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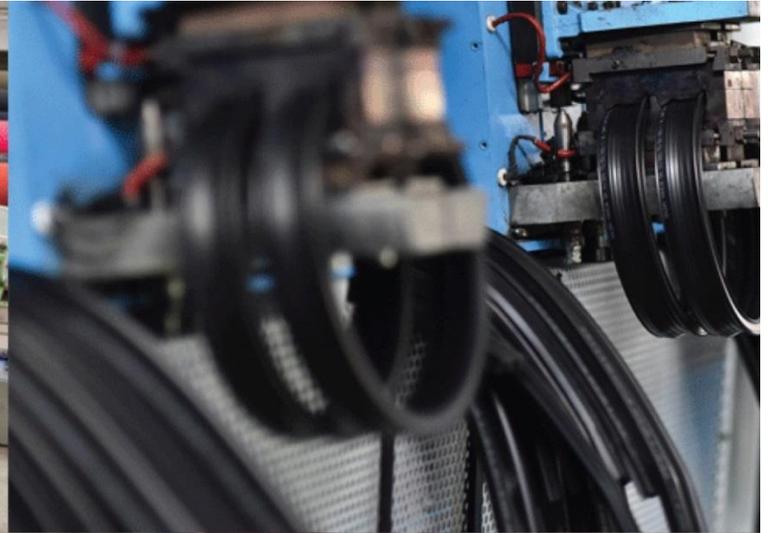


ELECTRO MAGNETIC innovative technologies

Kerone Research & Development Centre (KRDC)

B/47, Adl. MIDC. Anand Nagar, Ambarnath (East), Thane- 421 506, India

Tel- +91-251-2620542/13/44/45/46, Email-info@kerone.com, www.kerone.com



**Batch Microwave Heat Treatment
for Rubber curing**



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Customer :	M/s. Premier Seals (I) Pvt. Ltd., Pune
Process :	Batch Microwave Heat Treatment for Rubber curing

TEST REPORT No: 47/KRDC/LAB/17 Mum 01/10/2018

Date Sample reception : 01/10/2018

ID : 47/LAB/61

SAMPLE DESCRIPTION:

Sampling : As Requested

Sample Condition : Acceptable

Quantity : 3 bags

Sampling date : 05/10/2018

Product : Natural Rubber

Requirement : Rubber curing (Temperature of core of product after treatment must be between 60-70°C)

Start Date test : 05/10/2018

End Date test : 05/10/2018

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)	34°C (\pm 5°C)
Humidity (%)	\leq 73% 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

EQUIPMENTS USED:

Name of Equipment	Picture of Equipment	Specifications
Digital Thermometer with sensor		Model No: TM-902C Temperature range: -50~750°C Temperature accuracy: \pm1°C

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Infrared Thermometer		Model: FLUKE 566 Temperature Range: -40°C to 650°C Display Resolution: 0.1°
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 of rubber slabs having same shape and size in batch microwave heating system for rubber curing. For this, 12 rubber slabs has been placed in microwave system for different time period, different power and different temperature. The surface temperature and inner core temperature of sample has been noted.

ANALYTICAL RESULTS:

	Trial 1 (With dummy load)	Trial 2 (Without dummy load)
Microwave Power Gain (%)	83	83
Chamber Temperature (°C)	70	70
Hot Air Temperature (°C)	85	85
Heating Cycle Time (minutes)	3	3
Microwave Current (A)	6	6
Surface Temperature (°C)	39-50	36-45
Core Temperature (°C)	70-90	60-120

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PICTURES DURING TRIALS:



WITH DUMMY LOAD

WITHOUT DUMMY LOAD

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OBSERVATIONS:

By the physical observation, it has been found that pre-curing of natural rubber, which is having low elastic properties, when exposed to microwave radiation, it get more resilience and elasticity. The requirement of core temperature 60-70°C has been successfully achieved.

A handwritten signature in black ink that reads "K Komal".

Miss Komal Bhoite

Tested By

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