

A CRISIL-NSIC RATED COMPANY ISO-9001-2008 COMPANY



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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



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Customer :	M/s. Prafulla Agarwal
Process :	Batch Convection Heat Treatment for Dehydration of Mushrooms

TEST REPORT No: 47/KRDC/LAB/17 Mum 01/09/2020

Date Sample reception	: 01/09/2020
ID	: 47/LAB/175

SAMPLE DESCRIPTION:

Sampling	: As Requested
Sample Condition	: Acceptable
Quantity	: 200 grams
Sampling date	: 01/09/2020
Product	: Button Mushroom
Requirement	: Final Moisture should be around 10%
Start Date test	: 01/09/2020
End Date test	: 01/09/2020

LABORATORY EXPERIMENTAL SET UP:



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LAB BATCH CONVECTION HEATING SYSTEM SPECIFICATIONS:

Heating Zone (width*height*depth)	550*650*550 mm
No. of Heaters	4
Total Heater Power	3 kW
Motor	0.5 HP
No. of trays	7
Tray size	600500 X 35
(width*height*depth)	
Nominal Capacity of	1 tr each
Dehumidifier	
Humidity Range of	20-90%
Dehumidifier	

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Max. Ambient Temperature	40°C
of Dehumidifier	
Water Removal Rate of	80 It per day at NTP
Dehumidifier	

ENVIRONMENT-LABORATORY AMBIENT CONDITIONS:

Temperature (°C)	28°C (±5°C)
Humidity (%)	≤83% 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		Model: FLIR E-30 Resolution: 160x 120 IR Thermal sensitivity of 0.10°C
Moisture Analyzer		Make: Axis Balance Description: Moisture range: 1%(sample 0.02/0.05g), 0.1% (Sample 0.5/5g), 0.01%(Sample>5g)

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Thermo Hygrometer		Model No: HTC-2
	and the second s	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

SAMPLE PREPARATION AND METHOD/PROCEDURE:

The experiment has been performed on Button Mushrooms to speed up the drying rate. For this experimental run, given mushroom sample has been sliced vertically in 5-6 mm thickness by removing the stem and these slices has been placed in a perforated tray in such a manner that none of the pieces are touching and there is some space around each slice for air to circulate for achieving even drying characteristics. Observations are made after every 15 minutes on LOD basis. Also, initial and final moisture content has been taken.

ANALYTICAL RESULTS:

Setting Temperature: 65°C Initial Weight: 115 grams Initial Moisture Content: 92.9%

Sr.	Time	Weight noted	Weight loss	Temperature on	Remarks, if any
No.	(minutes)	(grams)	(%)	sample (°C)	
1.	After 15	80	30.4	38	Drying rate started
2.	After 30	57	50.4	40	Drying phase continue
3.	After 45	40	65.2	42	Variant of Drying rate
4.	After 60	27	76.5	45	Variant of Drying rate
5.	After 75	14	87.8	48	Variant of Drying rate
6.	After 90	10	91.3	50	Required Drying rate

Final Weight: 10 grams Total Weight Loss: 91.3% Final Moisture Content: 13%

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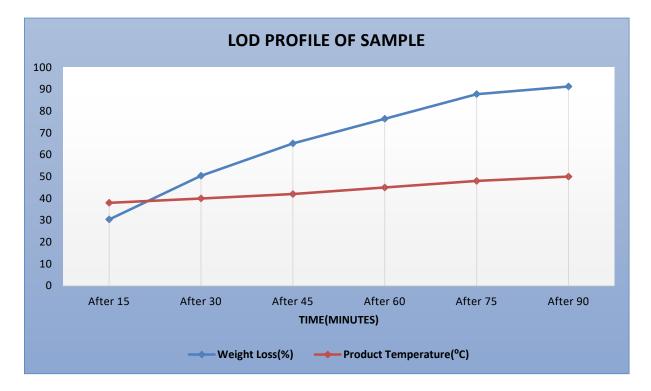


ΙϚΛ_9ΛΛ1_2ΛΛΧ ΓΛΜΡΔΝΥ

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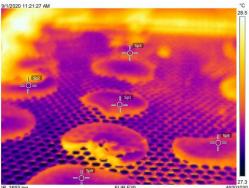
GRAPHICAL REPRESENTATION OF DRYING PARAMETERS:



THERMAL IMAGE BEFORE AND AFTER HEAT TRAETMENT:

1. Before Heat Treatment:

Measurements	9
Sp1	27.2 °C
Sp2	27.6 °C
Sp3	28.0 °C
Sp4	28.8 °C
Sp5	27.9 °C
Parameters	
Emissivity	0.95
Refl. temp.	20 °C



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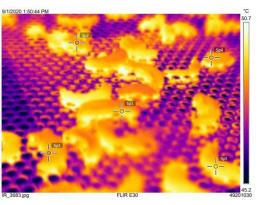
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2. After Heat Treatment:

Measurements	
Sp1	50.5 °C
Sp2	47.1 °C
Sp3	48.0 °C
Sp4	46.8 °C
Sp5	48.9 °C
Parameters	
Emissivity	0.95
Refl. temp.	20 °C



BEFORE AND AFTER PICTURES OF TREATED SPCIMEN SAMPLE:



BEFORE



AFTER

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REHYDRATION TEST:

For this test, little amount of treated sample has been taken in a glass and then boiled water added to it and covered it for 7-10 minutes followed by stirring.





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MOISTURE ANALYSIS REPORTS:

? Drying start	ted			707 17 172727 1778779	prying started
Date : 1-09-2020 Time :12:28:27		52C3#2#2+25#2 52C		A CONTRACT OF CONTRACT	DI A 10.2
	138	Date : 1-07-2020 Time :14:27:10		Date : 2-09-2020 Time :14:01:40 Model:AGS200	
Drying parameters		Model:AG5200 Serial number :		Serial number :	138
		Drying parameters		Drying parameters	
prying temperature	105.0 °C	and the lot of the lot	: Test	Product	; Test
or Yruld Ar proverse	: standard : Short mode : ((mD-m)/mD)*100%	Drying temperature	: 105.0 °C	Drying temperature	4 105.0 °C
		all trug be a second		Drying profile Mode	
		Mode Calculation Finished	: ((mO-m)/mO)#100% : 3 samples	Calculation Finished	: ((#0-#)/#0)#100% : 3 samples
Final weight		A CONTRACTOR OF A CONTRACTOR O	; 0.060 g	Initial weight	: 0.357 9
Drying time Sampling interval	1 00:38:20s 1 20 sec	Final weight	: 0,052 g	A REAL PROPERTY OF A REAL PROPERTY OF	; 0,060 g
Moisture	: 92.9 %	Drying time Sampling interval	: 00:01:40s : 20 sec	Drying time Sampling interva	: 00:16:40s 1 : 20 sec
NOTE Initial			: 13 X		ı 83 %
The analysis perform		NOTE Final		NOTE After	Rehydration
	mat				
IgnatureKKO		The analysis perf	ormed by:	The analysis pe	erformed by:
		KK	oma	KY	loma
		Signature		Signature.	
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OBSERVATIONS:

The drying behavior of Button Mushroom has been investigated under the convection heating system. The drying rate is found to be increasing with respect to increase in 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 required moisture content has been achieved with colour change in final product.

Miss Komal Bhoite Tested By

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