

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

Customer :	Laboratory Experimental Analysis
Process :	Batch Dehydration Heat Treatment for King Prawns

TEST REPORT No: 47/KRDC/LAB/18 Mum 26/05/2018

Date Sample reception : 26/05/2018
ID : 47/LAB/38

SAMPLE DESCRIPTION:

Sampling : As requested
Sample Condition : Acceptable
Quantity : 600 grams
Sampling date : 26/05/2018
Product : King Prawns
Requirement : Final product must be almost dry with minimum moisture content
Start Date test : 26/05/2018
End Date test : 26/05/2018

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)	30.5°C (±5°C)
Humidity (%)	≤ 67% RH
Pressure (kN/m ² 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		Model: FLIR E-30 Resolution: 160 x 120 IR Thermal sensitivity of 0.10°C

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<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>
<p>Thermo Hygrometer</p>		<p>Model No: HTC-2 Temperature accuracy: $\pm^{\circ}\text{C}$ (1.8$^{\circ}\text{F}$) Temperature resolution: 0.1$^{\circ}\text{C}$ (0.2$^{\circ}\text{F}$) Humidity range: 10%~99% RH Humidity accuracy: $\pm 5\%$ RH Humidity resolution: 1% RH</p>

SAMPLE PREPARATION AND METHOD/PROCEDURE:

The experiment has been performed on king prawns without adding any additive to speed up the drying rate. For experimental run, some amount of prawns on dehydrator tray has placed in such a manner that none of the pieces are touching and there is some space around each one for air to circulate for achieving even drying characteristics and observations are made after every 1 hour by checking the weight loss on drying. Initial weight before drying, final weight after drying, initial moisture content and final moisture content has been taken.

ANALYTICAL RESULTS:

Initial sample weight: 507 grams

Initial Moisture Content: 73.14%

Setting Temperature: 70 $^{\circ}\text{C}$

Sr. No.	Time (hours)	Temperature on sample ($^{\circ}\text{C}$)	Weight noted (grams)	Weight loss (grams)	Remarks, if any
1.	After 1	54.5	393	114	Drying rate started
2.	After 2	56.8	325	182	Drying phase continue
3.	After 3	59.1	281	226	Variant of Drying rate
4.	After 4	62.5	250	257	Variant of Drying rate

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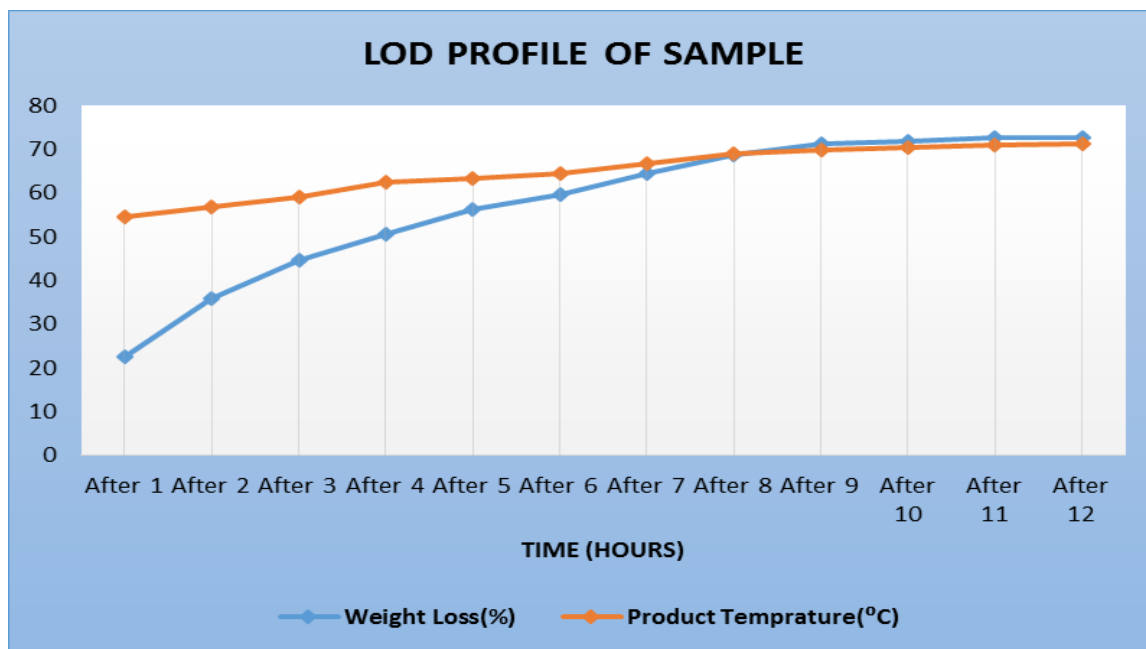
5.	After 5	63.3	221	286	Variant of Drying rate
6.	After 6	64.6	204	303	Variant of Drying rate
7.	After 7	66.8	180	327	Variant of Drying rate
8.	After 8	69.1	159	348	Variant of Drying rate
9.	After 9	70	145	362	Variant of Drying rate
10.	After 10	70.5	142	365	Variant of Drying rate
11.	After 11	71	139	368	Variant of Drying rate
12.	After 12	71.2	138	369	Required Drying rate

