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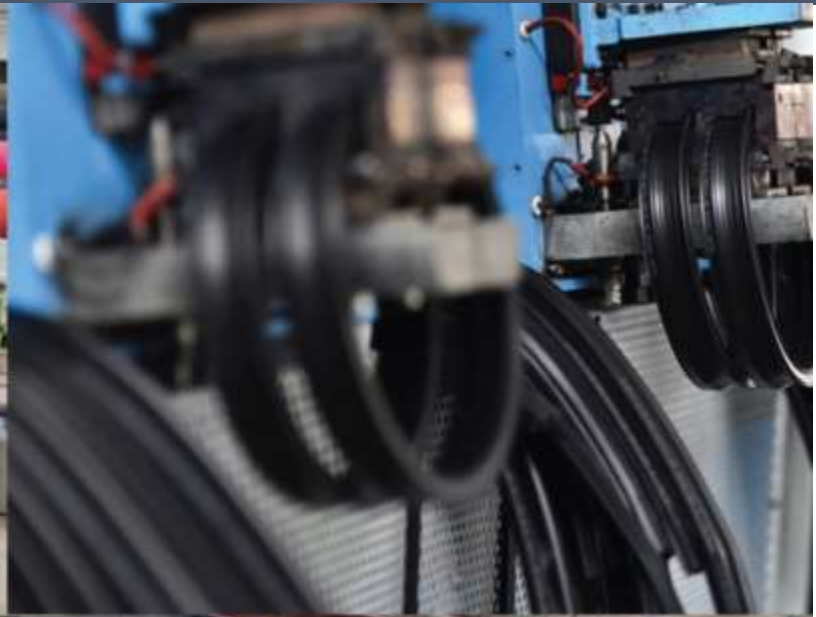
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Kerone Research & Development Centre (KRDC)

B/47, Addl. MIDC. Anand Nagar, Ambernath (East), Thane- 421 506, India
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**IR Heating System for drying of Touch-up Paint
on Weld seam and Top Chime**



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Customer :	M/s. Metal Seam Co. Pvt. Ltd.
Process :	IR Heating System for treatment of Touch-up Paint on Drum Weld Seam and Top Chime

Test Report No: 220/KRDC/LAB/17 Mum 15/05/2023

Date Sample reception : 19/05/2023
ID : KRDC/R&D/23-24/05/15

Sample Description:

Sampling : As Requested
Sample Condition : Acceptable
Sampling date : 13/05/2023
Product : Touch-up Paint on Drum Weld Seam and Top Chime
Start Date test : 13/05/2023
End Date test : 13/05/2023

System Specification:




IR Power	6 Nos (-each having 0.5 Kw)
IR Emitter to Object Distance	120 mm
Web width	400 mm
Temperature Range	0-200°C

Laboratory's Environmental Conditions –

Temperature (degree C)	29.4°C (±5°C)
Humidity (%)	≤50% 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

Equipment Used -

Name of Equipment	Picture of Equipment	Specifications
Thermo Hygrometer		<p>Model No: HTC-2</p> <p>Temperature accuracy: $\pm^{\circ}\text{C}$ (1.8$^{\circ}\text{F}$)</p> <p>Temperature resolution: 0.1$^{\circ}\text{C}$ (0.2$^{\circ}\text{F}$)</p> <p>Humidity range: 10%~99% RH</p> <p>Humidity accuracy: $\pm 5\%$ RH</p> <p>Humidity resolution: 1% RH</p>
Thermal Imaging Camera		<p>Model: FLIR E-30</p> <p>Resolution: 160 x 120 IR Thermal</p> <p>sensitivity of 0.10$^{\circ}\text{C}$</p>
Paint Brush		<p>Model: HIK</p> <p>Size: 50mm</p>

Procedure of the Experiment:

- The experiment was performed on Touch-up paint on the weld seam and Top Chime to speed up the heating rate.
- For this experimental run, the given sample was taken and placed in the IR heating system with suitable parameters.
- After the heating treatment the sample was analyzed.



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Analytical Results:

Trial 5 – Touch-up Paint on weld seam

Sr. No.	Cycle Time	Specifications of System	On Product temperature	Remark
1	After 30 sec	Set Temp: 100°C; IR Intensity: 80%	(56-60)°C	Drying started
2	After 60 sec	Set Temp: 100°C; IR Intensity: 80%	(60-67)°C	Drying Continuous
3	After 90 sec	Set Temp: 100°C; IR Intensity: 80%	(67-70)°C	Drying Continuous
4	After 120 sec	Set Temp: 100°C; IR Intensity: 80%	(70-73)°C	Dried as Desired

Total Cycle time – 2 mins.

On product temperature – (70-73) °C

Trial 6 – Touch-up Paint on top Chime

Sr. No.	Cycle Time	Specifications of System	On Product temperature	Remark
1	After 30 sec	Set Temp: 100°C; IR Intensity: 80%	(55-60)°C	Drying started
2	After 60 sec	Set Temp: 100°C; IR Intensity: 80%	(64-68)°C	Drying Continuous
3	After 90 sec	Set Temp: 100°C; IR Intensity: 80%	(68-70)°C	Drying Continuous
4	After 120 sec	Set Temp: 100°C; IR Intensity: 80%	(70-71)°C	Dried as Desired

Total Cycle time – 2 mins.

On product temperature – (70-71) °C



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Images during trials:

Touch-up Paint on weld seam



Initial Component



Touch-up Paint Applied weld seam



After drying Component

Touch-up Paint on top Chime



Initial Component



Touch-up Paint Applied Top Chime



After drying Component



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Thermal Images:

Measurements	
Sp1	71.1°C
Sp2	72.6°C
Sp3	73.6°C

Parameters	
Emissivity	0.99
Temp.	166.7°C

Measurements	
Sp1	71.1°C
Sp2	65.9°C
Sp3	93.1°C

Parameters	
Emissivity	0.99
Temp.	413.6°C

Observations:

The heating behavior of the Touch-up paint was investigated under the IR heating system. The heating rate was found to be increasing with respect to the increase in time. As per the physical investigation, it was observed that the product was dried as desired. The touch paint on the weld seam and top chime surface drying were done within a short period of time.

Ms. Sayali Asole
 (Tested By)