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FICCI

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Theme: The Rise of India in the Global Specialty Chemicals Industry



Knowledge & Strategy Paper on

Specialty Chemicals

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"MESSAGE"

I am delighted to know that the Federation of Indian Chambers of Commerce and Industry (FICCI) is organizing a **Specialty Chemicals Conclave, 2012,** with the active support of Department of Chemicals and Petrochemicals, Indian Specialty Chemicals Manufacturing Association, and CHEMEXCIL. The objective of this Conclave is to bring focus to this Sector and discuss the options, the potential and the way-forward for accelerated and sustainable growth of this important and untapped segment of the Chemical Industry.

The "Specialty Chemicals" is a highly knowledge driven industry, in which R&D plays a pivotal role for the development of non-conventional specialty chemicals where raw materials cost much less than any commodity chemicals. Automotive Sector, Construction chemicals, Water chemicals, Textiles and Personal Care Products are the key driving industries for growth of Specialty Chemical industries in the country. This segment has the potential to grow at a high rate of 13-14% per annum during the twelfth Five-Year Plan. Technology and innovation will play a vital role in growth of this sector wherein India has a natural advantage of a large pool of technical manpower as well as scientists and researchers.

I wish all the success to this Conclave.

(K. Jose Cyriac)

New Delhi
14 May 2012

Federation of Indian Chambers
of Commerce and Industry

MESSAGE



Deepak C Mehta
Chairman - National Chemicals Committee of FICCI
Vice Chairman & Mg Director - Deepak Nitrite Ltd.

India has set up a good basic chemical industry base in the last decade. If India has to now grow the chemical business it is through rapidly improving the quality of life for its vast population. This is possible only through specialty chemicals.

It is time India put performance chemicals growth as the first priority and as a lead in the ultimate pursuit of chemical sector growth as a whole.

The purpose of this Conclave is to bring focus to this sector and discuss the issues, the potential and the way ahead for this segment of the chemical industry with immense potential of increasing consumption as also exports and thus the growth rate.

(Deepak Mehta)

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Executive summary



Executive summary

Specialty chemical industry is a knowledge driven industry. In India it has been growing rapidly at 1.2-1.3x of GDP growth rate (~12%) over the last five years and currently stands at ~$21.5 Billion. Domestic demand of specialty chemicals is expected to follow an accelerated growth path. This demand is mostly driven by the strong growth outlook for end use industries. This along with increased adoption of specialty chemicals and newer usages can propel the growth further.

Indian specialty chemical manufacturers have strong presence in export market also. API and colorants (including dyes and pigments) are the key export oriented products. India exports specialty chemicals to nearby Asia-Pacific countries which don't have competitive scale of productions. India also exports to developed countries of Europe and USA where it leverages its low cost of production and quality talent pool. Compliance with global regulations and India's manufacturing competitiveness has helped the export market to grow significantly.

The key specialty segments in India are agrochemicals, paints coating and construction chemicals, colorants, Active Pharmaceutical Ingredients (APIs), personal care chemicals and flavors & fragrances. The critical success factors for most of the specialty chemical segments include understanding of customer needs and product/ application development to meet the same at a favorable price-performance ratio.

Going ahead innovation and sustainability initiatives are expected to be one of the major factors for competitiveness. Development of processes/ products which eliminate or reduce the use of hazardous substances could become the key priority of producers. Consumers would be expected to pay premium for green chemistry and environmental preservation initiatives and appreciate this globally. This along with more stringent regulatory constraints may further increase the importance of innovation.

Introduction to Specialty Chemicals



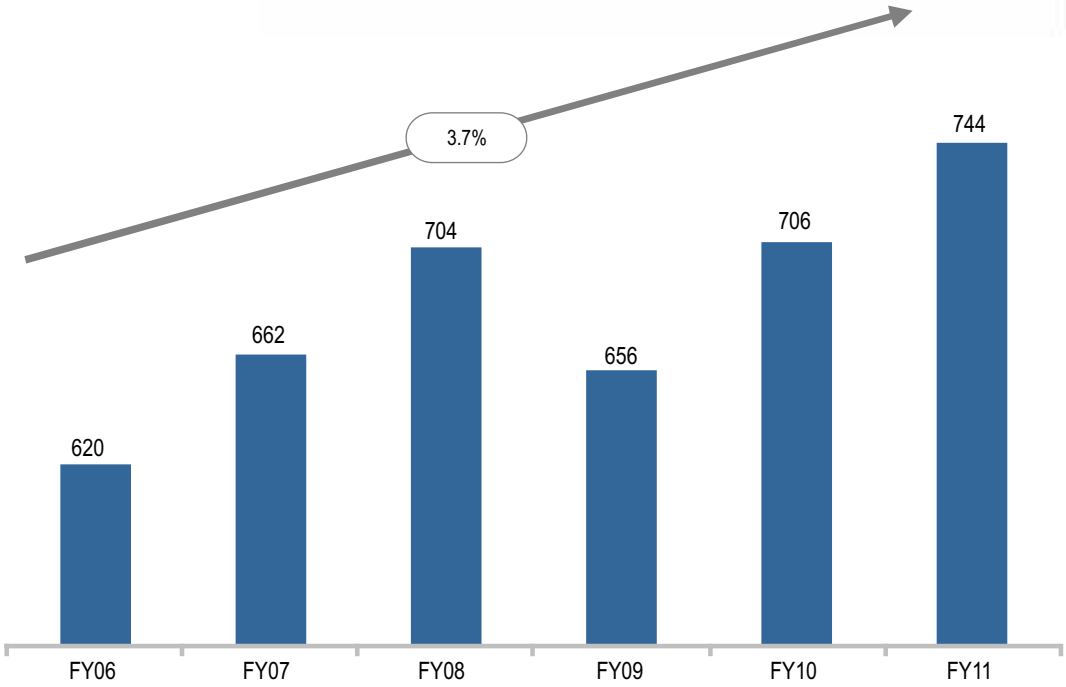


Specialty chemicals are defined as a "group of relatively high value, low volume chemicals known for their end use applications and/ or performance enhancing properties." In contrast to base or commodity chemicals, specialty chemicals are recognized for 'what they do' and not 'what they are'. Specialty chemicals provide the required 'solution' to meet the customer application needs. It is a highly knowledge driven industry with raw materials cost (measured as percentage of net sales) much lower than for commodity chemicals. The critical success factors for the industry include understanding of customer needs and product/ application development to meet the same at a favourable price-performance ratio.

A. Global scenario

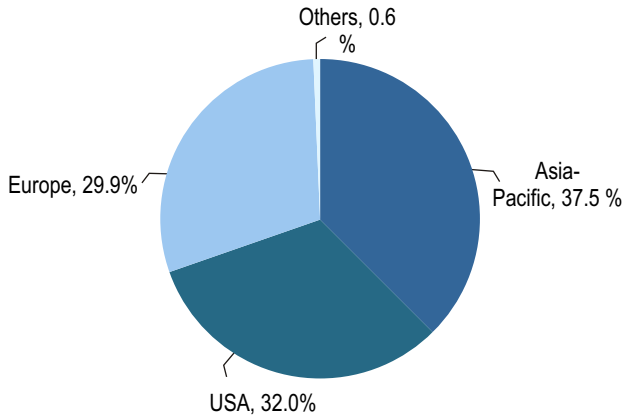
The global specialty chemicals market is ~ $740 billion in FY11 representing a compounded annual growth rate of ~3.7% during 2006-11 (Refer Figure II-1)

Figure II 1: Global specialty chemicals market, $ Bn



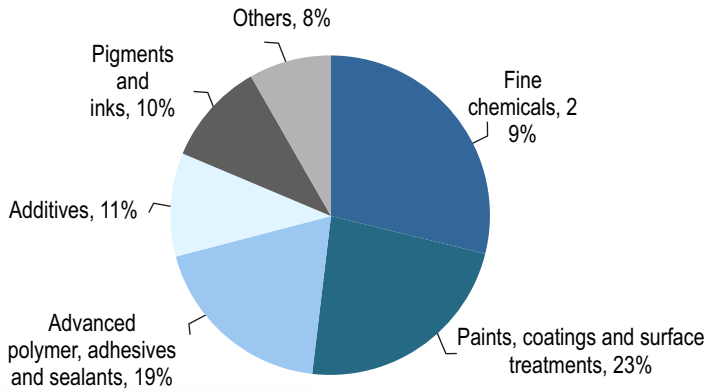
Global market declined sharply in 2009 due to global economic crisis; however it also quickly bounced back strongly in 2010 to reach the sales value close to 2008 figure. The following figure (Refer II-2) gives an indicative market split or different regions in specialty chemicals in 2011.

Figure II-2: Global market segmentation by regions in 2011



Globally fine chemicals accounts for the largest portion (~29%) of the specialty chemical market by value. It is closely followed by Paints, coatings and surface treatments (~23%) and advanced polymers, adhesives and sealants (~19%) The following figure (Refer II-3) represents the split of global specialty chemical market by products.

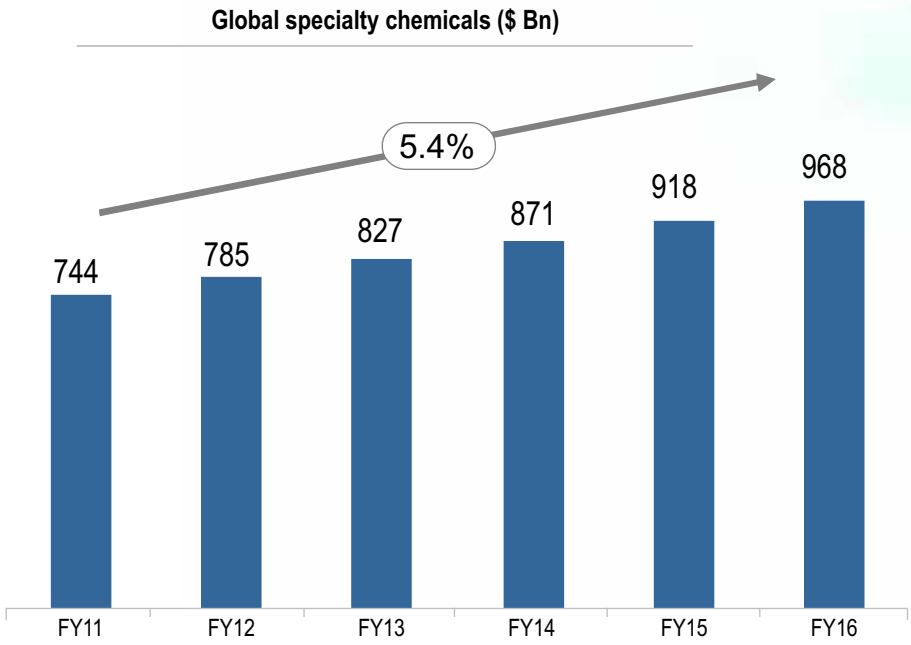
Figure II-3: Global market segmentation by products in 2010



BASF, DOW and INEOS are some of the large chemical companies with strong presence in specialty chemicals.

Currently in FY11 the global market is ~$740 billion and going ahead it is expected to grow by ~5.4% p.a. to reach ~$970 billion by FY16(Refer II-4). Bulk of the global demand growth is expected to be driven by Asia-pacific countries and Middle Eastern countries which have currently lower levels of consumption.

Figure II-4: Projected global market size of specialty chemicals



The trends that are likely to result in the above graph are given below. These trends will drive the demand and the innovations in this industry, which is covered in a later section.

i) **Energy and raw material management:** The price volatility and cost pressures could lead to increased focus on the efficient utilization of raw materials. Also energy costs are substantial and efforts to reduce it could lead to cost savings as well as help in making the operations greener.

ii) **Globalization:** The increasing globalization could result in new opportunities as well as new competitors. Consolidation, mergers & acquisitions could become one of the major instruments for growth.

iii) **Innovation and portfolio management:** The focus for specialty chemical manufacturers may increase towards innovation for various needs of end use industries. The focus may shift towards portfolio optimization and managing cyclicality of demand and increased usage of solutions.

iv) **Compliance:** Tighter regulations are expected in the future and could result in increased focus on environmental compliance, global trade compliance and risk management initiatives

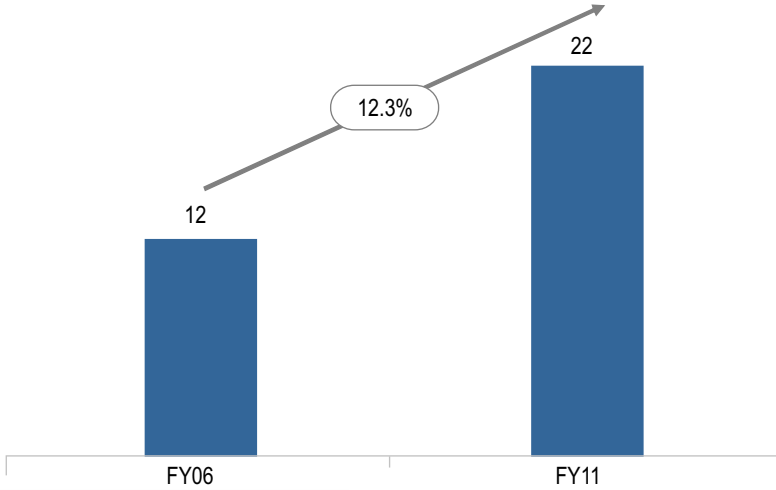
B. Indian scenario

i. Market size

Indian chemical industry is rapidly growing industry and is estimated at ~$108 billion (as per CMIE 2010). Of this the specialty chemicals account for ~20%, i.e. ~$21.5 billion ($17.7 billion of specialty chemicals and $3.8 billion of agrochemicals, APIs not included here).

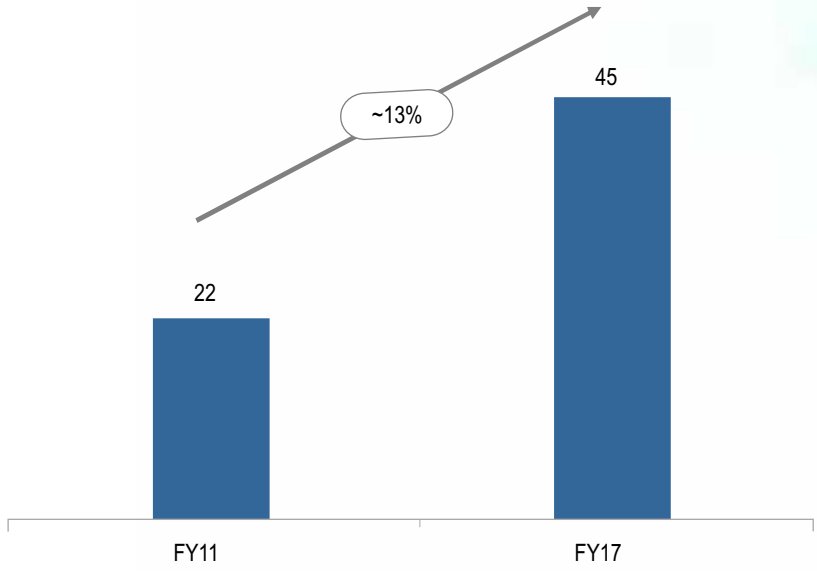
Specialty chemicals have observed a high growth rate in the past too. It has grown at ~12% p.a. since 2006 when the market size was ~ $12 billion(Refer Figure II-5).

