

# SPECIALTY CHEMICALS IN INDIA<sup>^</sup>

*A sum of disparate parts, segment leaders  
poised to create value*

AVENDUS<sup>^</sup>  
the next level is the only level



# SPECIALTY CHEMICALS REPORT<sup>^</sup>

## TABLE OF CONTENTS

- I. Message from the authors ..... 05
- II. Specialty chemicals : Amalgamation of disparate parts ..... 06
  - Market growth drivers ..... 07
  - Key success factors ..... 07
  - Key trends ..... 08
  - Challenges ..... 09
  - Segment attractiveness ..... 10
  - Key takeaways ..... 11
- III. Specialty chemical segments ..... 12



### AGROCHEMICALS | Page 12 - 29

- Executive summary ..... 13
- Introduction to agrochemicals : A critical agricultural input..... 14
  - > Introduction to agrochemicals ..... 14
  - > Classification of agrochemicals ..... 14
  - > Agrochemicals value chain ..... 16
- Market size and growth ..... 17
- Key success factors ..... 23
- Key trends shaping the market ..... 24
- Key challenges ..... 25
- Competitive landscape..... 26
  - > Companies to watch out for ..... 27
    - Rallis ..... 28
    - Indofil ..... 28
    - PI Industries ..... 28
    - Dhanuka ..... 29
- Future outlook : Marketing and product portfolio management as the key differentiators ..... 29



### FLAVORS AND FRAGRANCES | Page 30 - 43

- Executive summary..... 31
- Introduction to F&F : An important contributor to sensorial connect ..... 32
  - > An introduction to F&F ..... 32
  - > Industry value chain ..... 32
- Market size and market growth ..... 34
- Key success factors ..... 37
  - > Ingredient manufacturers ..... 37
  - > Blenders ..... 37
- Trends shaping the market ..... 37
- Challenges and concomitant opportunities for Indian players ..... 40

- Competitive landscape and companies to watch out for ..... 41
  - > Ingredients manufacturers ..... 41
  - > Blenders ..... 41
  - > Companies to watch out for ..... 41
    - Synthite Industries ..... 42
    - Privi Organics ..... 42
- Future outlook ..... 42
  - > M&A and JVs in the Indian market ..... 43



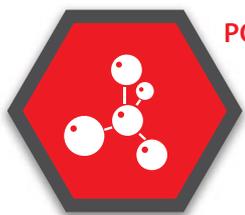
### DYES AND PIGMENTS | Page 44 - 53

- Executive summary ..... 45
- Introduction to the market ..... 46
  - > Introduction to dyes and pigments ..... 46
  - > Value chain ..... 46
  - > Classification of dyes and pigments ..... 47
- Market size and market growth ..... 48
- Key success factors ..... 49
- Trends shaping the market ..... 50
- Competitive landscape ..... 51
  - > Companies to watch out for ..... 52
    - Aarti Industries ..... 52
    - Sudarshan Chemicals ..... 52
    - Neelikon ..... 53
- Future outlook ..... 53



### SURFACTANTS | Page 54 - 59

- Executive summary ..... 55
- Introduction to the market ..... 56
  - > Introduction to surfactants ..... 56
  - > Value chain ..... 56
- Market size and market growth ..... 57
- Key success factors ..... 58
- Trends shaping the market ..... 58
- Competitive landscape ..... 59
  - > M&A activity and capital expansion ..... 59
- Future outlook ..... 59



### POLYMER ADDITIVES | Page 60 - 67

- Executive summary ..... 61
- Introduction to the market ..... 62
  - > Plastic : Value chain ..... 62
  - > Types of polymer additives ..... 62
- Market size and market growth ..... 63

- Key success factors ..... 65
- Trends shaping the market ..... 65
- Competitive landscape and companies to watch out for ..... 65
  - > Companies to watch out for ..... 66
    - HPL Additives ..... 66
- Future outlook ..... 66



**PERSONAL CARE INGREDIENTS | Page 68 - 77**

- Executive summary ..... 69
- Introduction to the market ..... 70
  - > Types of personal care ingredients ..... 70
  - > Value chain ..... 71
- Market size and market growth ..... 72
- Key success factors ..... 74
- Trends shaping the market ..... 74
- Competitive landscape ..... 76
  - > Companies to watch out for ..... 76
    - Kumar Organics ..... 76
- Future outlook ..... 77



**CONSTRUCTION CHEMICALS | Page 78 - 85**

- Executive summary ..... 79
- Introduction to the market ..... 80
  - > Value chain ..... 80
  - > Types of products ..... 80
- Market size and market growth ..... 81
- Key success factors ..... 82
- Trends shaping the market ..... 82
- Competitive landscape and companies to watch out for ..... 83
  - > Companies to watch out for ..... 84
    - Pidilite ..... 84
- Future outlook ..... 84



**WATER CHEMICALS | Page 86 - 95**

- Executive summary ..... 87
- Introduction to the market ..... 88
  - > Types of water chemicals ..... 88
- Market size and market growth ..... 88
- Key success factors ..... 90
- Trends shaping the market ..... 91
- Competitive landscape ..... 93
- Future outlook ..... 94



**TEXTILE CHEMICALS | Page 96 - 101**

- Executive summary ..... 97
- Introduction to the market ..... 98
- Market size and market growth ..... 99
- Trends shaping the market ..... 100
- Competitive landscape ..... 100
- Challenges for textile chemicals ..... 101
- Future outlook ..... 101

**IV. APPENDICES | Page 102 - 106**

- Appendix-I ..... 103
  - > Segment attractiveness : Scoring methodology ..... 103
- Appendix-II ..... 104
  - > Recent inbound and outbound transactions : Strategic M&A ..... 104
- Appendix-III ..... 106
  - > Trading multiples of select listed Indian and global specialty chemical players..... 106

# MESSAGE FROM THE AUTHORS <sup>^</sup>

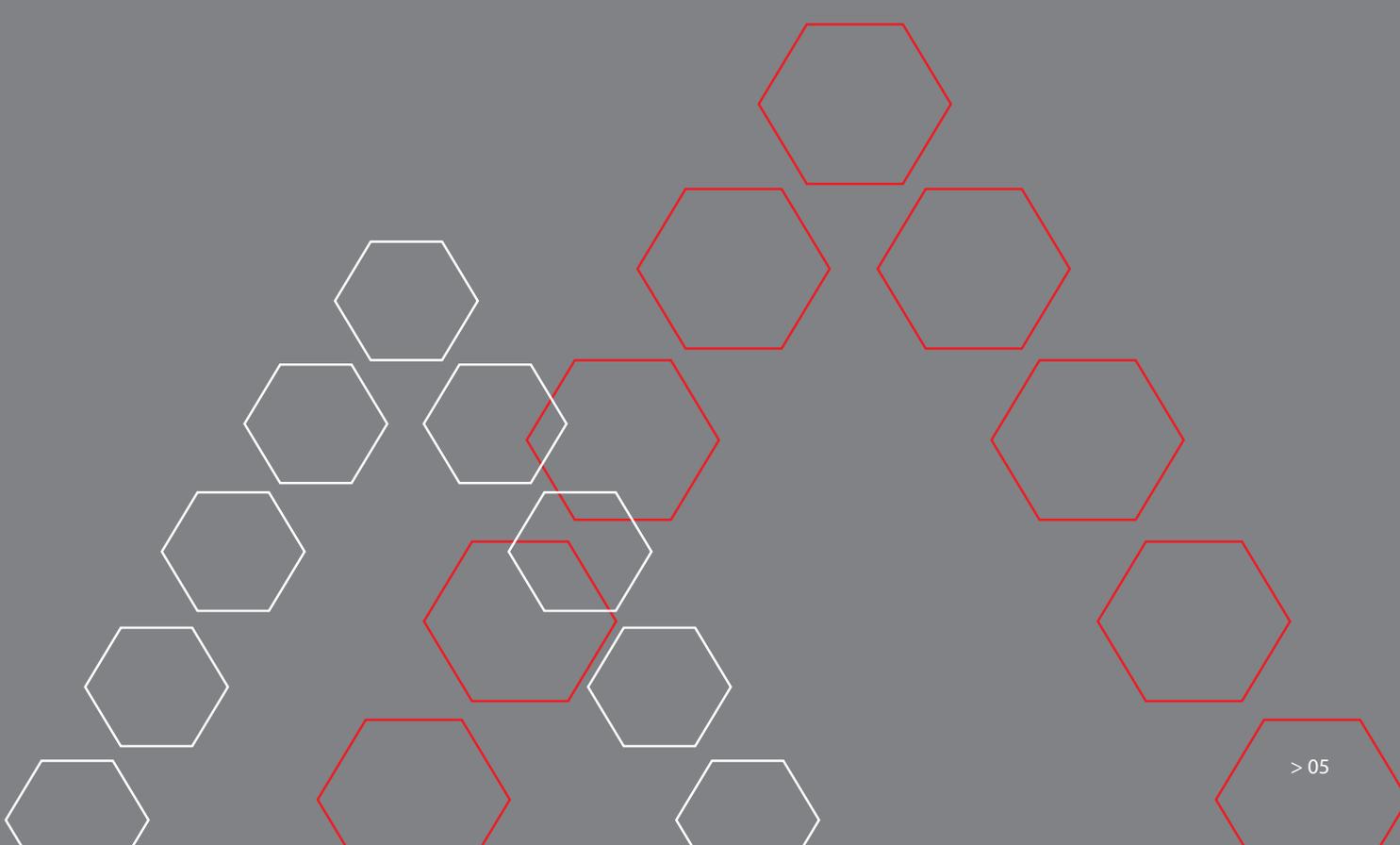
Specialty chemicals, which comprise low volume, high value chemicals with specific applications, constitute a significant part of the Indian chemical industry. With increasing demand for value added high performance products in all spheres of the life of an average Indian, we expect growth in demand for specialty chemicals that add such functionalities to products. At the same time, the shift of manufacturing to the East and India’s export competitiveness is expected to strengthen India’s position as a manufacturing hub for specialty chemicals. A glimpse of India’s emergence as a major export hub is already seen in segments such as agrochemicals and colorants, in which a significant part of India’s production is exported.

