



Marketing Report on Project to manufacture  
Hydrated Lime & Precipitated Calcium Carbonate

*Report submitted on 27 October, 2004 by:*

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## 1. Scope of Marketing Report

The objective of this study was to examine whether there are adequate opportunities of business for a new entrant manufacturing Hydrated Lime and Precipitated Calcium Carbonate in India. To address it, the Client desired that the following aspects be considered:

To find the number of manufacturers of Hydrated Lime and Precipitated Calcium Carbonate in India.

To derive the market demand in India in general, and in Western Region in particular.

To find the Demand-Supply gap if any.

To highlight the various types of process technology used in India.

## 2. Methodology

Industries using substantial amount of Hydrated Lime and Precipitated Calcium Carbonate were listed. Their production during the 2003-04 was considered. However for many user-industries, that data was not available as in October, 2004. Hence for such industries, past production pattern was studied and Compound Annual Growth Rate was calculated. CAGR was used for estimating the production for 2003-04.

Production patterns for the various user industries can be referred under Annexure I. Current Production data is summarised in Table A along with respective CAGR and assumptions wherever applicable.

**Table A**  
**Current Production of Industries using Hydrated Lime**  
**and Precipitated Calcium Carbonate**

<b>Sr. No.</b>	<b>Industry</b>	<b>Current Production in Tonnes</b>	<b>Basis of Forecast</b>
1	Crude oil	3,33,80,000	Economic Survey 2003-2004
2	Drugs & Pharmaceuticals	1,14,600	Forecast @ CAGR=7.4% Assumed price = Rs. 30,00,000 / Tonne
3	Ferro Alloys	21,36,900	Forecast @ CAGR=7.3%
4	Glass	8,32,400	Forecast @ CAGR=4.6% Assumed price = Rs. 34,000 / Tonne
5	Industrial Explosives	4,16,300	Forecast @ CAGR=1.4% Assumed price = Rs. 21,500 / Tonne
6	Paints & Varnishes	6,50,000	Forecast @ CAGR=2.7%
7	Paper	54,48,700	Forecast @ CAGR=4.0%
8	Pesticides	2,44,800	Forecast @ CAGR=8.0% Assumed price = Rs. 3,00,000 / Tonne
9	PVC (Plastics)	9,54,200	Forecast @ CAGR=5.8%
10	Printing Inks	1,05,800	Forecast @ CAGR=18.1% Assumed price = Rs. 1,20,000 / Tonne
11	Rubber	7,44,500	Forecast @ CAGR=2.1%
12	Steel	1,51,93,000	Economic Survey 2003-2004
13	Sugar	170,00,000	CRIS IL website. <a href="http://www.crisil.com/futuretense_cs/CrisilPic/images1/InfacSug/Sug_POP.html">http://www.crisil.com/futuretense_cs/CrisilPic/images1/InfacSug/Sug_POP.html</a>
14	Synthetic Detergents	21,36,900	Forecast @ CAGR=7.3%
15	Toothpaste	84,400	Forecast @ CAGR=6.0% Assumed price = Rs. 2,40,000 / Tonne
16	Wines, Spirits & Liquors	15,600 kLitre	Forecast @ CAGR=18.5%

Quantity of products under survey that was normally used in the manufacture of one Metric Tonne of the final product was quantified from discussions with knowledgeable people in user-industries.

