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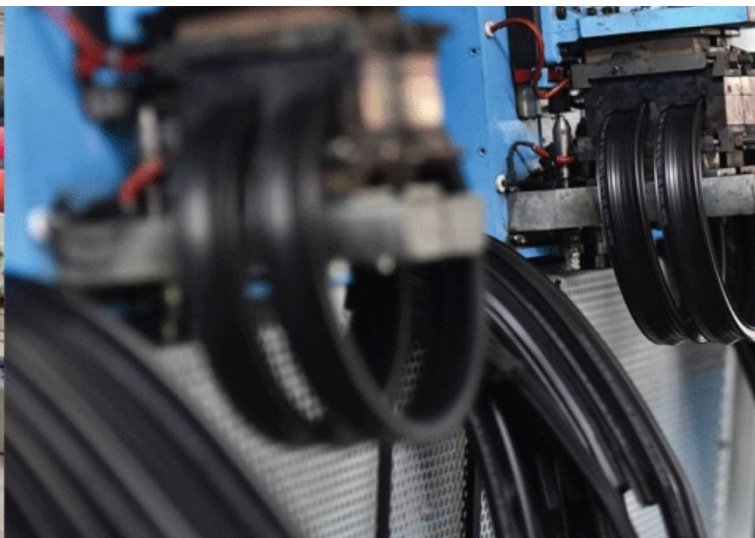
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Kerone Research & Development Centre (KRDC),  
B/47, Addl. MIDC. Anand Nagar, Ambernath (East), Thane- 421 506, India  
Tel- +91-251-2620542/43/44/45/46, Email-info@kerone.com, www.kerone.com



**Batch Convection Heat Treatment for  
Drying of Carbon Briquettes (Sample B)**



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Customer :	M/s. KOKO COAL PVT. LTD
Process :	Batch Convection Heat Treatment on Drying of Carbon Briquettes (Sample-B)

**TEST REPORT No: 47/KRDC/LAB/56 Mum 22/10/2021**

Date Sample reception : 19/10/2021

ID : 47/LAB/53

**SAMPLE DESCRIPTION:**

Sampling : As Requested

Sample Condition : Acceptable

Quantity : 6Kg

Samples opening date : 20/10/2021

Product : Activated Carbon Briquettes (62mmX 25mm)

Start Date test : 22/10/2021

End Date test : 22/10/2021

**LABORATORY EXPERIMENTAL SETUP:****Format: F/R&D/01**





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### LAB BATCH CONVECTION HEATING SYSTEM SPECIFICATIONS:

Heating Zone (width*height*depth)	510*480*410 mm
No. of Heaters	6
Total Heater Power	6 kW
Motor	0.5 HP
No. of trays	6
Tray size (width*height*depth)	560 x 435 x25
Centrifugal Exhaust Blower	1440 rpm

### ENVIRONMENT-LABORATORY AMBIENT CONDITIONS:




Temperature (°C)	26°C (±5°C)
Humidity (%)	≤71% RH
Pressure (kN/m <sup>2</sup> 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		<b>Model: FLIR E-30</b> <b>Resolution: 160x 120</b> <b>IR Thermal sensitivity of 0.10°C</b>
Moisture Analyzer		<b>Make: Axis Balance</b> <b>Description:</b> <b>Moisture range: 1%(sample 0.02/0.05g), 0.1% (Sample 0.5/5g), 0.01%(Sample&gt;5g)</b>
Thermo Hygrometer		<b>Model No: HTC-2</b> <b>Temperature accuracy: <math>\pm^{\circ}\text{C}</math> (1.8°F)</b> <b>Temperature resolution: 0.1°C (0.2°F)</b> <b>Humidity range: 10%~99% RH</b> <b>Humidity accuracy: <math>\pm 5\%</math> RH</b> <b>Humidity resolution: 1% RH</b>

## SAMPLE PREPARATION AND METHOD/PROCEDURE:

The experiment has been performed on Activated Carbon Briquettes to speed up the drying rate. For this experimental run, given sample has been placed on a perforated tray and then placed in Horizontal Batch Convection Oven at certain decided temperature and time cycle. Observations are made on the basis of weight and appearance of product.