While globally the specialty chemicals industry is differentiated from bulk chemicals by extensive R&D and innovation, such a demarcation is almost non-existent in the Indian context due to the “genericized” nature of the Indian specialty chemicals industry. However, we view the specialty chemicals space as an amalgamation of parts – multiple segments having unique characteristics and correspondingly witnessing different industry dynamics.

While the Indian specialty chemicals sector is well covered and researched, given the disparate characteristics of the various segments, we felt there was need for a more detailed study on each of the segments. In this report we will endeavour to deep - dive into the key segments within this space to test how they compare on various performance parameters. Our aim has been to identify, in the Indian context, the most attractive segments and within these segments, the most specialized and high growth niches.

**Mr. Preet Mohan Singh**  
Executive Director

**Mr. Koushik Bhattacharyya**  
Vice President



# SPECIALTY CHEMICALS <sup>^</sup>

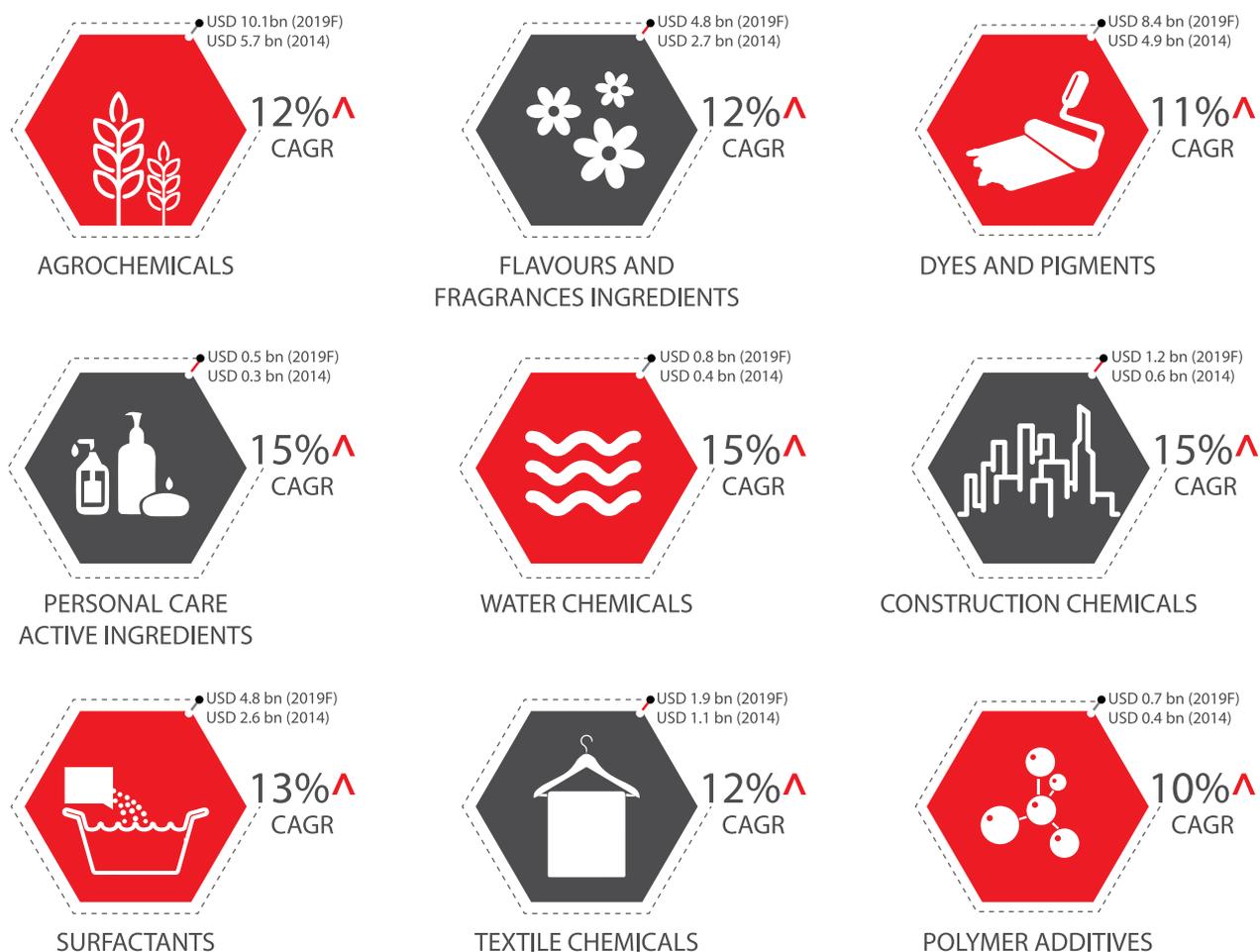
## AMALGAMATION OF DISPARATE PARTS

The definition of specialty chemicals varies widely across the industry. For the purpose of this whitepaper, we have defined it as chemicals which are used in low quantities (not in bulk) and are targeted towards specific end-use applications. From a financial perspective, a more tangible metric to distinguish between specialty and bulk chemicals is the EBITDA margin of the business. Specialty chemicals, by virtue of being high value, specialized products command higher margins than most bulk products.

Globally, specialty chemicals are driven by extensive product R&D and innovation, which is a significant differentiator over the commoditized chemical industry. However, in the Indian context, this line of demarcation is almost non-existent due to the “genericized” nature of the specialty industry. This also leads to a visible difference in margin structure of global and Indian specialty chemical companies.

Specialty chemicals can be sub-divided based on end-user industries. In addition to end-use driven segments, there are a few categories of specialty chemicals which are used across several end-user segments for similar applications. Our whitepaper breaks down the specialty chemicals industry into a mix of end-use driven segments (agrochemicals, personal care ingredients, polymer additives, water chemicals, textile chemicals and construction chemicals) and application-driven segments (surfactants, flavours and fragrances and dyes and pigments). These are the largest constituents of the specialty chemicals industry and cumulatively constitute over 80% of the specialty chemicals universe.

Segments within specialty chemicals vary in attractiveness and witness varying levels of competitive intensity, margin profiles, defensibility against raw material cost movements, and growth (including growth of the end-user segment in many cases).



**Figure 1: Market size and growth**

Source: Literature review; Avendus analysis

Note: USD 1 = INR 60 throughout the report

The nine segments that we have covered cumulatively constitute a market of USD 18.8 bn in India and are expected to grow at 12% p.a. to reach USD 33.2 bn by 2019. The largest segments are agrochemicals and dyes and pigments; these are expected to grow at 11–12% p.a. Water treatment and construction chemicals, are expected to be the fastest growing segments with expected growth rate of 15% p.a. over 2014–19.

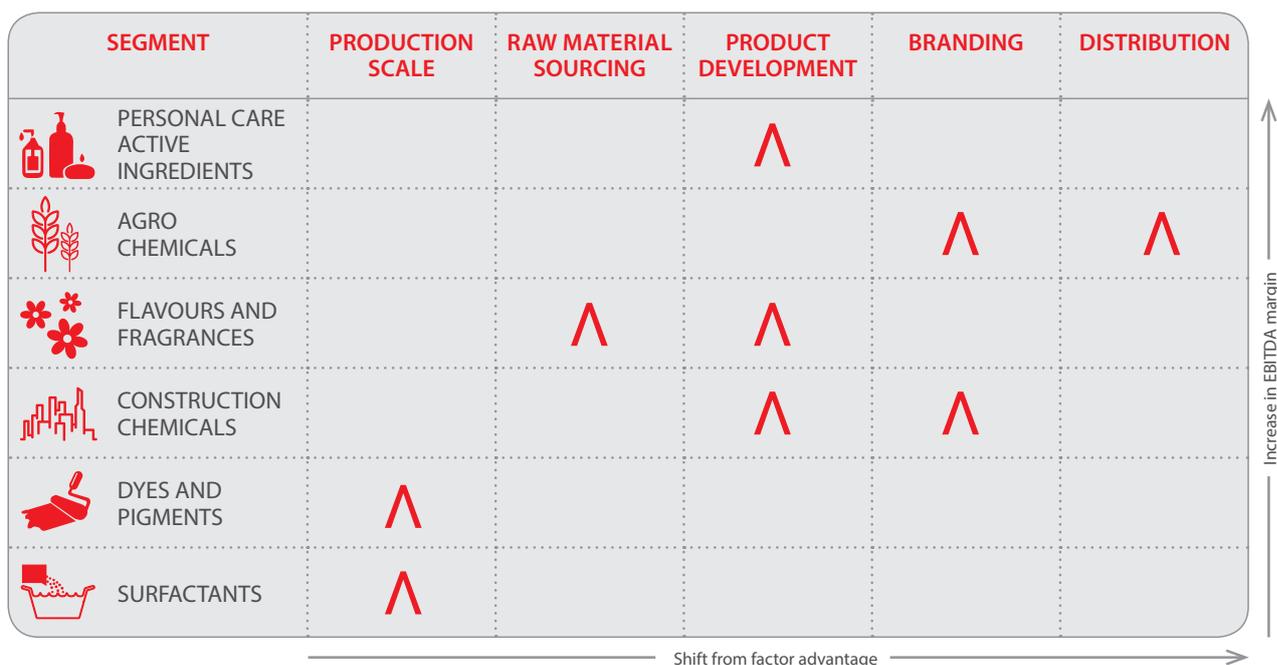
**MARKET GROWTH DRIVERS : DOMESTIC DEMAND AND EXPORT OPPORTUNITIES**

The growth for specialty chemicals is driven by both domestic consumption and exports. Specialty chemicals finding applications across consumer (eg. personal care chemicals), industrial (eg. water chemicals) and infrastructure (eg. construction chemicals) segments are driven by the overall growth of the Indian economy. Agrochemical growth has a strong linkage to the growth of the rural economy.