Figure II-5: Past growth of specialty chemicals in India, $ Bn



The past growth has been mostly due to growth in end use industries in the past, which has resulted in increased consumption for specialty chemicals.Going ahead, the growth potential of the specialty chemicals consumption in India is strong (Refer Figure II-6) and it is expected to reach ~$ 45billion by FY17 ($38 billion for specialty chemicals and $6.5 billion for agrochemicals).

Figure II-6 -: XIIth plan targeted growth for specialty chemicals in India, $ billion



ii. Growth drivers

The expected growth rate of specialty chemicals in India is broadly much higher than global standards. This is because the specialty chemical usage is at a nascent stage in India, with increasing applications and increased adoption in existing applications to follow. Also the export potential of some of these specialty chemicals is a strong driver in increasing cost effectiveness of manufacturers and making the product cheaper for consumption in India. Broadly the growth is driven by the following three factors:

a. More end use demand

With increasing GDP, the Indian middle-class could grow from 31 million households in 2008 to 148 million households by 2030, with quadrupled consumption. Furthermore, India's urban population is expected to increase by 275 million people by 2030. This will result in consumption-led double-digit growth in key end markets over the next decade and an increased need for better products and services.

Specialty chemical industry growth typically follows the growth of these key end markets. For example, an increasingly urbanized India (cities are

likely to comprise 40% of the population by 2030) will double the requirement for clean municipal water by 2020, and therefore significantly increase municipalities' usage of water treatment chemicals to treat/ recycle waste water. Similarly, increased infrastructure spending by the government (The XIIth Plan recommends USD 1 trillion investment in development of roads, ports, power and telecom) accompanied by growth in the real-estate industry, could result in over 15 % p.a. growth in the construction chemicals and coatings segment.

b. Increased intensity of consumption

Compared to the developed world (the US, Europe) or China, the current penetration of specialty chemicals within India's end markets is low. With an increased focus on improving products, usage intensity of specialty chemicals within these end markets will rise in India over the next decade.

For example, concrete admixtures improve the fluidity of concrete, provide a smoother, more even finish, and help avoid cracks. Consequently, concrete admixtures can help reduce maintenance and repair costs, and therefore, the total cost of ownership of construction projects in India. India's current expenditure on admixtures is only $1/ m3 of concrete, compared to $2/ m3 in China and $4.5/ m3 in US. This is primarily due to the lack of awareness of admixtures in the Indian construction industry. With increasing demand for higher quality construction and increasing awareness of concrete admixture benefits, the industry could double the intensity of admixture consumption in India.

Similarly, the usage of pesticides in India is 0.58 kg/ ha compared to 2 kg/ ha in China. To meet India's food requirements - spurred by increasing population, rising income, and limited availability of arable land - the yield per hectare will need to be increased considerably (e.g., crop productivity in India is at 2 MT/ ha compared to China at 5 MT/ ha). This can be achieved through multiple means (e.g., larger fields, better automation, improved irrigation infrastructure), along with increased use of agrochemicals.

c. Improved consumption standards

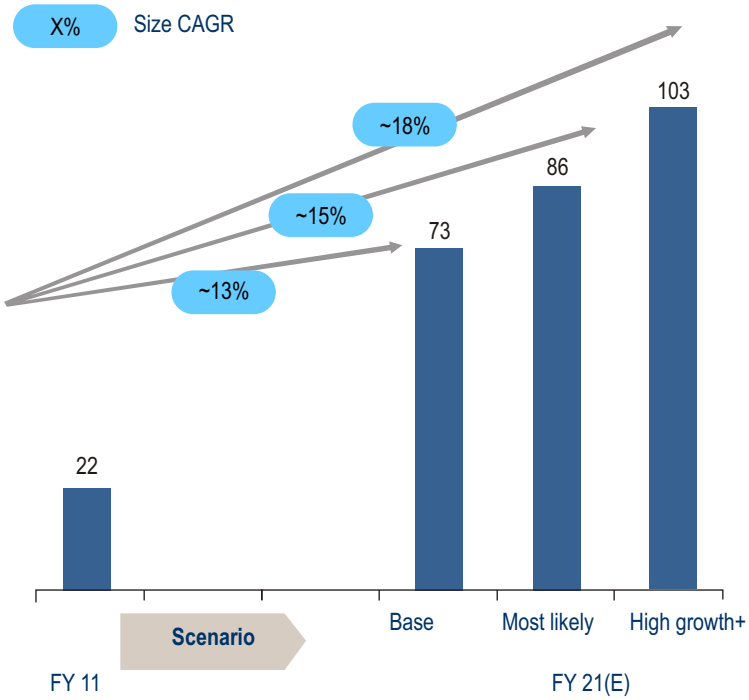
Consumption standards are policies implemented by the government to promote the safe use of products. These standards are necessary for both

improving society's standard of living and enhancing consumer safety. Most developed countries (e.g. the US, Germany) have implemented stringent consumption standards across various end-use markets. As the economy develops, India will need to regulate products more stringently, and strengthen consumption standards, which in turn will promote increased usage of specialty chemicals. For instance, the US and Germany are very strict on the usage of solvents in paints and limit the volatile organic compound (VOC) content. India still uses enamel paints with high VOC content. Mandating the usage of water-based paints (that contain 5-15% petrochemicals) will help ensure health and safety of consumers, and encourage the consumption of higher cost, water based paints (increasing the segment's value).

iii. Growth projections

The market size of specialty chemicals in India has the potential to reach $80-$100 billion by FY21. The base case growth rate is expected to be higher than the XIIth five year plan targets with an expected growth of ~15% p.a. And the optimistic case is likely to achieve a growth of ~18% p.a. over the next decade. (Refer Figure II-7)

Figure II-7-: Growth projections of specialty chemicals market size, $ Bn



The base case scenario growth is mostly driven by the expected growth in end use industries and increasing penetration of specialty chemicals in them which results in almost ~2X GDP growth rate. The enablers for a most likely growth or higher growth of ~17% p.a. are accelerated trends of urbanization, infrastructure development, increasing economic wealth, technology enhancement etc. which could lead to rise in demand for high performance products/ processes. The extent of accelerated trend could result in varying scenarios. A faster implementation of PCPIRs will also provide backward linkage in production support to facilitate high growth case.

iv. Segments in India

The nature of growth in different markets would reflect the growth potential of Indian economy in that segment. Government needs to play a key facilitating role in supporting this growth. The key segments in Indian markets based on their market size are given below:

	Segments	Size, FY11 ($ Bn)
1	Paints & coatings	3.6
2	Specialty polymers	2.3
3	Home care surfactants	1.1
4	Plastic additives	0.9
5	Textile chemicals	0.8
6	Construction chemicals	0.6
7	Water chemicals	0.6
8	Person care ingredients	0.5
9	Foods- Flavors and Fragrances	0.4
10	Paper chemicals	0.4
11	Printing inks	0.4
12	Industrial &Institutional cleaners	0.2
13	Rubber chemicals	0.2
14	Other segments	5.7
Total specialty chemical market		**17.7**
	Agrochemical	3.8
Net total		**21.5**

Agrochemicals are listed separately as its classification at times is not done directly in specialty chemicals. This segmentation does not highlight the markets of colorants separately (dyes & pigments) as the colorants are mostly used in many of the listed categories of specialty chemicals like paints & coatings, Inks, plastic additives, Textile chemicals etc. Colorants are covered in detail in later section. The other key segments discussed in detail are paints & coatings, food & fermentation and Personal care ingredients.

Active pharmaceutical ingredients are a major segment of pharmaceutical production in India, accounting for $8.1 billion in FY10 with almost ~65% of its turnover from exports resulting in a domestic market of ~$2.8 billion. And it will also be discussed in detail in a later section.

v. Challenges& opportunity

While chemical industry addresses growing need for materials required by different sectors, the industry employs highly complex manufacturing processes that involve handling of often toxic and hazardous chemicals. The process being energy intensive, the importance of safety, security and environmental protection cannot be underestimated. The export performance of specialty chemicals so far has been good. However, regulations like REACH may impact export performance.

Specialty chemicals segment has immense growth potential driven by high growing end-use industries. Technology & innovation will play vital role in growth of this sector where India has natural advantage of large pool of technical man-power as well as scientists and researchers.

Some of the upcoming developments that support the growth story for specialty chemicals are:-

a. Setting up of PCPIRs

b. Up-gradation of technical university to manage talent scarcity

c. Setting up of TUF (Technology up-gradation fund)

d. Increased focus on establishing consumer standards, environment protection certification etc.

However the execution of these initiatives is likely to define the rate of growth of specialty chemicals market. Details on some of the imminent needs of the industry are given below:-

a) **Feedstock availability:** India is naphtha surplus country and exports most of its naphtha because of lack of downstream petrochemical complexes. If this scenario continues to prevail then there may always be lack of building blocks for specialty chemical industries and domestic production of specialty chemicals may never grow rapidly. Setting up of consortium crackers and PCPIRs is a positive step however more stringent dis-incentives for naphtha export could be promoted.

   Even though consortium crackers are planned, technological constraints and lack of value added downstream specialty chemical capacities could result in a downward push for EO capacity (as it is very difficult to transport). Government should ensure supply of Ethylene Oxide (EO) and mandate stringent manufacturing standards for EO from these upcoming crackers.

b) **Improve infrastructure:** Support through better infrastructure (including safe transportation, storage etc.) adequate power/ water supply is needed.

c) **Develop better catalysts:** India lacks good catalysts and processes for better processing and value addition to feedstocks. Lack of autonomous research centres are one of the primary reason. Government support, strengthening of resources and focused research in this field, especially by centres such as IIP and NCL, could help develop better catalysts.

C. Export - Import scenario

i. Export: Key markets and key products

India exports significant proportion of its production of specialty chemicals and API. The key markets for export of specialty chemicals are(Refer Figure II-8):-

Figure II-8-: Key export destinations



i.	USA	ii.	Germany	iii.	UKiv.Turkey
v.	Brazil	vi.	Italy	vii.	Chinaviii.Korea
ix.	Indonesia	x.	Pakistan	xi.	Thailand
xii.	Bangladesh	xiii.	Japan		

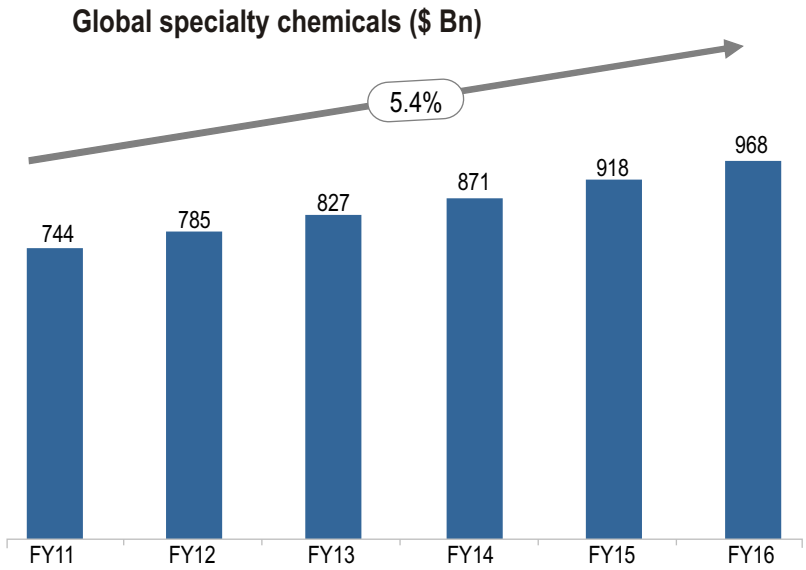
Colorants (dyes and pigments) form the bulk of the export of specialty chemicals. Agrochemicals export is also on the rise and major destinations for agrochemical exports are US, UK, France, Netherlands, Spain, Belgium and Asia-pacific countries. API exports from India are into both regulated and semi regulated markets spanning across the world.

Most of the export is either to the near-by Asia-pacific regions which have downstream usage of these specialty chemicals but minimal domestic manufacturing or to the developed countries in Europe and USA which import from India for their manufacturing competitiveness.

ii. Future global scenario

Currently in FY11 the global market is ~$740 billion and going ahead it is expected to grow by ~5.4% p.a. to reach ~$970 billion by FY16(Refer Figure II 9). Bulk of the global demand growth is expected to be driven by Asia-pacific countries and Middle Eastern countries which have currently lower levels of consumption.

Figure II-9-: Projected global market size of specialty chemicals, $ Bn



Increasing global demand is most likely to result in increased production by low cost manufacturing locations of Asia- pacific. At present India, exports to most of the Asia-pacific countries and other developed countries of Europe and USA. Going ahead India's exports is likely to increase further as many of the nearby countries don't have competitive capacities while developed countries are likely to prefer India over China as sourcing destinations.

In comparison to China, India has balanced IPR regime with good talent pool. Indian legal system is good and is expected to provide confidence to foreign investors. These along with good labour laws, low R &D cost and also low cost of capital could push India as a more preferred destination for setting up manufacturing units.

iii. India's competitive manufacturing

Increasing globalization has resulted in diminishing of geographic boundaries for business and the trade has been increasingly on the rise. Globally, Asia- pacific countries have gradually become the key suppliers for bulk of the chemical products. India's manufacturing competitiveness makes it one the preferred suppliers for most countries. The key factors contributing to India's manufacturing competitiveness are:-

a) Demographic dividend: India's percentage of working population has been on the rise and is expected to grow up to ~67% by 2030 from current levels of ~63%. While the percentage working population has started to dip for countries like China and Japan.

b) Availability of skilled labour force with low wage rates

c) Increased government focus on promoting manufacturing sector through Special Economic Zones, Petroleum, Chemicals & Petrochemical Investment Regions (PCPIRs), National manufacturing investment zones (NMIZs) by providing fiscal benefits

The new manufacturing policy of government validates its intent by establishing a target to increase share of manufacturing in GDP from current 15% to 25% by 2022.