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### ANALYTICAL RESULTS: **Sample B**

Initial Wt. – 1.490 Kg

Initial moisture – 27.4%

Setting Temperature: (100-150) °C

Sr. No	Cycle Time (min )	Setting Temp. (°C )	Weight of Briquettes (Kg)	Weight loss in (%)	Product Temp. ( °C)	Moisture Content (%)	Remarks, if any
1	After 30min	100°C	1.338	10.20%	(55-65)°C	-	Drying starts
2	After 60min	150°C	1.131	15.45%	(110-115)°C	5.5%	Drying continues , No cracks on product
3	After 90min	150°C	1.089	6.3%	(125-135)°C	0.5%	Dried effectively

Final Wt. – 1.052Kg

Final moisture – 0.5%

Total Weight loss in %- 26.9%

Total time cycle – 90 min

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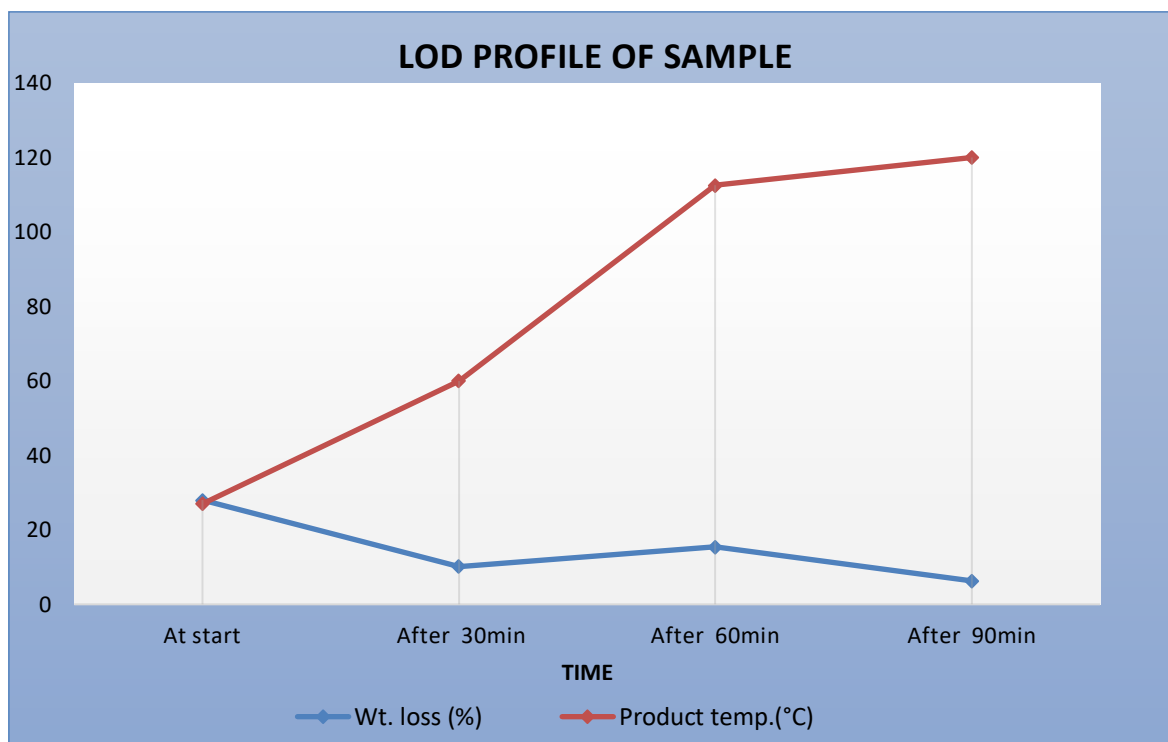


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#### BEFORE & AFTER PICTURES OF TREATED SPECIMEN SAMPLE:



