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COMPANY  
ISO-9001-2008 COMPANY

Kerone Research & Development Centre (KRDC), B/47, Addl. MIDC, Anand Nagar, Ambarnath (East), Thane- 421 506, India  
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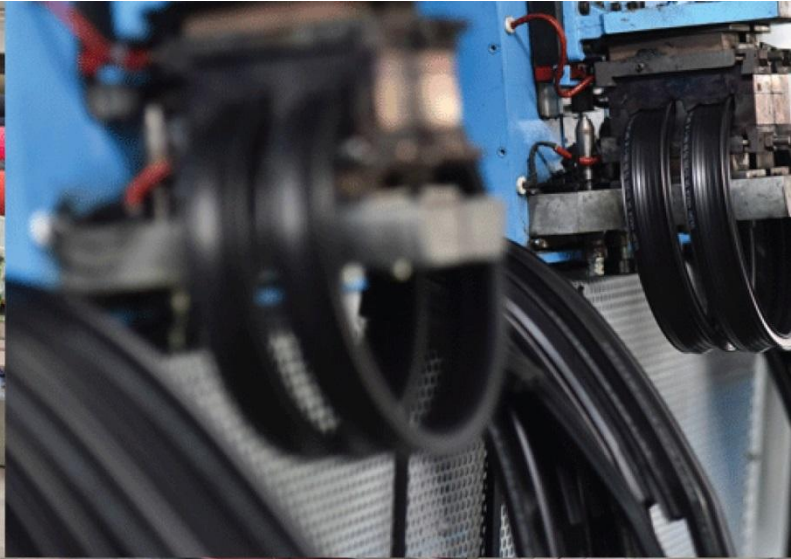


A.M.P.E.R.E (EUROPE)

In Association With



ELECTRO MAGNETIC innovative technologies



**BATCH MICROWAVE CONVECTION HYBRID HEAT  
TREATMENT FOR DRYING OF WET CAKE OF YARN**

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



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**KERONE**

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<b>Customer :</b>	<b>Laboratory Experimental Analysis</b>
<b>Process :</b>	<b>Microwave Convection Hybrid Heat Treatment for Drying of Yarn Cake</b>

**TEST REPORT No: 47/KRDC/LAB/17 Mum 02/08/2018**

Date Sample reception : 02/08/2018  
ID : 47/LAB/54

**SAMPLE DESCRIPTION:**

Sampling : As Requested  
Sample Condition : Acceptable  
Quantity : 5 Nos.  
Sampling date : 03/08/2018  
Product : Wet cakes of Yarn  
Requirement : Final product should have moisture content less than 5%  
Start Date test : 03/08/2018  
End Date test : 04/08/2018

**LABORATORY EXPERIMENTAL SET UP:**



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#### LAB BATCH MICROWAVE CONVECTION HYBRID HEATING SYSTEM SPECIFICATIONS:

Microwave Power	2 kW(CW)
Frequency	2450 MHz $\pm$ 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 (degree C)	27°C ( $\pm$ 5°C)
Humidity (%)	$\leq$ 89% RH
Pressure (kN/m <sup>2</sup> 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:

Moisture Analyzer		<p><b>Make: Axis Balance</b> <b>Description:</b> <b>Moisture range: 1%(sample 0.02/0.05g), 0.1% (Sample 0.5/5g), 0.01%(Sample&gt;5g)</b></p>
Thermo Hygrometer		<p><b>Model No: HTC-2</b> <b>Temperature accuracy: ±°C (1.8°F)</b> <b>Temperature resolution: 0.1°C (0.2°F)</b> <b>Humidity range: 10%~99% RH</b> <b>Humidity accuracy: ±5% RH</b> <b>Humidity resolution: 1% RH</b></p>

## SAMPLE PREPARATION AND METHOD/PROCEDURE:

The experiment has been performed on yarn cake in batch microwave heating system for drying. For this experimental run, the given wet cakes on tray have placed in such a manner that none of them are touching and there is some space around each cake for air to circulate for achieving even drying characteristic. The observations are made on the basis of LOD, moisture content and colour change of material.

## ANALYTICAL RESULTS:

Initial Moisture Content: 60%

Microwave Power: 1 kW

Setting Temperature: 60°C

Weight in grams →		Initial Weight	After 1 hour	After 2 hours	After 3 hours	After 3.5 hours
Sample No.	1	1465	1269	1060	815	714
	2	1399	1250	1035	825	738
	3	1369	1154	920	738	676
	4	1685	1558	1251	958	807

Final Moisture Content: 9%

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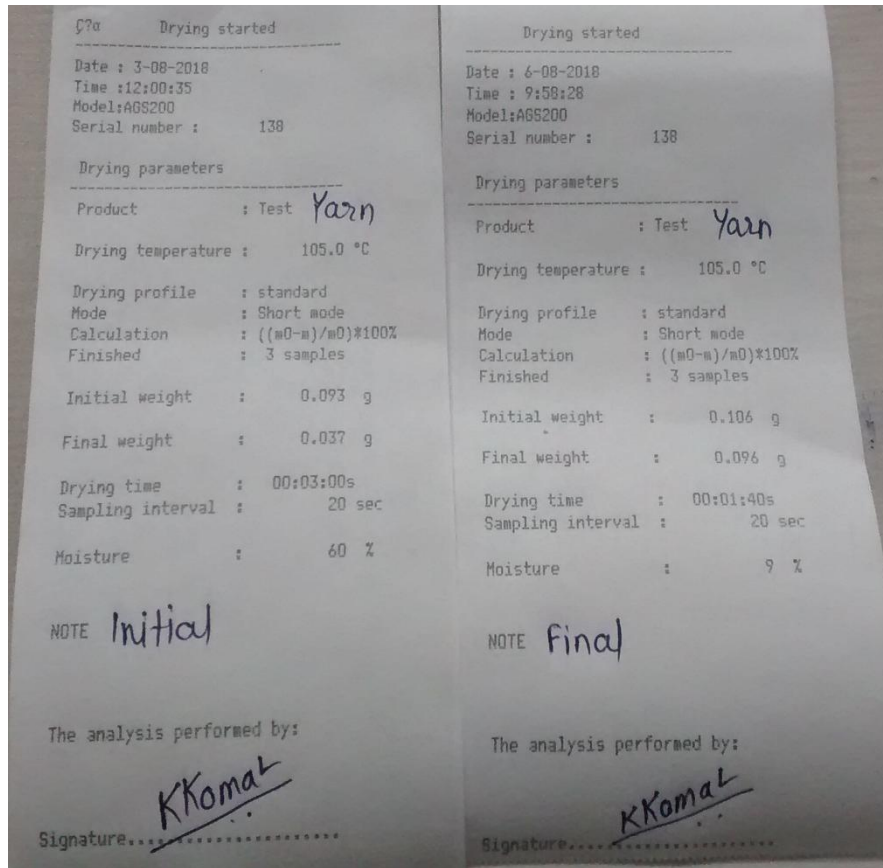
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### MOISTURE ANALYSIS REPORTS:



### OBSERVATIONS:

The Drying behavior of wet yarn cake has been investigated under the Microwave convection Hybrid irradiation mode Heating System. 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 uniform heating and no burning effect.

Miss Komal Bhoite  
Tested By

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