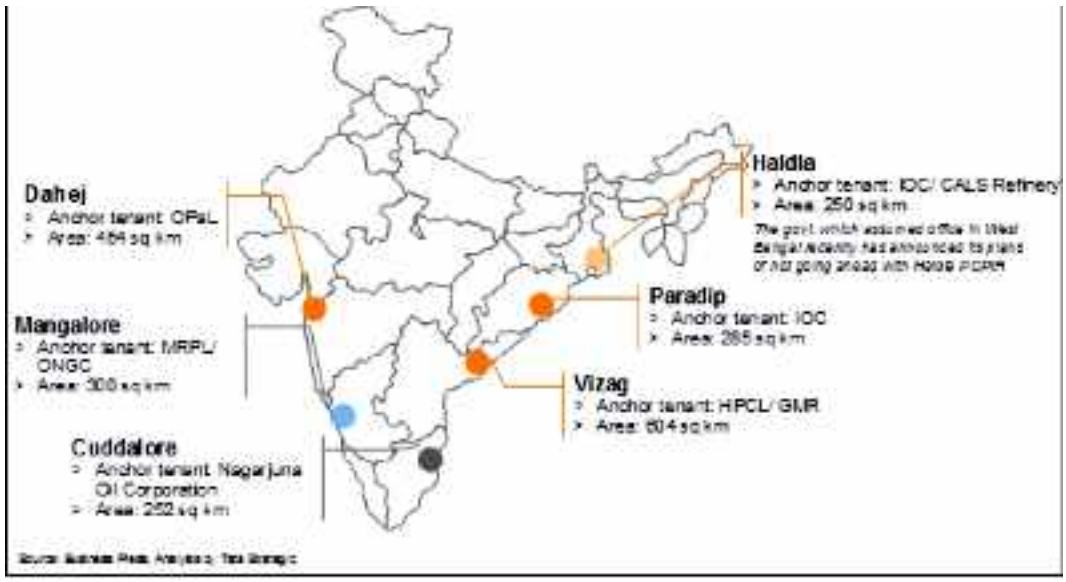
iv. Potential for chemical hubs in India

Establishment of PCPIRs is of immense importance for chemical industry as the policy is expected to attract major investments, both domestic and foreign for chemicals. Three PCPIRs have already been notified (Dahej, Paradip and Vizag). In addition to this various SEZs have presence of petrochemical complex (Mangalore and Dahej). These SEZs have a commitment to be a net foreign exchange earner making their focus strong for accessing export markets.

PCPIR policy

A PCPIR is a specifically delineated investment region with an area of around 250 sq km. The PCPIRs are planned to develop sufficient infrastructure to enable establishment of manufacturing facilities of world class scale (both in quality, volume and cost competitiveness). PCPIRs are being designed to house free trade warehouse zones (FTWZs), industrial parks and export oriented units (EOUs) along with public utilities, residential area and environment protection mechanisms. Government plans to link these PCPIRs to major markets in India through external physical infrastructure such as rail, road, ports, airports and telecommunications. Each of the PCPIRs (Refer Figure II 10) will have one anchor tenant to lead the investments and provide feedstock for other downstream units.

Figure II 10-: PCPIRs in India



Now we discuss the major specialty chemical segments of India.

Agrochemicals

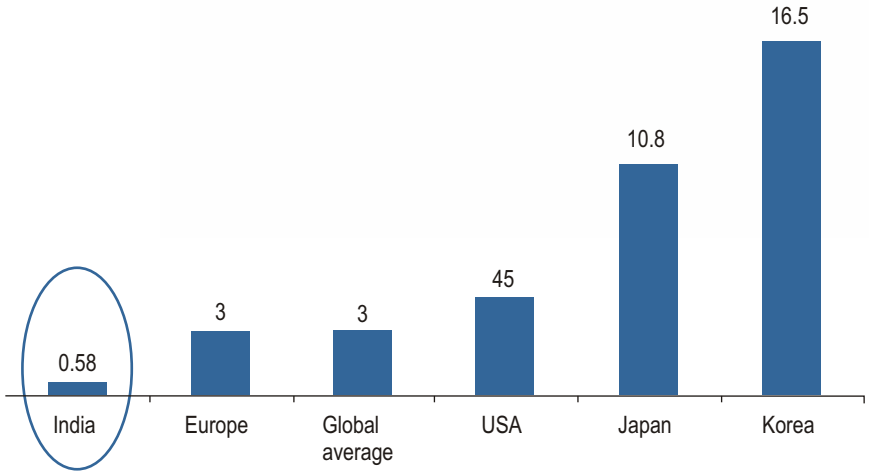




A. Introduction

In India a high spent on food and being the largest employer status makes agriculture a significant part of economy. Agriculture even though accounts for only ~17% of GDP it employs 55-60% of the workforce. However Indian agriculture is faced with challenges like limited farmland availability and low crop yields. India's crop yields in major crops like Rice, lentils, corn and soya-bean is more than 50% below China's. And one of the major reasons for this has been the low average crop protection consumption in India. (Refer Figure III-1)

Figure III-1: Average crop protection consumption (Kg/ Ha)



Source: Industry reports, Meeting of the GOI Chemicals Task Force – Crop protection sub sector discussions, Tata Strategic Analysis

The primary reason for low usage could be attributed to:-

- Low purchasing power of farmers
- Lack of awareness among farmers regarding benefits of crop protection chemicals
- Reach and accessibility of products
- Fragmented land holdings and low levels of irrigation
- Dependence on monsoon

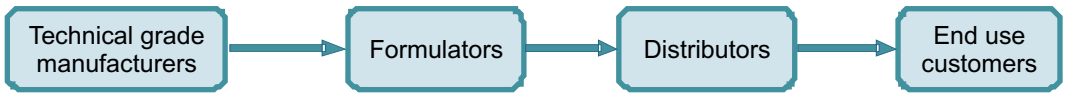
Agrochemicals are used to improve crop performance, yield or control pests, etc. Agrochemicals are substances manufactured through chemical or biochemical processes containing the active ingredient in a definite concentration along with

other materials which improve its performance and increase safety. For application, these are diluted with water in recommended doses and applied on seeds, soil, irrigation water and crops to prevent the damages from pests.There are broadly 5 categories of crop protection products: Insecticides, fungicides, herbicides, bio pesticides and others (includes nematocides, rodenticides etc.).

B. Market overview

Currently, the crop protectionchemicals/ agrochemical accounts for ~3.5% of the total chemicals market in India. The domestic crop protection market is estimated at ~$2 Bn, whereas the exports market is estimated at ~$1.8Bn making its total market size of $3.8Bn.

The crop protection industry in India is generic in nature with ~80% of the molecules being non-patented. Hence, strong distribution network and brand image act as competitive factors. Crop protection chemicals are manufactured as technical grades and converted into formulations for agricultural use. The crop protection industry consists of technical grade manufacturers, formulators producing the end products, distributors and end use customers. According to Pesticide Monitoring Unit, GOI, there were about 125 technical grade manufacturers, including about 10 multinationals, more than 800 formulators and over 145,000 distributors in India in 2007. Over 60 technical grade pesticides are being manufactured indigenously.



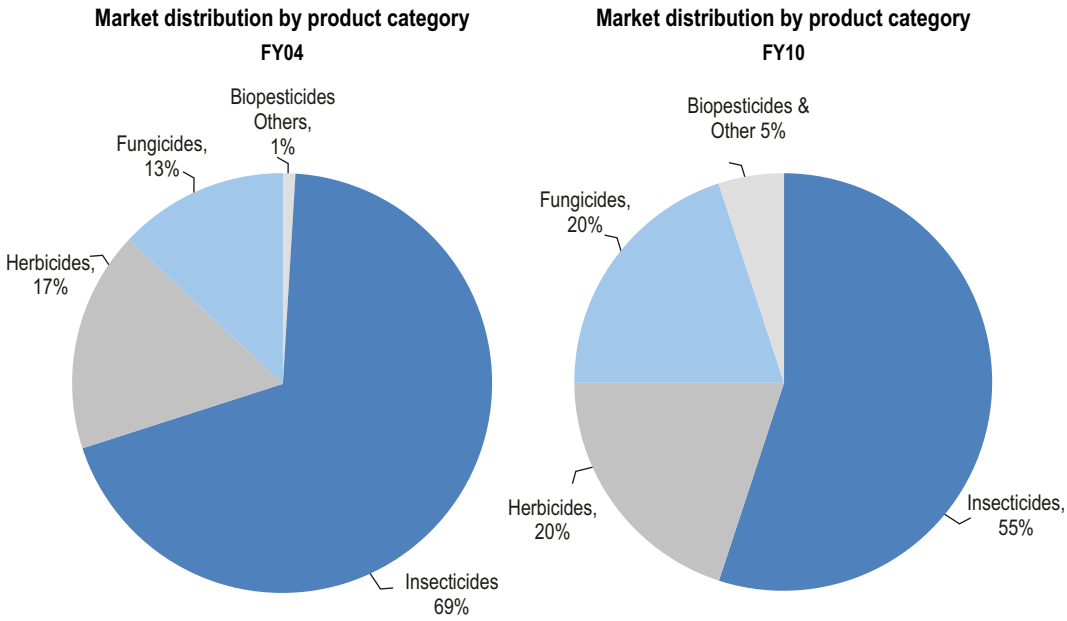
Technical grade manufacturers sell high purity chemicals in bulk (generally in drums of 200-250 kgs.) to formulators. Formulators, in turn, prepare formulations by adding inert carriers, solvents, surface active agents, deodorants etc. These formulations are packed for retail sale and bought by the farmers.

Insecticides form the largest segment of the domestic crop protection chemicals market accounting for 55% of the total market. It is mostly dependent on rice and cotton crops. Herbicides are the largest growing segment and currently account for 20% of the total crop protection chemicals market. Sales are seasonal, owing to the fact that weeds flourish in damp, warm weather and die in cold spells. Rice and wheat crops consume the major share of herbicides. Increasing cost of farm labour

will drive sales of herbicides going forward. Fungicides, accounting for 20% of the total crop protection market, are used for fruits and vegetables and rice Farmers moving from cash crops to fruits and vegetables and government support for exports are increasing the fungicides usage. Bio-pesticides include all biological materials organisms, which can be used to control pests. Currently a small segment, bio-pesticides market is expected to grow in the future owing to government support and increasing awareness about use of non-toxic, environment friendly pesticides.

With increasing penetration of BT cotton, usage of insecticides has witnessed a decline in the recent past. Its share in the total crop protection chemicals has reduced from 69% in 2004 to 55% in 2010. On the other hand, share of herbicides and fungicides has increased from 17% and 13% respectively in 2004 to 20% each in 2010 (Refer Figure III-2). This is due to increased focus on fruits and vegetables and higher awareness levels among end users.

Figure III-2: Market distribution of agrochemicals by product category



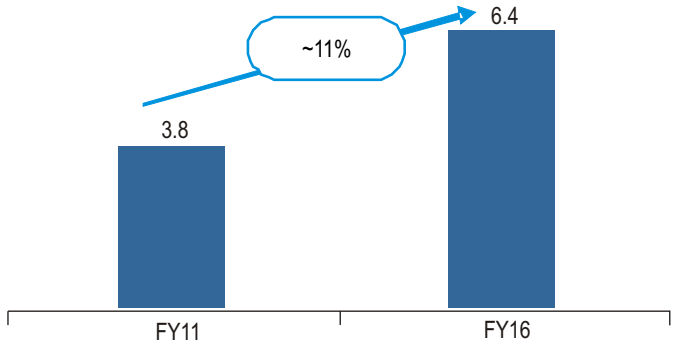
Source: Industry reports, Tata Strategic analysis

Some of the major players in agrochemicals in India are Bayer, Rallis, United Phosphorus, Syngenta etc.

C. Future growth potential

Even though the Indian agricultural sector is highly dependent on monsoons, the market for agrochemicals is expected to grow at a rapid growth rate of ~11% p.a. to reach $6.4 Bn by FY16 (Refer Figure III 3).

Figure III-3: Future growth potential of agrochemicals, $ Bn



Source: Industry reports, Research by Tata

Key growth drivers include:

1. Increasing demand for food grains: India has 16% of the world's population and less than 2% of the total landmass. Increasing population and high emphasis on achieving food grain self-sufficiency is expected to drive growth.
2. Limited farmland availability: India has ~190 Mn hectares of gross cultivated area and the scope for bringing new areas under cultivation is severely limited. Available arable land per capita has been reducing globally and is expected to reduce further. The pressure is therefore to increase yield per hectare which can be achieved through increased usage of agrochemicals.
3. Low Productivity: India has low crop productivity as compared to other countries. Average productivity in India stands at 2 MT/ha as compared to 6 MT/ha in USA and world average of 3 MT/ha. At the same time, India's pesticide consumption is also low at 0.60 kg/ha as compared to the world average of 3 kg/ha.(Source: India stat, Industry reports) Hence, increased usage of pesticides could help the farmers to improve crop productivity. By educating farmers and conducting special training programs regarding the need to use agrochemicals, Indian companies can hope to increase pesticide consumption.
4. Growth of horticulture and floriculture: Buoyed by high growth experienced by Indian floriculture industry, Government of India has launched a national horticulture mission to increase production (Source: National Horticulture Mission) Growing horticulture and floriculture industries will result in increasing demand for agrochemicals, especially fungicides.

Paints, Coatings & Construction Chemicals

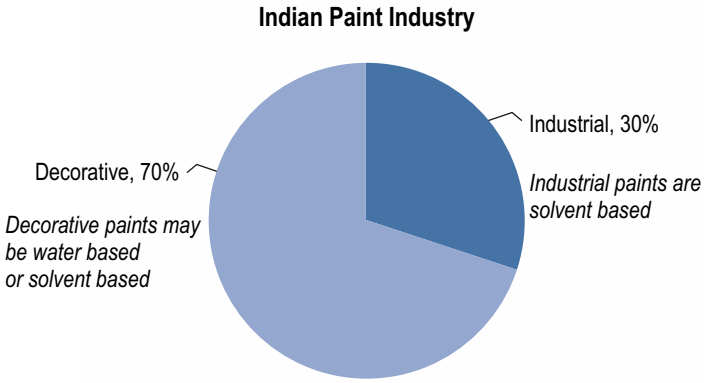




A. Introduction

Paints & Coatings: India is one of the major participants in the global paints and coatings industry. The industry can be broadly classified into 2 segments (Refer Figure IV-1)

Figure IV-1: Segments of Indian Paint industry

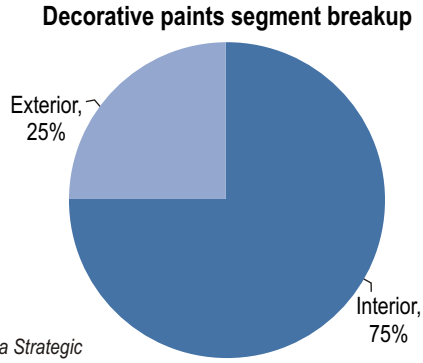


Source: Industry reports, Research by Tata Strategic

Decorative Paints: This segment primarily caters to the residential and commercial buildings and accounts for 70% of the total paint industry. Enamels are the most widely used followed by distempers and emulsions. Interior and exterior paints account for 75% and 25% of the decorative paints respectively (Refer Figure IV 2). On the basis of product composition, decorative paints are of two kinds - water based and solvent based.

