INORGANIC CHEMICALS

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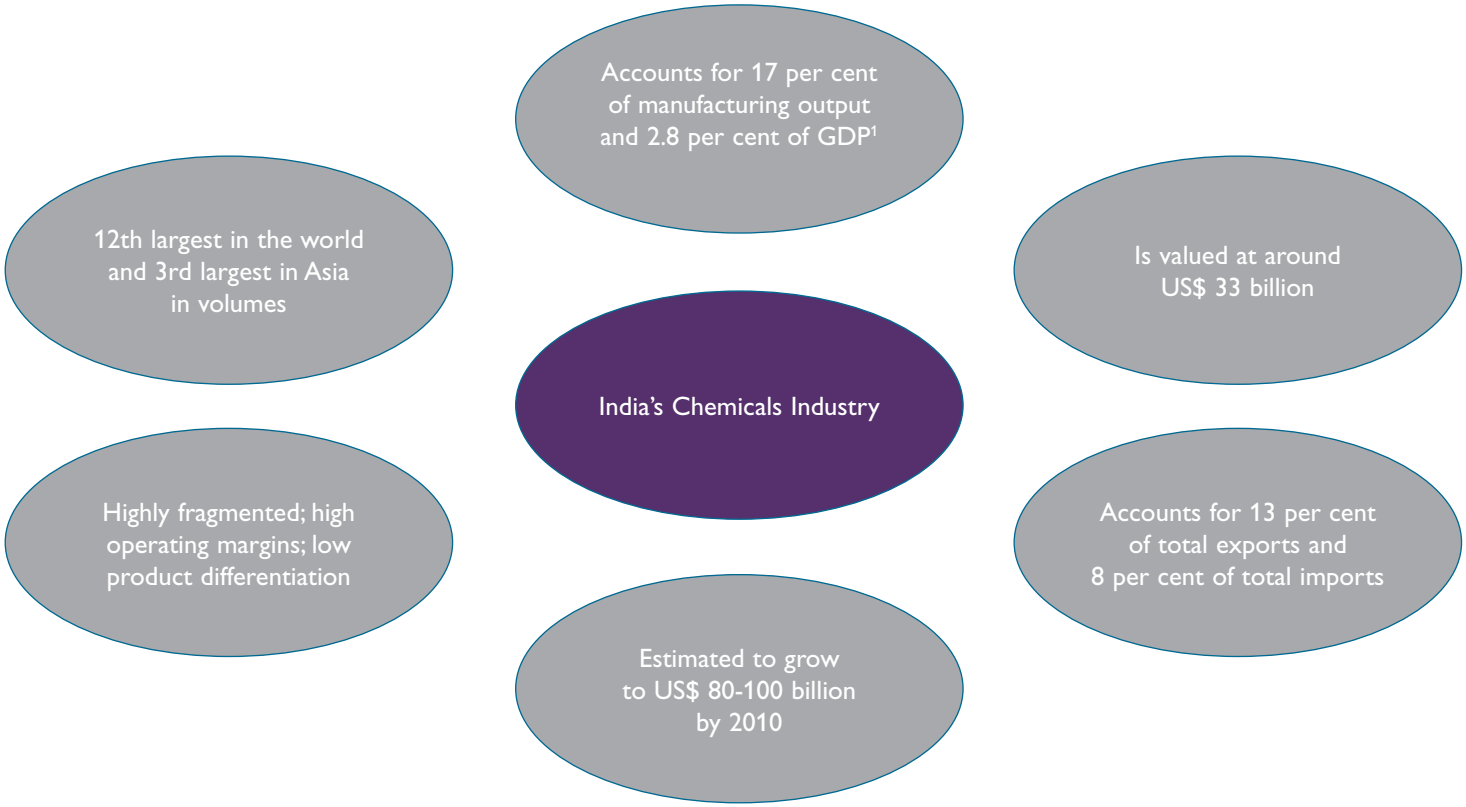
Market Overview

The Indian Chemicals Industry



Source: Department of Chemical & Petrochemicals, Annual Report 06-07, NMCC Vikas, Indian Chemical Manufacturers Association; Planning Commission