### 3. Demand Forecast

#### **3.1 Requirement of Hydrated Lime**

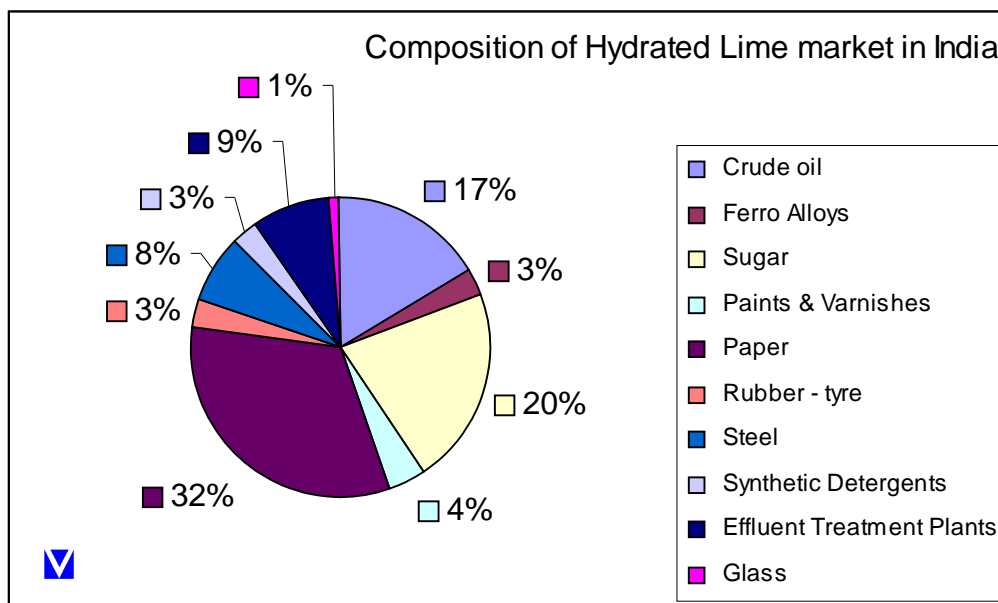
The Annual Production of each major user was multiplied with the amount of Hydrated Lime used in the production of one tonne of its finished product as shown against Sr. No. 1 to 9 in Table B.

In addition, Hydrated Lime is also widely used in treating industrial effluents. In the absence of All-India data, we worked it backwards from information that we could collect for industries in Gujarat as explained under Annexure II. Accordingly, we estimate a demand of 1,74,000 TPA generated from the ETP application as shown against Sr. No. 10 in Table B.

**Table B**  
**Demand Forecast for Hydrated Lime in India**

	User-Industry	Annual Production (Tonne)	Industry Norm (kg/Tonne)	Total Reqmt of Hydrated Lime (Tonne)
1	Crude oil	3,33,80,000	10	3,33,800
2	Ferro Alloys	21,36,900	25	53,423
3	Glass	8,32,400	25	20,810
4	Paints & Varnishes	6,50,000	120	78,000
5	Paper	54,48,700	120	6,53,844
6	Rubber - tyre	4,96,300	120	59,556
7	Steel	1,51,93,000	10	1,51,930
8	Sugar	1,70,00,000	25	4,25,000
9	Synthetic Detergents	21,36,900	25	53,423
10	Effluent Treatment Plants	-	-	1,74,000
	<b>Grand Total</b>			<b>20,03,786</b>

**Chart 1**



20% of this demand would come from the Western Region, as derived from data provided by CMIE and state governments. Details are given in Table C.

**Table C**  
**Demand Forecast for Hydrated Lime in Western Region**

	User-Industry	All-India Demand (Tonne)	Share of Western Region (%)	Western Region Demand (Tonne)
1	Crude oil	3,33,800	33	1,10,154
2	Ferro Alloys	53,423	10	5,342
3	Glass	20,810	3	624
4	Paints & Varnishes	78,000	53	41,340
5	Paper	6,53,844	15	98,076
6	Rubber - tyre	59,556	10	5,956
7	Steel	1,51,930	8	12,154
8	Sugar	4,25,000	15	63,750
9	Synthetic Detergents	53,423	45	24,040
10	Effluent Treatment Plants	1,74,000	-	43,500
	<b>Grand Total</b>	<b>20,03,786</b>		<b>4,04,936</b>

Demand in Western Region as a percentage of All-India = 20%

Assumptions: In absence of data, share % is assumed for Ferro Alloys and Rubber sectors.