#### GRAPHICAL REPRESENTATION OF DRYING PARAMETERS:



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## BEFORE & AFTER THERMAL ANALYSIS REPORTS:

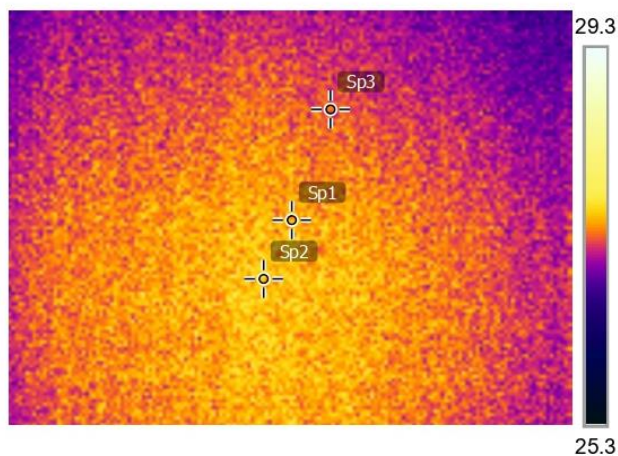
### Before Treatment:

#### Measurements

Sp1	27.5 °C
Sp2	27.6 °C
Sp3	27.4 °C

#### Parameters

Emissivity	0.95
Refl. temp.	20 °C



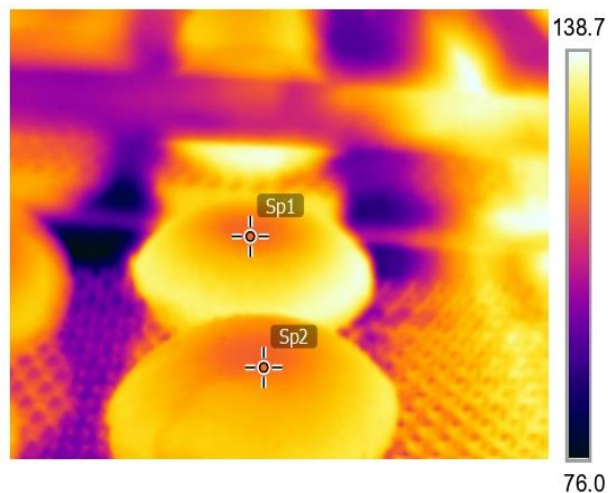
### During Treatment:

#### Measurements

Sp1	118.5 °C
Sp2	119.1 °C

#### Parameters

Emissivity	0.95
Refl. temp.	20 °C



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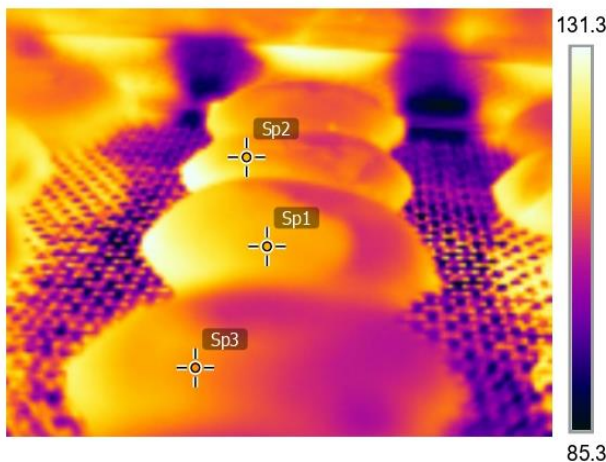
### During Treatment:

#### Measurements

Sp1	118.8 °C
Sp2	119.3 °C
Sp3	116.2 °C

#### Parameters

Emissivity	0.95
Refl. temp.	20 °C



### MOISTURE ANALYSIS REPORTS:

#### Sample B

Drying started		Drying started		Drying started		Drying started	
Date :22-10-2021	Date :22-10-2021	Date :22-10-2021	Date :22-10-2021	Date :22-10-2021	Date :22-10-2021	Date :22-10-2021	Date :22-10-2021
Time :11:57:05	Time :12:23:02	Time :13:06:38	Time :13:42:47	Time :13:06:38	Time :13:42:47	Time :13:06:38	Time :13:42:47
Model:AGS200	Model:AGS200	Model:AGS200	Model:AGS200	Model:AGS200	Model:AGS200	Model:AGS200	Model:AGS200
Serial number : 138	Serial number : 139	Serial number : 138	Serial number : 139	Serial number : 138	Serial number : 139	Serial number : 138	Serial number : 139
Drying parameters		Drying parameters		Drying parameters		Drying parameters	
Product : 0	Product : 0	Product : 0	Product : 0	Product : 0	Product : 0	Product : 0	Product : 0
Drying temperature : 50.0 °C	Drying temperature : 50.0 °C	Drying temperature : 50.0 °C	Drying temperature : 50.0 °C	Drying temperature : 50.0 °C	Drying temperature : 50.0 °C	Drying temperature : 50.0 °C	Drying temperature : 50.0 °C
Drying profile : standard	Drying profile : standard	Drying profile : standard	Drying profile : standard	Drying profile : standard	Drying profile : standard	Drying profile : standard	Drying profile : standard
Mode : Short mode	Mode : Short mode	Mode : Short mode	Mode : Short mode	Mode : Short mode	Mode : Short mode	Mode : Short mode	Mode : Short mode
Calculation : ((w0-m)/m0)*100%	Calculation : ((w0-m)/m0)*100%	Calculation : ((w0-m)/m0)*100%	Calculation : ((w0-m)/m0)*100%	Calculation : ((w0-m)/m0)*100%	Calculation : ((w0-m)/m0)*100%	Calculation : ((w0-m)/m0)*100%	Calculation : ((w0-m)/m0)*100%
Finished : 3 samples	Finished : 3 samples	Finished : 3 samples	Finished : 3 samples	Finished : 3 samples	Finished : 3 samples	Finished : 3 samples	Finished : 3 samples
Initial weight : 1.223 g	Initial weight : 0.822 g	Initial weight : 0.945 g	Initial weight : 0.611 g	Initial weight : 0.945 g	Initial weight : 0.611 g	Initial weight : 0.945 g	Initial weight : 0.611 g
Final weight : 0.888 g	Final weight : 0.777 g	Final weight : 0.934 g	Final weight : 0.608 g	Final weight : 0.934 g	Final weight : 0.608 g	Final weight : 0.934 g	Final weight : 0.608 g
Drying time : 00:24:40s	Drying time : 00:04:00s	Drying time : 00:01:40s	Drying time : 00:01:20s	Drying time : 00:01:40s	Drying time : 00:01:20s	Drying time : 00:01:40s	Drying time : 00:01:20s
Sampling interval : 20 sec	Sampling interval : 20 sec	Sampling interval : 20 sec	Sampling interval : 20 sec	Sampling interval : 20 sec	Sampling interval : 20 sec	Sampling interval : 20 sec	Sampling interval : 20 sec
Moisture : 27.4 %	Moisture : 5.5 %	Moisture : 1.2 %	Moisture : 0.5 %	Moisture : 1.2 %	Moisture : 0.5 %	Moisture : 1.2 %	Moisture : 0.5 %
NOTE Initial moisture of Carbon briquettes.		NOTE After 60 min.		NOTE After 75 mins.		NOTE final moisture of Carbon briquettes (After 90 mins.)	
The analysis performed by: 0		The analysis performed by: 0		The analysis performed by: 0		The analysis performed by: 0	
Signature.....		Signature.....		Signature.....		Signature.....	

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## OBSERVATIONS:

The Drying behavior of activated carbon briquettes has been investigated under the convection heating system. The drying rate is found to be increasing with respect to increasing drying time. As per physical investigation, the Briquettes become harder. The sample product is dried as desired without forming any cracks.

A handwritten signature in blue ink that reads "Komal".

Ms. Komal Ingle  
Tested By

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