The Chemicals Industry has three key segments and many smaller constituents

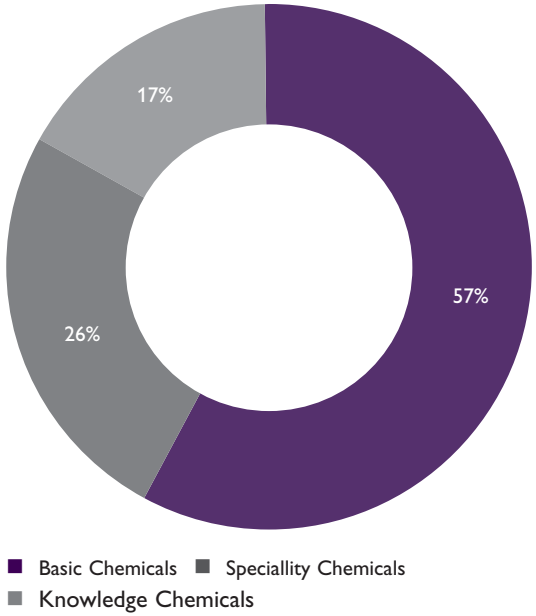
Basic Chemicals

- Inorganic Chemicals
- Petrochemicals
- Fertilizers
- Other industrial chemicals

Speciality Chemicals

- Adhesive Sealants
- Industrial Gases
- Catalysts
- Plastic Additives

Chemical Industry Segmentation (2006-07)



Source: Department of Chemical & Petrochemicals, Annual Report 06-07

The Chemicals Industry has three key segments and many smaller constituents

Knowledge Chemicals

- Agrochemicals
- Pharmaceuticals
- Biotechnology

Inorganic Chemicals is a small but significant part of the overall Chemicals sector

Inorganic Chemicals can be further classified into Basic and Alkali Chemicals

Basic Inorganic Chemicals

- Aluminium Fluoride
- Calcium Carbide
- Carbon Black
- Potassium & Sodium Chlorate
- Titanium Dioxide
- Red Phosphorus

Alkali Chemicals

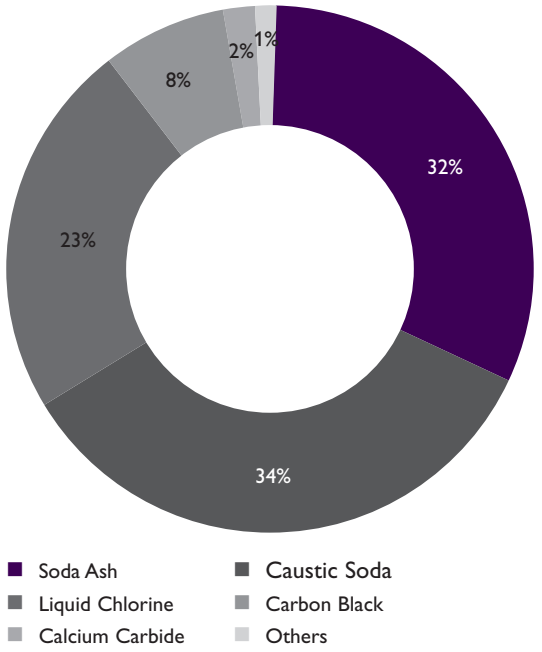
- Soda Ash
- Caustic Soda
- Liquid Chlorine

The inorganic chemicals contribute to around eight per cent of the total Indian chemical industry

Alkali Chemicals constitute the biggest segments within the Inorganic Chemicals sector in India

- Alkali Chemicals constitute nearly 90 per cent of volume
- Caustic Soda and Soda Ash together account for over 60 per cent of overall Inorganic Chemicals production

Inorganic Chemicals Share by Volume (2007-08)



Source: Annual Report 2007-08, Department of Chemicals and Petrochemicals, GoI

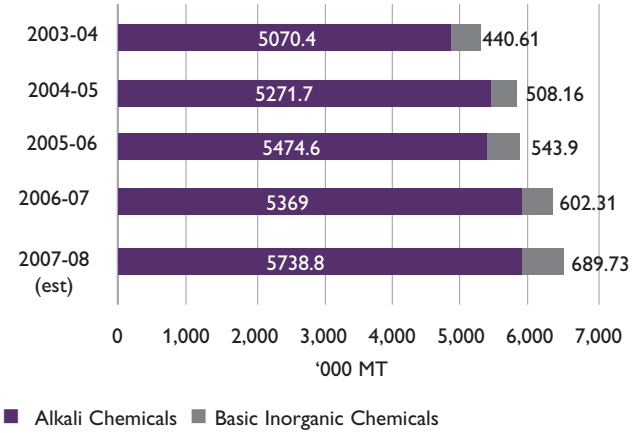
Production of Inorganic Chemicals has been increasing steadily