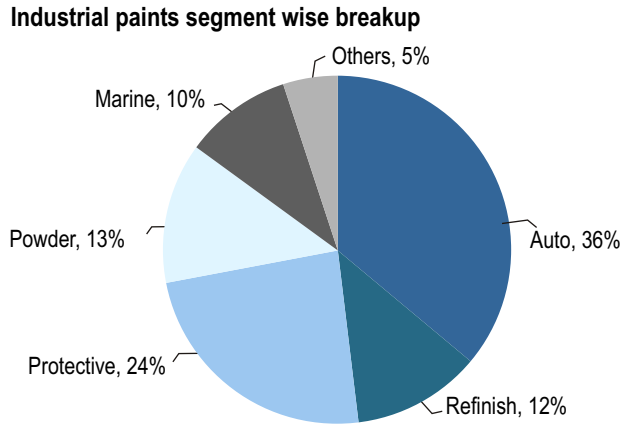
Industrial paints: This segment includes paints used in automobiles, auto ancillaries, consumer durables, containers, etc. (Refer Figure IV 3). This segment requires technological expertise and therefore it is largely served by the organized sector. It accounts for 30% of the overall market.

Figure IV-2: Segments- Decorative paints



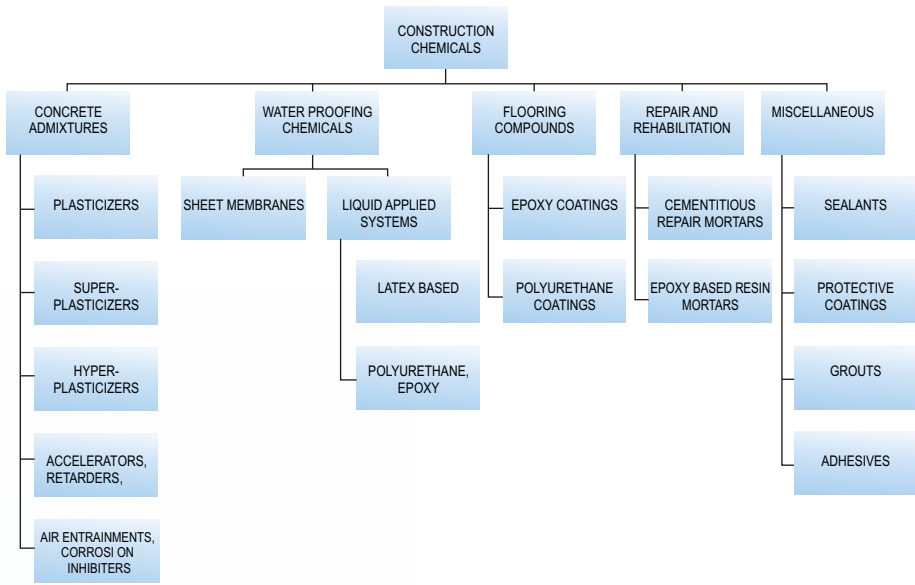
Source: Industry reports, Research by Tata Strategic

Figure IV-3-: Segments – Industrial paints



Source: Industry reports, Research by Tata Strategic

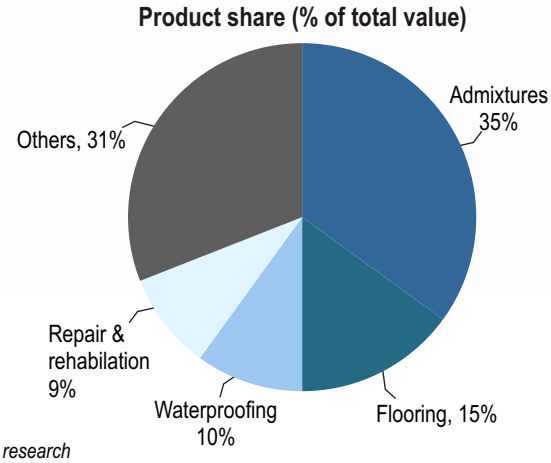
Construction Chemicals: Construction Chemicals are the chemical compounds used in construction activities. These compounds can be used in existing construction projects to speed up the construction work or in new construction projects to impart durability and strengthen the structures. Construction chemicals increase the cost of the project by 2-5% but the benefits are multi-fold. Certain chemical products help in minimizing the quantities of cement and water used in the construction. Based on end use applications, these compounds can be broadly classified into five categories.



These compounds impart chemical as well as physical properties in applications such as cross-linking or phase change (from liquid to solid). They also increase the life of construction work and impart additional protection from environmental hazards.

In 2011, concrete admixtures accounted for 35% of the total construction chemicals market, while flooring and waterproofing chemicals had a share of 15% and 10% respectively (Refer Figure IV-4). Other segments include sealants, grouts and adhesives.

Figure IV-4: Segments-Construction Chemicals



Source: Industry reports, Secondary research

B. Market overview

The Indian paint industry is estimated at ~$ 5 Bn in FY11. Paint industry is highly consolidated with 80% market captured by the organized sector. The major players in the paint industry are Asian Paints, Kansai Nerolac, Berger Paints and ICI. Key manufacturing locations of these players is given below (ReferFigure IV-5).

Figure IV-5 -: Key Manufacturing Locations for Paints



In the decorative segment, Asian Paints is the market leader followed by Berger and Kansai Nerolac. Kansai Nerolac is the leader in industrial paints followed by Berger and Asian PPG.

The Indian paint industry, valued at ~$ 5 Bn in FY11, has been growing at 1.5-2 times the GDP growth with a CAGR of 13.5% over the last five years. Owing to the economic downturn, the growth slowed down in the last 2 years. However, the growth is reported to have picked up with the resurgence of the construction industry.

The Indian construction chemical industry is estimated at ~$ 0.6 Bn in FY11. It has shown a strong growth rate of ~16% p.a., historically due to the construction boom in India and growing awareness in the industry for better quality of construction. With the economic slowdown, the growth slowed down in 2009, but has regained momentum thereafter.

The construction chemical market is highly competitive and with an increasing number of global construction companies making a foray into manufacturing operations in India, the industry is becoming more attractive and experiencing strong growth. The overall market is fairly consolidated but there is considerable fragmentation of individual products and application areas. The top 5 players account for ~50% of the market; the rest comprises of small and unorganized players.FOSROC and SIKA India Pvt. Ltd. are the largest players in the Indian construction chemicals industry. Other key players include BASF, Pidilite and Structural Waterproofing Company (SWC) Pvt Ltd. There are many other regional and smaller players as well. 300 companies are estimated to be operating in this segment.

Industry trends

There is a shift in market shares in favour of organized companies at the expense of unorganized segment due to entry of organized players into low cost distempers and enamels. While solvent-based enamels are still popular in India, a shift is being seen from solvent- to water-based paints. Keeping the environment concerns in mind, companies are coming up with new lead free and low Volatile Organic Compound (VOC) products. There is also a perceptible shift towards usage of organic pigments in premium paints with heavy metal pigments being phased out. Companies which adapt to these trends could grow successfully in the paints market.

The construction chemicals market in India is still very under-developed when compared to other countries, such as China, which is much larger at nearly ~$ 7.9 billion.Consumer awareness is very low regarding new chemical techniques and

construction aids. Margins are lower because most contractors prefer low-cost chemicals to reduce the overall construction cost. High value products have limited demand and are used only by premium construction houses. In the past there has been a considerable change in the market share of companies. Medium-sized and regional manufacturers have gained considerable share of market.

C. Future growth potential

Paint Industry: With the market recovering from the economic downturn, the paint industry is expected to grow at a CAGR of 14% in the next five years. In the decorative paints segment, water based paints are expected to drive growth with a CAGR of 15%. The key growth drivers of the paint industry are detailed below:

- Low per capita consumption: The per capita consumption of paints in India is very low at 1.25 Kg against 38 Kg in Singapore, 25.8 Kg in the U.S or 2.5 Kg in China.
- Growth in automotive industry: Growth of automotive paint industry is directly linked to the growth of passenger vehicles and commercial vehicles (expected CAGR >15%).
- Rapid growth in residential and commercial real estate with regulation permitting 100% FDI flow
- Untapped rural market: There is a shift in rural demand from cement paints to better quality paints.
- Growing middle class with increasing disposable incomes

Construction Chemicals: The Indian construction chemicals market is expected to show high growth rate of 15-20% p.a., in the future. Key growth drivers for the construction chemicals market in India are as follows:

- Growth in end-use market: Growth in construction activities due to increased investments in infrastructure, backed by Government of India's commitment to increase spend in infrastructure to 10% of GDP in the 12th Five-Year Plan
- Increased penetration: Increasing awareness about quality construction materials such as performance-enhancing products among consumers and builders, leading to increased usage of newer products like ready-mix concrete (RMC) etc. Currently, the use of RMC in construction is around 7% of domestic cement demand. This is expected to rise to 20 to 25% over the next few years

- Changing regulatory environment: Current and prospective regulatory guidelines incentivizing energy-efficient and green buildings will drive demand for suitable, innovative protective coatings and safe chemicals
- Increasing compliance with international manufacturing standards: Actions are being taken to implement relevant consumer standards matching with international standards. For example, ban on onsite mixing of concrete would reduce pollution levels and generate demand for ready-mix concrete admixtures.

Many newly developed products give better performance and results. Hence, a shift in demand towards products offering better performance, value-added products such as silicon caulks, specialty cement additives, polymer-based grouts and mortars etc. is expected.



Colorants

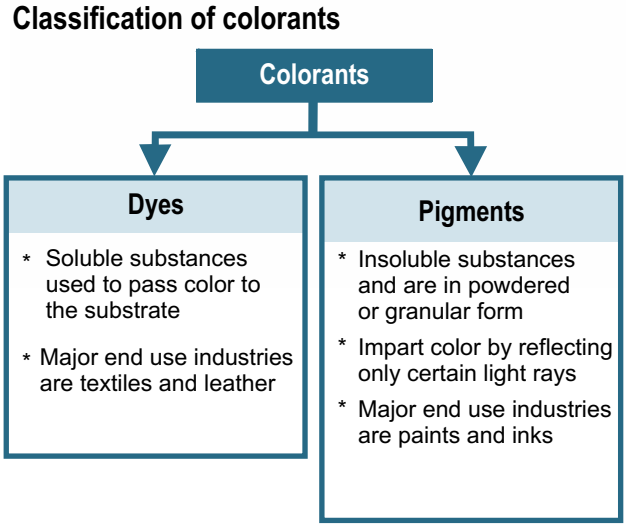




A. Introduction

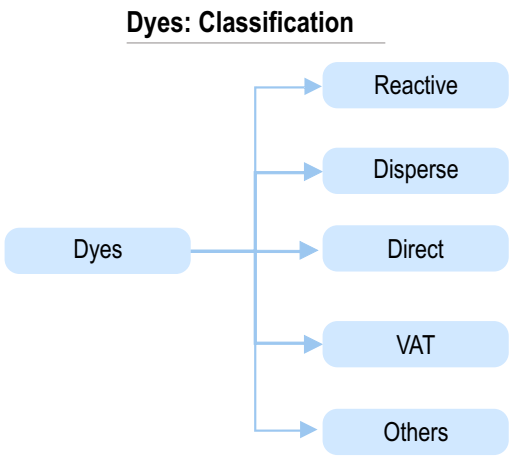
Colorants have inherent element of value addition to a wide variety of products like textiles, leather, paper, food products, cosmetics, plastics, paints, inks and high-tech applications like optical data storage (CDs, DVDs), solar cells, medical diagnostics (CT Scan, angiography), security inks, lasers, photo dynamics etc. The colorant industry comprises two sub segments- dyes and pigments (Refer Figure V-1).

Figure V-1: Classification of colorants



There are 12 types of dyes, classified on the basis of the usage, however disperse, reactive and direct dyes are the most commonly used in India. (Refer Figure V-2).

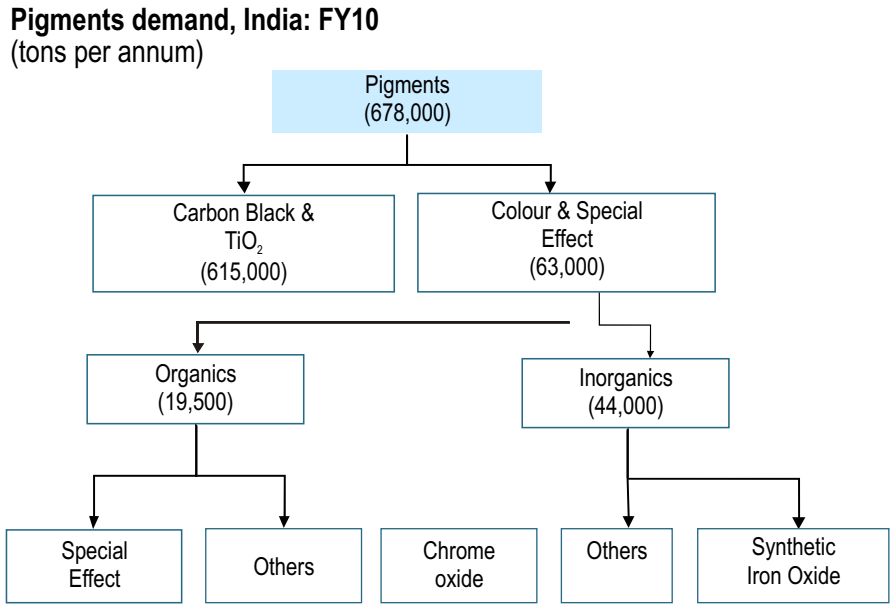
Figure V-2: Classification of dyes



Source: Industry reports

Pigments are broadly classified as organic and inorganic. The pigment market is estimated at ~7 lakh tons p.a. with a market size of ~USD 970 Mn. Carbon black and TiO2 accounts for the 90% of the total pigment demand (Refer Figure V-3).

Figure V-3: Pigments demand, India



Source: Industry reports, Tata Strategic analysis

There has been a notable transition in the global arena during the last 2-3 decades in the manufacturing base of colorants, with a shift in production from Europe, USA and Japan to Asia viz. China, India, Taiwan, Thailand and Indonesia etc. With decline in production in most of the traditional centers, non-traditional centers like India and China are now preferred sources for supply of colorants to the global market. India had a distinctive edge over other centers however based on supportive Chinese government policies the threat from Chinese manufacturers is increasing.

Preference for eco-friendly products has additionally cast responsibility on the industry to be more selective and improve the product range with greater focus on R&D. This would ensure quality and performance colorants to suit the market expectations.