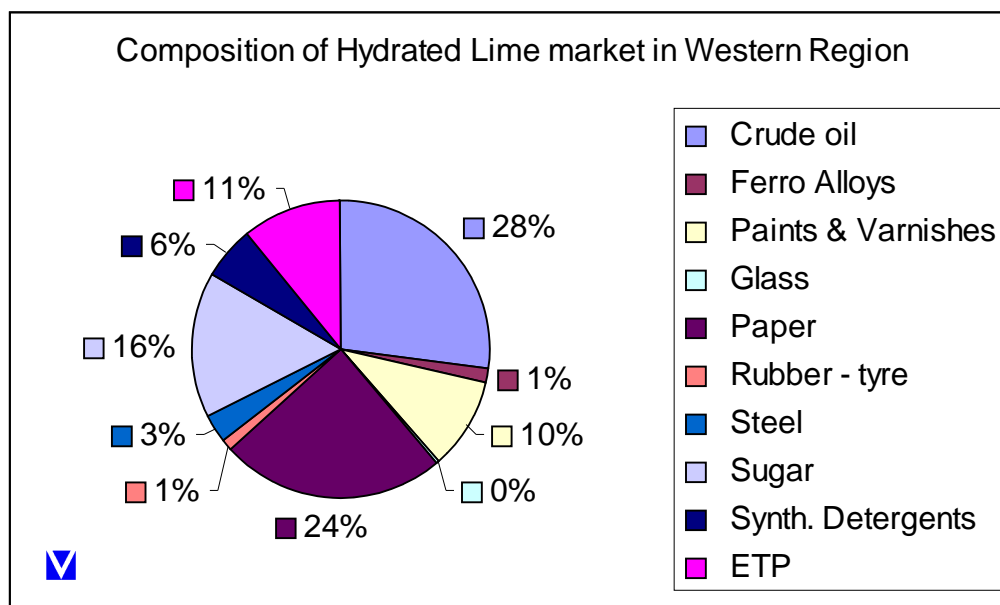
Source:

For Paper: Estimate is based on Gujarat in All-India production = 6.66% as provided by the Government of Gujarat web-site <http://imd-gujarat.gswan.gov.in/statistics/table-23.htm>

For Sugar: Estimate is based on Gujarat in All-India production = 6.25% as provided by the Government of Gujarat web site mentioned above.

Relative importance of various user-industries for marketing Hydrated Lime in the Western Sector can be visualized in Chart 1.

**Chart 2**



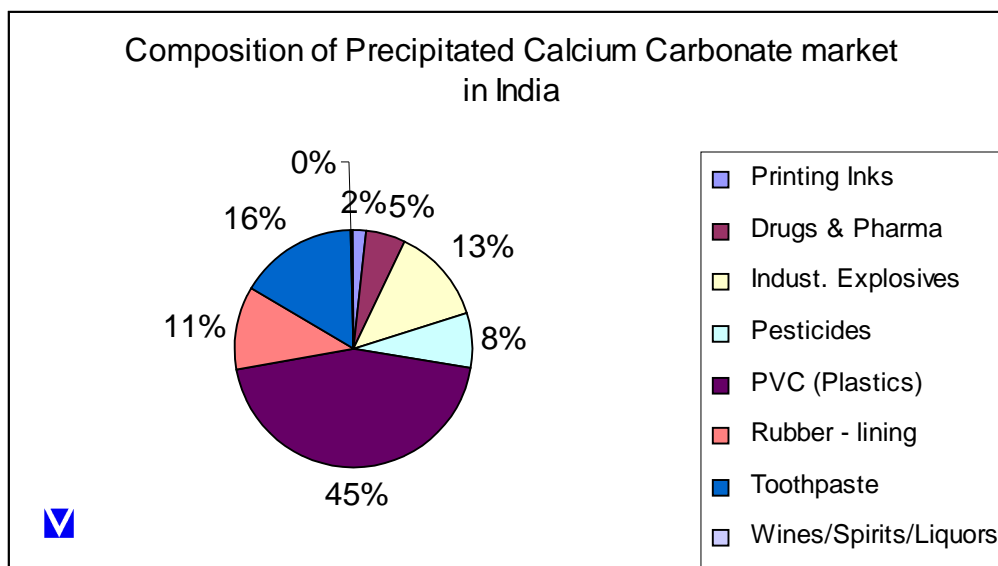
### 3.2 Requirement of Precipitated Calcium Carbonate

Similarly All-India Demand for Precipitated Calcium Carbonate was found to be 2,60,000 as summarised in Table D.

**Table D**  
**Demand Forecast for Precipitated Calcium Carbonate in India**

	User-Industry	Annual Production (Tonne)	Industry Norm (kg/Tonne)	Total Reqmt of PCC (Tonne)
1	Drugs & Pharmaceuticals	1,14,600	120	13,752
2	Industrial Explosives	4,16,300	80	33,304
3	Pesticides	2,44,800	80	19,584
4	PVC (Plastics)	9,54,200	120	1,14,504
5	Printing Inks	1,05,800	50	5,290
6	Rubber - lining	2,48,200	120	29,784
7	Toothpaste	84,400	500	42,200
8	Wines, Spirits & Liquors (kLitre)	15,600	50	780
	<b>Grand Total</b>			<b>2,59,198</b>

**Chart 3**



50% of this demand would come from the Western Region, as derived from data provided by CMIE and state governments. Details are given in Table E.