In certain segments (such as agrochemicals, dyes and pigments, flavours and fragrances), a significant proportion of production in India is exported. Exports are growing rapidly as India is becoming an important manufacturing hub for such chemicals. Tightening environmental norms (eg. REACH regulations) in developed countries and the slowdown of China (in certain segments) are contributing to the growth of exports. The recently launched “Make in India” campaign is also expected to add impetus to the emergence of India as a manufacturing hub for the chemicals industry in the medium term.

**KEY SUCCESS FACTORS**

Low cost labour and raw material availability have been the advantages enjoyed by Indian manufacturing companies traditionally. Increasingly, though, specialty chemicals companies are focusing beyond these traditional cost advantages. In agrochemicals, for instance, the focus is largely on branding and distribution. Product development capabilities have become increasingly important across segments and account for the difference between top and bottom performers. Surfactants and dyes are areas where scale and operational efficiency are still the success factors – these segments correspondingly have lower margins.



**Figure 2: Basis for competitive advantage**

Source: Avendus analysis

## KEY TRENDS IN THE MARKET

**1. Regulatory and environmental considerations :** Developed markets are tightening their import regulations due to environmental concerns and also to protect domestic manufacturers. The regulation which has maximum impact on Indian exports is the European Union's REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals), which came into force on 1st June 2007 and addresses the production and use of chemicals and their potential impact on human health and the environment. Significant impact of REACH will be felt with the implementation of Phase 3, which is scheduled to come into force by 1st June 2018 and would regulate any chemical supplied to EU at quantities of 1 tonne p.a. or more. REACH increases the safety, health and environmental compliance of chemicals manufacturers supplying to EU, and as a result affecting underlying process costs. While most scaled up exporters are already in the process of becoming REACH compliant, mid to small scale Indian companies are likely to find this difficult. This would separate the well prepared companies from the rest of the pack and would be a key source of differentiation.

**2. Shift of production to Asia :** Many MNCs are focusing on Asia, particularly India and China, as their manufacturing hubs as a result of tighter environmental norms in the west. At the same time, lower cost of production and availability of skilled manpower in Asian countries have further aided this process. This has been particularly evident in relatively standardized products with low differentiation, such as textile chemicals and dyes and pigments, wherein IP protection hasn't been a significant threat.

Recently, tightened pollution control norms in China have led to multiple plant shutdowns in the country in chemicals and other manufacturing segments. As a result of this, Indian chemical manufacturers have gained from production shift to India, especially visible in segments such as Dyes and Pigments.

**3. M&A activity on the rise :** M&A activity in this sector has been driven by several strategies.

### Inbound Activity :

- Gaining market access / increase in market share : Eg. Evonik's acquisition of Monarch Catalysts (May, 2015)
- Creating a manufacturing base : Cost efficiencies and shifting base from the west due to more stringent environmental regulations
- Sourcing and strengthening of supply base (intermediates/ ingredients) : Eg. Mane's acquisition of Kancor Ingredients (Nov, 2014)
- Acquiring brands and distribution network : Eg. Nihon Nohyaku's acquisition of Hyderabad Chemicals (Nov, 2014)
- Enhancing product portfolio : Eg. Clariant's acquisition of Plasticemix (Apr, 2014)

### Outbound Activity :

- Technology access : Eg. Sudarshan's acquisition of Ecart (Dec, 2011)
- Market access : Eg. UPL's acquisition of DVA Agro do Brazil (Jul, 2011)
- Enhance product portfolio : Eg. Indofil's acquisition of Dow's dithane business (Mar, 2012) ; Dorf Ketal's acquisition of Exxon's lubricant additives business (Mar, 2007)
- Strengthen global market share : Eg. Dorf Ketal in organometallic titanates : DuPont, Johnson Matthey, etc. (Jan, 2010 and Aug, 2010 respectively); Kiri's acquisition of Dystar (Dec, 2009)

Going forward, we anticipate inbound M&A to be more rampant than outbound and domestic transactions. Several MNCs have been present in India for some time (BASF, Bayer, Clariant, Nalco, Huntsman, etc.) and are focusing on both organic and inorganic strategies to capture the growing opportunity in this space. Other MNCs have recently entered India through M&A (like Kerry, Takasago, Chryso, Nihon Nohyaku, etc.).

In a limited way, Indian companies are also engaging in M&A activities for expanding their market presence and product portfolio. Some Indian companies (UPL, Kiri, Dorf Ketal, etc.) have acquired companies overseas to expand their footprint. There have also been a number of acquisitions by other Indian companies (Rallis, Coromandel International, Oriental Aromatics, etc.) to expand their product portfolios and also grow their India presence.

As opportunities and ambitions expand, we are witnessing heightened levels of M&A interest by players across the spectrum. The increased globalisation of the sector, sustained market opportunities and the emergence of Indian leaders are combining to create an exciting period for specialty chemicals.

### CHALLENGES REMAIN

Despite the demand side growth drivers, several challenges still remain. While some are segment specific issues, there are three systemic challenges the sector is confronted with – fragmentation and lack of scale, commoditisation and regulations.

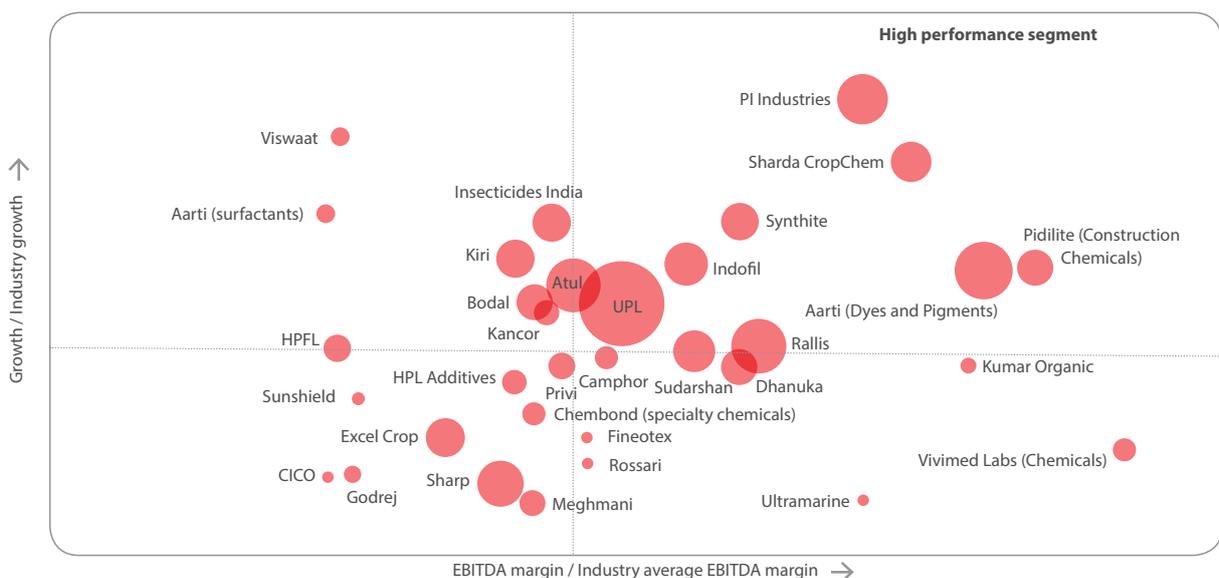
- Fragmented industry structure with few scaled up Indian players :** Most players operating in India are still small in scale. At the global level, however, there is significant level of concentration. Most segments in India witness a dominating presence of a few global leaders. This has implications on the competitiveness of Indian players. Only a few Indian players have the scale or capabilities to compete with the global giants on product development and innovation. As the global companies enter and strengthen their presence in the Indian market, they will also invest in marketing, distribution and production systems that local companies may struggle to match.
- Commoditisation :** Several mature products in the sector have already been commoditised or are at risk of the same. Specialty chemical manufacturers need to strengthen their focus on niche applications and product innovation in order to protect their margins.
- Regulations :** Cost of compliance might make operations increasingly economically unviable for small players.

### Handful of players have been able to overcome challenges and have built leadership positions

Ability to scale up, offering differentiated products through innovation, implementing an effective sales and marketing strategy, and maintaining high levels of regulatory standards clearly separate winners from the crowd in this space.

On an analysis of financial performance of 35 scaled up players across the specialty chemical segments over FY11-14 (FY15 where available), we clearly see emergent leaders outperforming their peers on the back of differentiated and niche offerings. The figure below illustrates the relative position of these 35 firms. We have normalised performance for segment specific growth rates and margins between FY11 and FY14 (FY15 where available). The companies indicated in the top right quadrant are those that have demonstrated growth rates and profitability above their segment averages and form part of our high performance segment. Aarti, Kumar Organic, Pidilite, PI Industries, Rallis, Sharda Cropchem, Synthite and Vivimed Labs are some of the players that have consistently demonstrated attractive growth rates and profitability relative to their segment averages.

