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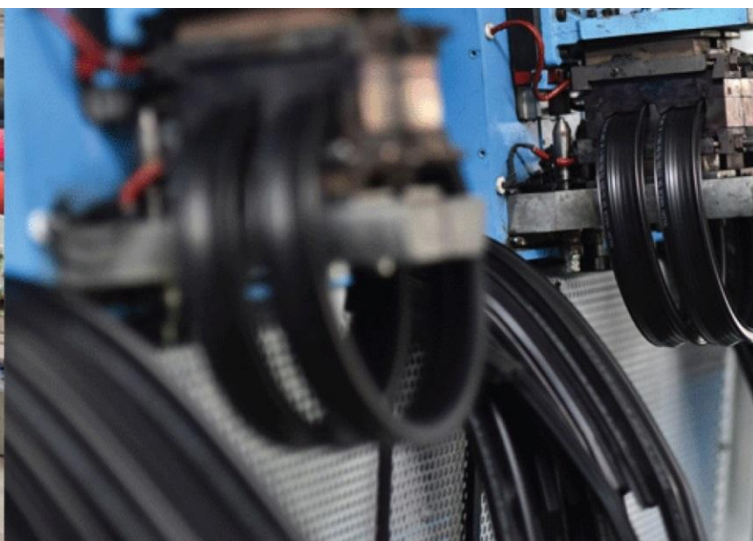
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In Association With



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 Convection Heat Treatment for  
Drying of 2-Methoxynaphthalene**

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



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Customer :	M/s. Rohdis Aromatics
Process :	Batch Convection Heat Treatment for Drying of 2-Methoxynaphthalene

**TEST REPORT No: 47/KRDC/LAB/18 Mum 07/10/2019**

Date Sample reception : 07/10/2019  
ID : 47/LAB/132

**SAMPLE DESCRIPTION:**

Sampling : As requested  
Sample Condition : Acceptable  
Quantity : 50 kgs  
Sampling date : 07/10/2019  
Product : 2-Methoxynaphthalene  
Requirement : Final product must have moisture content less than 1%  
Start Date test : 07/10/2019  
End Date test : 07/10/2019

**LABORATORY EXPERIMENTAL SET UP:**



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#### LAB BATCH DEHYDRATION 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
Centrifugal Exhaust Blower	1440 rpm
No. of trays	6
Tray size (width*height*depth)	560*25*435 mm

#### ENVIRONMENT-LABORATORY AMBIENT CONDITIONS:

Temperature (degree C)	31°C (±5°C)
Humidity (%)	≤82% 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



#### EQUIPMENTS USED:

Name of Equipment	Picture of Equipment	Specifications
Compact Thermal Imaging Camera		<b>Model: FLIR E-30</b> <b>Resolution: 160 x 120 IR Thermal</b> <b>sensitivity of 0.10°C</b>



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<b>Moisture Analyzer</b>		<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>
<b>Thermo Hygrometer</b>		<b>Model No: HTC-2</b> <b>Temperature accuracy: <math>\pm^{\circ}\text{C}</math> (1.8<math>^{\circ}\text{F}</math>)</b> <b>Temperature resolution: 0.1<math>^{\circ}\text{C}</math> (0.2<math>^{\circ}\text{F}</math>)</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 2-Methoxynaphthalene without adding any additive to speed up the drying rate. For this experimental run, given sample has been placed on SS tray in such a manner that thin layer of sample has been formed for air to circulate for achieving even drying characteristics. The observations are made after every 10 minutes on the basis of moisture content and LOD by checking weight loss.

### ANALYTICAL RESULTS:

**Setting Temperature: 50 $^{\circ}\text{C}$**

**Initial Sample Weight: 500 grams**

**Initial Moisture Content: 2%**

Sr. No.	Time (minutes)	Weight noted (grams)	Total weight loss (%)	Temperature on sample( $^{\circ}\text{C}$ )	Remarks, if any
1.	After 20	486	2.8	45	Drying rate started
2.	After 40	482	3.6	46	Drying phase continue
3.	After 60	470	6	48	Variant of Drying rate

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4.	After 80	462	7.6	49	Variant of Drying rate
5.	After 100	456	8.8	50	Variant of Drying rate
6.	After 120	449	10.2	50	Variant of Drying rate
7.	After 140	441	11.8	50	Variant of Drying rate
8.	After 160	438	12.4	50	Variant of Drying rate
9.	After 180	436	12.8	50	Variant of Drying rate

Sample weight after drying: 436 grams

Total weight loss on drying: 12.8%

### MOISTURE ANALYSIS TEST:

Time (minutes)	After 10	After 20	After 30	After 40	After 50	After 60	After 70	After 80	After 90
Moisture content (%)	1.66	1.64	1.35	1.23	1.01	0.79	0.57	0.38	0.37

**Note:** After 100 minutes, moisture analyzer was showing greater moisture content than initial one, so didn't take moisture analysis test after 100 minutes.