**Table E**  
**Demand Forecast for Precipitated Calcium Carbonate in Western Region**

	User-Industry	All-India Demand (Tonne)	Share of Western Region (%)	Western Region Demand (Tonne)
1	Drugs & Pharmaceuticals	13,752	40	5,501
2	Industrial Explosives	33,304	10	3,330
3	Pesticides	19,584	20	3,917
4	PVC (Plastics)	1,14,504	80	91,603
5	Printing Inks	5,290	6	317
6	Rubber - lining	29,784	10	2,978
7	Toothpaste	42,200	50	21,100
8	Wines, Spirits & Liquors (kLitre)	780	20	156
	<b>Grand Total</b>	<b>2,59,198</b>		<b>1,28,902</b>

Demand in Western Region as a percentage of All-India = 50%

Assumptions:

In absence of data, share % is assumed for Industrial Explosives, Rubber and Toothpaste sectors.

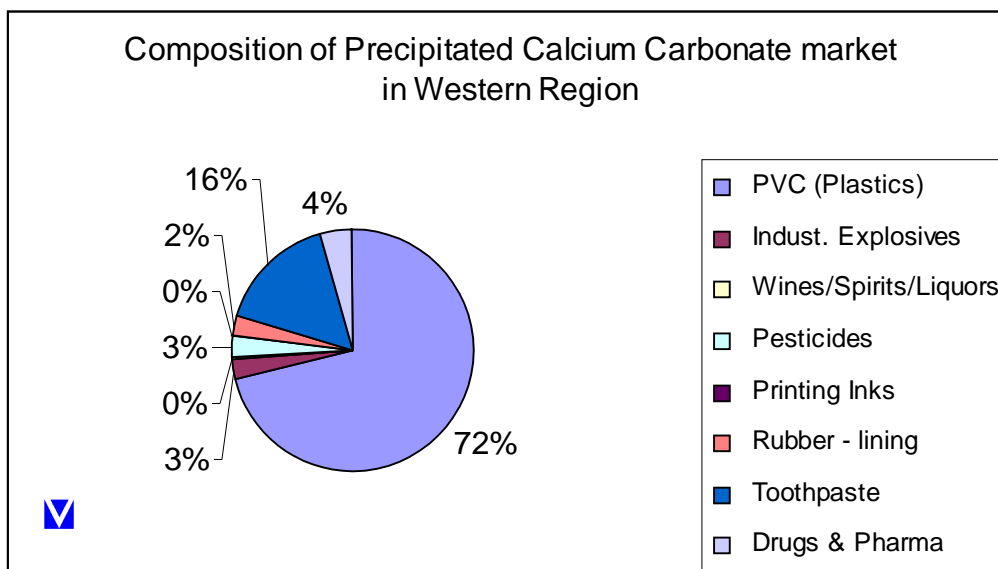
Source:

For Drugs & Pharma: Food & Drugs Control Administration web-site:

<http://www.gujhealth.gov.in/FDCA/salient.htm>

Relative importance of various user-industries for marketing Precipitated Calcium Carbonate in the Western Sector can be visualized in Chart 2.

**Chart 4**



## 4. Competition and Supply Status

### 4.1 Hydrated Lime Industry in India

Five units manufacture Hydrated Lime in the Organised Sector as listed in Table F. Each is having production capacity of 60,000 TPA, thus totalling to 3,00,000 Tonnes per annum.

**Table F**  
**Major manufacturers of Hydrated Lime**

	<b>Competitor</b>	<b>Location</b>
1	Hindustan Mineral Products Co. Ltd. <i><a href="http://www.hmpindia.com/prod_hydlime.htm">http://www.hmpindia.com/prod_hydlime.htm</a></i>	Maharashtra
2	Sankhla Brothers 60,000 TPA <i><a href="http://www.sankhla.com/index.html">http://www.sankhla.com/index.html</a></i>	Rajasthan
3	Shubh Lakshmi Minerals Pvt. Ltd. 60,000 TPA	”
4	Sigma Minerals Ltd. 200 TPD i.e. 60,000 TPA <i><a href="http://www.sigminerals.com/">http://www.sigminerals.com/</a></i>	”
5	Mag Excel Exports Pvt. Ltd. <i><a href="http://www.magexcel.com/products_mee_main.htm">http://www.magexcel.com/products_mee_main.htm</a></i>	Tamil Nadu

Source: Jodhpur Industries Association website:  
<http://www.jiaonline.org/showcategory.as?catid=9>

In addition, there are 32 units in the Small-scale sector as listed in Table G. Normally small units have a capacity of 15,000 TPA in this industry, thus totalling to 4,80,000 tonnes Hydrated Lime per annum.

