KERONE

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ELECTRO MAGNETIC innovative technologies

Kerone Research & Development Centre (KRDC),
B/47, Addl. MIDC. Anand Nagar, Ambernath (East), Thane- 421 506, India
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Batch Microwave+Convection Heat Treatment for Sterilization of MBV powder

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

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Customer :	**M/s. Frigorifico Allana Private Ltd., Aurangabad**
Process :	**Batch Microwave+Convection Heat Treatment for Sterilization of MBV powder**

TEST REPORT No: 47/KRDC/LAB/17 Mum 22/07/2019

Date Sample reception : 22/07/2019
ID : 47/LAB/122

SAMPLE DESCRIPTION:

Sampling : As Requested
Sample Condition : Acceptable
Quantity : 4 sealed packets
Sampling date : 23/07/2019
Product : MBV powder
Requirement : Sterilization
Start Date test : 23/07/2019
End Date test : 23/07/2019

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^{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^{o}C (±5^{o}C)
Humidity (%)	≤90% 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 120IR 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)
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 given MBV powder samples without adding any additive to speed up the drying rate for sterilization treatment. For this experimental run, sealed packet of given sample has been placed as it is in microwave heating system and treatment has been given. The observations are made for various parameters. Initial moisture content, final moisture content has been taken.

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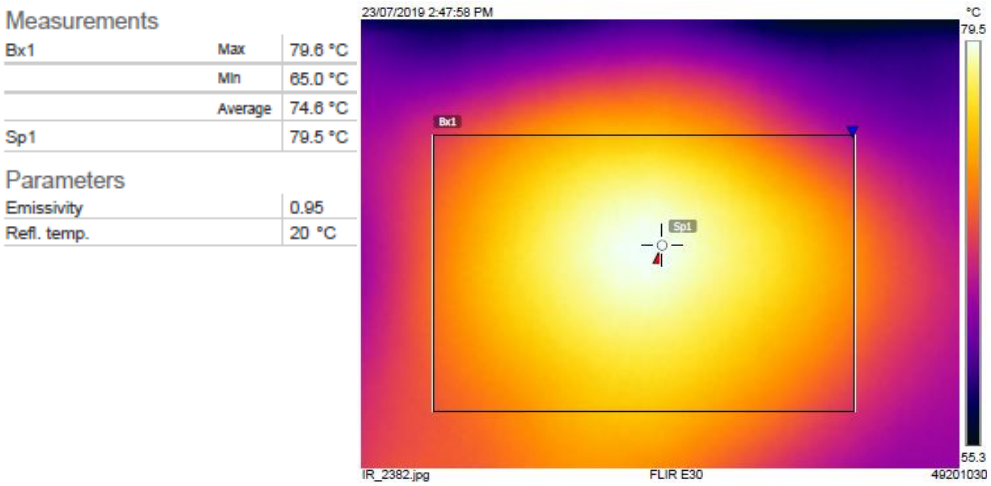
ANALYTICAL RESULTS:

Trial No.	Power (kW)	Hot Air Temp(°C)	Cycle Time (minutes)	Sample Weight(gms)	Product Temp(°C)	Remarks, if any
1.	1.5	60	3	503	43-47	No physical change
2.	2	80	3	515	51-55	No physical change
3.	2	80	5	515	78-81	No physical change

THERMAL IMAGE SHOWING TEMPERATURE PROFILE:



BEFORE AND AFTER PICTURES OF TREATED SPCIMEN SAMPLE:

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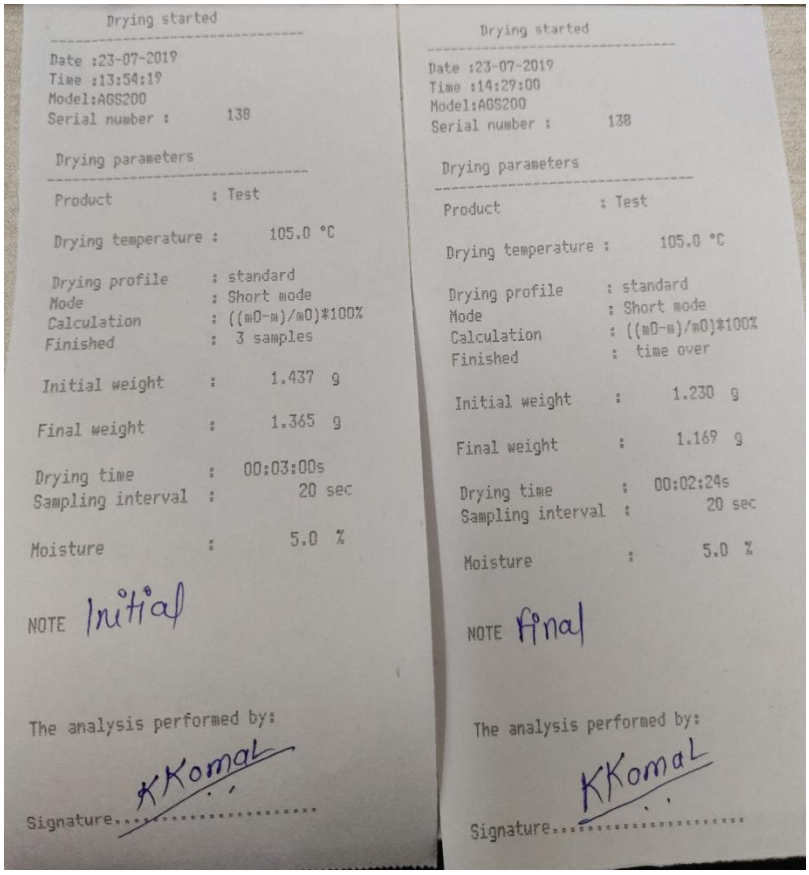
MOISTURE ANALYSIS REPORTS:



Drying started

Date :23-07-2019
Time :13:54:19
Model:AGS200
Serial number : 138

Drying parameters

Product : Test
Drying temperature : 105.0 °C
Drying profile : standard
Mode : Short mode
Calculation : ((m0-m)/m0)*100%
Finished : 3 samples
Initial weight : 1.437 g
Final weight : 1.365 g
Drying time : 00:03:00s
Sampling interval : 20 sec
Moisture : 5.0 %

NOTE Initial

The analysis performed by:

Signature.....

Drying started

Date :23-07-2019
Time :14:29:00
Model:AGS200
Serial number : 138

Drying parameters

Product : Test
Drying temperature : 105.0 °C
Drying profile : standard
Mode : Short mode
Calculation : ((m0-m)/m0)*100%
Finished : time over
Initial weight : 1.230 g
Final weight : 1.169 g
Drying time : 00:02:24s
Sampling interval : 20 sec
Moisture : 5.0 %

NOTE Final

The analysis performed by:

Signature.....

OBSRVATIONS:

The Drying behavior of MBV powder has been investigated under the microwave+convection heating system for sterilization treatment. The heating rate is found to be increasing with respect to increasing heating time. As per physical investigation, it has been observed that there is in no change in treated sample.

Miss Komal Bhoite
Tested By