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Kerone Research & Development Centre (KRDC),
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Batch Microwave+Convection Heat Treatment for Sterilization of Dry Red Chillies

ISO 9001-2008 | ISO 9001-2015 | EMS 14001 | OHSAS 18001
In Association with SVCH-Technologii, Moscow (Russia)

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Customer :	**Laboratory Experimental Analysis**
Process :	**Batch Microwave+Convection Heat Treatment for Sterilization of Dry Red Chillies**

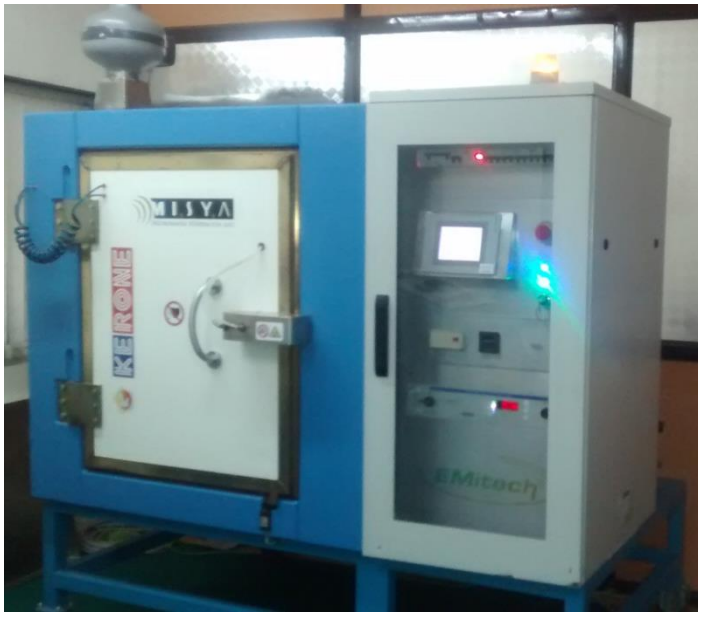
TEST REPORT No: 47/KRDC/LAB/17 Mum 18/01/2019

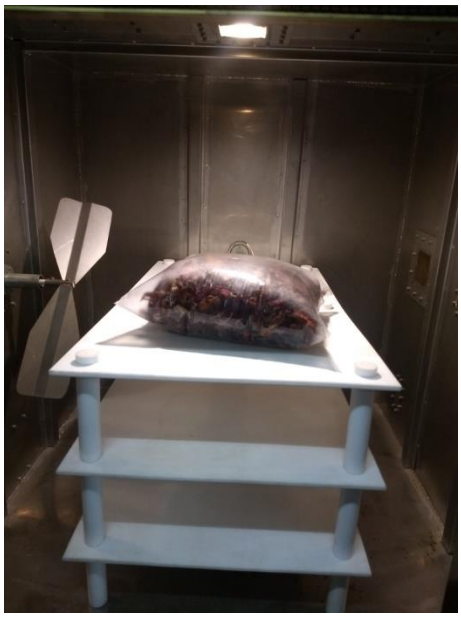
Date Sample reception : 18/01/2019
ID : 47/LAB/84

SAMPLE DESCRIPTION:

Sampling : As Requested
Sample Condition : Acceptable
Quantity : 10 kg
Sampling date : 25/01/2019
Product : Dry Red Chillies
Requirement : Sterilization and/or Disinfection
Start Date test : 25/01/2019
End Date test : 25/01/2019

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°C)
Microwave Exposure Zone (cavity)	1 cubic meter
Mode Stirrer	One
Thermal Monitoring System	Single Channel Fiber Optic: Range -40 to 250°C
Exhaust Power	1HP
Tray Size	450x950x50 mm

ENVIRONMENT-LABORATORY AMBIENT CONDITIONS:

Temperature (°C)	28.1°C (±5°C)
Humidity (%)	≤64% 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

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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
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 dry red chillies to speed up the drying rate for sterilization treatment. For this experimental run, given red chillies has been seal packed in plastic bags and placed in batch microwave+convection heating system for various setting parameters like microwave power, setting temperature and cycle time. The observations are made on the basis of temperature on product and colour change in product.

ANALYTICAL RESULTS:

Sr. No.	Microwave Power (kW)	Setting Temperature (°C)	Cycle Time (minutes)	Temperature on Product (°C)
1.	1	70	4	66-71
2.		80	3	63-73
3.	1.3	70	4	81-85
4.		80	3	69-73

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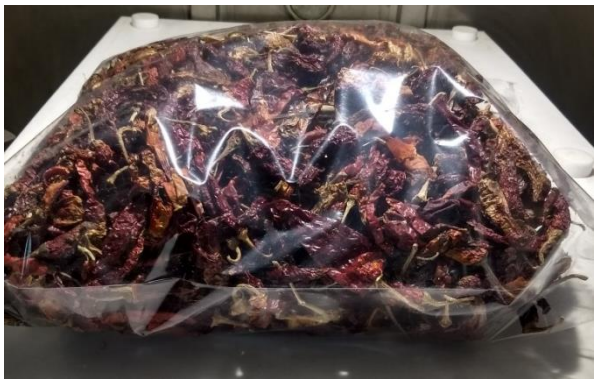
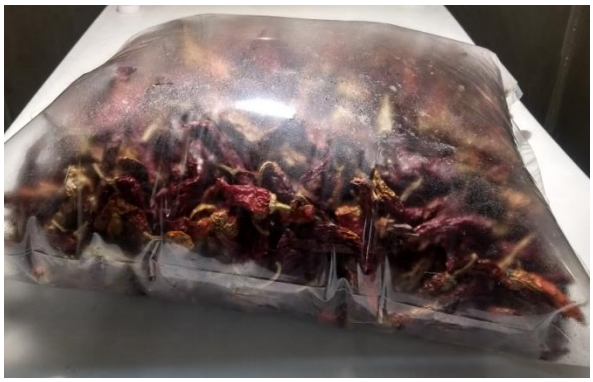
5.	**1.5**	**70**	**4**	**81-86**
6.		**80**	**3**	**71-15**

BEFORE AND AFTER PICTURES OF TREATED SPCIMEN SAMPLE:





OBSERVATIONS:

The Drying behavior of dry red chillies has been investigated under the microwave irradiation mode dryer for sterilization treatment. As per physical investigation, it has been observed that there is no colour change in any of the sample, no damage to plastic bag also.

K Komal

Miss Komal Bhoite
Tested By