**Table G**  
**Small-scale manufacturers of Hydrated Lime**

	<b>Competitor</b>	<b>Location</b>
1	Aditya Chemicals	Rajasthan
2	Ankur Minerals Pvt. Ltd. 22,500 TPA <i>http://www.ankurminerals.com/</i>	”
3	Bagawas Chemical Industries	”
4	Banzara Lime Products	”
5	Bera Chemical & Minerals	”
6	Carbonate Corporation (Ankur Group) 15,000 TPA	”
7	Chandora Lime Industries	”
8	Chemical & Mineral Industries Pvt. Ltd. <i>http://www.cmipl.com/</i>	”
9	Garima Calcium Products Pvt. Ltd. 18,000 TPA Turnover Rs. 1.5 Cr.(1999-2000) <i>http://www.garimachemical.com/</i>	”
10	Gotan Limes Pvt. Ltd.	”
11	Jodhpur Lime Co.	”
12	Latiyal Lime & Chemical Industries	”
13	Lohia Mine-Chem Pvt. Ltd.	”
14	Maa Kirpa Agro Product Pvt. Ltd.	”
15	Mahadev Lime Products	”
16	Mahesh Lime Pvt. Ltd.	”
17	Marlborough Polychem Pvt. Ltd	”
18	Marwar Industries	”
19	Mayur Minerals	”
20	Modi Minerals Pvt. Ltd. 15,000 TPA	”
21	Om Industries	”
22	Raghav Lime Industries	”
23	Ransi Mineral Pvt. Ltd.	”
24	Shivam Chemical	”
25	Shree Chemicals & Minerals	”
26	Shree Sidhi Lime Pvt. Ltd.	”
27	Shri Lime Industries	”
28	Shri Ram Lime Products Pvt. Ltd.	”
29	Shrikant Minerals Pvt. Ltd.	”
30	Suraj Lime Co.	”
31	Uttam Chuna Patthar Udyog	”
32	White ‘N’ White Mineral Pvt. Ltd. 3,000 Tonne per month capacity, i.e. 36,000 TPA <i>http://www.indiabizclub.com/qxzpmd/?q=q9w;q4axgi5ox1ax56qrt</i>	”

Source:

1. Business Infotech Pvt. Ltd. Website: <http://www.indiabizclub.com/qxzppfs/?q=yut;3088;H;;0>
2. Reed Business Information website: <http://www.kellysearch.com/in-product-13483.html>

It is understood that manufacturing Hydrated Lime is a sort of ‘cottage’ industry. It appears that there are 100 to 150 tiny units of 10 to 20 TPD (i.e.3,000 to 6,000 TPA) capacity in addition to the above and they manufacture low quality of Hydrated Lime that nevertheless addresses indifferent as well as urgent demand through strong established agents located in industrial centres. We estimate their contribution to be around 5,62,500 TPA.

Not finding indication of any imports, we believe that the Total Supply of Hydrated Lime is around 13,42,500 Tonnes per annum. Considering the Total Demand of 20,03,800 TPA, a gap of 6,61,300 TPA is identified.

## 4.2 Precipitated Calcium Carbonate Industry in India

Four units manufacture Precipitated Calcium Carbonate in the organised sector. Their annual production is estimated to be about 1,40,000 Tonnes valued Rs. 120 Crore. Citurgia Biochemicals Ltd. suspended operations of its PCC plant in Uttaranchal in 2003. The management said that “over-supply position of the market resulted in lower sales and severe pressure in price”. Lime Chemicals Ltd. having PCC plants in Maharashtra and Himachal Pradesh, operated at a loss earlier but made a turn-around in 2003 and hoped to regain its market share steadily. Gulshan Chemfill Ltd. with a PCC plant in Uttar Pradesh appeared to be just surviving, but its sister concern Gulshan Sugars & Chemicals Ltd. with similar facilities is doing well. It was reported to be installing a co-generation power plant for uninterrupted production.