Sample weight after drying: 138 grams

Total weight loss on drying: 369 grams

Final Moisture Content: 4%

GRAPHICAL REPRESENTATION OF DRYING PARAMETERS:



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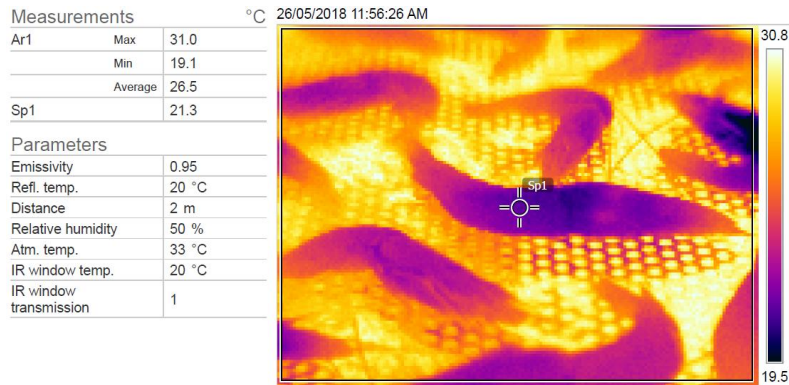
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MOISTURE ANALYSIS REPORTS:

Drying started		Drying started	
Date	: 26-05-2018	Date	: 28-05-2018
Time	: 15:53:56	Time	: 14:02:57
Model	: A65200	Model	: A65200
Serial number	: 138	Serial number	: 138
Drying parameters		Drying parameters	
Product	: Test	Product	: Test
Drying temperature	: 105.0 °C	Drying temperature	: 105.0 °C
Drying profile	: standard	Drying profile	: standard
Mode	: Short mode	Mode	: Short mode
Calculation	: $((m0-m)/m0)*100\%$	Calculation	: $((m0-m)/m0)*100\%$
Finished	: 3 samples	Finished	: 3 samples
Initial weight	: 13.066 g	Initial weight	: 2.213 g
Final weight	: 3.509 g	Final weight	: 2.124 g
Drying time	: 03:50:40s	Drying time	: 00:04:20s
Sampling interval	: 20 sec	Sampling interval	: 20 sec
Moisture	: 73.14 %	Moisture	: 4.0 %
NOTE	Initial	NOTE	Final
The analysis performed by:	<i>KKomal</i>	The analysis performed by:	<i>KKomal</i>
Signature	<i>KKomal</i>	Signature	<i>KKomal</i>

THERMAL IMAGE BEFORE AND AFTER HEAT TREATMENT:

1. Before Heat Treatment

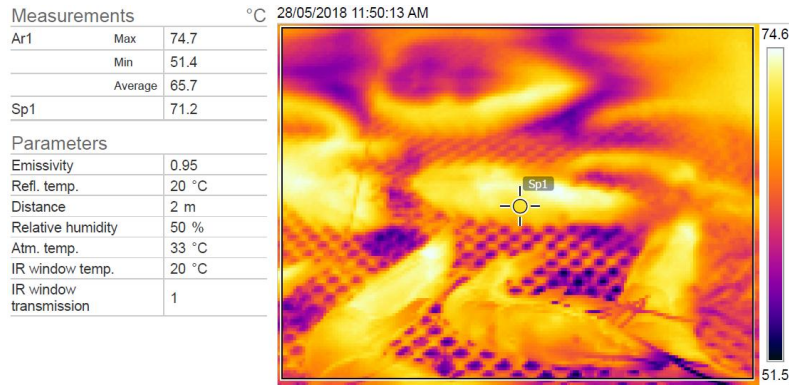


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2. After Heat Treatment:



BEFORE AND AFTER PICTURES OF TREATED SPECIMEN SAMPLE:



OBSERVATIONS:

The Drying behavior king prawns 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 drying time. As per physical investigation, it has been observed that the color seems to pinkish with crunchy texture and there is no enzymatic browning.



Miss. Komal Bhoite
Tested By

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