

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](mailto:info@kerone.com), [www.kerone.com](http://www.kerone.com)

Customer :	M/S. 80:20 Wellness, Virar
Process :	Batch Dehydration Heat Treatment for drying of food samples

**TEST REPORT No: 47/KRDC/LAB/18 Mum 19/06/2018**

Date Sample reception : 19/06/2018  
ID : 47/LAB/46

**SAMPLE DESCRIPTION:**

Sampling : As requested  
Sample Condition : Acceptable  
Quantity : 5 containers  
Sampling date : 20/06/2018  
Product : Soyabeans, sprouted ragi, oats, flex seeds  
Requirement : Final product must be dry with 4-5% moisture content  
Start Date test : 20/06/2018  
End Date test : 21/06/2018

**LABORATORY EXPERIMENTAL SET UP:**



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Tel- +91-251-2620542/13/44/45/46 E-mail: [info@kerone.com](mailto:info@kerone.com), [www.kerone.com](http://www.kerone.com)**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)	28.1°C (±5°C)
Humidity (%)	≤ 94% 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
Infrared Thermometer		<b>Model: FLUKE 566</b> <b>Temperature Range: -40°C to 650°C</b> <b>Display Resolution: 0.1°C</b>

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<p><b>Moisture Analyzer</b></p>		<p><b>Make:</b> Axis Balance <b>Description:</b> <b>Moisture range:</b> 1%(sample 0.02/0.05g), 0.1% (Sample 0.5/5g), 0.01%(Sample&gt;5g)</p>
<p><b>Thermo Hygrometer</b></p>		<p><b>Model No:</b> HTC-2 <b>Temperature accuracy:</b> ±°C (1.8°F) <b>Temperature resolution:</b> 0.1°C (0.2°F) <b>Humidity range:</b> 10%~99% RH <b>Humidity accuracy:</b> ±5% RH <b>Humidity resolution:</b> 1% RH</p>

**SAMPLE PREPARATION AND METHOD/PROCEDURE:**

The experiment has been performed on soyabean, ragi, oats, flex seeds without adding any additive to speed up the drying rate. For experimental run, given amount of samples was taken and on dehydrator tray it has placed in such a manner that it form uniform layer in a tray for achieving even drying characteristics and observations are made after every ½ and/or 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:**

**1. Soyabean:**

**Initial sample weight:** 917 grams

**Initial Moisture Content:** 10.2%

**Setting Temperature:** 60°C

Sr. No.	Time (hours)	Temperature on sample (°C)	Weight noted (grams)	Weight loss (grams)	Remarks, if any
1.	After 1	54.2	796	121	Drying rate started
2.	After 2	57.5	779	138	Drying phase continue
3.	After 3	60	763	154	Required Drying rate

**Sample weight after drying:** 763 grams

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**Total weight loss on drying: 154 grams**

**Final Moisture Content: 1.4%**

### 2. Ragi:

**Initial sample weight: 1000 grams**

**Initial Moisture Content: 23.3%**

**Setting Temperature: 50°C**

Sr. No.	Time (hours)	Temperature on sample (°C)	Weight noted (grams)	Weight loss (grams)	Remarks, if any
1.	After 1	42.6	899	101	Drying rate started
2.	After 2	45.5	820	180	Drying phase continue
3.	After 3	48.3	798	202	Variant of Drying rate
4.	After 3.5	49.5	791	209	Required Drying rate

**Sample weight after drying: 791 grams**

**Total weight loss on drying: 209 grams**

**Final Moisture Content: 3.8%**

### 3. Oats:

**Initial sample weight: 925 grams**

**Initial Moisture Content: 7.4%**

**Setting Temperature: 60°C**

Sr. No.	Time (hours)	Temperature on sample (°C)	Weight noted (grams)	Weight loss (grams)	Remarks, if any
1.	After 1	56.2	913	12	Drying rate started
2.	After 2	56.9	908	17	Drying phase continue
3.	After 3	58.3	894	31	Variant of Drying rate
4.	After 4	59.1	884	41	Variant of Drying rate
5.	After 5	59.8	882	43	Required Drying rate

**Sample weight after drying: 882 grams**

**Total weight loss on drying: 43 grams**

**Final Moisture Content: 4.2%**

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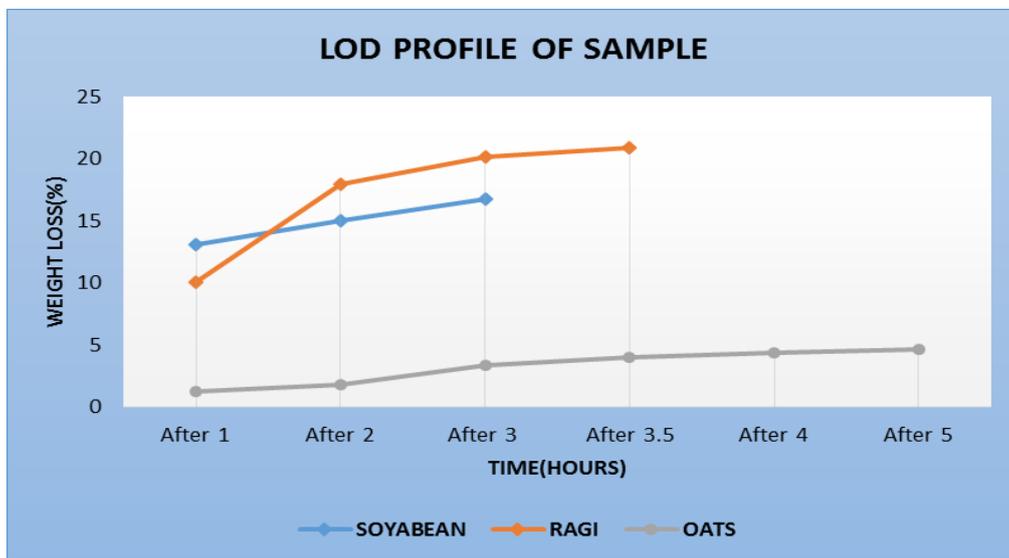
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#### 4. Flex seeds:

Initial Moisture Content: 2.3%

As initial moisture content is less than 4%, dehydration treatment is not done with flex seeds.

