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ISO-9001-2008 COMPANY

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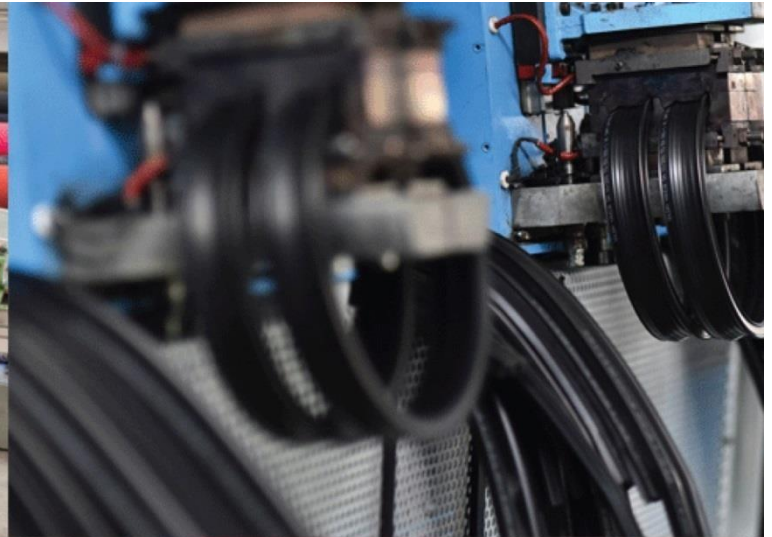
A.M.P.E.R.E (EUROPE)

In Association With



ELECTRO MAGNETIC innovative technologies

Kerone Research & Development Centre (KRDC),
B/47, Addl. MIDC. Anand Nagar, Ambarnath (East), Thane- 421 506, India
Tel- +91-251-2620542/43/44/45/46, Email-info@kerone.com, www.kerone.com



**Continuous Infra-red Heat Treatment
for Annealing of inner RAS body**

ISO 9001-2008 | ISO 9001-2015 | EMS 14001 | OHSAS 18001

In Association with SVCH-Technologii, Moscow (Russia)



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Customer :	M/s. Watertec (India) Pvt.Ltd.
Process :	Continuous Infra-red Heat Treatment for annealing of inner RAS bodies.

TEST REPORT No: 49/KRDC/LAB/17 Mum 21/01/2022

Date Sample reception : 21/01/2022
ID : 49/LAB/152

SAMPLE DESCRIPTION:

Sampling : As Requested
Sample Condition : Acceptable
Quantity : 10 pieces
Sampling date : 24/01/2022
Product : Inner RAS bodies
Requirement : Annealing condition 70+/-5°C.
Start Date test : 24/01/2022
End Date test : 25/01/2022

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°C

ENVIRONMENT-LABORATORY AMBIENT CONDITIONS:



Temperature (degree C)	26°C (±5°C)
Humidity (%)	≤78% 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: $\pm 0.1^{\circ}\text{C}$ (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 given inner RAS bodies, having same shape and size for annealing them in continuous infra-red heating system. For this experimental run, given sample of RAS bodies has been placed in a tray and passed under Continuous IR heating system with suitable parameters. The final observations are made on the on-product temperature and appearance.



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ANALYTICAL RESULTS:

TRAIL 1

Setting Temperature: 70°C

Intensity of IR: 50%

Initial Weight: 33 grams

Cycle Time of 1 pass: 4mins

No. of passes	Total time	On product Temperature
After 1 st pass	4 min	50°C
After 5 TH pass	20 min	64°C
After 10 TH pass	40 min	71°C

TRAIL 2

Setting Temperature: 70°C

Intensity of IR: 50%

Initial Weight: 33 grams

Cycle Time of 1 pass: 4mins

No. of passes	Total time	On product Temperature
After 1 st pass	4 min	58°C
After 5 TH pass	20 min	65°C
After 9 TH pass	36 min	75°C

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BEFORE AND AFTER PICTURES OF TREATED SPECIMEN SAMPLE:



a) Before treatment



b) After treatment

THERMAL ANALYSIS REPORTS:

After 1ST PASS



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After 5ST PASS



After 10ST PASS



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IN ASSOCIATION WITH EMitech, ITALY



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OBSERVATIONS:

By the physical observation, it has been found that annealing of RAS bodies, which is having flammable properties when exposed to infra-red radiation below 80°C the material was not burnt or melted. The material after treatment is in acceptable condition. The requirement of core temperature around 70 +/- 5°C for annealing the material has been successfully achieved.

A handwritten signature in black ink, appearing to read "Sayali" with a stylized flourish.

Ms. Sayali Asole
Tested By

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