### COMPETITIVE LANDSCAPE



**Figure 3: Specialty chemicals competitive landscape**

Source: Literature review; Avendus analysis  
 Note: Bubble size indicates relative 2014 revenue (FY15 where available)

While some companies retain their edge using traditional factor advantages, there is a definitive shift from production to marketing driven differentiators. Branding and marketing, distribution, product innovation, customer relationships are becoming much more important than they used to be, driven by increased maturity of the domestic market and heightened levels of competition.

**Table 1: Summary of players to watch out for**

SEGMENT	COMPANY	EBITDA MARGIN (FY12-15 AVERAGE)	SALES GROWTH (FY11-15 CAGR)	TOTAL SHAREHOLDER RETURN (5YR PERIOD)
 AGROCHEMICALS	Rallis	15%	14%	20%
	Indofil*	14%	19%	NA
	PI Industries	17%	28%	83%
	Dhanuka	15%	13%	52%
 FLAVOURS AND FRAGRANCES	Privi*	11%	13%	NA
	Synthite*	15%	21%	NA
 DYES AND PIGMENTS	Aarti	20%	18%	54%
	Neelikon*	20%	28%	NA
	Sudarshan	14%	14%	25%
 PERSONAL CARE ACTIVE INGREDIENTS	Kumar Organic*	20%	13%	NA
 CONSTRUCTION CHEMICALS	Pidilite	21%	18%	35%
 POLYMER ADDITIVES	HPL Additives*	10%	12%	NA

Total Shareholder Return per annum for the period between 1st Jan, 2010 and 31st Dec, 2015

\*Up to FY14

## SEGMENT ATTRACTIVENESS

In the following pages of the report we have analysed the individual segments on several parameters including market opportunity, financial performance, levels and sources of product differentiation, etc. to identify high performing and attractive segments. The table below summarizes this analysis.

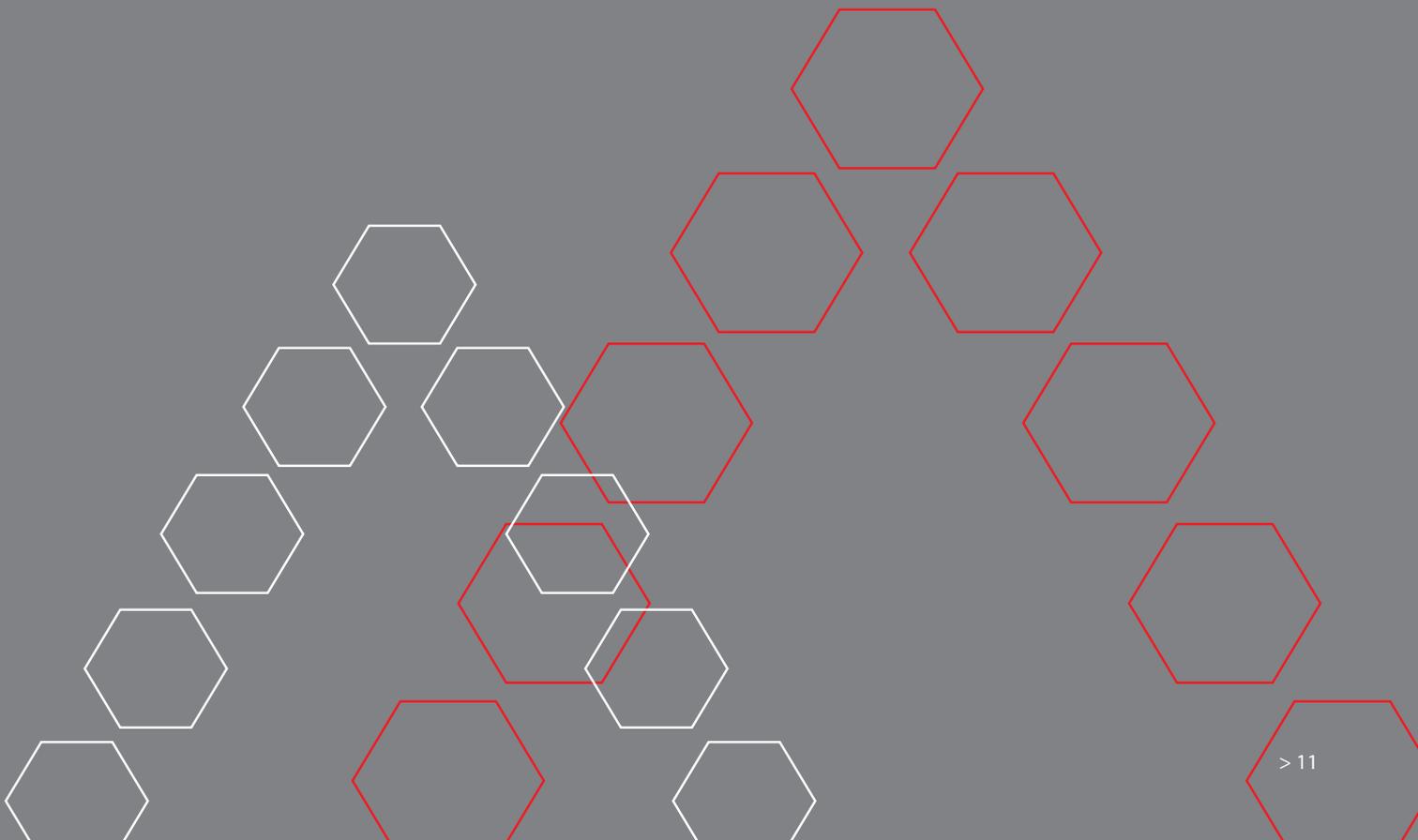
**Table 2: Summary performance parameters for segments**

	Market Size	Growth Rate	EBITDA Margins	Product Differentiation / Specialization	Presence of scaled up Indian players	Overall Attractiveness
Agrochemicals						
Flavours & Fragrances						
Personal Care						
Dyes & Pigments						
Surfactants						
Polymer Additives						
Construction						
Water Treatment						
Textile						

Note: Appendix 1 for details

**KEY TAKEAWAYS**

Agrochemicals, Flavours and Fragrances (F&F) and Personal Care are the three most attractive sectors in our opinion. They are characterized by strong product differentiation / specialization and strong end industry growth. Amongst these, Agrochemicals and F&F have a large market and a number of scaled up investible assets.



# AGROCHEMICALS<sup>^</sup>

**OVERALL ATTRACTIVENESS**



**Indian Market Size**



**Profitability**



**Presence of Scaled Up Players**



**Market Growth Rate**



**Product Differentiation**



---

## MARKET SIZE AND GROWTH<sup>^</sup>

- Global market size of USD 54.5 bn; to grow at 5.5% over 2014-19. Growth to be driven by decreasing arable land, increasing population and consequent need for improvement in crop yields
  - Indian market size (production) of USD 5.7 bn; to grow at 12% over 2014-19. Growth to be driven by increase in awareness level of farmers, improvement in rural income and the pressure for improving productivity
- 

## KEY SUCCESS FACTORS<sup>^</sup>

- Ability to create strong brands
  - Strong distribution network
  - Robust product pipeline
- 

## TRENDS SHAPING THE MARKET<sup>^</sup>

- Investments and capacity expansion have resulted in excess capacity and low utilization
  - Strategic partnership models are giving way to potential inbound M&A opportunities
  - Inorganic growth by outbound acquisitions has been a key trend among Indian players
  - Upcoming patent cliff is expected to result in an opportunity in generics
- 

## COMPETITIVE LANDSCAPE<sup>^</sup>

- The market comprises several large Indian and global companies, including significant presence of global giants like Bayer, Syngenta, Monsanto and DuPont
  - UPL, Bayer Crop Science and Rallis are the top 3 players in the Indian market
  - Companies enjoy strong EBITDA margins driven by the premium commanded by strong brands and low cost of manufacturing in India
  - **Companies to watch out for** - Rallis, Dhanuka, PI Industries, Indofil
- 

## CHALLENGES FOR INDIAN PLAYERS<sup>^</sup>

- Seasonality due to overdependence of Indian agriculture on the monsoon
  - Introduction of GM (genetically modified) crops may affect demand
- 

## FUTURE OUTLOOK<sup>^</sup>

- Domestic market presents a huge growth opportunity
  - Marketing, distribution network and product portfolio management will continue to be key differentiators
-

# AGROCHEMICALS

*An attractive market driven by compelling macro drivers and a strong footprint in export markets*

## A. INTRODUCTION TO AGROCHEMICALS : A CRITICAL AGRICULTURAL INPUT

India ranks second in the world in terms of farm output. Constituting ~ 14% of the Indian GDP and employing over 50% of India's workforce, agriculture continues to be a key element of the Indian economy. Over the last few decades, agrochemicals has played a vital role in improving agricultural productivity, necessitated by a growing population base and the resultant demand arising from the need to achieve food sufficiency. These fundamental factors will continue to drive growth in the agrochemicals industry going forward. While agrochemicals is a generic term referring to a broad range of chemicals used in agriculture (including crop protection chemicals, synthetic fertilizers, hormones and chemical growth agents), for the purpose of this report, we have defined agrochemicals exclusively as crop protection chemicals.

