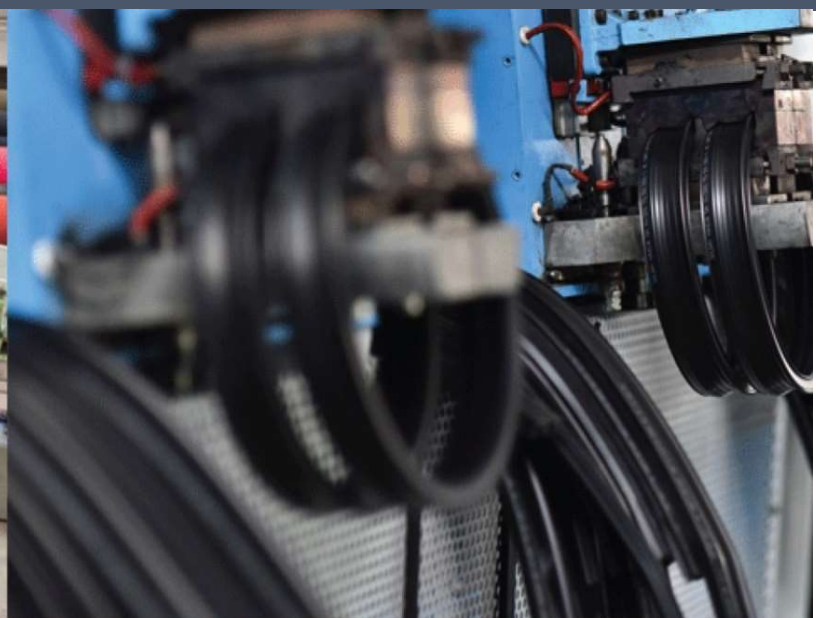


Kerone Research & Development Centre (KRDC)  
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**Continuous Rotary Drum Dryer for  
Drying of Paracetamol Powder**

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Customer :	M/s. IOL Chemical & Pharmaceutical Limited.
Process :	Continuous Rotary Drum Dryer for drying of Paracetamol Powder

**Test Report No: 224/KRDC/LAB/17 Mum 11/07/2023**

Date Sample reception : 21/06/2023  
ID : KRDC/R&D/23-24/07/11

**Sample Description:**

Sampling : As Requested  
Sample Condition : Acceptable  
Sampling date : 10/12/2023  
Product : Paracetamol Powder  
Start Date test : 10/07/2023  
End Date test : 10/07/2023

**Laboratory Experimental System -**





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### System Specification –

<b>IR Power</b>	5 kW
<b>Type of Heating</b>	Quartz Infrared
<b>Rotary Drum Size</b>	Φ324 mm x 800 mm long x 3mm Thick.
<b>Thermal Monitoring System</b>	Single Channel Fiber Optic: Range 40 to 250°C
<b>Exhaust</b>	Exhaust port with manual damper
<b>Air Circulation Fan</b>	Radial Fan FHP 0.5HP

### Laboratory's Environmental Conditions –





<b>Temperature (degree C)</b>	29.4°C (±5°C)
<b>Humidity (%)</b>	≤50% RH
<b>Pressure (kN/m<sup>2</sup> or kPa)</b>	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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### Equipment Used -

Name of Equipment	Picture of Equipment	Specifications
<b>Compact Thermal Imaging Camera</b>		<b>Model: FLIR E-30</b> <b>Resolution: 160x 120IR Thermal</b> <b>sensitivity of 0.10°C</b>
<b>Thermo Hygrometer</b>		<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>
<b>Moisture Analyzer</b>		<b>Make: Axis Balance</b> <b>Description:</b> <b>Moisture range: 1%(sample 0.02/0.05g),</b> <b>0.1% (Sample 0.5/5g), 0.01%(Sample&gt;5g)</b>
<b>Weighing Balance</b>		<b>Make: Gill</b> <b>Description:</b> <b>ISO 9001: 2008</b> <b>Model- PEWT – X</b> <b>Max- 10/20 Kg</b> <b>Min- 20g</b> <b>e. ½ g</b>

**Format: F/R&D/01**

The value obtained is already corrected for possible recover value stated, if applicable. This document may not be reproduced or disclosed wholly or partly in any part thereof without the written consent of the laboratory management or customer. This document relates only to the specimen samples processed. The processed sample will be kept in this laboratory for 7 days from the date of heat treatment.

