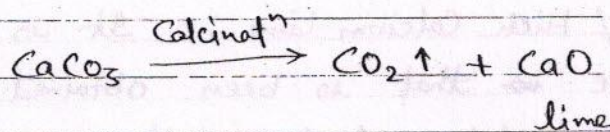


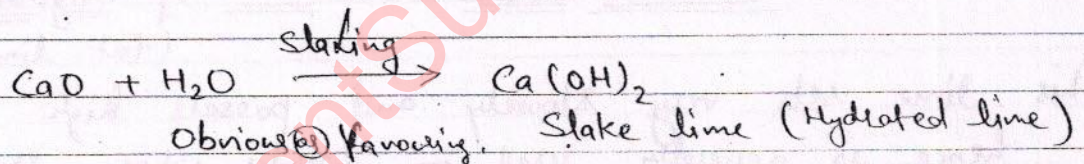
\therefore Lime :-

It's produced from it's calcination of it's ore calcium carbonate {lime stone}.

Calcination is the process in which Calcium Carbonate is heated upto redness resulting in loss of CO_2 and moisture from it and leading to the formatⁿ of lime.



- Lime is which is produced from relatively pure lime stone is termed as quicklime. \downarrow (90 to 95%)



Quicklime has very high affinity for water hence reacts with it vigorously resulting in formatⁿ of Slaked lime or hydrated lime.

- Slaking is the process in which quicklime reacts with water, swell, cracks and falls out as Calcium Hydroxide.
- Slake lime should be used as fresh as avail possible as it has very high affinity to CO_2 .

Hence reacts with it (CO_2) and results in formatⁿ of precipitate of Calcium carbonate.



- On the basis of %age purity lime may be further divided into 3 :-

(1) Fat / white / Pure / Rich / High Calcium lime :- It is the type of lime that is been obtained from relatively pure limestone (%age purity - 90 to 95%) or clay content is approximately 5 to 10 %.

(i) This lime slakes vigorously and its vol^m is increased to about 2 to 2.5 times the Vol^m of Original lime.
(Fat lime)

(ii) This lime sets very slowly and possesses high plasticity hence is generally used in works where strength is req^d.

(iii) This lime possesses pure white colour hence is generally used for finishing works. (Plastering & White washing)

is (2.) Hydraulic / Water lime :- (i) It is the type of lime that is been obtained from relatively impure limestone (% purity \rightarrow 90 to 70 %) or clay content (10 to 30 %)

(ii) This lime is capable of setting under water or in damp condⁿ where there is no free circulatⁿ of air

this property of lime is referred as "Hydraulicity"

(iii) It takes comparatively lesser time for setting and possesses higher strength hence is generally used for work where strength is desired. { Masonary work }

(iv) The colour of this lime is ^{not} perfectly white hence it is not generally used for finishing work.

(3.) Poor / Impure / Lean lime :- It is the type of lime which is produced from the limestone having high %age of impurity ($> 30\%$ Clay Content) ($\% \text{purity} < 70\%$)

(i) This lime doesn't slake, sets very slowly possesses poor binding property and muddy white colour hence is generally used for inferior quality work. (Brickwork around the foundation)

→ Constituents of lime :- (1) Clay :- It imparts hydraulicity in lime and makes it insoluble in water. If it is in excess it retards slaking and if it is in deficiency it arrests slaking. For good lime clay content should be in range of 8 to 30%

(2) Soluble Silicates :- Silicates in the form calcium, magnesium and aluminium also impart hydraulicity to the lime.

(3) Magnesium Carbonate :- (i) Presence of Mg^{++} Carbonate in lime allows it to slake and set slowly

(4) Sulphates :- (i) Presence of Sulphate in small qty in lime retards slaking and accelerates the setting of lime.

Mg^{++} \leftarrow opposite \rightarrow Sulphate

Functions of lime :- (i) It is used for finishing works like plastering and white washing.

(ii) Used in Masonry work.

(iii) For the stabilization of soil.

(iv) For manufacturing of Glass.

(v) It is used as a flux in metallurgical operations.