Agricultural productivity has been a key concern globally, driving significant research efforts across the various aspects, including crop protection chemicals. Global agrochemicals players spend a sizable proportion of their revenue towards development of novel crop protection molecules. As a result, agrochemicals is sometimes referred to as "knowledge chemicals", and shares several similarities with pharmaceuticals. At the same time, generic and off patent proprietary agrochemicals also constitute a significant part of the market (52% and 26% respectively of the total global agrochemical consumption in terms of value as of 2013). India is the fourth largest producer and amongst the fastest growing markets of agrochemicals in the world. The Indian agrochemicals industry is dominated by a host of global giants with local operations as well as a number of scaled up Indian players catering to domestic as well as export markets.

The Crop Care Federation of India (CCFI) estimates that 85% of India's crop loss (worth ~ USD 20 bn) is caused by pest infestation, disease and weeds and is avoidable by the use of agrochemicals. This, coupled with rising awareness amongst farmers and growing rural income, and the resultant willingness to spend on crop protection chemicals, is expected to provide a significant fillip to the domestic consumption of agrochemicals.

At the same time, supported by availability of skilled manpower, low labour costs and the ability to offer quality products meeting international quality standards, India is also emerging as a manufacturing hub to cater to the global markets.

## Classification of agrochemicals

Agrochemicals can be classified as follows :

**1. Insecticides :** These are used to limit insects below a certain level, thereby improving crop yields by preventing damage such as plant defoliation, boring of parts of the plant, etc. They can be further classified based on their mode of action :

a. Contact insecticides : These kill insects on direct contact and leave no residual activity, hence causing minimal environmental damage. Examples include carbaryl, fipronil, pyrethrins, pyrethroids (bifenthrin, cyfluthrin, cypermethrin, deltamethrin, lambda-cyhalothin, permethrin, es-fenvalerate, tefluthrin or tralomethrin), and liquid fipronil or spinosad.

b. Systemic insecticides : These are absorbed by the plant tissues and destroy insects when they feed on the plant. These are usually associated with long term residual activity. Examples include imidacloprid, terbufos, thiamethoxam, dimethoate and dinotefuran.

Insecticides had traditionally been a major contributor in increasing agricultural yields through the 20<sup>th</sup> century, but have been currently overtaken by herbicides (discussed below) in developed markets.

**2. Fungicides :** They are agrochemicals that control fungal diseases by either inhibiting or killing the causative fungi. This in turn improves productivity, reduces blemishes on crop (thus enhancing market value of the crop) and improves storage life and quality of harvested crop. Fungi are the most widespread causes of crop loss across the world.

**3. Herbicides :** They are the agrochemicals used to kill unwanted plants. Selective herbicides kill specific plants, leaving the desired crop unharmed, while non selective herbicides are used for widespread clearance of ground and are used to control weeds before crop planting.

**4. Other pesticides :** Other categories include nematicides (for roundworms), termiticides (for termites), molluscicides (for molluscs), rodenticides (for rodents), bactericides (for bacteria), etc. Biopesticides is an emerging category comprising derivatives of naturally occurring substances with pesticidal properties and includes pesticidal microbes, plant incorporated protectants, biochemical or hormonal pesticides, etc. The biopesticides category currently is a small proportion of the market but has a huge growth potential considering its non-toxic nature.



*The global agrochemicals market is worth USD 54.5 bn and is expected to grow at 5.5% p.a. over the next five years*

**Table 3: Commonly used agrochemical molecules**

<b>MOLECULE</b>	<b>TYPE</b>	<b>USE</b>	<b>KEY MANUFACTURERS</b>
<b>Imidacloprid</b>	<b>Insecticide</b>	Used to control sucking pests – aphids, jassids, thrips, whitefly, brown planthopper and a variety of insects in cotton, rice and vegetable crops	Bayer, Du Pont, Syngenta, Dow, BASF, PI Industries, Rallis
<b>Fipronil</b>	<b>Insecticide</b>	Used to control rice stem borer, diamondback moth of cole crops, early shoot borer of sugarcane and thrips in chilli	Bayer, Syngenta, BASF, Du Pont, UPL, Rallis, Gharda, Coromandel
<b>Glyphosate</b>	<b>Herbicide</b>	Used to control weeds, especially annual broadleaf weeds and grasses in various crops	Monsanto, Bayer, Syngenta, Dow, Du Pont, BASF, Zhejiang Wynca, Sichuan Fuhua, Cheminova, UPL, Rallis, PI Industries
<b>Tricyclazole</b>	<b>Fungicide</b>	Used to control leaf blast, node blast and neck blast in rice	Dow, Syngenta, Arysta, UPL, Rallis, Biostadt, Heranba
<b>Quizalofop</b>	<b>Herbicide</b>	Used to control narrow leaf weeds in broad leaf crops	Monsanto, Du Pont, Dhanuka, Insecticides India
<b>Dinotefuran</b>	<b>Insecticide</b>	Reliable solution to effectively manage the brown plant hoppers in rice	BASF, Du Pont, Mitsui Chemicals, Biostadt, Indofil, PI Industries
<b>Hexaconazole</b>	<b>Fungicide</b>	Useful for controlling powdery mildews, rusts and leaf spots in cereals, oil seeds, horticultural and plantation crops and also for the effective control of rice sheath blight	Bayer, Cheminova, Coromandel, Biostadt, Rallis, UPL
<b>Chlorpyrifos</b>	<b>Insecticide</b>	Useful in the control of fruit borers, stem borers and leaf eating caterpillars on a wide range of crops like cotton, pulses, oilseeds, rice, etc.	BASF, Bayer, Dow, Du Pont, Syngenta, UPL, Rallis, Gharda, Insecticides India
<b>Acephate</b>	<b>Insecticide</b>	Particularly effective on severe infestations of sucking and chewing insects of tobacco, sugarcane, cotton, chillies, vegetables, fruits and cereals	Bayer, Cheminova, UPL, Rallis, PI Industries, Insecticides India, Excel Crop Care
<b>Flonicamid</b>	<b>Insecticide</b>	Control of almost all important aphid species in apples, peaches, wheat, potato, vegetables	Syngenta, ISK, UPL



## B. MARKET SIZE AND MARKET GROWTH

### Sustained global growth riding on the need for yield improvement

The global agrochemicals market is estimated at USD 54.5 bn in 2014, up from USD 43.0 bn in 2009, growing at a CAGR ~ 5% in the last five years. It is expected to continue a steady growth over the next five years to reach USD 71.3 bn by 2019.

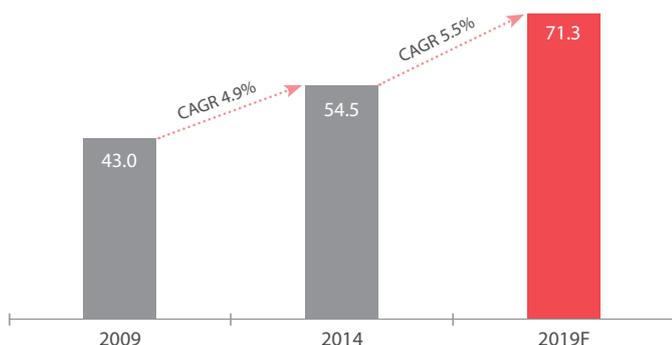


Figure 5: Global market for agrochemicals (USD bn)

Source: BCC Research; Research and Markets; Syngenta; Literature review

The key drivers contributing to the growth of the global market include decreasing arable land, increasing global population and consequent requirement to improve crop yields. Further, new demand for agricultural products would also be created by the use of agricultural products for industrial applications such as in fuel blending and polymer manufacturing, opening up new avenues of applications for agrochemicals.

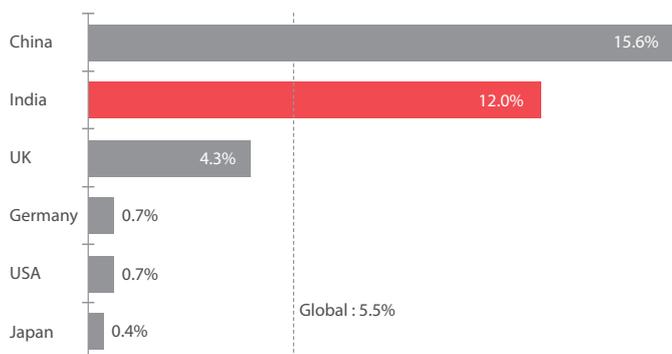


Figure 6: Estimated growth rates of agrochemicals 2014-19

Source: Literature review; Avendus analysis

In developed countries there are rising concerns about the environmental impact of agrochemicals. The Environment Protection Agency (EPA) of the USA has, over time, put in place stringent laws to monitor and regulate environmental impact of agrochemicals. Several highly toxic agrochemicals (like DDT, Endosulfan, Toxaphene, Aldrin, Endrin, Chlordane, Captafol, etc.) have been phased out from the developed countries and many developing countries too. Agrochemical companies are now focusing their R&D efforts on producing newer molecules which are safer for the environment.

