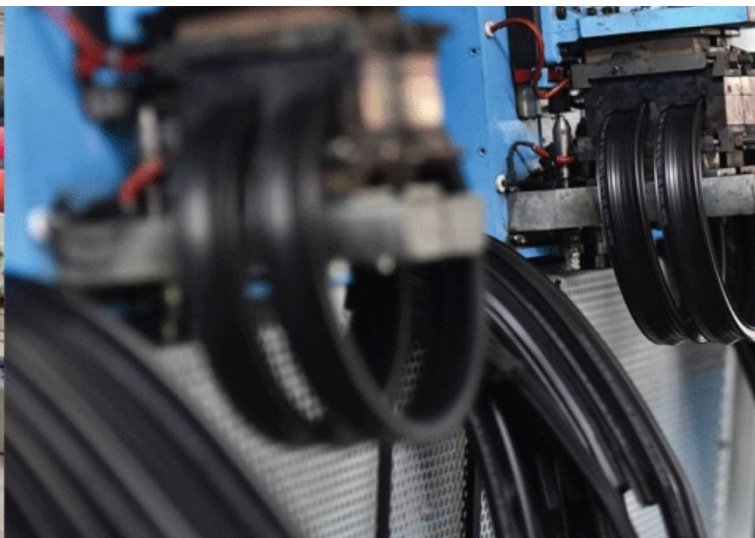
A.M.P.E.R.E(EUROPE)

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



**Continuous Rotary IR Heat Treatment
for Activated Carbon**

ISO 9001-2008 | ISO 9001-2015 | EMS 14001 | OHSAS 18001
In Association with SVCH-Technologii, Moscow (Russia)



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Customer :	M/s. Octet Chemical
Process :	Continuous Rotary Infrared Heat Treatment for Activated Carbon

TEST REPORT No: 58/KRDC/LAB/17 Mum 22/03/2022

Date Sample reception :17/03/2022
ID : 58/LAB/22

SAMPLE DESCRIPTION:

Sampling : As Requested
Sample Condition : Acceptable
Quantity : 2000g (used 1500g)
Sampling date : 24/09/2021
Product : Activated Carbon
Requirement : Reduced the moisture content up to 30%
Start Date test :21/03/2022
End Date test : 22/03/2022

LABORATORY EXPERIMENTAL SETUP:



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LAB CONTINUOUS IR HEATING SYSTEM SPECIFICATIONS:

Infrared Power	5 kW
Type of Infrared 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 250°C
Exhaust	Exhaust port with manual damper
Air Circulation Fan	Radial Fan FHP 0.5HP

ENVIRONMENT-LABORATORY AMBIENT CONDITIONS:




Temperature (degree C)	30°C (±5°C)
Humidity (%)	≤65% 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
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: $\pm^{\circ}\text{C}$ (1.8°F) Temperature resolution: 0.1°C (0.2°F) Humidity range: 10%~99% RH Humidity accuracy: $\pm 5\%$ 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)

SAMPLE PREPARATION AND METHOD/PROCEDURE:

The experiment has been performed on given sample of Activated Carbon to speed up the heating rate for drying treatment. For this experimental run, given samples passed through continuous rotary IR heating system on different setting parameters to achieve required drying rate. The observations are made on the basis of temperature on product, total moisture loss and any damage to product samples.



ANALYTICAL RESULTS:

1. Trial: -

Initial Moisture Content: 60.2%

Initial Weight: 500g

Sr. No.	Cycle Time (minutes)	IR Set Temp. (°C)	Drum Speed (rpm)	Outlet on Product Temp. (°C)	Remarks
1.	After 40	110	1.2	40-46°C	Texture- powdery & lumps with some moisture. Colour- lighter

No. of cycle: 2

Final Moisture Content: 33.8%

Final Weight: 210g

2. Trial: -

Initial Moisture Content: 60.2%

Initial Weight: 500g

Sr. No.	Cycle Time (min)	IR Set Temp. (°C)	Drum Speed (rpm)	Outlet on Product Temp. (°C)	Remarks
1.	After 20	250	1.2	45-52°C	Texture- Fine powder Colour- lighter

No. of cycle: 1

Final Moisture Content: 16.3%.

Final Weight: 92g

3. Trial: -

Initial Moisture Content: 60.2%

Initial Weight: 500g

Sr. No.	Cycle Time (min)	IR Set Temp. (°C)	Drum Speed (rpm)	Outlet on Product Temp. (°C)	Remarks
1.	After 20	200	1.2	40-49°C	Texture- powdery & lumps which were dried & can break into fine powder. Colour- lighter

No. of cycle: 1

Final Moisture Content: 28.2 %.

