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



Spray Drying Heat Treatment for

Drying of Hygro Solution

ISO 9001-2008 | ISO 9001-2015 | EMS 14001 | OHSAS 18001 In Association with SVCH-Technology, Moscow (Russia)

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Customer :	M/s. BEE CHEMS
Process :	Spray Drying Heat Treatment for Drying of Hygro solution

TEST REPORT No: 63/KRDC/LAB/59 Mum 19/04/2022

Date Sample reception	: 25/03/2022
ID	: 63/LAB/19

SAMPLE DESCRIPTION:

Sampling	: As Requested
Sample Condition	: Acceptable
Quantity	: 5kg
Sampling date	: 18/04/2022
Product	: Hygro Solution
Requirement	: Dried upto powder formation
Start Date test	: 18/04/2022
End Date test	: 18/04/2022

LABORATORY EXPERIMENTAL SET UP:



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LAB ELECTRIC SPRAY DRYING SYSTEM SPECIFICATIONS:

Drying chamber Installed Power	4.5 KW	
Drying chamber Heat Load	250°C maximum	
Pneumatic Air Pressure	6 bar	
Dossing pump	6-7 rpm min.	

ENVIRONMENT-LABORATORY AMBIENT CONDITIONS:

Temperature (degree C)	33°C (±5°C)	
Humidity (%)	≤65% RH	
Dehumidifier Set Parameters	Temp. 50°C & RH- 10.0%	
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 plant surrounding conditions.

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EQUIPMENTS USED:

Name of Equipment	Picture of Equipment	Specifications
Compact Thermal Imaging Camera		Model: FLIR E-30 Resolution: 160x 120 IR Thermal sensitivity of 0.10°C
Moisture Analyzer		Make: Axis Balance Description: Moisture range: 1%(sample 0.02/0.05g), 0.1% (Sample 0.5/5g), 0.01%(Sample>5g)
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 sample of Hygro solution to speed up the drying rate. For this experimental run, given sample has been treated in spray drying system under different setting parameters. The observations are made on the basis final moisture content and physical appearance of final powder.

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ANALYTICAL RESULTS:

Initial Moisture Content: 72.4 % Initial Weight: 630 g

Input Temperature (°C)	Cycle Mode	Dossing Pump (rpm)	Remark, if any
160	Continuous	4.4	Dried as desired

Time req. to reach 160°C: 20min. Total cycle time: 1 hour Final Moisture Content: 0.9% Final sample recovered: 35g

BEFORE AND AFTER TREATMENT PICTURES OF SPECIMEN SAMPLE:



Untreated



Treated

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MOISTURE ANALYSIS REPORT:

.?" Drying started	Drying started
Date :19-04-2022 Time :12:34:04 Model:AGS200 Serial number : 138 Drying paramet	Date :19-04-2022 Time :14:38:39 Model:AGS2D0 Serial number : 138 Drying parameters
Product	Product : 0
∶0 Drying temperature . 105.0 °C	Drying temperature : 105.0 °C
Drying profile : standard Mode : Short mode Calculation : ((mO-m)/mO)%100% Finished : camples	Drying profile : standard Mode : Short mode Calculation : ((mO-m)/mO)*100% Finished : time over
Initial weight : 2.364 g	Initial weight : 0.676 g
Final weight ; 0.652 g	Final weight : 0.670 g
Drying time : 00:56:20s Samoling interval : 20 sec	Drying time : 00:00:10s Sampling interval : 20 sec
Hoisture : 72.4 %	Moisture : 0.9 %
NOTE Initial Moisture	NOTE Final Moisture
The analysis performed by:	The analysis performed by:
Signature.	Signature
Section 1	

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OBSERVATION:

The drying behavior of Hygro Solution has been investigated under the Spray drying system. It has been found that the moisture content on the dry basis (%) decreases with respect to increase in input heating & dwell time. As per physical investigation, the solution become white coloured fine powder on drying. And the desired moisture content is obtained.

Tested By, Ms. Sayali Asole

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