Thus the Organised Sector presented a mixed picture of failure and success, indicating that cost-effective operations remained viable in spite of the selling price of PCC experiencing downward pressure in the market for several years now. Details are given in Table H.

**Table H**  
**Production of major manufacturers of Precipitated Calcium Carbonate**

	Competitor	Units	1998-99	1999-2000	2000-01	2001-02	2002-03	2003-04
1	Lime Chemicals Ltd	Tonne	Not avail.	47,380	50,183	49,823	50,705	55,000 (Prov)
		Rs.Cr.	44.31	44.09	45.57	43.52	41.39	Not available
2	Citurgia Bio-chemicals Ltd.	Tonne	Not avail.	Not avail.	34,842	31,632	24,327	2,050 Suspended Ops.
		Rs.Cr.	39.44	33.57	32.57	29.98	22.87	1.08
3	Gulshan Chemfill Ltd.	Tonne	--	--	9,425	9,010	Not avail.	Not available
		Rs.Cr.	--	--	6.34	5.93		
4	Gulshan Sugars & Chem. Ltd.	Tonne	Not avail.	45,241	36,872	45,256	53,566	Not available
		Rs.Cr.	46.27	41.68	34.53	40.46	46.06	
5	U.P. Limechem	Tonne	Not avail.	Suspended operations				
		Rs.Cr.	1.85					
6	Calchem Indust. (India)	Tonne	Not avail.	Not avail.	Not avail.	Not available		
		Rs.Cr.	21.77	23.72	23.72			

Source: 1. CMIE, July 2004 report 2. Annual Reports against Sr. No. 1 to 4

In absence of quantity manufactured by Calchem Industries, it is estimated based on comparable unit price to be about 25,000 Tonnes. While Rashtriya Chemicals & Fertilisers Ltd. in Maharashtra ( <http://www.rcfltd.com> ) markets Calcium Carbonate, it appears to be more like a by-product rather than specially manufactured PCC. Thus the contribution of the major manufacturers is estimated at 1,42,500 TPA.

Five units manufacture Precipitated Calcium Carbonate in the Small-scale sector as listed in Table J. From CMIE inputs, we project their contribution to be about Rs. 20 Crore at a price of around Rs. 6,500/- per Tonne. Accordingly, we estimate the annual production of PCC at 30,000 TPA in the Small-scale sector.

**Table J**  
**Small-scale manufacturers of Precipitated Calcium Carbonate**

Sr. No.	Competitor in Small-scale	Location
1	New Indiachromium Chemical Trust	Gujarat
2	Saurashtra Solid Industries Pvt. Ltd. <a href="http://www.saurashtrasolid.com/calciumcarbo.htm">http://www.saurashtrasolid.com/calciumcarbo.htm</a>	”
3	Famous Minerals & Chemicals Ltd. <a href="http://www.famousminerals.com">http://www.famousminerals.com</a>	Maharashtra
4	Chemical & Mineral Industries Pvt. Ltd. <a href="http://www.cmipl.com/">http://www.cmipl.com/</a>	Rajasthan
5	Shubh Lakshmi Minerals Pvt. Ltd.	”

Every year about 20,000 Tonnes of Calcium Carbonate are imported as indicated in Table K.

**Table K**  
**Imports of Calcium Carbonate**

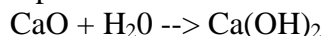
Sr. No	Year	Quantity Tonne	Value Rs. Crore
1	1997-98	17,528	15.3
2	1998-99	17,125	19.8
3	1999-2000	16,305	14.2
4	2000-01	21,900	16.5
5	2001-02	15,778	12.7
6	2002-03	20,429	17.1

Source: CMIE, July 2004 report

Thus the Imports and the Production of Precipitated Calcium Carbonate adds to a total supply of 1,92,500 Tonnes per annum. When compared to the Demand Forecast of 2,59,200 Tonnes, we find a Demand-Supply gap of 66,700 Tonnes per annum.

## 5. Process Technology

Hydrated Lime is Calcium Hydroxide i.e.  $\text{Ca(OH)}_2$ . Limestone is manufactured by calcination of limestone containing high percentage of Calcium Carbonate and low impurities such as Magnesia, Silica and Iron. It is treated with water under controlled conditions until the Calcium Oxide portion is converted to Calcium Hydroxide.



For manufacturing Precipitated Calcium Carbonate, the basic raw material is Hydrated Lime. It is slacked to produce Lime Slurry, which is further carbonated into Precipitated Calcium Carbonate in controlled conditions.