Final Weight: 310g

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MOISTURE ANALYSIS REPORTS:

Moisture Content Before & After Drying Treatment:

Drying started	
Date :17-03-2022	
Time :18:07:50	
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 : 0.942 g	
Final weight : 0.375 g	
Drying time : 00:16:00s	
Sampling interval : 20 sec	
Moisture : 60.2 %	
NOTE Initial Moisture	
The analysis performed by:	
Signature: <i>Agali</i>	

Drying started	
Date :22-03-2022	
Time :15:06:09	
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 : 0.845 g	
Final weight : 0.559 g	
Drying time : 00:04:40s	
Sampling interval : 20 sec	
Moisture : 33.8 %	
NOTE Final moisture	
The analysis performed by:	
Signature: <i>Agali</i>	

Drying started	
Date :22-03-2022	
Time :12:19:21	
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 : 0.932 g	
Final weight : 0.780 g	
Drying time : 00:03:20s	
Sampling interval : 20 sec	
Moisture : 16.3 %	
NOTE Final moisture	
The analysis performed by:	
Signature: <i>Agali</i>	

Drying started	
Date :22-03-2022	
Time :16:07:24	
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 : 0.834 g	
Final weight : 0.599 g	
Drying time : 00:05:00s	
Sampling interval : 20 sec	
Moisture : 28.2 %	
NOTE Final moisture	
The analysis performed by:	
Signature: <i>Agali</i>	







Format: F/R&D/01

The value obtained is already corrected for possible recover value stated, if applicable. This document may not be reproduced or disclosed wholly or partly in any part thereof without the written consent of the laboratory management or customer. This document relates only to the specimen samples processed. The processed sample will be kept in this laboratory for 7 days from the date of heat treatment.



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SAMPLE BEFORE AND AFTER HEAT TREATMENT:

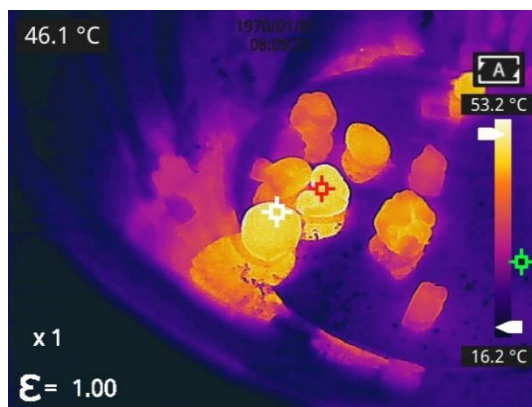
Trials	Before Heat Treatment:	After Heat Treatment:
1.		
2.		
3.		

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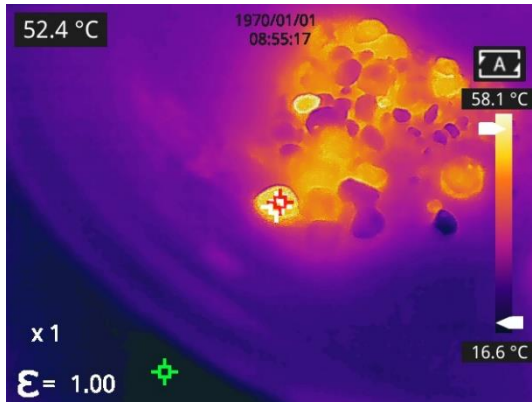
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THERMAL IMAGE OF HEAT TREATMENT SAMPLE:

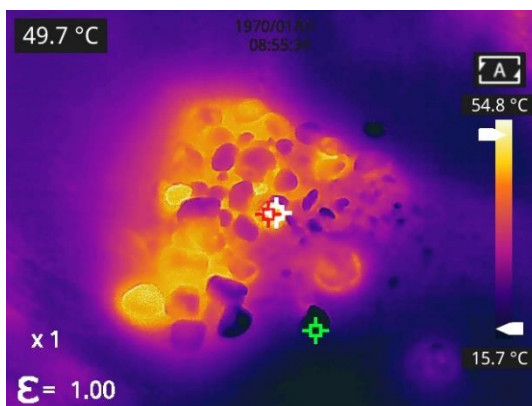
Trial 1



Trial 2



Trial 3



Format: F/R&D/01



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OBSERVATIONS:

The drying behavior of Activated Carbon has been investigated under the Rotary IR Heating System. The drying rate is found to be increasing with respect to increasing drying time. It has been found that the moisture content on the dry basis (%) decreases with respect to increase drying time. In the processed sample, as per physical investigation, it has been observed that the dried product is become lighter in colour and texture is powdery. Also the loss of weight after drying was observed. During the process the sticky nature of initial product and the suspension of fine powder in air may also be the reason for loss of sample, care must be taken while handling to avoid spoilage.

Miss. Sayali Asole

Tested By