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

Customer :	**M/s. Megha Kedia**
Process :	**Batch Microwave+Convection Heat Treatment for Dehydration of Cooked food**

TEST REPORT No: 47/KRDC/LAB/17 Mum 25/05/2018

Date Sample reception : 25/05/2018
ID : 47/LAB/37

SAMPLE DESCRIPTION:

Sampling : As Requested
Sample Condition : Acceptable
Quantity : 3 small containers
Sampling date : 25/05/2018
Product : Cooked food (Dal tadka, Veg Pulav and Mix Veg)
Requirement : Final product should be dried like powder form with minimum moisture content
Start Date test : 25/05/2018
End Date test : 25/05/2018

LABORATORY EXPERIMENTAL SET UP:

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LAB BATCH MICROWAVE+CONVECTION HEATING SYSTEM SPECIFICATIONS:

Microwave Power	2 kW(CW)
Frequency	2450 MHz ± 50
Convective Power	3.5 kW (air flow 350 l/min at 20^{o}C)
Microwave Exposure Zone (cavity)	1 cubic meter
Mode Stirrer	One
Thermal Monitoring System	Single Channel Fiber Optic: Range -40 to 250^{o}C
Exhaust Power	1HP
Tray Size	450x950x50 mm

ENVIRONMENT-LABORATORY AMBIENT CONDITIONS:

Temperature (degree C)	29.2^{o}C (±5^{o}C)
Humidity (%)	≤ 52% 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
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** **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 cooked food in batch microwave+convection heating system for dehydration treatment. For this, given cooked food samples has been placed on microwave safe tray with uniform layer to achieve even drying characteristics in microwave+convection heating system. Drying treatment has been continued till it gives completely dry texture. Observations are made after every 30 minutes by checking the weight loss on drying and visible observations.

ANALYTICAL RESULTS:

Microwave Power: 0.5 kW
Temperature: 45°C

	Dal Fry	Veg Pulav	Mix Veg
Initial Weight (grams)	**222**	**200**	**170**
Initial Moisture Content (%)	**NA**	**61.6**	**NA**

Sr. No.	Time (minutes)	Weight noted (grams)			Remarks, if any
		Dal Fry	Veg Pulav	Mix veg	
1.	After 30	176	142	124	Drying rate started
2.	After 60	150	102	82	Drying phase continue
3.	After 90	125	86	63	Variant of Drying rate
4.	After 120	87	80	59	Variant of Drying rate
5.	After 150	71	77	55	Variant of Drying rate

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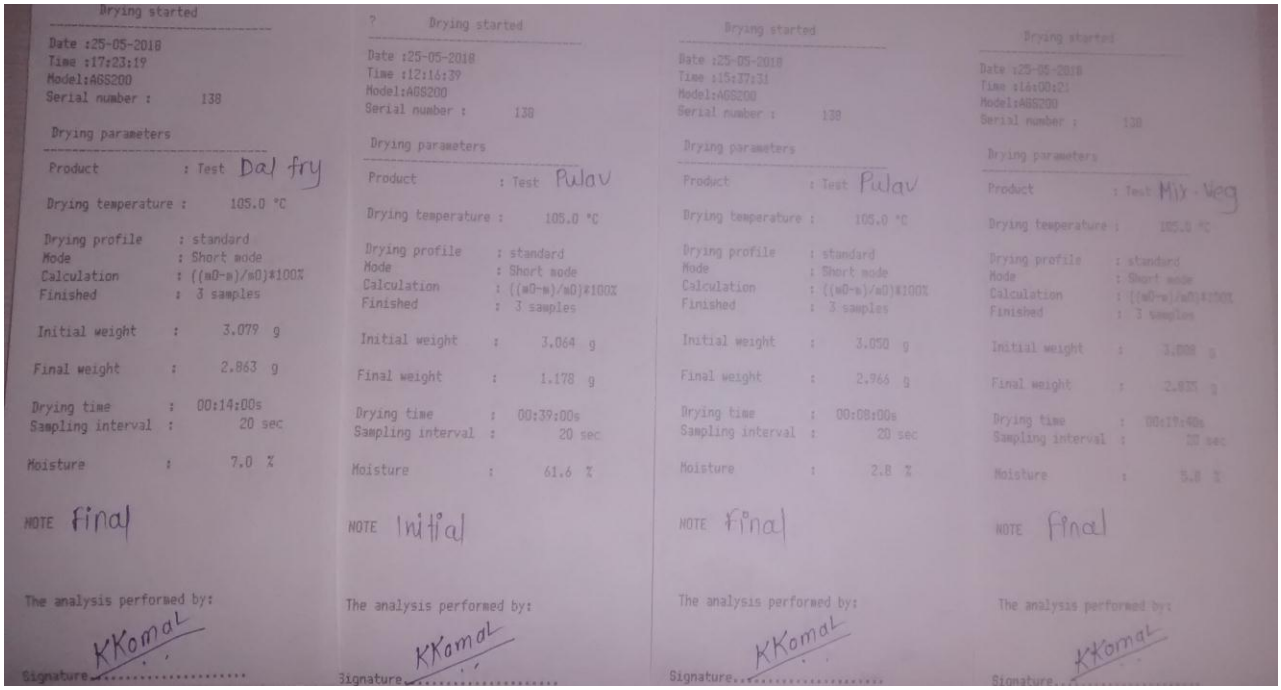
6.	**After 180**	**66**	**76**	**54**	**Drying Completed for Veg Pulav and Mix Veg**
7.	**After 210**	**61**	**_**	**_**	**Drying phase continue for Dal Fry**
8.	**After 240**	**59**	**_**	**_**	**Variant of Drying rate**
9.	**After 270**	**58**	**_**	**_**	**Drying Completed for Dal Fry**

