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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
Tel- +91-251-2620542/43/44/45/46, Email-info@kerone.com, www.kerone.com

Infra-red Heat Treatment for Drying of Whatman Filter Paper

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

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Customer :	**M/s. Merck Life Science Private Limited**
Process :	**Infra-red Heat Treatment for Drying of Whatman Filter Paper**

TEST REPORT No: 47/KRDC/LAB/17 Mum 27/08/2020

Date Sample reception : 27/08/2020
ID : 47/LAB/173

SAMPLE DESCRIPTION:

Sampling : As Requested
Sample Condition : Acceptable
Quantity : 10 Nos.
Sampling date : 27/08/2020
Product : Whatman Filter Paper
Requirement : Complete Drying
Start Date test : 27/08/2020
End Date test : 27/08/2020

LABORATORY EXPERIMENTAL SET UP:

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LAB CONTINUOUS INFRARED HEATING SYSTEM SPECIFICATIONS:

IR Medium Wave Emitters	6 Nos (-each having 0.5 kW, 445 mm heating length)
Short Wave IR Emitter with special reflectors	6 Nos (-each having 1 kW, 406 mm heating length)
IR Emitter to Object Distance	120 mm (- in medium wave zone)
IR Emitter to Object Distance	100 mm (- in short wave zone)
Overall IR Heating Zone length	1400 mm
Web width	400 mm
IR wavelength range	0.7 to 10 microns
Direct Exposure of MW IR	500 mm
Direct Exposure of SW IR	750mm
Temperature Range	0-400^{o}C

ENVIRONMENT-LABORATORY AMBIENT CONDITIONS:

Temperature (degree C)	30^{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**
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 sample of Whatman Filter paper to speed up the drying rate. For this experimental run, given filter paper has been dipped in water and then dried under infrared exposure for different time and temperature parameters. Initial and final weight, initial and final temperature has been taken.

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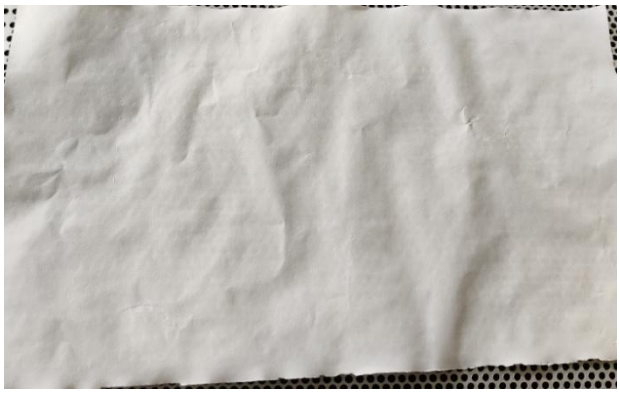
ANALYTICAL RESULTS:

	Trial No. 1	Trial No.2	Trial No. 3	Trial No. 4
Setting Temperature (°C)	140	140	140	160
Intensity (%)	60	80	80	80
Number of Passes	2	2	1	2
Total Drying Time (minutes)	2	2	2	2
Initial Weight (grams)	12	11	12	11
Initial Temperature(°C)	28	28	28	28
Weight after Dipping (grams)	37	35	35	36
Final Weight (grams)	12	11	11	11
Final Temperature (°C)	35-39	55-58	37-45	55-60

BEFORE AND AFTER PICTURES OF TREATED SPCIMEN SAMPLE:

BEFORE



AFTER

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OBSERVATIONS:

The drying behavior of Wet Whatman Filter Paper has been investigated under the infrared irradiation heating system. The drying rate is found to be increasing with respect to increasing drying time. As per physical investigation, it has been observed that there is no colour change and burning effect with required amount of drying.

Miss. Komal Bhoite
Tested By