- Increase in production has lead to high capacity utilisation in specific areas, primarily Alkali Chemicals

The growth and high capacity utilisation indicate a clear need for investment in fresh capacity in specific areas

Chemical	Capacity Utilisation (2006-07)
Carbon Black	93%
Soda Ash	78%
Caustic Soda	75%
Liquid Chlorine	69%
Calcium Carbide	65%
Titanium Dioxide	58%

Inorganic Chemicals Production Trend

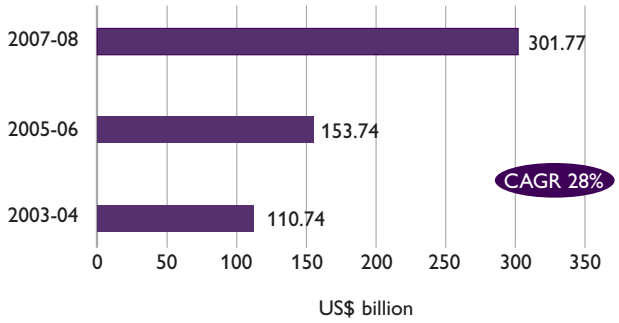


Source: Department of Chemicals & Petrochemicals

Imports have been increasing at a steady rate

Increase in imports reflects the gap between domestic demand and supply. Progressive reduction in customs duties and elimination of anti-dumping duty have also driven growth in imports

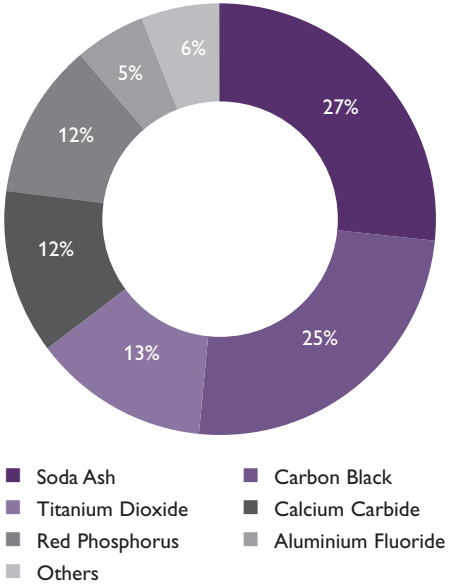
Imports of Inorganic Chemicals



Source: Ministry of Commerce, GoI, www.commerce.nic.in

Imports are dominated by a few chemicals

Share of Imports (2007-08)



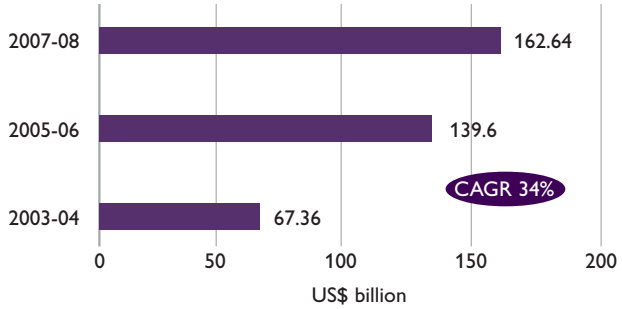
Source: Ministry of Commerce, GoI, www.commerce.nic.in

Exports of inorganic chemicals from India have been increasing

Increasing export indicate India's growing significance in the global inorganic chemicals market

