Date

Expt. No. 8

Page No. 36

Aim :-

To determine the construction of drying curve for calcium carbonate.

Reference :

Khan and Vyas "Industrial Pharmacy" CBS Publication and distributors, 4th edition, Page No⇒ 39.

Requirement : →

Apparatus :- Petridish, Hot air oven, Weighing balance, Spatula.

Chemicals :- Calcium carbonate.

Principle :-

The behaviour of drying of solid is experienced by drying curve. The time required for drying a batch of weight of material in a dry air oven can be estimated with the help of drying curve. Drying is a mass transfer process consists of the removal of water or other solvent by evaporations from a solid, semisolid, liquid. This process is obtained used as final production steps before, packing products.

Teacher's Signature

Observation and Calculation

$W_1 = 17$, $W_2 = 20$, $W_3 = 24$

* **At 0 minute :-**

% moisture content $= \frac{W_3 - W_2}{W_3 - W_1} \times 100$

$= \frac{24 - 20}{24 - 17} \times 100$

$= \frac{4}{7} \times 100 = 57.14\%$

* **After 15 minute :-** There is no change in the weight of slurry $W_3 = 24$ gm.

% moisture content $= \frac{24 - 20}{24 - 17} \times 100$

$= \frac{4}{7} \times 100 = 57.14\%$

* **After 30 minute :-** The weight of slurry is equal to W_2 & $W_3 = 20$.

$= \frac{20 - 20}{20 - 17} \times 100$ & $\frac{0}{3} \times 100 = 0\%$

Avg moisture content :=

$= \frac{57.14 + 57.14 + 0}{3}$

$= \frac{114.28}{3} = 38.9\%$

Date

Expt. No. 08

Page No. 37

Theory:

Calcium carbonate is the active ingredient in agricultural lime and is created when ~~the~~ calcium ions in hard water react with carbonate ions to create limescale.

Procedure:

i) Take a clean petridish without lid and consider its weight as "W_1 gm".

ii) Note the area of petridish

iii) Take 10gm calcium carbonate in a clean petridish and consider its weight as "W_2 gm".

iv) Prepare slurry by adding water consider it's weight as "W_3 gram".

v) Heat petridish in hot air oven at temperature 70°c.

vi) Note down the weight of sample after every 15 minutes.

vii) Continue drying until there is no change in weight of the sample is obtained.

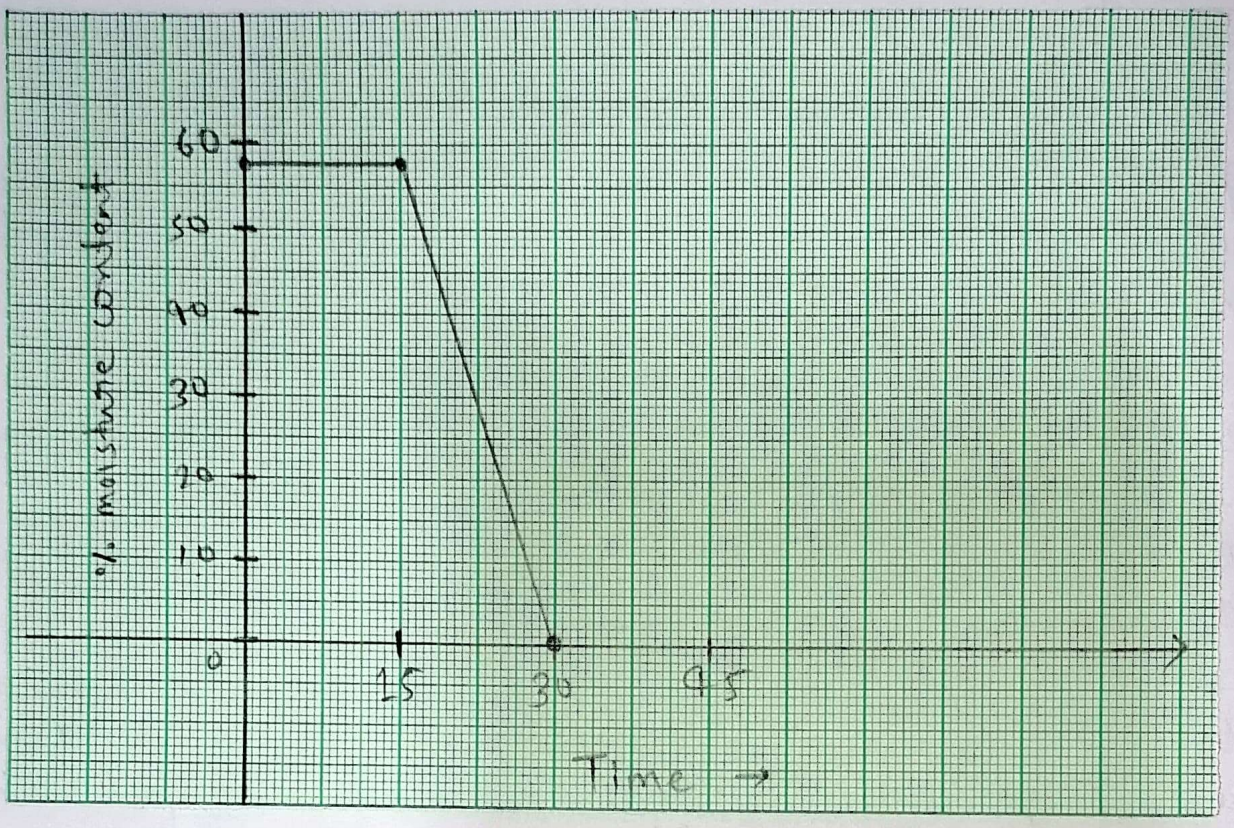
viii) Determine percentage moisture content and drying rate by using following formula.

$$\text{Percentage moisture} = \frac{W_3 - W_2}{W_3 - W_1} \times 100.$$

Result:

The percentage moisture content are determine to be 38.9%.

Teacher's Signature


% moisture content
60
50
40
30
20
10
0
15
30
45
Time →