B. Market overview

The world market for colorants comprising dyes, pigments and intermediates is presently estimated at approximate value of $27 billion. During the last decade, the industry was growing at an average growth of 2-3% per annum. Whereas other

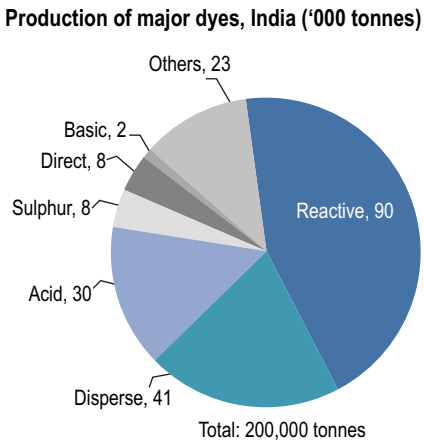
countries in the world market contribute nearly 87.5% of the global share, India accounts for 12.5%. Size of the Indian colorants industry is $3.4 billion in FY10 with exports accounting for ~68%.

The Indian dyestuff industry is highly fragmented and characterised by a large number of players in the unorganized sector. Today, Indian dyestuffs industry comprises about 950 units (50 in large and organized sector and 900 units under Small & Medium Enterprises (SME) Sector). These units are mainly present in the western states of Gujarat and Maharashtra, with Gujarat accounting for almost 80% of capacity.

Within India, the major players in the pigments industry are Sudarshan Chemicals, Golchha Pigments, Tata Pigments and Clariant India while in the dyestuff industry, companies such as are Atul, Clariant India, Kiri dyes, and IDI are large players present in the organized sector.

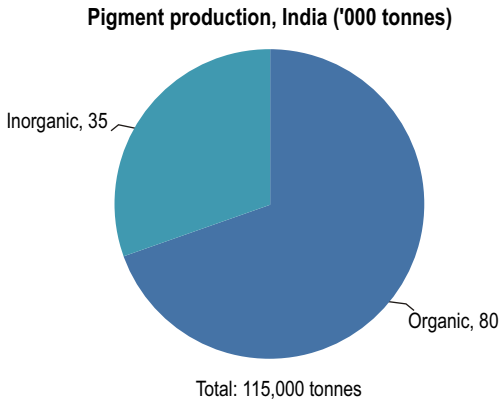
The overall production capacity of dyestuffs is 200,000 tonnes per annum (Refer Figure V 4). With the ever increasing standards of quality and reliability, Indian dyestuffs industry meets more than 95% of the domestic requirement, out of which textile industry consumes nearly 60% and the remaining is shared by paper, leather & other consumer industries. As far as pigments are concerned, the market size is 115,000 tonnes (Refer Figure V-5). The main consumer industries are printing inks, paints, plastics, rubber, etc., accounting for 70% of the end use.

Figure V-4: Production of major dyes, India



Source: DMAI

Figure V-5: Pigment production, India

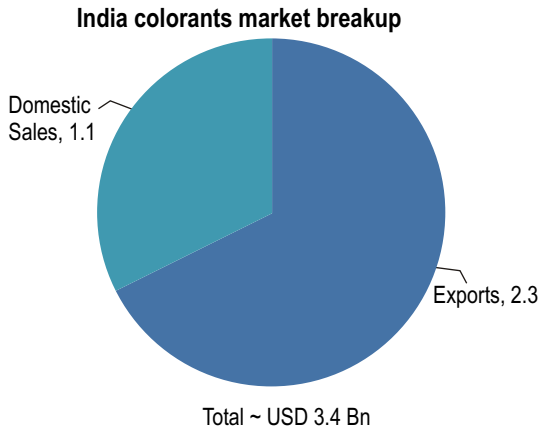


Source: DMAI

Total installed capacity for organic pigment is 80,000 tons p.a., which is way higher than the demand from the Indian market (Refer Figure V 3). Large proportion of the organic pigments produced is exported. There are also niche markets in India for special effect pigments such as metallic and pearlescent. These pigments are usually imported into the Indian market, with Sudarshan Chemicals being the only domestic manufacturer. Though the volume for these pigments would be very small as compared to other pigment segments, they usually command a premium for the design appeal that they provide to the final product such as automotive coatings and packaging materials.

The industry has grown at ~10% p.a. between FY06 and FY10 with exports growth at 14.5% p.a. The dyestuffs are exported to Europe, South East Asia and Taiwan to cater to the textile industries in these countries

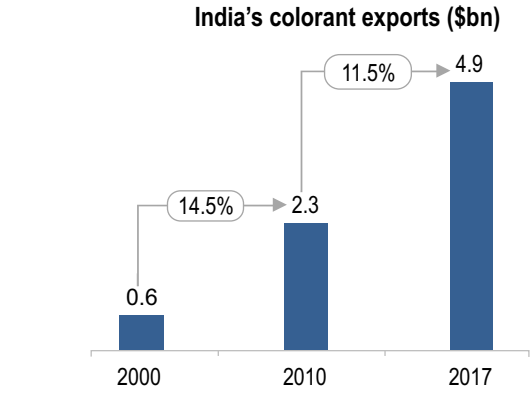
Figure V-6: India colorants market breakup



Source: DMAI

There has been remarkable growth in the exports of colorants during the last 2 decades. From a mere $0.03 billion in 1990, exports reached $2.3 billion in 2009-2010 (Refer Figure V 6), having surpassed the estimates envisaged in the ten year strategic action plans submitted in 1991 and 2001. During the last decade, the industry achieved a growth of 14.5% p.a. Exports are estimated to grow to $4.9 billion by 2017 (Refer Figure V-7).

Figure V-7: India colorant export ($ bn)

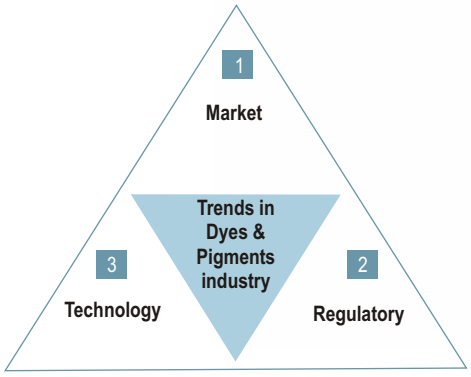


Source: DMAI

Market Trends - *High performance products*

The global capacity of dyestuffs has exceeded the demand resulting in an oversupply scenario. Due to the lack of export demand, the prices of the colorants had dropped by roughly 20% in the recent past. It is expected that consumer preference for environmentally friendly products and high performance dyes and organic pigments will help improve overall value of the market. (Refer Figure V-8)

Figure V-8-: Industry trends for colorants



1 **Market**
- Global overcapacity
- Customer requirements of environment friendly and high performance products

2 **Regulatory**
- Stricter domestic environmental laws
- Compliance to REACH

3 **Technology**
- Color Solution approach to counter
- Commoditization

Source: Industry reports, Research by Tata Strategic

Regulatory Trends - *Stricter environmental laws*

Fiscal policies and excise concessions led to a high level of fragmentation in the Indian dyestuffs market. However, a gradual reduction in the excise duty has resulted in a more balanced pricing differential between the organized and unorganized sectors. The organised sector, with a better product range, technology and marketing reach, was able to increase its market share. Further, various regulations such as REACH and ban on certain dye stuffs have impacted the exporters resulting in the closure of small establishments and helping increase the share of the organized players.

Technological Trends - *Commoditization*

Since majority of dyestuffs are commodities there is not much product differentiation and duplication of products is easy. To counter the same, global manufacturers are investing in research and development to improve the specialty end of their portfolio.

There is also a trend towards providing colour solutions rather than just a colorant. Collaborations with equipment manufacturers are being undertaken to provide integrated solutions to customers.

The financial crisis in 2008 has resulted in a demand slump, worldwide over-capacity and further margin pressures on the dyestuff industry. The Indian dyestuff industry is facing challenges due to reduced export demand growth and decreasing profitability. Companies with greater focus on innovation and Research & Development will benefit in the long run. Adopting green chemistry practices and compliance could become the need of the hour.

C. Future growth potential

Globally, the demand for dyes and organic pigments is forecast to increase 9% per year to ~USD 16.2 Bn in 2013. This growth will have a direct bearing on the domestic production of dyes and organic pigments since a large proportion of production is exported. Moreover, after the REACH (Registration, Evaluation, Authorization and Restriction of Chemicals) regulation, costs of handling effluents have increased. As a result a large number of companies have begun to relocate their operations to the Asian markets, particularly India and China.

Due to a greater use of polyester and cotton-based fabrics, there has been a shift towards reactive dyes used in cotton-based fabrics and disperse dyes used in polyester. The demand for reactive and disperse dyes is expected to grow fastest due to this continued demand.

The textile industry will remain the largest consumer of dyestuffs; however growth will be driven by markets such as printing inks, paints and plastics. These segments are also expected to increase the consumption of high performance pigments helping improve profitability. At around 8% growth, the Indian colorants industry (including pigments, dyes and dye intermediates) is likely to reach ~USD 5.1 Bn by 2012-13 and is expected to capture 10-12% of the global market.

The basic raw materials used for the manufacture of dyestuffs are benzene, toluene, xylene and naphthalene (BTXN). The technology employed by the dyes sector has been well received in the international market. Some of the units have established joint ventures abroad using their indigenous technology. The per capita consumption of dyes in India is 50 gms as compared to 400 gms in Europe, 300 gms in Japan which shows that there is tremendous potential for the Indian market to absorb additional production.

Considerable efforts have been put in by industry and academia on a continuous basis to deliver colorants with green environment. The need for high performance products has been to a great extent crystallized. There is also a noticeable trend in the world market with regard to color solution approach to counter commoditization with the advent of technological innovations. Innovations on plant based colorants are at advances stages too and could become a strong game changer.

Active Pharmaceutical Ingredients (APIs)





A. Introduction

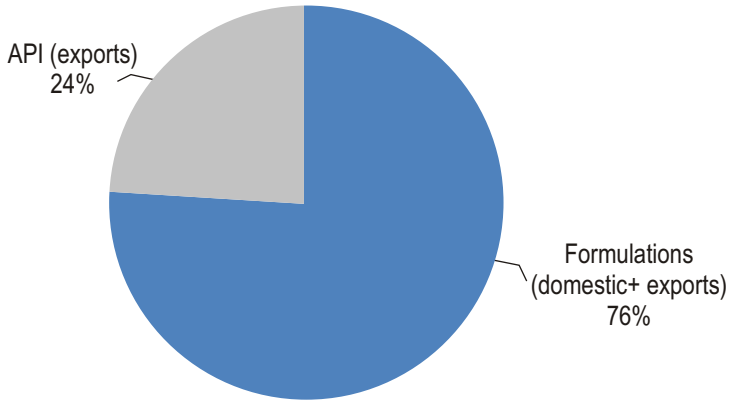
Active Pharmaceutical Ingredients (APIs) are integral components of both the quality and the cost of pharmaceutical goods. Pharmaceutical are one of the key necessities for publicand this requires that API players must account for high quality, sustainability and low prices. Driven by lower costs and high quality (requires skill set and R&D also) the manufacturing of APIs have gradually moved to manufacturing competitive countries of Asia-pacific like China and India. Mostly for generic drugs the cost competitiveness becomes the key and as going ahead by 2014 almost $3Bn worth of drugs are going off patent this increases the potential for API manufactures in India drastically.

B. Market overview

Indian players are also increasingly involved in providing API for regulated markets. Players such as Piramal Healthcare, Divi's Labs, Dishman Pharma, Shasun and Aurobindo etc. supply API for patented products to large and mid-sized pharmaceutical players in regulated markets.

The total turnover of pharmaceutical segment in FY10 was ~$21.8 billion . Details of the overall market size are given below(Refer Figure VI-1). The market break up is such that the of the total pharmaceutical segment API exports account for ~24% of the total turnover resulting in a market size of ~$5.3 Billion. Rest $16.5 Billion is captured by formulations.

Figure VI-1-: Indian Pharmaceutical Segment, FY10



Total Pharmaceutical market in FY10:~$21.8 Bn

Source: Department of Pharmaceuticals Annual Report 2010-11, Research by Tata Strategic

The API exports and the consumption of API for domestic formulations together account for a market size of almost $8.1 billion in FY10 with the API domestic consumption accounting only for ~35% of the total production ($2.8 Bn).There has been growth in the export of the API as the market is estimated to grow from ~60% of total production in 2008-09 (Source: Indian Pharmaceutical Industry, 2009 & ICRA) to ~65% in 2009-10. This trend is also evident from the rising number of deals by Indian players for supplying API in recent years. List of some of the deals is given below(ReferTable VI 1):-

Table VI-1: Deals for APIs

Indian company	MNC partner	Deal type
Piramal healthcare	AstraZeneca Allergan Pfizer	Several APIs two APIs some APIs
Divi's Labs	Abbott Labs GSK Merck & Co.	N.A. two APIs one API
Dishman	Solvay AstraZeneca GSK	four APIs one API some APIs
Shasun Chemicals	GSK Eli Lilly	one API one API
Cadila Healthcare	Nycomed Wyeth	one API one API
Alembic	Pfizer	one API
Hikal	Pfizer Apotex	one API one API
AurobindoPharma	Pfizer	Several APIs
Matrix Labs	Mylan	Acquisition
RAKS Pharma	AmnealPharma	Acquisition

Over the past few years, Indian pharmaceutical players have been increasingly tapping opportunities in global generics markets, especially the US and Europe. Medium-sized and small players, meanwhile, have targeted the semi-regulated markets of Africa, Asia and Latin America to enhance their distribution network. Also cost involved for approvals and the hassles of regulated market has acted as impediments for medium and small players.

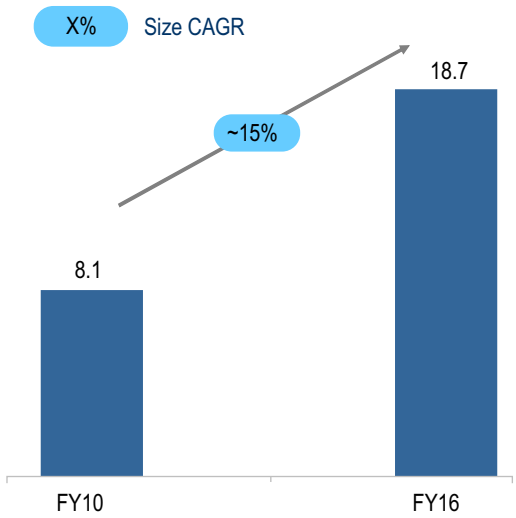
Buoyed by the above trends, For API manufacturers, a burgeoning generic market and cost-reduction measures by global pharmaceutical companies present a huge opportunity in regulated markets. India, which has lower manufacturing costs, well-developed process chemistry skills and the largest number of drug master filings globally, is well-placed to tap export opportunities in regulated markets. Accordingly, bulk drugs exports have grown posted a robust CAGR of over 25% between FY06 and FY10, with exports to regulated markets (having an estimated 52 per cent share) registering a CAGR of about 35 per cent in the said period.