- Exports growing at 34%, much faster than imports

Exports of Inorganic Chemicals

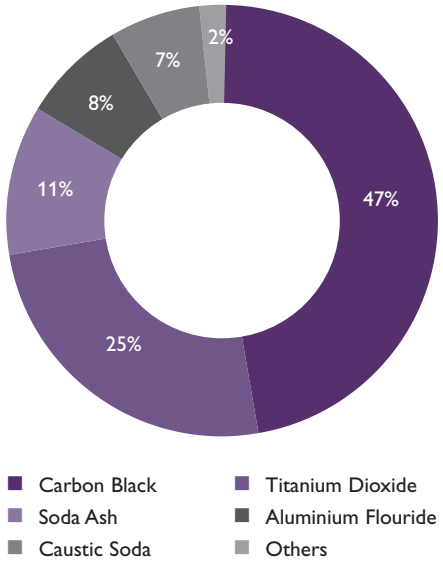


Source: Ministry of Commerce, GoI, www.commerce.nic.in

Exports of inorganic chemicals from India have been increasing

- Carbon Black and Soda Ash dominate exports

Share of Exports (2005-2006)



Source: Department of Chemicals & Petrochemicals, Annual Report 06-07

The industry has been driven by growth in key user industries

Paint Industry

- Overall CAGR of 28 per cent over the last five years
- Decorative segment expected to grow at (30 per cent to 32 per cent), driven by household/real estate growth
- Industrial paints expected to grow at 18 per cent to 20 per cent, driven by automotive and consumer durables

Glass Industry

- Annual turnover of US$ 665 million
- Demand growth primarily driven by automotive and building construction

Source: Cygnus Industry Monitor, August – 07
Economic Survey, Ministry of Commerce & Industry
Department of Industrial Policy and Promotion

The industry has been driven by growth in key user industries

Ceramic Industry

- Growing at 12 per cent annually, driven by both institutional and retail markets
- Sanitary ware growing at about five per cent annually
- Crockery and tableware has also registered significant growth

Rubber & Tyre Industry

- The annual turnover of the industry is around US$ 3.2 billion
- The Indian tyre industry has witnessed a CAGR of 7.7 per cent over the last decade

Source: Cygnus Industry Monitor, August – 07
Economic Survey, Ministry of Commerce & Industry
Department of Industrial Policy and Promotion

The industry has been driven by growth in key user industries

Detergent / Soap Industry

Growth being driven by:

- Favourable consumer demographics
- Penetration into untapped/rural markets

Source: Cygnus Industry Monitor, August – 07
Economic Survey, Ministry of Commerce & Industry
Department of Industrial Policy and Promotion

Supportive Government Policies make India an attractive destination for investment

- The sector has matured and is highly deregulated
- Licensing requirements have been done away with except for hazardous chemicals and a few special drugs
- Entrepreneurs are allowed to set up chemical industries following the Industrial Entrepreneurs' Memorandum (IEM) route
- Tariff levels have been reduced substantially for most chemicals and petrochemical products
- Majority of the chemical items can now be freely imported or exported through simplified procedures

Supportive Government Policies make India an attractive destination for investment

- 100 per cent FDI under the automatic route is allowed for all chemical items except hazardous chemicals
- Plans are underway to set up port based chemical parks in SEZs to encourage clustering, provide infrastructure and enable tax concessions
- Downstream SEZs have been planned to use the output of Chemical Parks

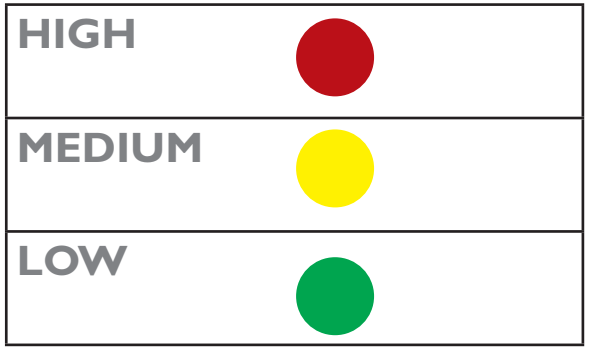
The sector presents attractive options for investments

Threat of New Entrants

- Fragmented industry
- Growing domestic market, need for fresh capacity
- Supportive policy environment

