

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

Customer :	M/s Green Cosmetics Pvt Ltd, Karnal, Haryana
Process :	Continuous Microwave Heat Treatment for Drying of Henna powder

TEST REPORT No: 47/KRDC/LAB/17 Mum 27/02/2018Date Sample reception : 27/02/2018
ID : 47/LAB/23**SAMPLE DESCRIPTION:**Sampling : As Requested
Sample Condition : Acceptable
Quantity : 5 kilograms
Sampling date : 27/03/2018
Product : Henna powder
Requirement : Dried product must have 1-2% moisture content
Start Date test : 27/03/2018
End Date test : 27/03/2018**LABORATORY EXPERIMENTAL SET UP:****Format: F/R&D/01**

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LAB MICROWAVE HEATING SYSTEM SPECIFICATIONS:

Microwave Power	1.45 kW(CW)
Frequency	2450 MHz \pm 50
Infra-red Power	6 kW
Microwave Exposure Zone (Cavity)	1000 mm length wise
Web width	380mm
Entry Vestibule length	1200mm
Exit Vestibule Length	1200 mm
Exhaust Power	0.5 HP

ENVIRONMENT-LABORATORY AMBIENT CONDITIONS:

Temperature (degree C)	41°C (\pm 5°C)
Humidity (%)	\leq 26 % RH
Pressure (kN/m ² 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
Compact Thermal Imaging Camera		Model: FLIR E-30 Resolution: 160 x 120 IR Thermal sensitivity of 0.10°C

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<p>Moisture Analyzer</p>		<p>Make: Axis Balance Description: Moisture range: 1%(sample 0.02/0.05g), 0.1% (Sample 0.5/5g), 0.01%(Sample>5g)</p>
<p>Thermo Hygrometer</p>		<p>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</p>

SAMPLE PREPARATION AND METHOD/PROCEDURE:

The experiment has been performed on henna powder which were dried in continuous microwave heating system without adding any additive to speed up the drying rate. Henna powder on microwave safe tray has placed in such a manner that uniform layer is formed of thickness about 7-10 mm to get uniform exposure of microwaves and this tray passed through continuous microwave heating system with low conveyor speed. The observations are made after every 1 pass of 22 minutes on the basis of LOD method by checking weight loss. Also, initial weight before drying, final weight after drying, initial moisture content and final moisture content has been taken.

ANALYTICAL RESULTS:

Initial sample weight: 150 grams

Intensity: 100%

Initial Moisture Content: 10.5%

Thickness of layer: 10 mm

Sr. No.	Time (minutes)	Temperature on sample (°C)	Weight noted (grams)	Weight loss (grams)	Remarks, if any
1.	After 22	52.3	137	13	Drying rate started
2.	After 44	58.6	136	14	Drying phase continue
3.	After 66	63.9	135	15	Required Drying rate

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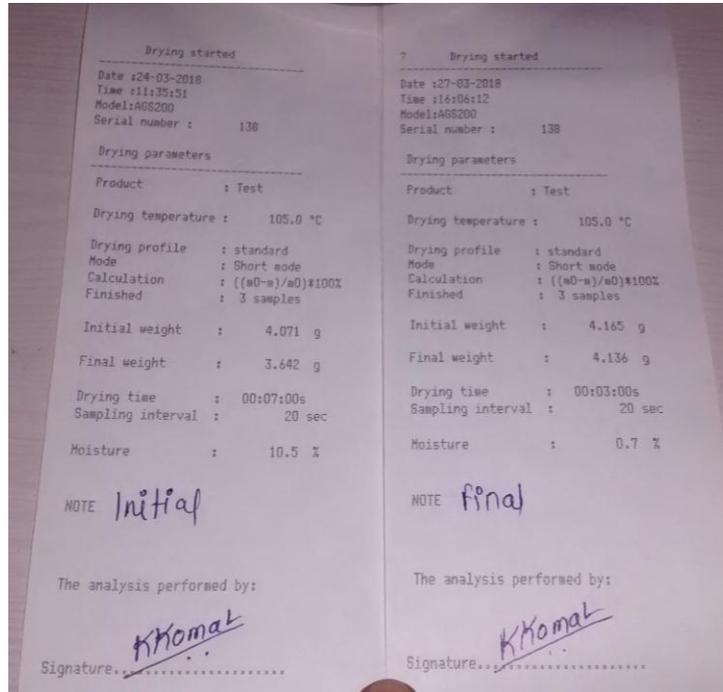
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Sample weight after drying: 135 grams