There are two types of calcination kilns, Vertical Shaft Kiln and Rotary Kiln. The former costs about one-fifth of the cost of the latter, it wastes 30 to 35% material in process and the end product is of average quality. On the other hand, the Rotary Kiln costs about Rs. 1.5 Crore, thus putting a heavy load on capital investment. However, its efficient operation enables the manufacturer to produce products of very high quality for which he can get premium from discerning buyers. Thus the Rotary Kiln offers more favourable pay-back period and long-term business opportunity.

## 6. Conclusion

From the above analysis, our findings are as under:

### Hydrated Lime:

Demand	=	20,03,800 Tonnes per annum	
Supply	=	13,42,500	”
Gap	=	6,61,300	”

### Precipitated Calcium Carbonate:

Demand	=	2,59,200 Tonnes per annum	
Supply	=	1,92,500	”
Gap	=	66,700	”

We believe there is adequate market potential to justify the feasibility of new entrants who are able to provide excellent quality of products in this sector. A couple of major manufacturers closed down in the past apparently due to their failure to deliver high quality product, in which case they were competing with small and tiny sectors whose overheads are much less.

## Annexure I

## Production of User Industries

Year	Crude oil	Drugs & Pharma.	Ferro-Alloys	Glass	Industrial Explosives	Paints & Varnishes
V	Tonnes	Rs. Crore	Tonnes	Rs. Crore	Rs. Crore	Tonnes
1997-98	Not available	22,390 (b)	13,99,696 (b)	2,163 (b)	822 (b)	4,83,869 (b)
1998-99	"	26,000 "	15,86,838 "	2,645 "	822 "	5,69,832 "
1999-2000	"	27,700 "	19,34,883 "	2,810 "	890 "	6,33,222 "
2000-01	3,24,30,000 (a)	30,000 "	23,41,497 "	2,651 "	919 "	7,19,045 "
2001-02	3,20,30,000 "	31,000 "	22,58,159 "	2,700 "	928 "	6,45,020 "
2002-03	3,30,40,000 "	32,000 "	19,91,544 "	2,700 "	883 "	6,37,202 "
2003-04	3,33,80,000 "	34,370 (c.)	21,36,900 (d)	2,830 (e)	895 (f)	6,50,000 (g)

Year	Paper	Pesticides	PVC (Plastics)	Printing Inks	Rubber	Steel
V	Tonnes	Rs. Crore	Tonnes	Rs. Crore	Tonnes	Tonnes
1997-98	42,93,870 (b)	4,629 (b)	6,79,490 (b)	468 (b)	6,56,300 (s)	Not available
1998-99	44,50,377 "	6,302 "	7,25,367 "	601 "	6,72,283 "	"
1999-2000	50,88,998 "	6,747 "	7,68,700 "	664 "	6,82,717 "	"
2000-01	48,33,665 "	6,662 "	8,21,463 "	887 "	6,95,686 "	1,24,90,000 (a)
2001-02	49,50,302 "	7,240 "	9,22,715 "	1,114 "	7,00,221 "	1,30,50,000 "
2002-03	52,39,181 "	6,799 "	9,01,866 "	1,075 "	7,29,146 "	1,43,80,000 "
2003-04	54,48,700 (h)	7,344 (k)	9,54,200 (m)	1,270 (n)	7,44,458 (u)	1,51,93,000 "

Year	Sugar	Synthetic Detergents	Toothpaste	Wines & Spirits
V	Tonnes	Tonnes	Rs. Crore	kLitres
1997-98	1,32,50,000 (b)	13,99,696 (b)	Not available	5,633 (b)
1998-99	1,42,31,300 "	15,86,838 "	"	7,958 "
1999-2000	1,74,70,000 "	19,34,883 "	1,700 (y)	7,300 "
2000-01	1,96,07,800 "	23,41,497 "	1,802 (z)	10,721 "
2001-02	1,87,00,700 "	22,58,159 "	1,910 "	10,426 "
2002-03	1,89,77,000 "	19,91,544 "	2,025 "	13,185 "
2003-04	1,70,00,000 (w)	21,36,900 (x)	2,146 "	15,624 #