Supplier Power

- Abundant raw materials
- Logistics and supply chain costs are high



Source: KPMG Analysis

The sector presents attractive options for investments

Competitive Rivalry

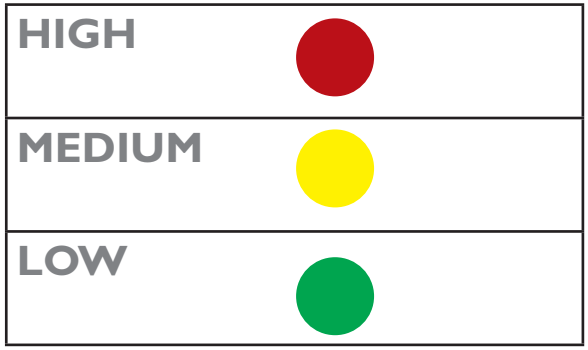
- Moderately competitive industry
- Presence of companies to cater to diversified product base

Customer Power

- User industries driving demand
- Demand linked to industrial growth

Threat of Substitutes

- Increasing imports



Source: KPMG Analysis

Possible focus areas for investors

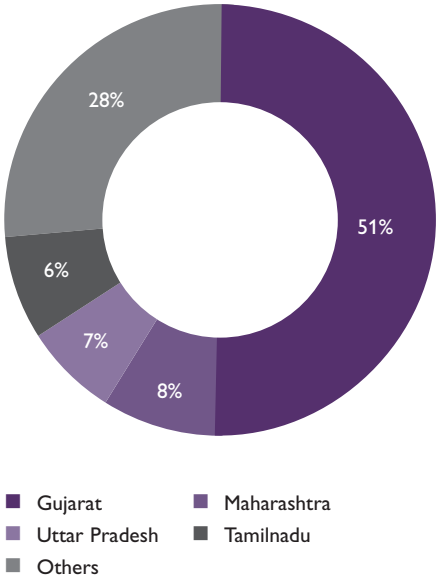
- Alkali Chemicals
  - Alkali Chemicals form the biggest segment in the Indian Inorganic Chemicals sector
  - Significant demand-supply gap, indicating need for fresh investment
  - Growth potential in both domestic markets as well as exports
- Logistics Services
  - Logistics is a key cost element in the industry
  - Logistics service providers who focus on the chemical industry and can provide cost efficient solutions could gain market share
- R&D
  - As in other sectors, leveraging India's engineering strengths to establish a R&D centre could be another attractive option for MNCs

Attractive states for investment

- The following factors were assessed to identify attractive states for investment in the sector:
  - Presence of industry
  - Availability of raw material and skilled labour
  - R&D facilities
  - Government initiatives and support

Most of the Chemicals industry is presently clustered in Western India

Concentration of Chemical Industry, 2007-08



Source: Dept. of Chemicals & Petrochemicals, Annual Report – 2007-08

Attractive states for investment

- Based on these factors, the following states appear attractive:
  - Gujarat
  - Andhra Pradesh
  - West Bengal
  - Maharastra
  - Madhya Pradesh
  - Punjab
  - Rajasthan

Profile of key players

Tata Chemicals Ltd. (TCL)

- TCL is India's leading manufacturer of inorganic chemicals
- Incorporated in 1939, the company has an annual turnover of over US$ 1.3 billion in FY '07
- TCL operates the largest and most integrated inorganic chemicals complex in India at Mithapur in Gujarat
- It is a market leader in the branded, iodized salt segment
- It is also amongst the largest producers of synthetic soda ash in the world

Profile of key players

Tata Chemicals Ltd. (TCL)

- TCL operates in two segments: Fertilizers and Inorganic Chemicals
- The Inorganic Chemicals segment products include soda ash, salt, marine chemicals, caustic soda, cement and bulk chemicals
- Chemicals segment margins improved from 17.5 per cent to 22.6 per cent primarily on low base
- The company is diversifying its business by entering into manufacturing of bio-fuels and distribution of fresh fruits and vegetables

Profile of key players

Nirma Ltd.

- It started off as a one man army of Dr. Karsanbhai Patel in 1969
- It has invested in latest technologies for multi-locational manufacturing facilities
- There has been an investment of US$ 250 million in the soda ash plant
- This plant has a capacity of 650,000 tonnes per annum. It has 40 MW captive co-generation plant. This plant can handle 10, 000 MT of solid.

Profile of key players

Nirma Ltd.