Table 4: WHO classification of hazardous pesticides

### WHO CLASSIFICATION

#### Extremely Hazardous

Eg. : Aldicarb, Chlormepos, Disulfoton, Hexachlorobenzene, Phorate, Parathion, Sulfotep, Terbufos

#### Highly Hazardous

Eg. : Acrolein, Carbofuran, Dinoterb, Famphur, Isoxathion, Mecarbam, Oxamyl, Tefluthrin, Warfarin

#### Moderately Hazardous

Eg. : Acephate, Allethrin, Bentazone, Butamifos, Carbosulfan, Chlorpyrifos, Cyanazine, DDT, Endosulfan, Fipronil, Imidacloprid, Phenthoate, Quizalofop, Thiocloprid, Tricyclazole, Ziram

#### Slightly Hazardous

Eg. : Acetochlor, Borax, Butachlor, Chloidazon, Dicloran, Glyphosate, Hexaconazole, Pimaricin, Spinosad, Trietazine

#### Active ingredients unlikely to present acute hazard in normal use

Eg. : Aclonifen, Bromacil, Captan, Dalapon, Fenclorim, Folpet, Isoxaben, Mancozeb, Neburon, Phthalide, Tebutam, Zineb

#### Obsolete or discontinued pesticides

Eg. : Aldrin, Barban, Butam, Carbanolate, Clofop, Dieldrin, Erbon, Glyphosine, Mirex, Proxan, Sesamex, Tetrasul

#### Pesticides subject to prior informed consent procedure (Rotterdam Convention)

Eg. : Aldrin, DDT, Dieldrin, Fluoroacetamide, Heptachlor, Lindane, Pentachlorophenol, Monocrotophos, Parathion

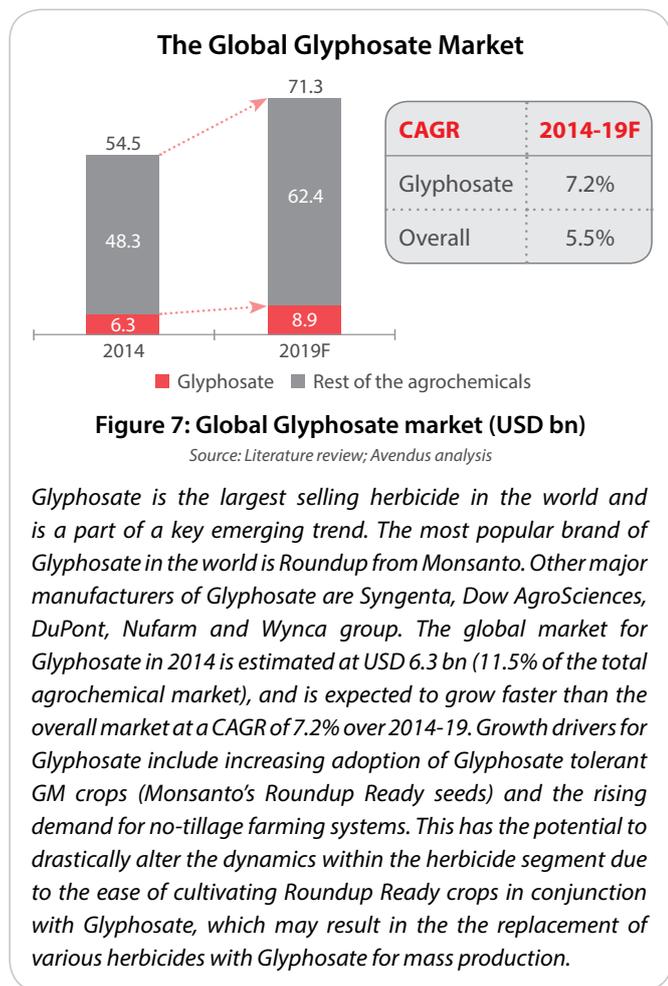
#### Gaseous or volatile fumigants not classified by WHO

Eg. : Aluminium phosphide, Chloropicring, 1, 2 - Dibromoethane, Ethlene oxide, Formaldehyde, Hydrogen cyanide, Methyl bromide, Phosphine

With production worth USD 5.7 bn, India is the fourth largest agrochemical producer in the world

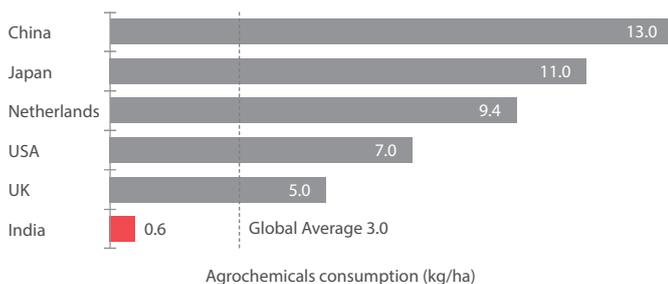
---

Production in India is expected to grow at a CAGR of ~ 12% over 2014-19, amongst the fastest in the world

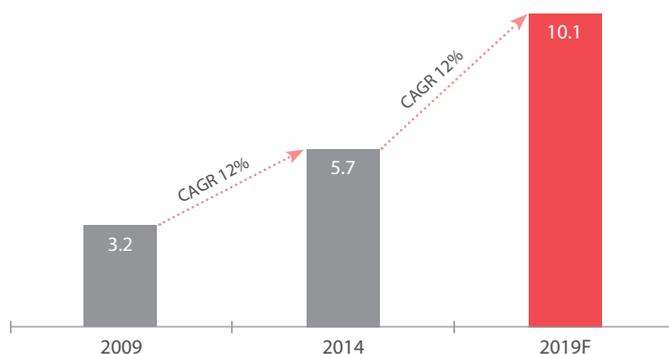


**Vast potential in India driven by the need for food security and the current penetration levels**

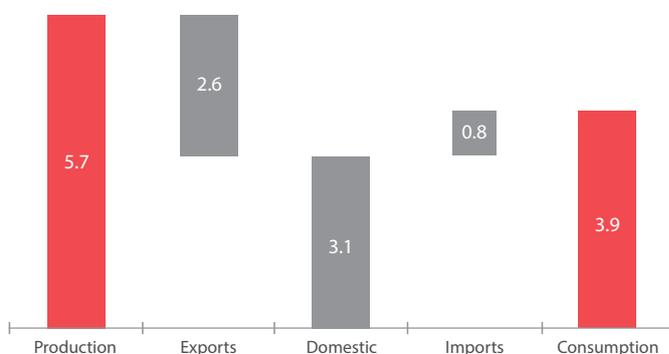
Agriculture accounts for ~ 14% of the total GDP of India, employing almost 50% of India's workforce. With a population of nearly 1.25 bn growing at an estimated 1.5% annually, of which 23% falls below poverty line, India faces significant strain on achieving food security. An estimated 85% of India's crop loss (worth ~ USD 20 bn) is caused by pest infestation, disease and weeds and is avoidable by the use of agrochemicals, as per the estimates by the Crop Care Federation of India (CCFI). This exemplifies the critical role of agrochemicals in India's effort to achieve national food security.



India is the fourth largest manufacturer of agrochemicals after the USA, Japan and China. However, the Indian agricultural market witnesses a very low agrochemical penetration (at 0.6 kg/ha) compared to developed nations such as USA (7 kg/ha) and Japan (11 kg/ha), and is as low as 20% of the global average (3 kg/ha). This indicates the huge headroom for growth of agrochemical penetration in India.



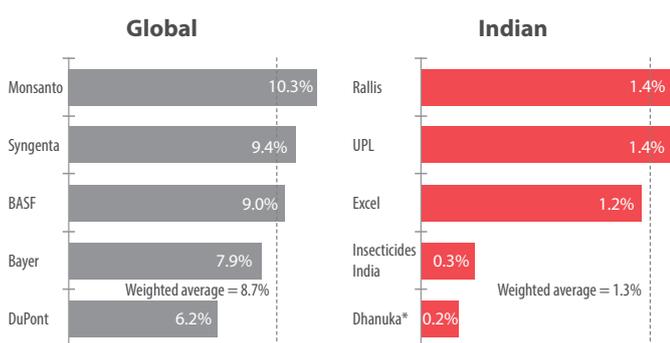
The total agrochemicals production in India is estimated at USD 5.7 bn in 2014 growing at ~ 12% over 2009-14. With a continued growth momentum it is expected to reach USD 10.1 bn by 2019.



 At 20% of the global average, India has one of the lowest per hectare agrochemicals consumption rate

**Focus on generics or licensed products in India**

Indian players have a low focus on R&D and instead focus on manufacturing generic or licensed products. R&D commands substantial investments and continues to be a key focus area for global innovators such as Syngenta, Bayer, BASF, DuPont, Dow Agrochemicals and Monsanto. Indian players spend much lesser on R&D, both in absolute and relative terms, and are focused more on cost efficiencies and modifying existing generic or off patent products to suit local conditions.



**Figure 11: R&D spend as a % of revenue for leading global and Indian agrochemical companies**

Source: Annual reports; Avendus analysis

\* FY 14 data

**Domestic Demand – An important driver of Indian agrochemical industry**

Increasing consumption of pesticides by Indian farmers is a key reason behind the expected growth of the Indian agrochemical market. The major factors leading to the rapid rise in domestic demand of agrochemicals are :

- 1. Awareness levels of farmers :** Indian farmers have been long accustomed to traditional agricultural methods and processes. There have been significant efforts by local government bodies, state agricultural universities and agrochemical companies towards improving farmer awareness and acceptability of modern agriculture methods including adequate use of agrochemicals.
- 2. Improvement in rural income :** Encouraged by various government schemes such as minimum support prices, farmer income has risen on an average and they are able to afford more agrochemicals. Further there is greater availability of credit from banks and NBFCs for agriculture.
- 3. Need to improve yields :** Driven by a rising population, favourable demographics and economic growth, India’s foodgrain consumption is expected to increase from 232 MnT in 2014 to 247 MnT in 2019. Given the limited arable land, it is imperative to improve agricultural yields at a faster pace compared to the growth in demand to be able to meet food sufficiency targets.