### THERMAL IMAGE BEFORE AND AFTER HEAT TREATMENT:

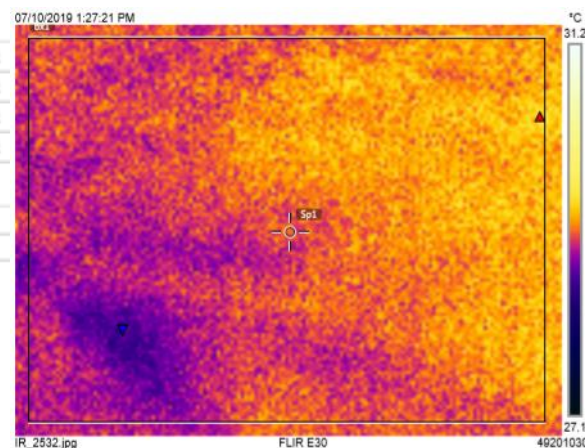
#### 1. Before Heat Treatment:

#### Measurements

Bx1	Max	29.7 °C
	Min	28.3 °C
	Average	29.1 °C
Sp1		29.2 °C

#### Parameters

Emissivity	0.95
Refl. temp.	20 °C



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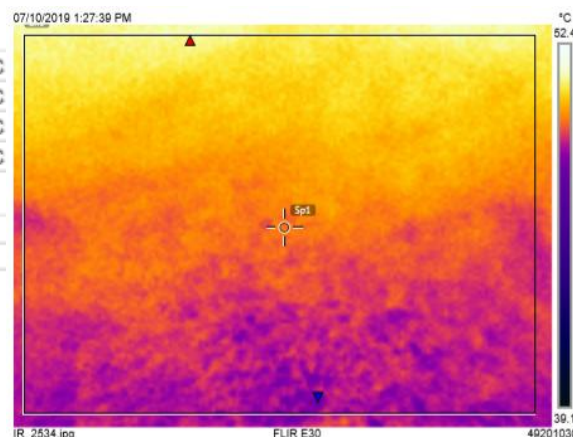
## 2. After Heat Treatment:

### Measurements

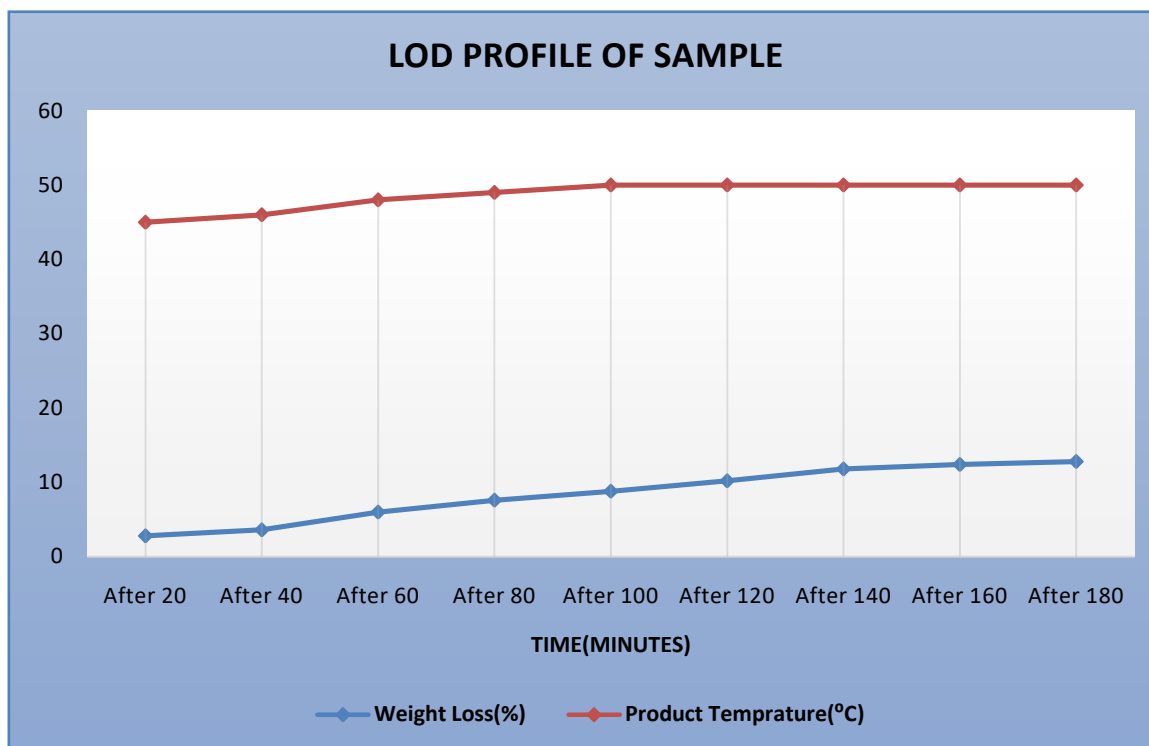
Bx1	Max	51.5 °C
	Min	47.5 °C
	Average	49.8 °C
Sp1		49.8 °C

### Parameters

Emissivity	0.95
Refl. temp.	20 °C



## GRAPHICAL REPRESENTATION OF DRYING PARAMETERS:



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



#### OBSERVATIONS:

The Drying behavior of 2-Methoxynaphthalene has been investigated under the convection 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 in drying time. As per physical investigation, it has been observed that there is no change in product after heat treatment.

Miss. Komal Bhoite  
Tested By