- Some of the industrial products manufactured by Nirma limited are linear alkyl benzene, Alfa olefin sulphonate, Sulfuric acid, Glycerin, soda ash, pure salt, vacuum evaporated iodized salt, single super phosphate, and sodium silicate.
- The company had a turnover of over US$ 500 million in 2007-08

Profile of key players

Travancore Alkali & Chemicals Ltd.

- The company is into manufacturing caustic soda and chlorine
- It has plans of setting up a captive hydel project in the state of Kerala
- It intends to produce chlorinated latex, which would increase the demand of chlorine
- The company also intends setting up a latex chlorination unit
- The company is presently looking out for technology tie-ups to improve chlorine utilisation
- The company had a turnover of US$ 32 million in FY'07

Profile of key players

DCW Ltd.

- DCW is a diversified manufacturer of basic chemicals
- The products manufactured by the company are caustic soda, liquid chlorine, soda ash and others. The company has a successful record in developing downstream and related products
- DCW was started in 1925 but was taken over in 1939 and run under the name of Dhrangadhra Chemical Works
- DCW commissioned a plant for the production of caustic soda in 1959

Profile of key players

DCW Ltd.

- The output of caustic soda has been increased in stages from 28,000 TPA to 80,000 TPA, making DCW one of the leading producers of this basic chemical in India
- The company had gross sales of US$ 215 million in 2007-08

Profile of key players

Kilburn Chemicals Ltd.

- The company is a leading producer and exporter of anatase grade titanium dioxide
- KCL also manufactures and exports the by product ferrous sulphate
- KCL's manufacturing plant is based at the Sipcot Industrial Complex in Tuticorin in Tamil Nadu
- KCL commenced operations in November 1994
- The company's titanium dioxide pigment is certified by the Bureau of Indian Standards as conforming to IS-411 specifications

Profile of key players

Kilburn Chemicals Ltd.

- The production of titanium dioxide by the company has increased over years, from 3, 703 MT in 2000 to 11, 043 MT in 2007
- The growth in the production has been at a CAGR of 17 per cent
- The overall turnover of the company stands presently at US$ 16 million and has seen growth at a CAGR of 13 per cent

Profile of key players

Tanfac Industries Ltd.

- This company was incorporated in 1972, as a part of the Aditya Birla Group
- The company manufactures inorganic chemicals like aluminium fluoride, hydrofluoric acid, ammonium bifluoride, etc
- The company diversified by manufacturing value added products called organic fluorine chemicals such as di-chloro fluoro-benzene, acetophenone in 1999
- The plant is located at Cuddalore in Tamil Nadu
- The company had sales income of around US$ 30.2 million

Profile of key players

Triveni Chemicals

- The company is over 15 years old in the chemical industry
- It has been successfully producing and exporting aluminium fluoride
- The company has its manufacturing unit in Gujarat. It has been able to cut down on transportation costs because of the location
- The company has state-of-the-art equipment and is a leader in producing aluminium fluoride
- The total area covered by factories is 5,200 sq. metres
- It can cater to a bulk requirement of 1,000 MT per month and has a total production capacity of 500 MT per month

Profile of key players

W Ferro Alloys (WFA)

- WFA produces calcium carbide and specialty ferro alloys
- Operations commenced in 2001, in a factory at Karaikal in Pondicherry
- WFA is a multi-division company with its corporate headquarters in Chennai, Tamil Nadu and manufacturing units in Andhra Pradesh, Tamil Nadu and Pondicherry

Profile of key players

Phillips Carbon Black Ltd.

- It is a part of the RPG Group
- It is now the leading producer of carbon black in the country catering to the needs of elastomer, plastic, paints and ink manufacturing industries
- The company was incepted in 1960
- The company has access to the modern state-of-the-art carbon black technology
- The company's present installed capacity is 270,000 MTPA (million tonne per annum)
- It is not only the largest exporter of carbon black in India but also one of the largest in Asia in its field

Profile of key players

Hi-Tech Carbon

- Hi-Tech Carbon (HTC) is a unit of Aditya Birla Nuvo Ltd
- HTC is one of the leading manufacturers of furnace grade carbon black
- The company started in the year 1988 at Renukoot in Uttar Pradesh
- In the year 1998, HTC developed a facility at Gummidipoondi and later doubled the manufacturing capacity to reach 84,000 MT per annum in 2004
- Currently HTC exports roughly one third of carbon black capacity to overseas customers in the international market

Profile of key players

Vaigai Chemical Industries Ltd.