Typically large players are more profitable due to their wide base in regulated markets, which fetch higher realizations. However, a significant exposure to international markets also makes large players vulnerable to risks such as currency volatility, overall market performance and outsourcing plans of key players in the target destinations etc.

C. Future growth potential

The overall market of API is expected to grow at ~16% p.a. in the next five years to reach ~$17 billion by FY16 from current levels of $8.1 Billion (Refer Figure VI-2).

Figure VI-2: Market size of API (including exports), $ billion



The global pharmaceutical industry is witnessing a strong generics push, as drugs totaling annual revenues of around $150 billion will go off-patent during FY11 to FY15. Additionally, declining revenue growth due to a fall in the prices of drugs and decreasing research and development (R&D) productivity (despite an escalation in drug development costs) has forced big pharmaceutical players to cut costs and outsource manufacturing of API to cheaper destinations like India.

These developments have provided Indian API manufacturers an opportunity to increase their penetration in the US and Europe generics market. API exports for off-patent drugs are expected to grow at a CAGR of 17-19% over the next 5 years. Also driving exports will be the decline in the profitability of global players due to severe competition in the space. The emphasis on reducing healthcare costs by governments of regulated markets will give a further fillip to generics and in-turn API export.

In terms of low cost, China is more preferable over India, however still global players prefer India because of documentation issues (language of documents), quality concerns, and India's advanced process chemistry skills. Also, India has the highest number of US FDA (US Food and Drug Administration) approve facilities outside the US. In the case of some players, forward integration into pre-formulations is also provided by Indian manufacturers.

India accounts for nearly 35 per cent of Drug Master Files of the total drug master filings (DMFs) to the US FDA, the share of Indian players has risen sharply to about 35 per cent in 2010 from about 14 per cent in 2000. 271 DMFs in 2009 and 311 DMFs in 2010 were added. This suggests that Indian players have been able to maintain the required quality standards to export to regulated markets. (A DMF provides an indication about the bulk drug manufacturing capabilities of players in terms of its quality standards at facilities, processing, packaging, storage of drugs etc. to the global pharmaceutical company who is outsourcing). Sizeable gap exists in the DMFs of India in comparison to competing countries like China (12%) and Japan (5%).

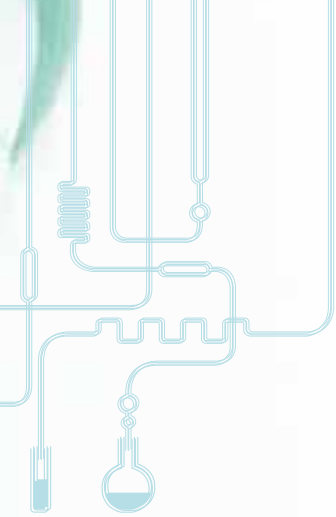
Hence for API export which is one of the critical elements in value chain, India's manufacturing competitiveness is most likely not threatened.





Personal Care Chemicals

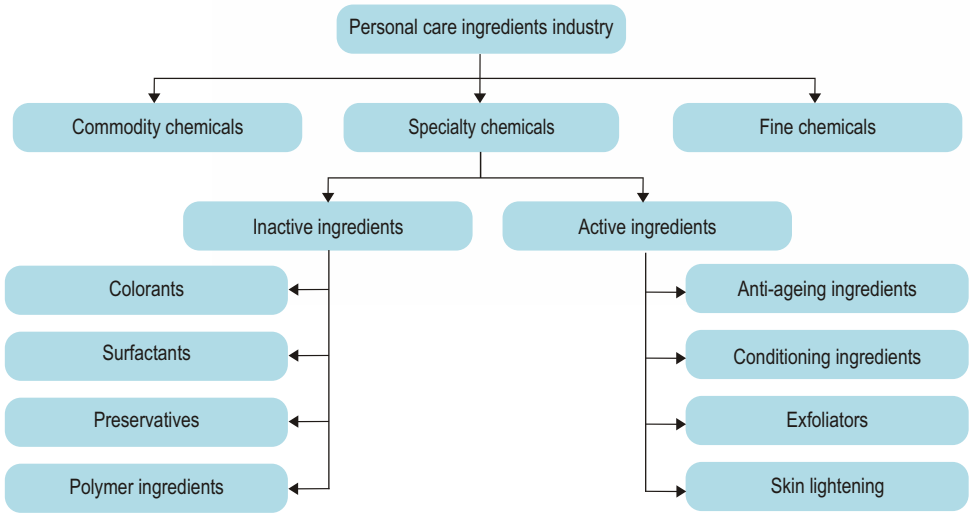




A. Introduction

The market for personal care ingredients is broadly classified into commodity, fine chemical, and specialty chemical ingredients. Specialty ingredients are further classified as active and inactive ingredients based on their functionality in consumer products(Refer Figure VII-1)

Figure VII-1: Segmentation- Personal care ingredients industry



Source: Industry reports, Research by Tata Strategic

a. Inactive ingredients

Personal Care inactive ingredients refer to those ingredients that provide physical and process able properties to a formulation as opposed to active properties. These include ingredients such as surfactants, preservatives, colorants and polymer ingredients

b. Active ingredients

Personal Care active ingredients refer to those ingredients that add active property to a product that result in benefits to the end user as opposed to the formulation. These include ingredients such as Anti-ageing ingredients, exfoliators, conditioning agents and UV agents.

B. Market overview

Personal care ingredients market is valued at ~$450 million in FY11 with Active ingredients accounting for ~40% of the total market. In 2011, the total Indian personal care inactive ingredient market was valued at ~$270 million while active ingredients market was valued at ~$180 million.

The market for personal care ingredients in India is becoming increasingly sophisticated. The constant entry of foreign manufacturers has raised the standards expected of suppliers in this market. Market is characterized by strong presence of MNCs like Cognis, Dow Corning, BASF, ISP, DSM, Merck etc. Domestic players like Vivimed Laboratories, SAMI Labs and India Glycols are gaining prominence.

Premium Segments in India are showing good growth potential with increasing awareness and evolving consumers who are ready to spend more on quality products.

Inactive personal care ingredients market has grown at a CAGR of 6.9% to reach ~$270 million in FY11 from ~$180 million in 2005 (ReferFigure VII 2). Polymer ingredients and surfactants are key cost drivers for cosmetics and hence a major focus of cosmetics manufacturers' cost reduction. Most of the inactive ingredients are procured from domestic suppliers with imports for only special ingredients. The market share of inactive ingredients by application is also given below (ReferFigure VII 3).

Figure VII-2: Personal care Inactive ingredients Market

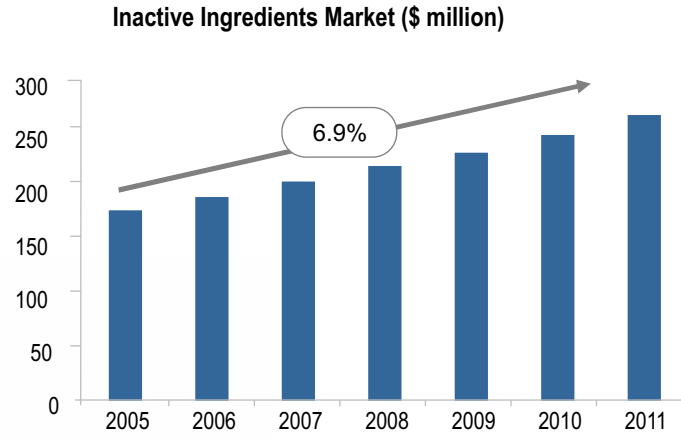
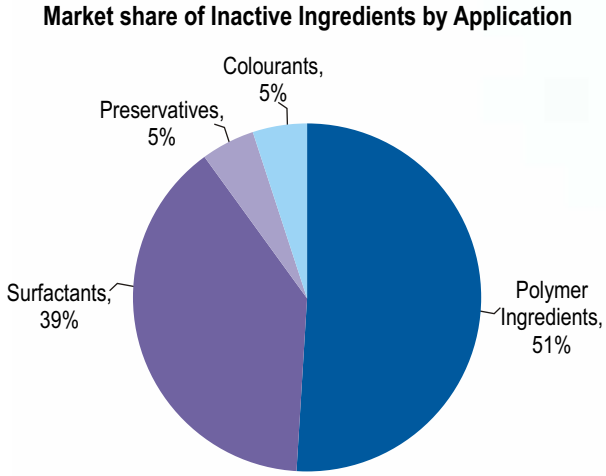


Figure VII-3: Market share of Inactive ingredients by application



Active personal care ingredients market has grown from $110 million in 2005 to reach ~$180 million in 2011 (ReferFigure VII 4), registering a CAGR of ~8.2%. In India, UV ingredients and conditioning agents have a mature market while Anti-aging agents and exfoliators are in growth phase. Active ingredients are the ones providing the final property to the product. There are not many manufacturers for the same in India and most of the active ingredients are being imported. The market share of active ingredients by application is also given below (Refer Figure VII 5).

Figure VII-4: Personal care active ingredients market

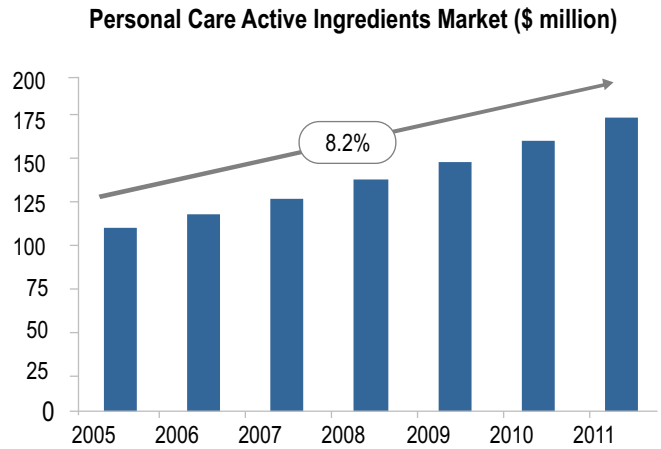
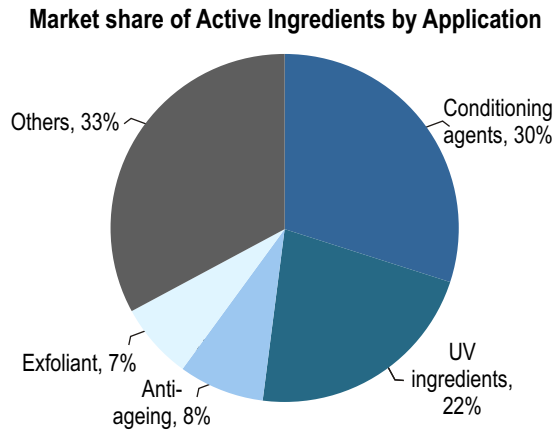


Figure VII-5: Market share of active ingredients by application



Industry trends(Refer Table VII 1)

Market trends

High price sensitivity has limited use of high value personal care ingredients. Market is also seeing advent of large corporations willing to take long term investment decisions in India. Typically different sets of personal care products and hence the ingredients are used for low and middle class segments as compared to the premium segments. There are many Indian players coming up to provide local substitutes for active ingredients.

Regulatory trends

There are multiple and complex regulations under different bodies due to which there is a lack in implementation of set guidelines and laws. Drugs and Cosmetics Act (1940) has laid down the general guidelines about imports, manufacturing, sales and distribution of personal care products in India. Bureau of Indian Standards has also framed standards about personal care products as well as the ingredients, completely based on the European Union's guidelines but these are also not enforced as regulations.

There is an also non-uniform licensing approval across states. Each state has its own FDA and license is granted by state where the manufacturing unit is located. No separate sales license is required and there are considerable variations in norms followed by each state. This leads to inconsistent approach across authorities in interpretation of a particular issue.

Technology trends

The market is seeing increasing demand for natural ingredients as customers are becoming more aware about the contents of the products they use. With certain products being considered carcinogenic and already been banned in foreign countries, there is a shift in Indian markets also though a complete ban has not yet been imposed by the government. For example: The surfactant industry is facing increased pressure to go green due to rising environmental concerns and the allergenic effects of synthetic surfactants, whereas International and national manufacturers are reducing their dependence on synthetic preservatives such as parabens, due to its carcinogenic activity.

Table VII 1: List of applications, trends & implications for personal care ingredients

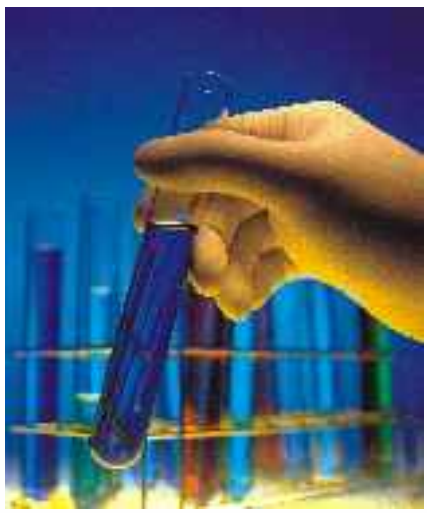
	Application	Key Trends	Implications
Inactive ingredients	Surfactants	• Increasing pressure to "go green" • Focus on natural surfactants due to allergenic effects of synthetic ones	• Demand for vegetable-derived surfactants increasing • Natural surfactants such as soap nut shells are becoming popular
	Colorants	• Special effect pigments - colour shifting effects, heat-reflection etc. • Customer demand for newer shades	• Need for joint product development with formulators • Intense colours and new metallic shades being developed
	Preservatives	• Reduction of dependence on synthetic preservatives • Concerns about carcinogenic properties	• Small, local players gaining prominence • Movement towards bio-based products
Active ingredients	Polymer ingredients	• Need for multi-functional polymers	• Increased innovation focus
	Anti-aging	• Preference for natural products increasing	• Opportunity to use local knowledge of herbs and Ayurveda to introduce new products
	Conditioning	• Increasing demand for moisturization • Increasing competition in other related fields like skin care etc.	• Increased use of hair care humectants • Hair care emollient demand acts a s a potential growth area

C. Future growth potential

With increasing competition from MNC's and the organized sector, the segment is expected to see strategic alliances and acquisitions in future. The market is also expected to witness increased product differentiation and value addition aided by increasing spend on R & D even by the domestic suppliers. New ingredient formulations are supporting the market penetration for higher value and premium ingredients.

Increasing demand for personal care products with evolving customers is the key in driving the growth of personal care ingredients. Personal care products growth is being driven by factors such as increasing focus on rural markets, increasing disposable income, widening product portfolios and enhanced value realization by end consumers.

