



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

Member Of



AIMCAL (USA)



A.M.P.E.R.E (EUROPE)

In Association With

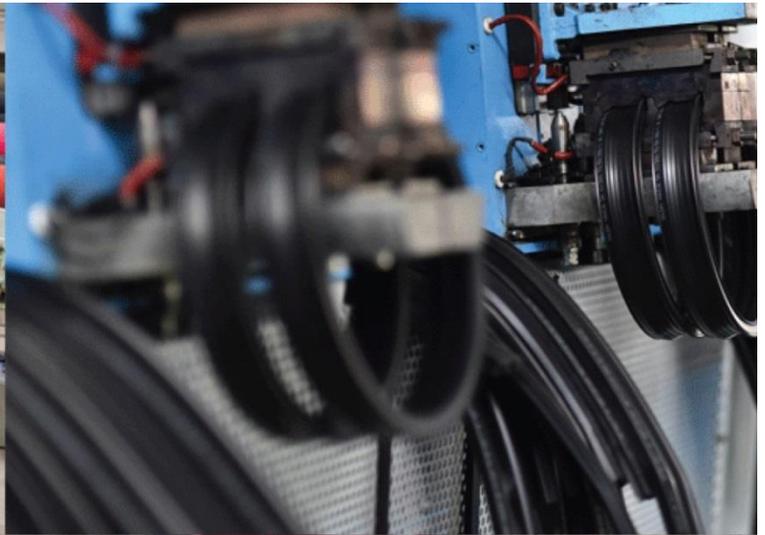


ELETTIO MAGNETIC innovative technologies

Kerone Research & Development Centre (KRDC)

B/47, Adl. MIDC. Anand Nagar, Ambernath (East), Thane- 421 506, India

Tel- +91-251-2620542/13/44/45/46, Email-info@kerone.com, www.kerone.com



**Continuous Microwave Heat Treatment  
for Sterilization/disinfection of Sesame**





ELECTRO MAGNETIC Innovative technologies



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

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. Nature Bio Foods Ltd, Kaspur
Process :	Continuous Microwave Heat Treatment for Sterilization of Sesame seeds

**TEST REPORT No: 47/KRDC/LAB/17 Mum 10/09/2018**

Date Sample reception : 10/09/2018  
ID : 47/LAB/60

**SAMPLE DESCRIPTION:**

Sampling : As Requested  
Sample Condition : Acceptable  
Quantity : 25 kg  
Sampling date : 27/09/2018  
Product : Organic Sesame seeds  
Requirement : Sterilization and Disinfection  
Start Date test : 27/09/2018  
End Date test : 27/09/2018

**LABORATORY EXPERIMENTAL SET UP:**



Format: F/R&D/01



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, Email-info@kerone.com, www.kerone.com

### LAB CONTINUOUS MICROWAVE HEATING SYSTEM SPECIFICATIONS:

<b>Total Microwave Power (CW oscillation ) Three Microwave Generators</b>	3 kW
<b>Frequency</b>	2450 ± 50 MHz
<b>Helical Conveyor System</b>	1-10 Hz, 20.1 to 53.6 minute helix
<b>Material Feeding Pipe (Polypropylene)</b>	2100 mm length, feed opening 53.5 mm
<b>Material Feed Sensor</b>	For down mass flow sensing
<b>Honey comb filters</b>	2 numbers
<b>Air extraction system</b>	Adjustable by POT
<b>Loading Hopper with flow regular</b>	Adjustable by metering gauge

### ENVIRONMENT-LABORATORY AMBIENT CONDITIONS:

<b>Temperature (degree C)</b>	36°C (±5°C)
<b>Humidity (%)</b>	≤64% RH
<b>Pressure (kN/m<sup>2</sup> or kPa)</b>	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°</b>
Thermo Hygrometer		<b>Model No: HTC-2</b> <b>Temperature accuracy: <math>\pm 1^\circ\text{C}</math> (1.8°F)</b> <b>Temperature resolution: 0.1°C (0.2°F)</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 organic sesame seeds without adding any additive to speed up the drying rate for sterilization treatment. For this experimental run, sesame seeds has been passed through conveyORIZED microwave heating system from hopper. At the exit point, temperature on the surface of sesame seeds has been noted.

### ANALYTICAL RESULTS:

Microwave Power: 3 kW  
Heating Cycle Time: 3 minutes  
Weight of sample: 25 kg  
Temperature on Product: 70°C



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, Email-info@kerone.com, www.kerone.com

### PICTURES DURING TRIAL:



### OBSERVATIONS:

The heat-treatment, behavior of Sesame Seeds has been investigated under the microwave irradiation mode heating system for sterilization/disinfection treatment. As per physical investigation, it has been observed that there is no colour change and burning effect.

*K Komal*

**Miss Komal Bhoite**  
**Tested By**