- The Vaigai Group was established in 1981
- It is located in the city of Madurai
- The company is in the fields of chemicals, edible oils, textiles, construction, etc
- Chemicals have been the core area of operation for Vaigai since its inception
- The chemical division is located at Karaikal, about 250 kilometres from Madurai
- The 6000 MT capacity complex is India's 2nd wlargest potassium chlorate manufacturing plant
- The company is a major supplier of potassium chlorate to the fireworks and safety match industries and has a 40 per cent market share in India

Snapshot of key segments

	Industry Analysis	Demand Drivers
Caustic Soda	* Nearly 45 per cent of the total chemicals industry depends on caustic soda as an essential input * Demand for caustic soda for Asia/India is expected to increase from 21.8 million MT in 2005 to 26.9 million MT in 2010 – Highest growth rate next only to the Middle East * 40 plants in India operating at 84 per cent capacity * Paper & pulp, manmade fibres, fibres, soaps & alumina and other major users contribute to around 80 per cent of the total domestic production	* Paper industry with an expected growth of 6 per cent per annum * Chlorine will also see its usage through water treatment, both municipal and industrial * The growth in alumina industry also promises a continuous demand of caustic soda
Soda Ash	* 6 plants of soda ash with an aggregate installed capacity of 3.1 million tonnes operating at 74 per cent capacity utilisation * The domestic consumption is expected to reach 2.986 MT by 2012 with a CAGR of 5.4 per cent * The maximum demand for soda ash is from China (expected 7-8 per cent growth), followed by America and Asia	* Glass & detergents industry, a major source of the demand for soda ash is expected to grow three fold in the period 2005-09

Source: Alkali Industry – 07; Planning Commission

Snapshot of key segments

	Industry Analysis	Demand Drivers
Calcium Carbide	* Industry has recovered dramatically from negative growth role during 2002-03 and 2003-04 to 22.6 per cent during 2005-06 * There are 8 major players, with an installed capacity of 0.155 million tonnes per annum * The number of unorganised players is more than 50 small scale industries (SSI) * The estimated capacity installed among these unorganised players is around 60,000 tonnes per annum * The overall capacity utilisation for the year 2005-06 has been 45.4 per cent	* Acetylene (PVC) * Carbide lamps * Fruit ripening * Steel industry
Carbon Black	* The top six players contribute to over 90 per cent of the total production, with top two players contributing around 65 per cent * The production growth rate in this industry is around 3.6 per cent with a capacity utilisation of 87 per cent during 2005-06 * The present installed capacity of carbon black is 455,000 MTPA	* Tyres (65 per cent) consumption; rubber (34 per cent) constitute majority consumers * With the automobile industry booming, the demand for carbon black is only going to grow more

Source: Planning Commission

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Snapshot of key segments

	Industry Analysis	Demand Drivers
Potassium Chlorate	* The present installed capacity of potassium chlorate is 11,623 MTPA * The growth in production during 2005-06 was 50.1 per cent * Capacity utilisation was 29.2 per cent during 2005-06	* Paper & Pulp industry contributes to around 90 per cent of the consumption
Sodium Chlorate	* The installed capacity is around 9,000 tonnes per annum. * The expected demand level is around 11,000 tonnes per annum * Certain portion of the demand is met through imports	* The growth rate in demand is around seven to eight per cent in applications like bleaching of wood pulp; reagent; dyestuff; pharmaceuticals; paper; leather; weedicide, etc.
Titanium Dioxide	* Indian raw material deposits are estimated to exceed 14 per cent of the total world reserves * The present installed capacity of Titanium Dioxide is 108250 MT (increased by 25.9 per cent during 2005-06) The growth in production during 2005-06 was 4.7 per cent and capacity utilisation was 55.7 per cent during 2005-06	* Paint industry contributes around 60 per cent paper 13 per cent and plastic around 20 per cent of the total consumption * Paint industry expected to grow at 30 per cent CAGR
Red Phosphorous	* The present installed capacity of red phosphorus is 1680 MTPA * It is a power intensive process and as such it is showing negative growth throughout * The gap in demand is met by increased imports	* Safety matches and phosphorus compounds

Source: Planning Commission

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