Personal care ingredients market is expected to register a growth of ~8% p.a. to reach a value of ~$610 million by FY15. Active ingredients are expected to register a higher growth at ~9% p.a. as compared to the growth of inactive ingredients at ~7.4% p.a. This is mainly due to the improving penetration of functional products as compared to traditional products. Customers are demanding products for their exact skin type and needs and are willing to pay premium for quality product.





Flavors & Fragrance





A. Introduction

Flavors and fragrances (F&F) are the basic essential additives for any foodstuff/ personal care products that lend the specific taste and smell to the product. The figure below represents the value chain structure for flavors & fragrances(ReferFigure VIII 1).

Figure VIII -1 -: Value chain for Flavors & Fragrances

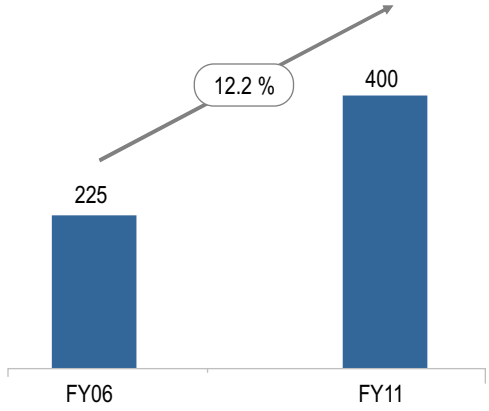


The major end users of flavors & fragrances are Soaps, Tobacco, Detergent, Bakery, Confectionary, Skin care, Dairy, Beverages, Processed food, Fine fragrances, Household care, toothpaste etc.The market is highly fragmented in the bakery, savory, and confectionery segments with buyers ranging from multinationals to small-scale manufacturers. Among all the other food segments, it is relatively more consolidated, as manufacturing technology becomes more complex restricting the entry of smaller participants.

B. Market overview

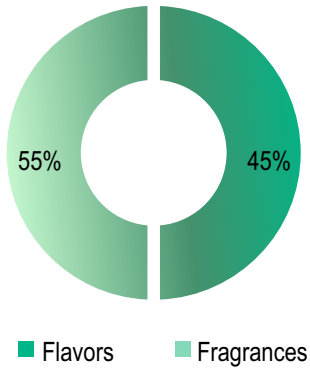
Globally flavors & fragrances market is currently ~ $ 21 Billion with a combined annual growth rate of almost 3.5-4% p.a. in the last decade. The markets in Asia-pacific have been growing at a higher rate of 7-8% p.a. Indian market however has been one of the fastest growing with growth of ~12% p.a. in the last five years to reach $400 Million in FY11 from $225 Million in FY06(Refer Figure VIII 2). India is one of the markets which have lagged in the synthetic flavors and fragrance market in the past but is rapidly catching up. The figure below depicts the market size of flavors & fragrances in India.

Figure VIII-2: Market size of Flavors & Fragrances, $ Million



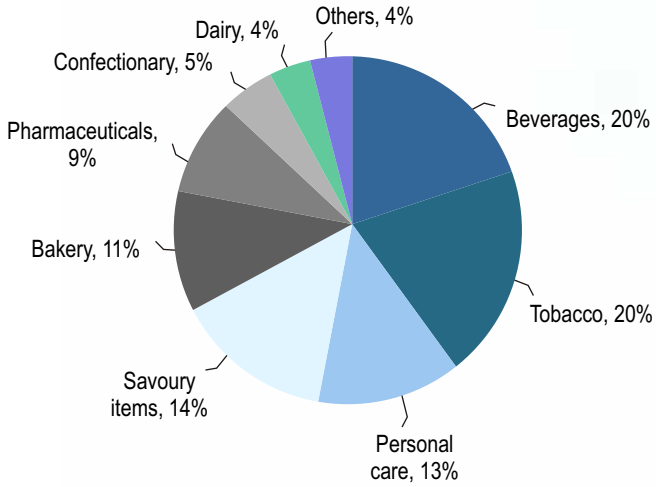
The break-up of the market size in terms of usage as flavors and fragrances is given below (Refer Figure VIII-3) which indicates that 45% of usage is as flavors with the rest as fragrances.

Figure VIII-3: Break up of Flavors & Fragrances market by product type



The break-up of the market by key applications is given below which indicates that most of the usage is by beverages, tobacco, personal care, bakeries and pharmaceuticals (Refer Figure VIII-4).

Figure VIII-4: Break up of Flavors & Fragrances market by end usage



The market is mostly dominated by large players. The five largest companies in the market are the key MNCs such as Givaudan, International Flavors & Fragrances (IFF), Firmenich, and Symrise and together they command more than 2/3rd of the domestic market. Apart from these, key Indian F&F companies that are present in the flavors market are companies such as SH Kelkar (Keva), Sachee Aromatics, and Oriental Flavors & Fragrances. India is currently more or less self-sufficient with minimal demand capacity gap. And most of the market players are trying to leverage feedstock availability and manufacturing competitiveness of India to access export markets. The Indian fragrance market differs fundamentally from the global market in its segmentation. While fine fragrances (use in alcoholics) are a major component of global fragrance sales, in India this category is negligible. In India the usage in beverages, bakeries, confectionaries, personal care and savory items form the bulk usage.

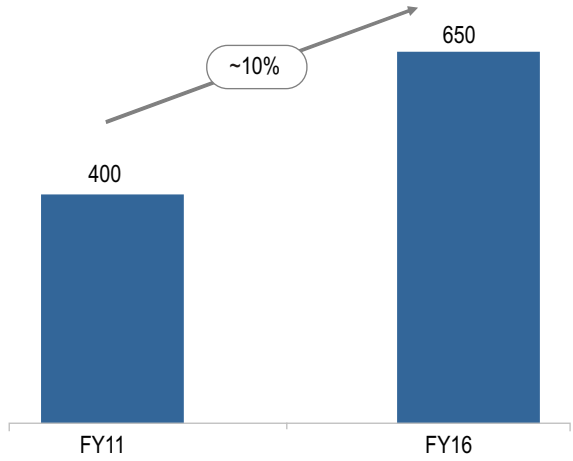
C. Future growth potential

Traditionally, flavors were viewed as customized value added ingredients and therefore, commanded higher prices over the past few years. However, prices have been reduced due to increasing price pressures from end users/ buyers. This trend has gained momentum with increasing consolidation among customers through mergers and acquisitions thus, improving their bargaining power. An overall increase in the prices of aroma chemicals, the building blocks of flavors due to fluctuating prices in petrochemicals has also affected price margins of flavors and this is one of the major constraints restraining the growth in market revenues. Shift from natural to synthetic products has been marked due to increasing cost pressures and the better product/ process for synthetic which meet customer requirements.

Production of quality customized blends is a key competitive factor in the general F&F industry. Therefore, F&F houses are focused on different areas in flavor synthesis technology such as encapsulation of flavors for timed release.

A key agenda of major F&F companies has been to maintain existing customers and expand market shares. As the U.S. and European markets are saturated, Asia Pacific, particularly India, is on the roadmap for most of the global F&F companies for expansion of sales. India's manufacturing competitiveness along with availability of feedstock promotes it as a production base too. The flavor and fragrances industry of India is expected to grow at ~10% p.a. over the next five years(Refer Figure VIII 5) to reach ~$650 Bn by FY16. Going ahead the demand drivers are the end use industries, which are expected to register a healthy growth rate (beverages ~12%, bakeries ~11%, pharmaceuticals ~15% etc.).

Figure VIII 5: Future market potential of Flavors & Fragrances, $ Million



India is one of the few countries expected to register a double digit growth. The figure below represents the future market size.Historically acquisitions and mergers have been one of the key routes of growth of MNCs. The large foreign players have used M&A to expand their operating and production bases.

Innovation and Sustainability




Thymine
Adenine
Cytosine
Guanine

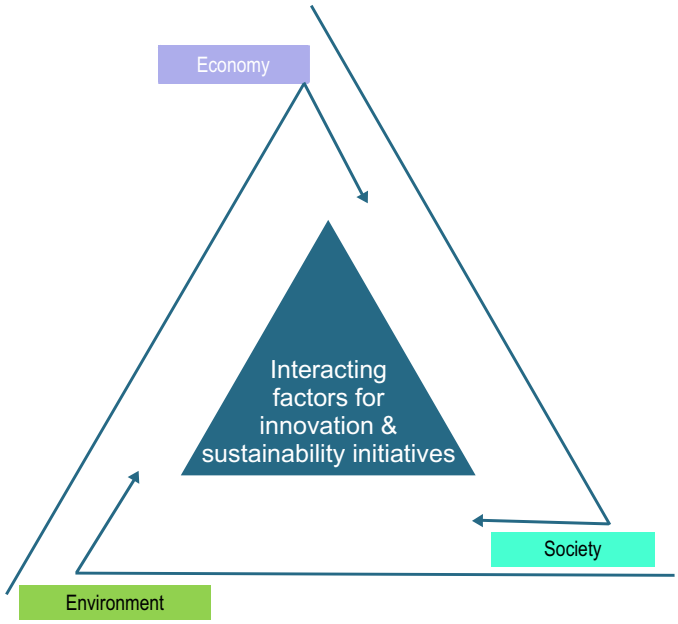
Figure IX-1: Sustainability map



The figure above (Refer Figure IX-1)represents some of the considerations of a specialty chemicals company for sustainability. A sustainable growth for specialty chemicals is most likely to depend on the scope of innovation. Various companies are now focusing on growth of demand and are leveraging innovation as the key to achieve it. Specialty chemicals can play a major role in improving the quality of life by enabling the manufacture of the goods and materials that we need whilst mitigating adverse environmental impact. By developing new usages of specialty chemicals, new processes and sustainable routes to produce, along with novel environmentally benign materials, we can achieve low carbon processes that make high value products that are safe for humans and solve energy and sustainability challenges.

The following chart (Refer Figure IX 2)depicts the three important interacting factors which define the need for innovation and sustainability initiatives.

Figure IX 2: Interacting factors pushing for innovation and sustainability initiatives



Currently India fares poorly in chemical research and innovation, accounting for only ~5% of the global chemical research papers and only ~1% of the global chemical patents. The overall investment in R&D research scenario in India is reverse to the scenarios in developed countries. Most of the developed nations have 60-70% of total R&D and innovation initiatives by industries whereas in India more than 50% research in chemicals is by Government. The average R&D intensity in India chemical sector was ~2.5% (in FY09). Bulk of this intensity is due to knowledge intensive specialty chemicals while the bulk chemicals and fertilizers are at the lower spectrum. In terms of global comparison average R&D of chemical sector is almost half to the developed countries.

A. Green chemistry

Green chemistry focuses on encouraging the development of products and processes that eliminate or reduce the use of hazardous substances. However with evolving understanding of the consumers about the downsides of existing processes Green chemistry is no longer a proactive step. It is increasingly becoming a tool for competitiveness. Consumers in many developed countries in Europe and USA are willing to pay a premium for green chemistry. The adoption of green production and green products is likely to determine the competitive positioning in near future.

B. Climate change

Climate change is one of the mega trends impacting the industries across the globe. The attitude of community and governments towards adverse impact to climate is becoming more stringent and hence new regulations are coming into effect. Reduction in CO2 emission is becoming very important for industries to sustain.

Local companies along with MNCs are taking steps to control it. Some of the steps to making specialty chemicals production sustainable in this parameter are:-

i) Carbon capture and storage e.g.: use of supercritical CO2 for solvent, enhanced oil recovery, ecofriendly Water Dispersible granules (WDG), Suspension Concentrates (SC), Oil Dispersion (OD), Micro-emulsion (ME), and Emulsion oil in Water (EW) etc.

ii) Use of aqueous hydrogen peroxide for clean oxidations, use of better catalyst for better conversion efficiencies etc.

iii) Energy conservation: use of renewables for power generation

iv) Introduce eco-friendly/ bio degradable/ bulk/ recyclable packaging

However just a focus on environment and society is not going to complete the pillar and hence the economics aspect must also be covered for an innovation based sustainability strategy.Some of the economic implications of innovations are:-

i) A low energy footprint results in saving power and energy, the cost of which is substantial for production of specialty chemicals.

ii) Shift towards high value activities could result in higher premiums, brand development etc. and may compensate for the cost of innovation. This along with a focus on geographic expansion is likely to bring in more demand for high value products.

iii) Reduction in the cyclicality of the portfolio along with the efficient utilization of raw materials could be another aspect where innovation may drastically impact the economic gains

iv) Focus on building knowledge capital and talent pool is likely to bring in innovation that could drive the competitive positioning of specialty chemical firms

v) With more tighter environmental norms expected to come, it becomes imperative to develop the specialty chemical products in line with the future needs

Some of these sustainability and innovation initiatives are also needed to be taken up by the industry together. Setting up of standards or benchmarking, awareness of customers and producers, recognitions and awards etc. are important for innovation to become a part and parcel of specialty chemical production.

Compliance with REACH and other stringent regulations imposed by EU and US markets should encourage the Indian specialty chemical manufacturers to increase their focus on innovation and sustainability. Indian government currently does not have any stringent regulations or environmental mandates forcing Indian manufacturers however with increasing globalization and awareness of consumers, investment in innovation could pay rich dividends later.



Conclusion

In recent times the production of specialty chemicals have slowly shifted from developed countries to manufacturing competitive countries of India, China, and Taiwan etc. It is imperative for India to maintain its manufacturing competitiveness as well as for Indian manufacturers to keep pace with the product/ process innovation cycles to build its presence in global specialty chemicals industry.

The focus of Indian specialty chemical manufacturers could be on eco-friendly products and in alignment with stringent regulations. Segments like colorants, flavors & fragrances etc. have strong presence of unorganized players and the market is expected to observe consolidation in these segments. Investments in R&D could also be increased (either on industry level or on company level) to increase differentiation and ensure minimum duplication in market.

The stakeholders in this industry need to be abreast of the global capacity and demand scenario. Rapid pace of capacity build up could lead to mismatched demand supply resulting in price volatilities and saturation of market (including export markets). A global footprint, better reach, customer relationship, marketing initiatives could reduce the risk of varying demand. A diverse product portfolio and huge product range could ensure sustainability of the company.

Export market scenarios may change with time and create new geographic opportunities to enter. For e.g. Pakistan could decide to grant India most favored nation (MFN) trading status. It may then open up many potential benefits for both countries; existing trade arrangements couldalso be improved.

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About Tata Strategic

Tata Strategic Management Group is the largest Indian Owned Management Consulting Firm. Set up in 1991, Tata Strategic has completed over 500 engagements with more than 100 Clients across countries and industry sectors, addressing the business concerns of the top management. Today more than half the revenue of Tata Strategic Management Group comes from working with companies outside the Tata Group. We enhance client value by providing creative strategy advice, developing innovative solutions and partnering effective implementation.





