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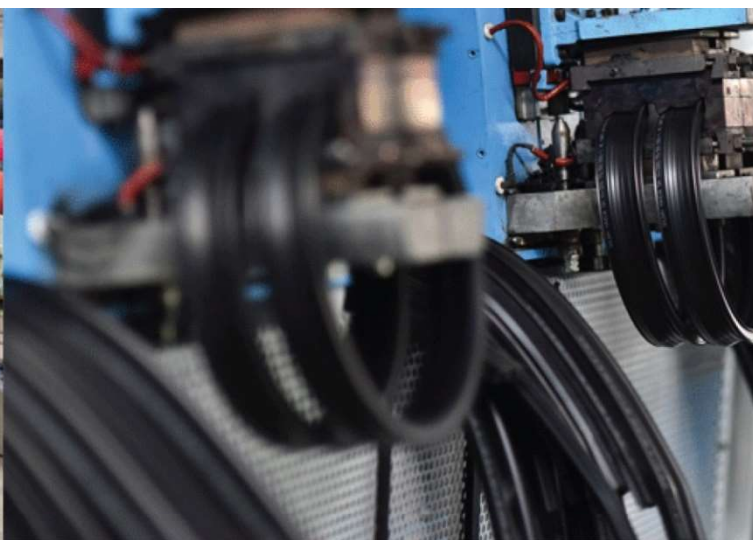
In Association With



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 Heat Treatment to Water to
check Temperature Uniformity





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Customer :	M/s. Premier Seals (I) Pvt. Ltd., Pune
Process :	Batch Microwave Heat Treatment to Water to check Temperature Uniformity

TEST REPORT No: 47/KRDC/LAB/17 Mum 01/12/2018

Date Sample reception : NA
ID : NA

SAMPLE DESCRIPTION:

Sampling : As Requested
Sample Condition : Acceptable
Quantity : 12 beakers with 80 ml water
Sampling date : 01/12/2018
Product : Water
Requirement : Uniformity of Temperature
Start Date test : 01/12/2018
End Date test : 01/12/2018

EXPERIMENTAL SET UP:



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BATCH MICROWAVE HEATING SYSTEM SPECIFICATIONS:

Microwave Power	1.45 kW
Frequency	2450 MHz \pm 50
Convective Power	1.5 kW
Microwave Exposure Zone (cavity)	500*350*350 mm ³
Exhaust Power	0.5 HP



ENVIRONMENT-LABORATORY AMBIENT CONDITIONS:

Temperature (degree C)	29.5°C (\pm 5°C)
Humidity (%)	\leq 65% 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
Digital Thermometer with sensor		Model No: TM-902C Temperature range: -50~750°C Temperature accuracy: $\pm 1^{\circ}\text{C}$
Thermo Hygrometer		Model No: HTC-2 Temperature accuracy: $\pm 1^{\circ}\text{C}$ (1.8°F) Temperature resolution: 0.1°C (0.2°F) Humidity range: 10%~99% RH Humidity accuracy: $\pm 5\%$ RH Humidity resolution: 1% RH

SAMPLE PREPARATION AND METHOD/PROCEDURE:

The experiment has been performed on water in batch microwave heating system for checking uniformity of temperature. For this, 12 beakers with 80 ml water in each has been placed on turntable in microwave system and heating treatment has been given for various parameters. The temperature of water has been noted.



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ANALYTICAL RESULTS:

	Trial (samples placed vertically)
No. of samples	12
Microwave Power Gain (%)	83
Chamber Temperature (°C)	70
Hot Air Temperature (°C)	60
Heating Cycle Time (minutes)	3
Microwave Current (A)	7
Water Temperature (°C)	54-58

PICTURES DURING TRIALS:



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OBSERVATIONS:

By the physical observation, it has been found that there is uniformity of temperature of water with low temperature gradient. The is to be tuned for Microwave intensity, turntable indexing speed and cycle timing to achieve minimum temperature gradient while processing Rubber products at site.

K Komal

Miss Komal Bhoite

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