	Dal Fry	**Veg Pulav**	**Mix Veg**
Total Weight Loss (grams)	**164**	**124**	**116**
Total Weight Loss (%)	**73.87**	**62**	**68.24**
Final Moisture Content (%)	**7**	**2.8**	**5.8**

MOISTURE ANALYSIS REPORTS:



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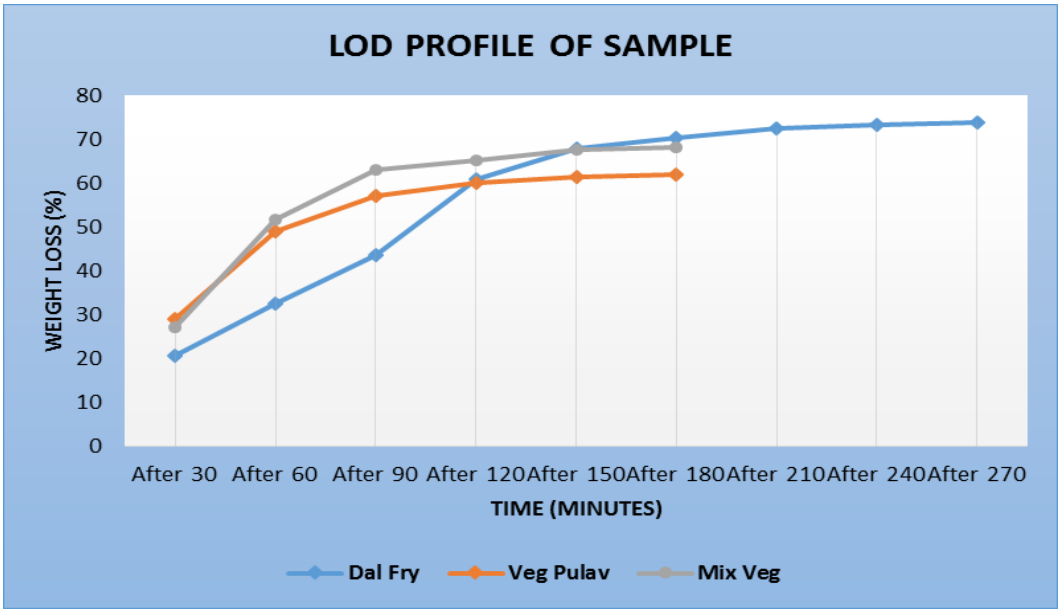
GRAPHICAL REPRESENTATION OF DRYING PARAMETERS:



BEFORE AND AFTER PICTURES OF TREATED SPECIMEN SAMPLE:

1. Dal Fry

2. Veg Pulav

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3. Mix Veg

REHYDRATION TEST:

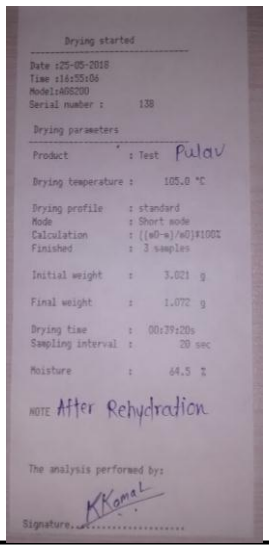
For this test, little amount of treated sample has been taken in mug and then boiled water added to it as per requirement and covered it for 5-10 minutes (depending on sample) followed by stirring.

Moisture Analysis of rehydrated veg pulav has been taken. Following are the rehydration test pictures and moisture analysis report of veg pulav.

Dal Fry

Veg Pulav

Mix Veg



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OBSERVATIONS:

The Drying behavior of cooked food has been investigated under the microwave+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 there is crunchiness in texture without burning and there is little colour change to dark reddish.

Miss Komal Bhoite
Tested By