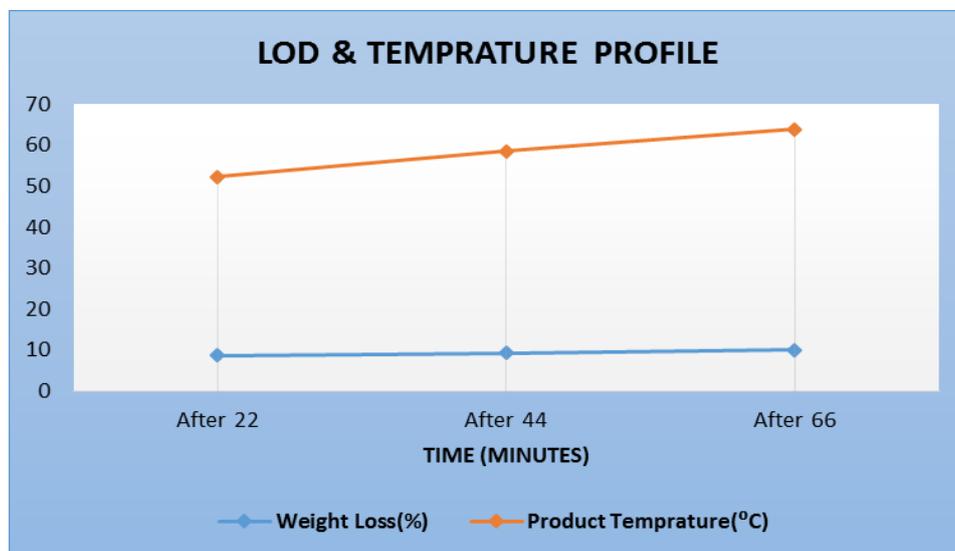
Total weight loss on drying: 15 grams

Final Moisture Content: 0.7%

MOISTURE ANALYSIS REPORTS:



GRAPHICAL REPRESENTATION OF DRYING PARAMETERS:



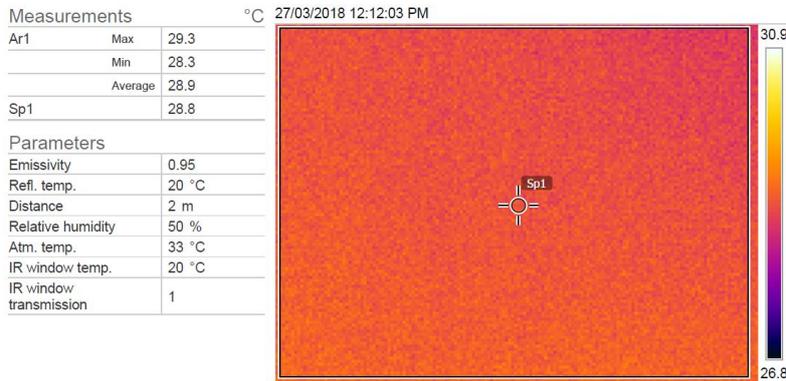
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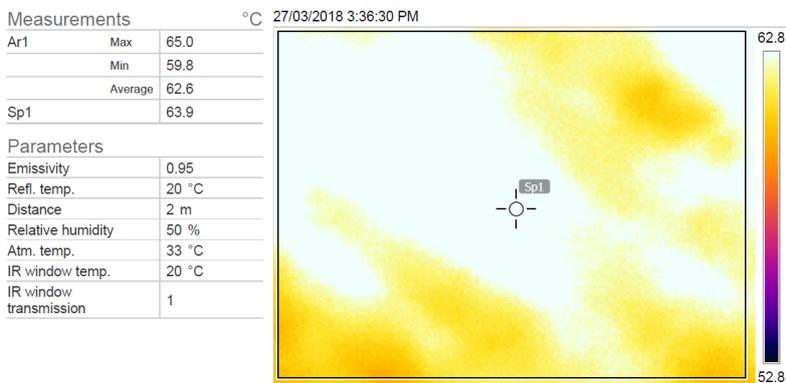
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THERMAL IMAGE BEFORE AND AFTER HEAT TREATMENT:

1. Before Heat Treatment



2. After Heat Treatment:



BEFORE AND AFTER PICTURES OF TREATED SPECIMEN SAMPLE:



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OBSERVATIONS:

The Drying behavior of henna powder has been investigated under the microwave irradiation mode dryer. 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 change in colour and no burning effect.



Miss Komal Bhoite
Tested By



Dr. Uttam K. Goswami
Approved By

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Customer :	M/s Green Cosmetics Private Limited, Karnal
Process :	Examination of moisture content in processed samples (-Master)

TEST REPORT No: 47/KRDC/LAB/17 Mum 27/02/2018Date Sample reception : 27/02/2018
ID : 47/LAB/23**SAMPLE DESCRIPTION:**Sampling : As Requested
Sample Condition : Acceptable
Quantity : 5 kilograms
Sampling date : 27/02/2018
Product : Henna Powder
Requirement : Moisture content in master samples
Start Date test : 19/02/2018
End Date test : 19/02/2018**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)

ENVIRONMENT-LABORATORY AMBIENT CONDITIONS:

Temperature (degree C)	39°C (±5°C)
Humidity (%)	≤ 11% RH
Pressure (kN/m2 or kPa)	Not recorded

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MOISTURE ANALYSIS REPORTS:

1. Sample No. 1:



2. Sample No. 2:



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3. Sample No. 3:



4. Sample No. 4:



K Komal

Miss Komal Bhoite
Tested By

Uttam K. Goswami

Dr. Uttam K. Goswami
Approved By

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