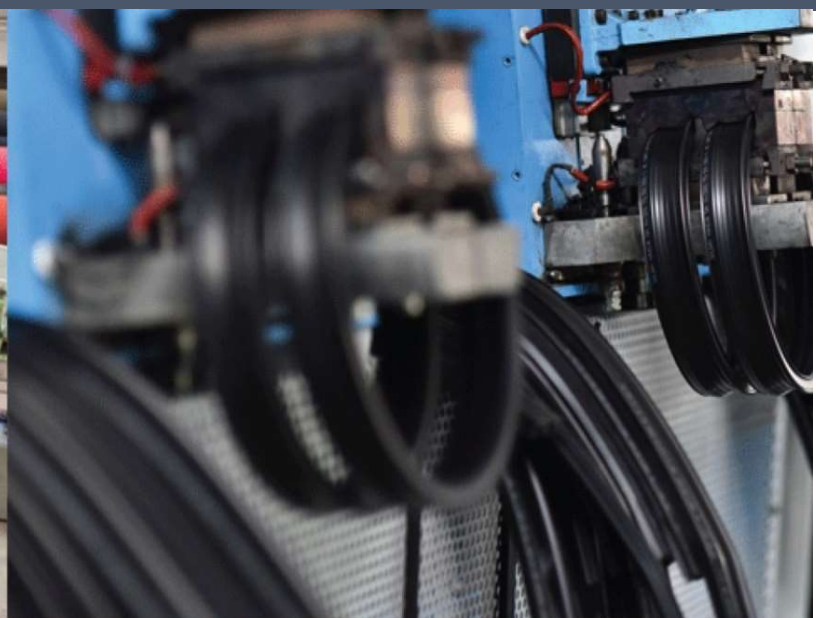


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**Batch Convection Heat Treatment for
Drying of Paracetamol Powder**





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Customer :	M/s. IOL Chemical & Pharmaceutical Limited.
Process :	Batch Convection Heat Treatment for Drying of Paracetamol Powder

Test Report No: 221/KRDC/LAB/17 Mum 30/06/2023

Date Sample reception : 21/06/2023
ID : KRDC/R&D/23-24/06/30

Sample Description:

Sampling : As Requested
Sample Condition : Acceptable
Sampling date : 29/06/2023
Product : Paracetamol Powder
Start Date test : 29/06/2023
End Date test : 29/06/2023

Laboratory Experimental System -





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System Specifications -

Heating Zone (width*height*depth)	510*480*410 mm
No. of Heaters	6
Total Heater Power	6 kW
Motor	0.5 HP
No. of trays	6
Tray size (width*height*depth)	560 x 435 x25
Centrifugal Exhaust Blower	1440 rpm

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

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Equipment Used -

Name of Equipment	Picture of Equipment	Specifications
Thermo Hygrometer		Model No: HTC-2 Temperature accuracy: $\pm^{\circ}\text{C}$ (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
Moisture Analyzer		Make: Axis Balance Description: Moisture range: 1%(sample 0.02/0.05g), 0.1% (Sample 0.5/5g), 0.01%(Sample >5g)
Weighing Balance		Make: Gill Description: ISO 9001: 2008 Model- PEWT - X Max- 10/20 Kg Min- 20g e. $\frac{1}{2}$ g
Compact Thermal Imaging Camera		Model: FLIR E-30 Resolution: 160x 120IR Thermal sensitivity of 0.10°C

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 given sample was taken in the tray and placed in the heating system with suitable parameters.
- After the heating treatment, the sample was analyzed.

Analytical Results:

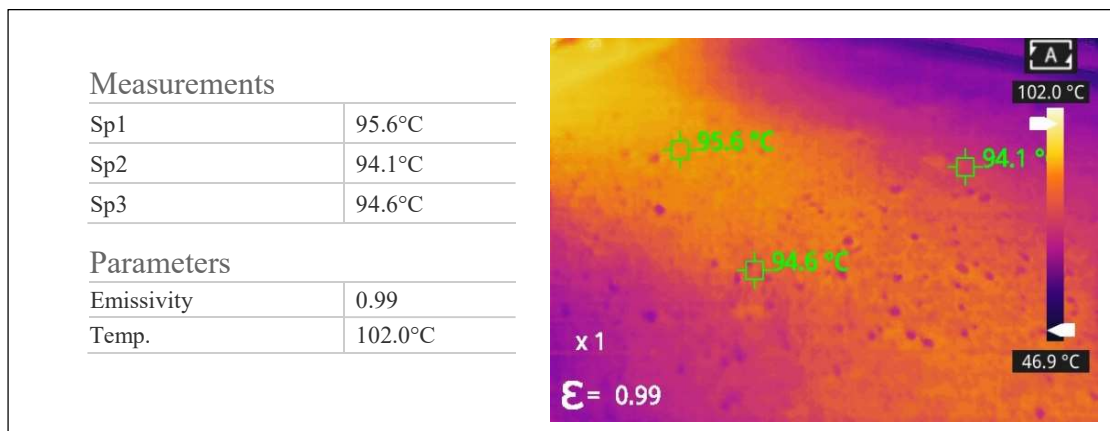
Trials 1

Initial Weight – 500g
Initial Moisture – 3.2%

Cycles	Cycle time (mins.)	Set temperature	On product Temperature	Remark
C1	20	80°C	(70-75) °C	Drying started
C2	30	80°C	(80-85) °C	Drying continuous
C3	40	80°C	(80-85) °C	Dried as desired

Final Weight – 308g
Final Moisture – 0.5%
Cycle Time – 40 mins.

Thermal Images:



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Images during trials:





Untreated Sample



Treated Sample

Moisture Analysis 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 : 1.954 g	Initial weight : 1.106 g
Final weight : 1.894 g	Final weight : 1.100 g
Drying time : 00:03:40s	Drying time : 00:01:40s
Sampling interval : 20 sec	Sampling interval : 20 sec
Moisture : 3.2 %	Moisture : 0.5 %
NOTE Initial moisture	NOTE Final moisture
The analysis performed by:	The analysis performed by:
Signature: 	Signature: 



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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)