

## Hydrated Lime

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### Introduction

Hydrated lime is a dry powder obtained by treating quick lime with water enough to satisfy its chemical affinity for water under the conditions of hydration. It consists essentially of calcium hydroxide and some magnesium hydroxide.

### Prospects of Industry

Hydrated lime is used for neutralization, coagulation, causticization, dehydration, hydrogenation and absorption. The present existing manufacturing capacity in the country is not sufficient to meet the growing demand of hydrated lime in construction alone. Hence to start few new plants of hydrated lime is needed in the country at every corner.

### Properties

Formula	Ca (OH) <sub>2</sub>
Mol. weight	74.10
Density	2.2 gm/c.c.
Decomposition temp.	580°C.

### Uses and Applications

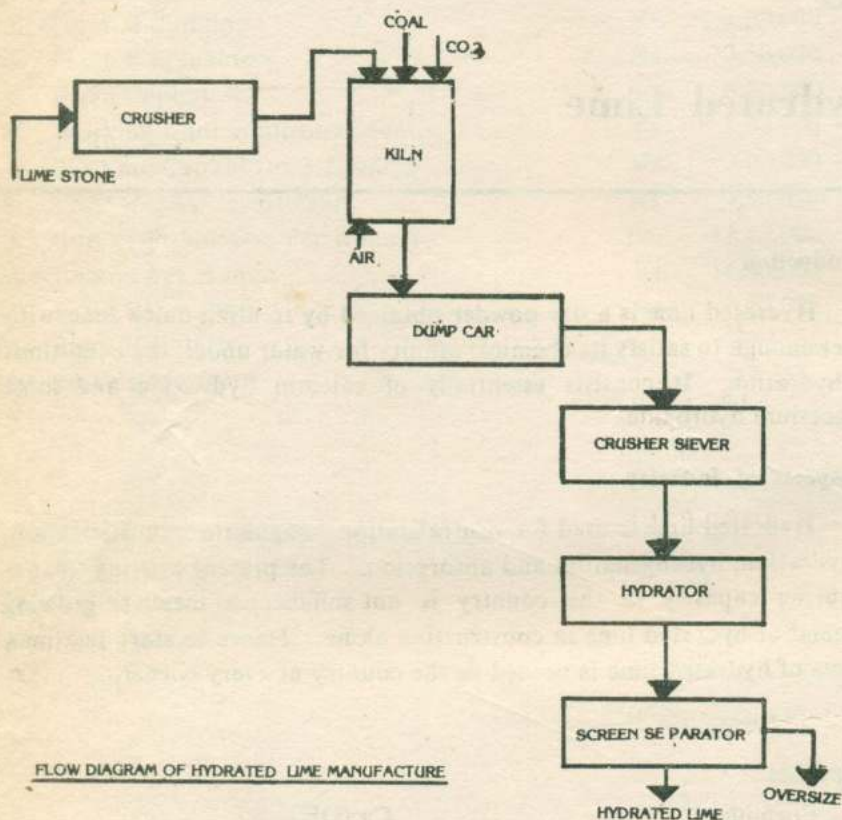
Hydrated lime is used in mortar, plasters, cement-lime paints, medicines and in agriculture to sweeten the acid soil. Hydrated lime is also used in curing of leather, in paper and pulp industry.

Hydrated lime finds its application in metallurgy as flux, in specialized lubricants as a bonding agent, as a filler in refractory.

### Grades of Hydrated Lime

Depending upon the quick lime of following grades :

1. High calcium quick lime contains more than 90% CaO.
2. Low magnesium quick lime contains 5-25% MgO.
3. Dolomitic quick lime contains 25-40% MgO.



### List of Plant & Machinery

1. Jaw crusher
2. Lime kiln with accessories
3. Hydrator
4. Ball mill
5. Classifier
6. Storage tank, pumps
7. Misc. & others
8. Installation & erection

### Process of Manufacture

The process can be grouped into following operations :

1. Breaking of lime stone and coal
2. Calcization of limestone
3. Separation of quick lime lumps
4. Grinding of quick lime lumps
5. Hydration
6. Pulverizing
7. Packing

First three steps relates to the production of quick lime from limestone. The limestone and coal, after breaking to small uniform size, is charged into vertical shaft kiln and is fired inside to complete calcination. It takes 48-72 hours to calcine the limestone. The quick lime so produced is collected, ground and charged to a hydrator where calculated amount of water is added to complete the hydration. The hydrated lime is finally pulverized and packed.

### COST ANALYSIS

#### BASIS : 5 M.T. Hydrated Lime Per Day

1. Covered Area Required		500 sq. m.
2. Number of Employees		17
3. Land & Building	Rs.	4,30,000
4. Plant & Machinery	Rs.	4,00,000
5. Fixed Capital	Rs.	8,30,000
6. Working Capital for one Month	Rs.	87,000
7. Working Capital for 3 Months	Rs.	2,61,000
8. Total Capital Investment	Rs.	10,91,000
9. Cost of Production Per Annum	Rs.	12,80,000
10. Receipt Per Annum	Rs.	17,60,000
11. Profit Per Annum	Rs.	4,80,000
12. Rate of Return		43.99%
13. Break Even Point		44.9%