## Source:

(a) Economic Survey 2003-2004

Ministry of Finance, Government of India

(b) CMIE, July 2004 report

(c.) Estimated @ CAGR = 7.4%

(d) Estimated @ CAGR = 7.3%

(e) Estimated @ CAGR = 4.6%

(f) Estimated @ CAGR = 1.4%

(g) UK Trade &amp; Investment web-site

<http://www.tradepartners.gov.uk/chemicals/india/profile/overview.shtml>

(h) Estimated @ CAGR = 4.0%

(k) Estimated @ CAGR = 8.0%

(m) Estimated @ CAGR = 5.8%

(n) Estimated @ CAGR = 18.1%

(s) IndiaInfoline.com web-site

<http://www.indiainfoline.com/sect/>

(u) Estimated @ CAGR = 2.1%

(w) Estimated by Indian Sugar Mills Association -

<http://www.indiansugar.com/sugarstn.htm>

(x) Estimated @ CAGR = 7.3%

(y) Dental Care, 2001

Economic Times Intelligence Group

(z) Projected at 5 to 7% CAGR as mentioned in

Dental Care, 2001. ET Intelligence Group

# Estimated @ CAGR = 18.5%

## Annexure II

### Demand estimate of Hydrated Lime used by Effluent Treatment Plants

According to Gujarat Pollution Control Board ( [http://www.gpcb.gov.in/ro\\_bharuch.asp](http://www.gpcb.gov.in/ro_bharuch.asp) ), the Common Effluent Treatment Plant Facility at Ankleshwar has a capacity to process 1,000 cu. m. effluents per day. It has installed lime storage tank of length = 3.5m, breadth = 2.5m and depth = 1.1m. Thus its volume is calculated to be 9.625 cu.m. Normally, lime storage tanks are designed to address monthly requirements.

Therefore (9.625 x 12) cu.m. = 115 cu.m. is used per annum. 1 cu.m. of Hydrated Lime weighs more than 1 Tonne. Therefore we consider that 115 Tonne Hydrated Lime is used per annum to operate an ETP having 1,000 cu.m./day processing capability.

We understand from Paramount Pollution Control Ltd., Baroda, that the following ETPs are operating in Gujarat:

Sr. No.	Organisation	ETP capacity Cu.m per day
1	IPCL – 6 units	48,120
2	Reliance, Hazira	17,040
3	Gujarat Refinery – 3 units	10,900
4	ONGC – 6 units	12,960
5	Gujarat Steel Tube	140
6	Steel Co. Ltd.	240
7	Mehsana Dairy	2,000
8	Baroda Dairy	1,000
9	Gujarat Aromatics	1,200
10	Anil Starch	800
11	Transpek	200
12	Atul Products	150
13	Gujarat Leather Industries	180
14	Parekh Dyechem	800
15	Bharat Vijay Mills	2,800
16	PG Textile Mills	500
17	Digvijay Woollen Mills	650
18	Shri Dinesh Woollen Mills	400
19	Shri Khedut Sahakari Khand Udyog	725
20	Gujarat Narmada Valley Fertiliser	11,785
	<b>Total</b>	<b>1,26,380</b>

This, by no means is an exhaustive list. We do not have data from an equal number of giant Effluent Treatment Plants in Gujarat, viz., ACC, Alembic, Ambuja Cement, Amul Dairy, Arvind Mills, Birla Cement, Cadilla, Deepak Nitrite, Essar Refinery, Essar Steel, GACL, Godrej, GSFC, IFFCO, KRIBHCO, L&T Cement, Lupin, NDDDB, Nirma, Pidilite, Reliance Refinery, Sanghi Cement, Sarabhai, Saurashtra Cement, Siddhi Cement, Sumul Dairy, all textile mills in Surat and all municipalities. However, for the sake of keeping on the safe side, we base the estimate on 1.26 lac cu.m. as obtained above.

Now applying the Ankleshwar CETP norm, we estimate the quantity of Hydrated Lime as follows:

$$[1,26,000 \times 115/1,000] \text{ Tonnes per annum}$$

$$= 14,490 \text{ cu.m. Tonnes per annum}$$

Hence the annual requirement of Hydrated Lime is about 14,500 tonnes from ETPs in Gujarat. Assuming that the requirement in Gujarat is one-third of the total requirement of Western Region, we estimate the demand for Hydrated Lime to be 43,500 Tonnes of per Annum in Western Region.

Further assuming that the requirement in Western Region is one-fourth of All-India requirement, we estimate the demand for Hydrated Lime to be 1,74,000 Tonnes of per Annum in India.