**Table 5: Awareness Initiatives**

**Organization : DHANUKA**

**Awareness Initiative :**

Dhanuka, with the help of experts called “Dhanuka Doctors”, conducts a variety of programs for educating farmers on agrochemical usage, soil and water testing, seed treatment facilities and new product usage ; Dhanuka has a field force of over 1,000 people across the country to inform the farmers about the judicious use of pesticides through its initiative called ‘Dhanuka Kheti Ki Nayi Takneek’

**Organization : RALLIS**

**Awareness Initiative :**

Rallis runs an Agro advisory program called “Samrudha Krishi”, which makes customized recommendations to farmers on scheduled basis for their whole crop cycle; The program which was piloted in 2011-12 is expected to reach 4,000 enrolled farmers; The program includes various activities like field day, crop seminar, R&D / expert visits, soil samplings, etc.

**Organization : INSECTICIDES (INDIA) LTD**

**Awareness Initiative :**

Seeing the success of the “Jagrukta Abhiyaan” which was piloted in Punjab, Haryana, Andhra Pradesh and Rajasthan in 2007, the company has expanded nationwide; A techno commercial team of more than 400 agri experts create awareness about the safe and judicious use of agrochemicals among farmers; The campaign has touched 1 mn farmers till date

**Organization : DEPARTMENT OF AGRICULTURE AND COOPERATION, MINISTRY OF AGRICULTURE**

**Awareness Initiative :**

The department has operationalized an m-kisan portal which subsumes all mobile initiatives used for providing topical and seasonal advisory to farmers in their local language; The Kisan Call Centers which use toll free numbers to answer farmer queries have been substantially upgraded with dedicated lease lines, voice systems and facility of video conference

**Organization : INDIAN COUNCIL OF AGRICULTURAL RESEARCH**

**Awareness Initiative :**

The Council organizes a number of awareness programs for various farmers on diverse issues like organic farming, farmer rights, etc.; They have recently launched a program called “Farmer First” which enhances scientist farmer interaction in a rural farm environment

AGROCHEMICALS

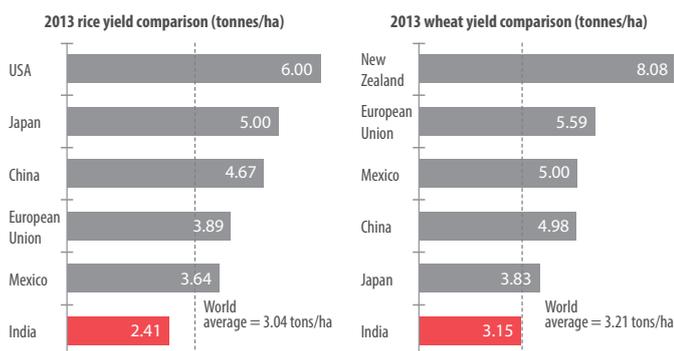


Figure 12: Yield levels by region for rice and wheat  
Source: OECD

Herbicides in India : A small but rapidly growing segment

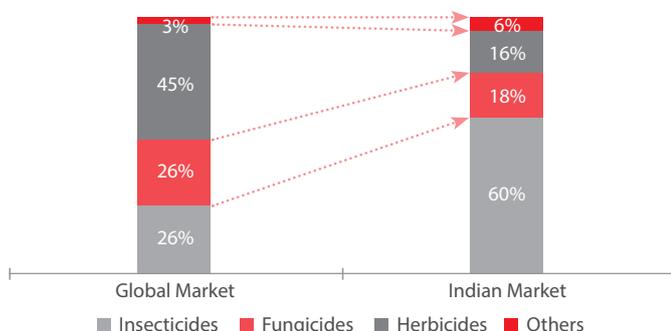


Figure 13: Global and Indian production segmentation for agrochemicals (by value)  
Source: Literature review; Avendus analysis

Globally, herbicides constitute the largest part of agrochemicals market, accounting for ~45% of the total consumption. This segment is largely driven by the significant focus on production of high value crops in global markets, including horticulture, where the use of these chemicals is of particular importance to prevent loss of such high value crops. However, the Indian market structure is very different. Unlike the global market, herbicides account for a mere 16% of the market. Instead, the largest part of the production is constituted by insecticides (~60% of the total market), followed by fungicides (18% of the market). Historically the use of herbicides has not been necessary in India, primarily because of the availability of cheap labour, as manual weeding effectively acts as a substitute for herbicides. However, herbicides have started demonstrating impressive growth with the rise in labor cost and cost efficiency of chemical against manual weeding. This trend is expected to continue going forward, with strengthening demand arising for herbicides from increased mechanization and reduced labor intensity of agricultural practices, higher labor cost arising from urbanization and reduction in rural population, as well as strengthening of India as a manufacturing hub to cater to export markets (herbicides comprising a major proportion of the export demand in line with global consumption structure).

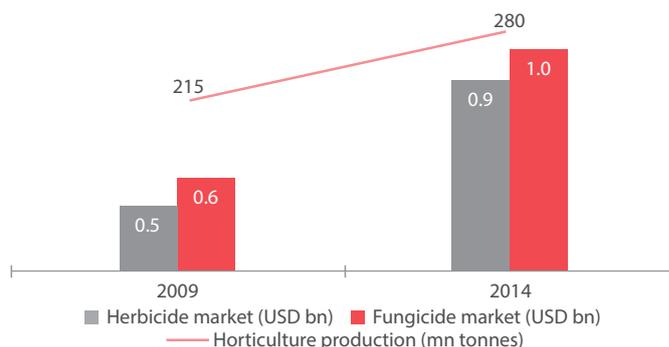


Figure 14: Herbicide and Fungicide growth relative to growth of horticulture  
Source: National Horticulture Board; Literature review

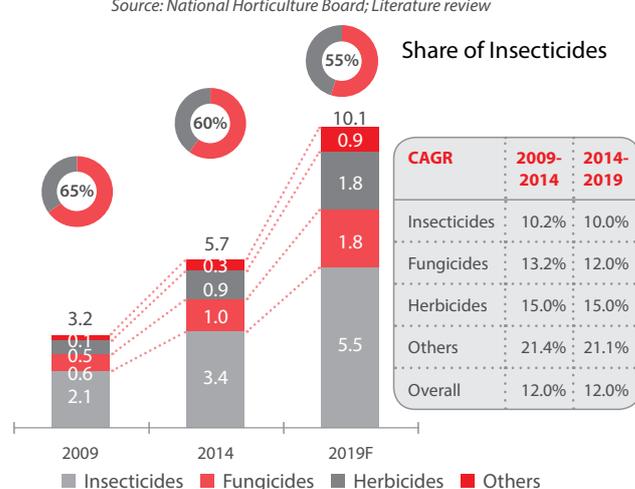


Figure 15: Segment wise market growth for agrochemicals (USD bn)  
Source: Avendus analysis; Literature review

Other segments : Continued growth momentum

While insecticides and fungicides have largely dominated the Indian agrochemical demand, herbicides have overtaken them in terms of recent growth. However, in spite of the size and penetration, insecticides and fungicides are expected to continue to demonstrate attractive growth rates (10% and 12%, respectively) over 2014-19.

The production value of insecticides in India has been growing at a modest pace, despite a decline in sales volumes resulting from the replacement of conventional insecticides by newer, high value generic insecticides which are more potent, less toxic and are required to be applied in lower volumes compared to their traditional counterparts. Fungicides are expected to grow at ~12% CAGR over 2014-19, almost in line with their historical growth. The growth is slightly muted due to better control and reduced incidence of fungal diseases in key crops such as potato. Going forward, the demand for fungicides is expected to be driven by the growth of fruits and vegetables segment and other

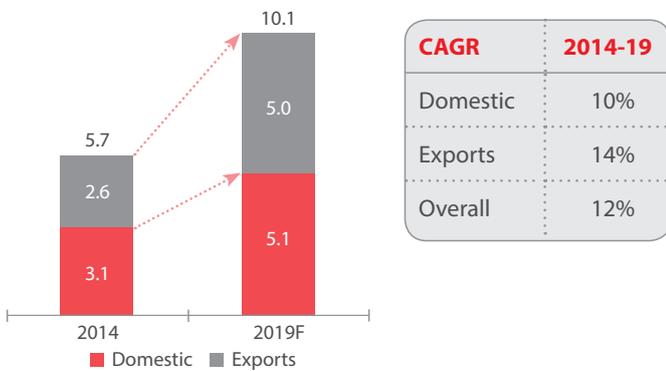
**A** Herbicides would be the fastest growing segment with an expected CAGR of ~15% over 2014-19

cash crops where return to the farmers is higher and they are willing to spend more on protecting the crops. Biopesticides are other significant agrochemicals – they are mass-produced agents manufactured from living micro-organisms or natural products and constitute a niche and emerging segment. A very small market currently, comprising ~ 3% of the total crop protection market, this segment has a bright future over a longer term with growing environmental concerns and awareness, and increasing adoption of modern agricultural practices such as integrated pest management.

**India as the exports hub for generics**

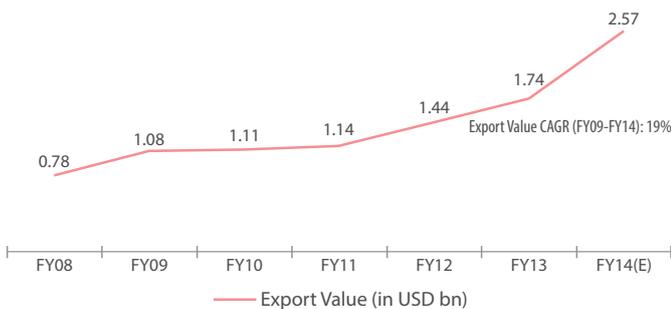
India is a major exporter of generic agrochemicals, featuring among the top 10 exporters globally, accounting for close to 5% of the global agrochemical market. ~ 45% of domestic production of agrochemicals is exported (as of 2014) accounting for ~ USD 2.6 bn in value.