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**Procedure of the Experiment -**

- The experiment was performed on Paracetamol Powder to speed up the heating rate.
- For this experimental run, the sample was treated in the Continuous Rotary Drum Heating System under different parameters.
- After the heating treatment, the sample was analyzed.

**Analytical Results:**

**Trial 1 –**

Initial Weight – 500g

Initial Moisture – 3.2%

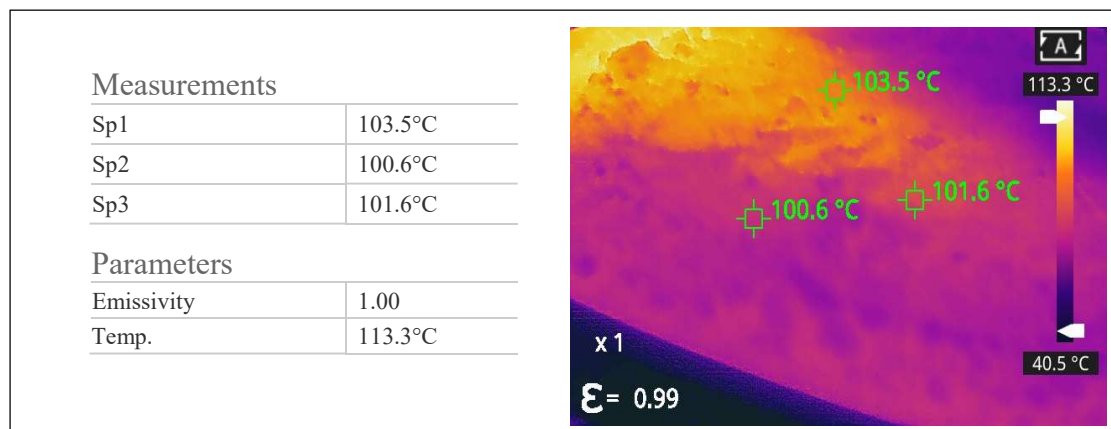
Cycle	Heat Exposure Time	Specifications of Rotary Drum Dryer	On product Temperature	Moisture Content (%)	Remark
C1	12 min. 30 sec. (after 1 <sup>st</sup> pass)	Set temp: 100°C; Drum speed:0.8 rpm	(80-85) °C	1.9%	Drying started
C2	25 min. (after 2 <sup>st</sup> pass)	Set temp: 100°C; Drum speed:0.8 rpm	(100-110) °C	0.3%	Dried as desired

Final Weight – 410g

Final Moisture – 0.3%

Total Cycle time – 25 mins.

**Thermal Images:**



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**Images during Trials:**



**Untreated Sample**



**Treated Sample**

**Moisture Report:**

Drying parameters		Drying parameters	
Product	: 0	Product	: 0
Drying temperature	: 105.0 °C	Drying temperature	: 105.0 °C
Drying profile	: standard	Drying profile	: standard
Mode	: Short mode	Mode	: Short mode
Calculation	: $((m0-m)/m0)*100\%$	Calculation	: $((m0-m)/m0)*100\%$
Finished	: 3 samples	Finished	: 3 samples
Initial weight	: 1.956 g	Initial weight	: 1.205 g
Final weight	: 1.894 g	Final weight	: 1.201 g
Drying time	: 00:03:40s	Drying time	: 00:01:40s
Sampling interval	: 20 sec	Sampling interval	: 20 sec
Moisture	: 3.2 %	Moisture	: 0.3 %
NOTE Initial moisture		NOTE Final moisture	
The analysis performed by:		The analysis performed by:	
Signature.....	<i>Azechi</i>	Signature.....	<i>Azechi</i>

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### Observations:

The heating behavior of Paracetamol Powder was investigated under the Convection 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 powder dried as desired with the required moisture content.



**Ms. Sayali Asole**  
(Tested By)