Reports co-authored by Anshul Saxena and Avinash Singh

About FICCI

Established in 1927, FICCI is the largest and oldest apex business organisation in India. Its history is closely interwoven with India's struggle for independence, its industrialization, and its emergence as one of the most rapidly growing global economies. FICCI has contributed to this historical process by encouraging debate, articulating the private sector's views and influencing policy.

A non-government, not-for-profit organisation, FICCI is the voice of India's business and industry.

FICCI draws its membership from the corporate sector, both private and public, including SMEs and MNCs; FICCI enjoys an indirect membership of over 2,50,000 companies from various regional chambers of commerce.

FICCI provides a platform for sector specific consensus building and networking and as the first port of call for Indian industry and the international business community.

Our Vision

To be the thought leader for industry, its voice for policy change and its guardian for effective implementation.

Our Mission

To carry forward our initiatives in support of rapid, inclusive and sustainable growth that encompass health, education, livelihood, governance and skill development.

To enhance efficiency and global competitiveness of Indian industry and to expand business opportunities both in domestic and foreign markets through a range of specialised services and global linkages.

FICCI

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Specialty chemical manufacturers

a. Agrochemicals

Brief profile: Bayer Cropscience

Bayer CropScience India	
Company overview	• Bayer CropScience is one of the world's leading cropscience companies in the world with presence in 122 countries
Product segments/ Verticals	• Crop Protection • Environmental Science • Bioscience
Manufacturing locations	• Three manufacturing locations at Thane, Himmatnagar & Ankleshwar • Total production capacity of 5770 MT of active ingredients and formulation capacity of 10,025 KL & 3650 Mt for liquids & solids respectively
Key Mergers/ Acquisitions	• Merger with Aventis Cropscience Limited worldwide, 2002 • Acquisition of Biotech company Athenix Corp., 2009

Brief profile: Rallis

Rallis India	
Company overview	• Rallis is one of the leading Indian agrochemical company
Product segments/ Verticals	• Agri business domestic: Five segments: Pesticides, seeds, fertilizers, household products & seed treatment chemicals • Institutional business: Formulations & technical bulk sales to leading companies like Bayer, Syngenta, UPL, etc • Contract services: Partnering with leading companies for contract manufacture of technical grades/ formulations & intermediates
Manufacturing locations	• Five manufacturing plants at Turbhe, Akola, Ankleshwar, Lote&Patancheru "Total installed capacity of pesticides is 16,720 MT for solids &12,500 MT for liquids
Key Mergers/ Acquisitions	• Majority stake in Bangalore based Metahelix Life, 2010 • Co-marketing alliances with several companies such as DuPont, Syngenta, Bayer, FMC, Makhteshim Chemical works, Ghrada Chemicals, etc

Brief profile: United phosphorus

United Phosphorous Limited	
Company overview	• Established in 1969 and has its presence in all value-added agricultural inputs ranging from seeds to crop protection &post harvest activity • Has its own subsidiary offices worldwide Global player with customer base in 86 countries
Product segments/ Verticals	• Agrochemicals • Speialty chemicals • Industrial chemicals
Manufacturing locations	• 21 manufacturing location across the globe with 9 in India • Production capacity of 98,264 MT of pesticides & 42,631 MT of pesticides intermediates
Key Mergers/ Acquisitions	• Product acquisitions from DuPont and Bayer • Company acquisitions of Metahelix Life, Evofarms, AG, Cequisa and ICONA

Brief profile: Syngenta

Syngenta India Limited	
Company overview	• 84% subsidiary of Syngenta Global • Formed by merging agri-businesses of Novartis & Astra
Product segments/ Verticals	• Seeds • Crop protection chemicals
Manufacturing locations	• Manufacturing plant at Santa Monica, Goa
Key Mergers/ Acquisitions	• Co-marketing alliance with Rallis India • Crop protection technology exchange with DuPont, partnership on improving crop quality with Embrapa - the Brazilian Agricultural Research Corporation, R&D agreement with Dow AgroScience • Product license from Sumitomo

Brief profile: Gharda Chemicals

Gharda Chemicals Limited	
Company overview	• Established in 1967 • A major player in domestic and export market in India
Product segments/ Verticals	• Agrochemicals • Intermediates • Pigments • High performance polymers • Contract services
Manufacturing locations	• Dombivli, Ankleshwar, Lote, Jammu &Panoli
Key Mergers/ Acquisitions	• Set up Gujarat Insecticides Ltd. In joint venture with Gujarat Agro Industries Corporation Ltd. In 1980 • In 1996, Gharda Chemicals purchased the entire holdings of Gujarat Agro Industries Corporation Ltd and Gujarat Insecticides Ltd. Became the subsidiary of Gharda Chemicals.

b. Paints, Coatings & Construction chemicals

Brief profile: Asian Paints

Asian Paints www.asianpaints.com/	
Company overview	• Company overview"India's largest paint company and Asia's third largest paint company
	• Operates in 17 countries and has 24 paint manufacturing facilities in the world
Key products	• Ancillaries, Automotive coatings, Industrial paints and Decorative Paints
Manufacturing locations	• Raigad, Satara (Maharashtra), • Ankleshwar (Gujarat), Rohtak (Haryana) • Kanchipuram, Cuddalore (Tamil Nadu), Medka (AP)

Brief profile: Kansai Nerolac

Kansai Nerolac www.nerolac.com	
Company overview	• It is the second largest coating company in India and the market leader in automotive and powder coating
	• Nerolac paints is an established brand in decorative paints
Key products	• Automotive Coatings, Decorative Paints, Powder Coatings, High Performance Coatings, General Industrial Coatings
Manufacturing locations	• Ratnagiri (Maharashtra), • Kanpur (UP), Rewari (Haryana) • Hosur (Tamil Nadu)

Brief profile: Rhodia

Rhodia Specialty Chemicals India Ltd. www.rhodia.com	
Company overview	• Formerly Albright & Wilson Chemicals India Ltd. (acquired in 2000 by Rhodia)
Key products	• Alkamuls OR 36, Igepal BC/4, Rhodafac
Manufacturing locations	• Roha, Maharashtra

Brief profile: BASF Coatings India Ltd.

BASF Coatings India Ltd. www.basf-india.com	
Company overview	• Independent division of BASF India
	• Prominent in automotive coatings
Key product lines	• Electrodeposition coatings, primer surfacer, top coats, base coats, paint system for plastic components
Manufacturing locations	• Dadra & Nagar Haveli

Brief profile: Fosroc India

Fosroc India www.fosroc.com	
Company overview	• Wholly owned subsidiary of Fosroc International
Key products	• Admixtures, joint sealants, surface treatments
Manufacturing locations	• Bangalore • Ankleshwar • Rudrapur

Brief profile: SIKA India

SIKA India www.sika.in	
Company overview	• Convened India operations in 1987 • Subsidiary of Switzerland-based parent company
Key products	• Waterproofing: Sikacim • Tiling: SikaTilofix • Sealing: SikaBoom
Manufacturing locations	• Kalyani, West Bengal • Goa • Jaipur • Blending units in Mumbai and Chennai

Brief profile: BASF Construction

BASF Construction Chemicals Division www.basf-cc.co.in	
Company overview	• Wholly owned by the BASF group
Key products	• Concrete admixtures, joint sealants, flooring and waterproofing
Manufacturing locations	• Turbhe, Navi Mumbai

Brief profile: Pidilite

Pidilite www.pidilite.com	
Company overview	• Started operations in 1959, a pioneer in consumer and specialties chemicals in India
Key products	• Adhesives and sealants
Manufacturing locations	• Himachal Pradesh • Maharashtra • Gujarat

c. Colorants

Brief profile: Sudarshan India

Sudarshan India www.sudarshan.com	
Company overview	• Largest pigment and sole effect pigment manufacturer • Present in business for over 50 years
Key brands	• Colours: Sudaperm, Sudafast, Sudacolor • Effects: Sumica, Sumicos
Manufacturing locations	• Roha and Mahad (Mahasrashtra)

Brief profile: Golchha Pigments

Golchha Pigments www.golchhapigments.com	
Company overview	• One of the largest manufacturers of synthetic iron oxide pigments in India • Also into manufacturing high quality oxide flooring colours, Wall Putty, Tile Adhesive, Cement Paints, Cement Primer and Waterproofing Compound
Key brands	• Cement Paint:WONDERCEM & ECOCEM ,WONDER WHITE, WONDERFIX • Water Proofing: WONDERSEAL, WONDER WALL PUTTY
Manufacturing locations	• Kalunga and Rourkela in Orissa and Bilaspur in Chattisgarh and a dedicated export office in Rourkela

Brief profile: Atul Industries

Atul Industries www.atul.co.in	
Company overview	• Diversified company with presence in colours, aromatics, agrochemicals, polymers and pharma intermediaries
Key brands	• Vat dyes: Novatic • Acid dyes: Tulacid • Direct dyes: Tuladir
Manufacturing locations	• Atul and Ankleshwar (Gujarat)

Brief profile: Clariant Chemicals India

Clariant Chemicals India www.clariant.in	
Company overview	• One of India's leading specialty chemicals companies • No. 1 player in Pigments, Textile Chemicals, Leather Chemicals and Biocides for Paints
Key brands	• Flame retardants: Exolit®, Polymer additives: Hostavin® • Emulsions: Mowilith® , Mowicoll®, Appretan® • Masterbatches :REMAFIN®, RENOL®
Manufacturing locations	• Kolshet (Thane), Roha (Raigad), Cuddalore, Kanchipuram

d. APIs

Brief profile: Piramal Healthcare

Piramal Healthcare Limited www.piramalhealthcare.com	
Company overview	• It has a global footprint of over 100 countries • Aspires to be the first Indian company to discover, develop and launch its own NCE drug in the global market • It has more than 115 issued patents and 395 pending patent applications in several countries
Key brands	• Saridon, Lacto Calamine, i-pill, Supractiv, Triactiv, Polycrol, Workz
Manufacturing locations	• Mumbai, Medak (AP), Chennai, Pithampur (MP), Ahmedabad, Raigad (MH), Thane (MH), Baddi (HP)

Brief profile: Divis Laboratories

Divis Laboratories Limited www.divislabs.com	
Company overview	• Established in 1990 with first plant in 1995 • Focus on research & development
Key segments	• Generics, Intermediates, Protected amino acids, Chiral synthesis, Carotenoids and Nutraceuticals
Manufacturing locations	• Vishakapatnam and Nalgonda (Andhra Pradesh)

Brief profile: Cadila Pharmaceuticals

Cadila Pharmaceuticals Limited www.cadilapharma.com	
Company overview	• It has a global footprint in over 90 countries • One of the largest privately held pharmaceutical companies in India • Offers more than 50 APIs and has filed 33USDMFs
Key brands	• Envas, Aciloc, Symbiotik, Clax, Rabeloc etc.
Manufacturing locations	• API:- Ankaleshwar, Gujarat

Brief profile: Dishman

Dishman Group www.dishmangroup.com	
Company overview	• Dishmanprovides a range of solutions at locations in Europe, China and India • Provide highly potent API services which are offered under the carbogenamcis business apart from contract research and manufacturing services (CRAMs)
Key brands	• Carbogen AMCIS business, specialty chemicals
Manufacturing locations	• Ahmedabad (Naroda and Bavla plant)

Brief profile: Jubilant Life Sciences

Jubilant Life Sciences www.jubl.com		
Company overview	Jubilant Life Sciences Limited, an integrated pharmaceutical and life sciences company, is the largest Custom Research and Manufacturing Services (CRAMS) player and a leading Drug Discovery and Development Solution (DDDS) provider out of India. Recently it has been ranked at No. 6 position amongst the Top 10 Global contract manufacturing & services outsourcing players of the pharmaceutical industry.	
Key product lines	• **Life Science Ingredients** Active Pharmaceutical Ingredients Fine Chemicals Nutrition Ingredients Crop Science Chemicals	**Generics** Solid Dosage Forms Radiopharmaceuticals Allergenic Extracts
Manufacturing locations	Uttar Pradesh Uttarakhand Karnataka Gujarat	Maharashtra Quebec Spokane Salisbury

b. Personal care ingredients

Brief profile: Vivimed Labs

Vivimed Labs www.vivimedlabs.com	
Company overview	• Sales footprint across 50 geographies with SBUs in USA, Europe and a marketing office in China
Key product lines	• Oral care: Anti-bacterial, enamel protection • Skin care: Anti-ageing, skin lightening • Hair care: Jarocol, dyes, anti-dandruff, UV filters
Manufacturing locations	• Bonthapally, Bidar, Jeedimetla (Andhra Pradesh) • Haridwar, Kashipur (Uttarakhand)

Brief profile: Sami Labs

Sami Labs Ltd. www.samilabs.com	
Company overview	• Established 1991 in Bangalore • Sales footprint and strategic alliances in USA, Europe, Japan, Australia, Middle East, South Africa, China,
Key products	• Alpha lipolic acid • Cococin • Ellagic acid
Manufacturing locations	• Bangalore (4 plants) • Hyderabad • Utah, USA

Brief profile: India Glycols

India Glycols www.indiaglycols.com/	
Company overview	• Established in 1983, A leading company that manufactures green technology based bulk, specialty and performance chemicals and natural gums, spirits, industrial gases, sugar and nutraceuticals
Key products	• PE Glycols, Fatty Acid/ alcohol Ethoxylates • Phytochemicals, Polysorbates, Glycol ethers • Performance Chemicals, Natural Gums

f. Flavors & Fragrance

Brief profile: S H Kelkar& Co.

S H Kelkar www.kelkargroup.com	
Company overview	• Largest Indian flavours and fragrances manufacturer • In business for over nine decades
Key end-use customer segments	• Flavours: Dairy products, bakery, savouries, pharma • Fragrances: Personal care, hair care, fabric care
Manufacturing locations	• Patalganga, Maharashtra

Brief profile: Sachee Aromatics

Sachee Aromatics www.sachee.com	
Company overview	• Started by Mr. ManojArora, a leading aroma chemical manufacturer for five decades
Key end-use customer segments	• Personal wash, personal care, fabric care, incense sticks, aerosols, candles, tobacco products
Manufacturing locations	• Delhi • Paris

Brief profile: Givaudan

Givaudan www.givaudan.com	
Company overview	• One of the leading, MNC, manufacturer of flavour and fragrance for consumer products
Key end-use customer segments	• Beverages, Dairy, Health & wellness, Savoury, Personal care, Home care
Manufacturing locations	• Daman (flavour production) • Bangalore (fragrance production) • Mumbai (fragrance and flavour creation/application)

Brief profile: International Flavors & Fragrances

International Flavors & Fragrances www.iff.com	
Company overview	• A leading global creator of flavors and fragrances
Key end-use customer segments	• Beverages, Dairy, Savoury, Beauty care, Fabric care, Home care
Manufacturing locations	• Chittoor, Andhra Pradesh (flavour production) • Chennai (Fralour, fragrance, ingredients production)