#### GRAPHICAL REPRESENTATION OF DRYING PARAMETERS:



#### MOISTURE ANALYSIS REPORTS:

##### 1. Soyabean:

Drying started		Drying started	
Date : 20-06-2018	Time : 10:54:02	Date : 20-06-2018	Time : 11:19:29
Model : A05200	Serial number : 138	Model : A05200	Serial number : 138
Drying parameters		Drying parameters	
Product : Test	Drying temperature : 105.0 °C	Product : Test	Drying temperature : 105.0 °C
Drying profile : standard	Mode : Short mode	Drying profile : standard	Mode : Short mode
Calculation : ((M0-W)/M0)*100%	Finished : 3 samples	Calculation : ((M0-W)/M0)*100%	Finished : 3 samples
Initial weight : 1.117 g	Final weight : 1.302 g	Initial weight : 1.175 g	Final weight : 1.159 g
Drying time : 00:14:20h	Sampling interval : 20 sec	Drying time : 00:03:00h	Sampling interval : 20 sec
Moisture : 10.2 %		Moisture : 1.4 %	
NOTE Soyabean (Initial)		NOTE Soyabean (Final)	
The analysis performed by:		The analysis performed by:	
Signature: <i>KKomal</i>		Signature: <i>KKomal</i>	

##### 2. Ragi:

Drying started		Drying started	
Date : 20-06-2018	Time : 10:41:30	Date : 20-06-2018	Time : 11:21:42
Model : A05200	Serial number : 138	Model : A05200	Serial number : 138
Drying parameters		Drying parameters	
Product : Test	Drying temperature : 105.0 °C	Product : Test	Drying temperature : 105.0 °C
Drying profile : standard	Mode : Short mode	Drying profile : standard	Mode : Short mode
Calculation : ((M0-W)/M0)*100%	Finished : 3 samples	Calculation : ((M0-W)/M0)*100%	Finished : 3 samples
Initial weight : 1.134 g	Final weight : 0.870 g	Initial weight : 1.047 g	Final weight : 1.007 g
Drying time : 00:07:00h	Sampling interval : 20 sec	Drying time : 00:04:20h	Sampling interval : 20 sec
Moisture : 23.3 %		Moisture : 3.8 %	
NOTE Ragi (Initial)		NOTE Ragi (Final)	
The analysis performed by:		The analysis performed by:	
Signature: <i>KKomal</i>		Signature: <i>KKomal</i>	

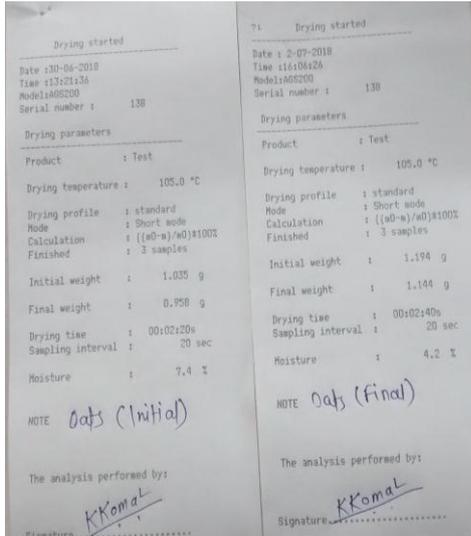
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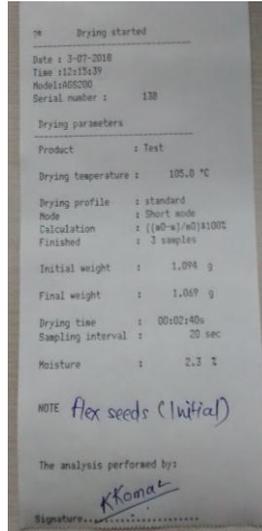
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**3. Oats:**



**4. Flex seeds:**



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

**1. Soybean:**



**2. Ragi:**



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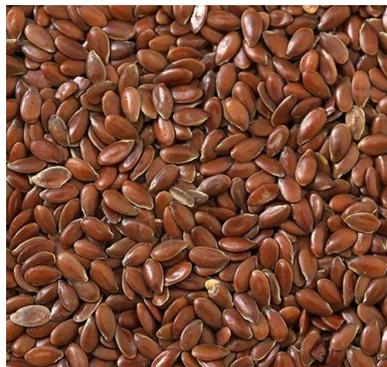
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### 3. Oats:



### 4. Flex seeds:



### OBSERVATIONS:

The Drying behavior soyabean, ragi and oats 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 there is no much colour change in case of soyabean and little reddish colour change in case of ragi and oats. As per physical investigation, it has been observed that there is no enzymatic browning (- for data, sample has to gone through colorimeter to get the browning index).



Miss. Komal Bhoite  
Tested By

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