Key export markets for India include the USA, France, Netherlands, Belgium, Germany, Brazil, Colombia, China, Vietnam and Indonesia. India qualifies as a strong supplier to developed markets in the west including USA and Europe, driven by tightening environmental regulations in these markets and the ability of Indian manufacturers to offer low cost quality products meeting international quality and regulatory standards. This provides the Indian manufacturers a clear competitive advantage vis-a-vis other low cost manufacturers such as Chinese producers in terms of quality and against manufacturers in western markets in terms of cost competitiveness.



**Figure 16: Indian agrochemicals market 2014 (USD bn)**

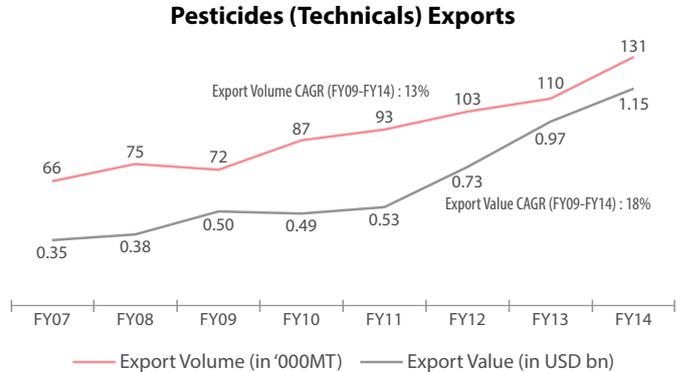
Source: Avendus analysis; Literature review



**Figure 17: Indian agrochemicals formulation exports**

Source: Avendus analysis; DGCIS

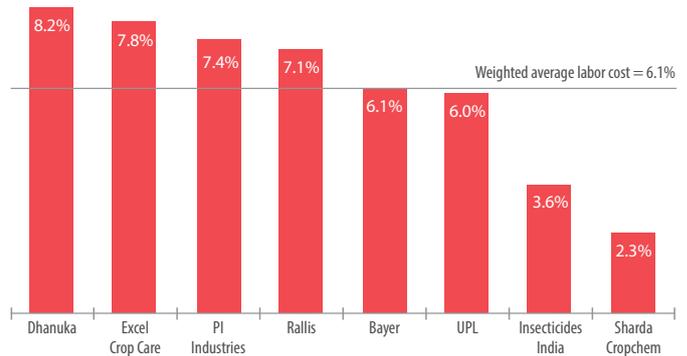
Indian agrochemical exports have been rapidly rising for both technical pesticides and generic formulations. During FY09-14, formulation and technicals exports have experienced 19% and 18% CAGR respectively.



**Figure 18: Indian agrochemical technicals exports**

Source: DGCIS

The main drivers of the growth of agrochemical exports from India include low-cost manufacturing capability and availability of technically trained manpower. India is a manufacturing hub and supply base for several global agrochemical giants due to attractive cost of operations and technology and skill availability.



**Figure 19: Labour costs as a % of revenue for major agrochemical companies in India**

Source: Annual Reports

*45% of total Indian production value was exported in 2014 as India is strengthening its foothold as a hub for manufacturing generics*

---

*Exports are expected to grow at 14% p.a. over 2014-19*

---

*Average employee costs for an Indian agrochemical manufacturer is 6.1% of its revenue highlighting the cost advantage of operating in India*

AGROCHEMICALS ^

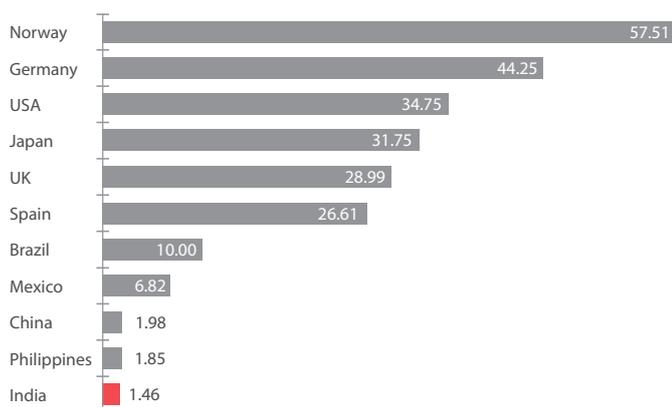


Figure 20: Hourly labour costs in major geographies (2010) (USD/hour)

Source: The Conference Board; International Labors Comparisons Program

Low capacity utilization levels – an opportunity to cater to global markets

Indian manufacturers witness low capacity utilization levels particularly due to the seasonal nature of domestic demand. However, this also provides the Indian players the ability to rapidly capture global market opportunity in off seasons in the domestic market.

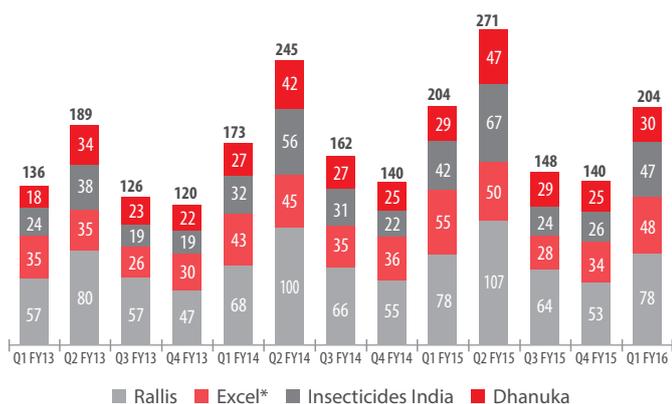


Figure 21: Quarterly agrochemical sales of major players (USD mn)

Source: moneycontrol.com

\*Standalone Financials

There have been investments in capacity expansion by many Indian players in recent years in anticipation of domestic demand, resulting in low capacity utilizations (~ 60%) over the last few years. Thus we can expect Indian companies to focus on increasing exports during the off season when the domestic demand falls.

**Domestic demand is seasonal – it is heavily dependent on monsoons as only 40% of the net sown area is irrigated**

Table 6: Recent greenfield investments in agrochemicals in india

<p><b>Company : INDOFIL</b>  <b>Year : 2014</b>  <b>Project Overview :</b> To set up a 4,000 tonne p.a. capacity plant at Dahej, Gujarat to target export market  <b>Investment Amount : USD 108 mn</b></p>
<p><b>Company : INDOFIL</b>  <b>Year : 2012</b>  <b>Project Overview :</b> Announced a CS2 (carbon disulfide) plant at Dahej, Gujarat in a JV with China's Shanghai Baijin Chemical Group (SBC)  <b>Investment Amount : USD 25 mn</b></p>
<p><b>Company : RALLIS</b>  <b>Year : 2011</b>  <b>Project Overview :</b> Set up a new pesticide plant of 5,000 MT p.a. in Dahej, Gujarat  <b>Investment Amount : USD 25 mn</b></p>
<p><b>Company : DHANUKA</b>  <b>Year : 2014</b>  <b>Project Overview :</b> Announced a new manufacturing plant in Rajasthan with first phase operational in Dec 2014  <b>Investment Amount : USD 8 mn</b></p>
<p><b>Company : INSECTICIDES INDIA</b>  <b>Year : 2014</b>  <b>Project Overview :</b> Operationalised R&amp;D facility in Rajasthan, set up under a JV with OAT Agrico Co.  <b>Investment Amount : USD 7 mn</b></p>

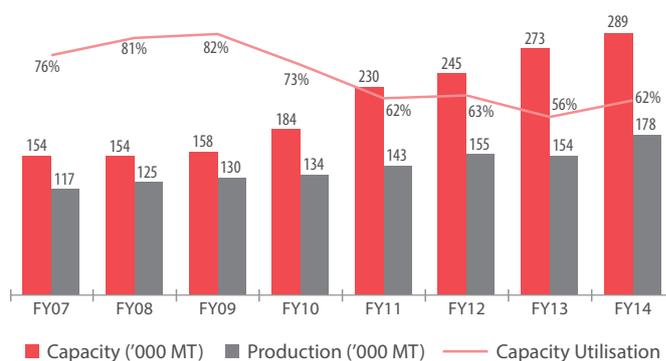
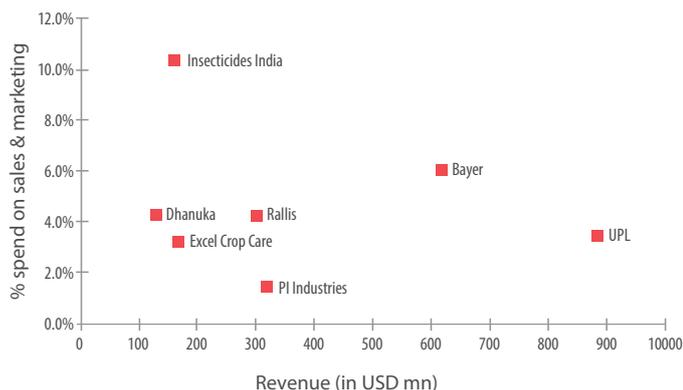


Figure 22: Indian agrochemical technicals production capacity

Source: Ministry of Chemicals

**C. KEY SUCCESS FACTORS**

• **Ability to create brands :** Unlike most other sub-segments of specialty chemicals, agrochemicals is largely a B2C business, which makes marketing and brand creation extremely vital for agrochemical players. The competition in Indian agrochemicals market is intense as it is fairly crowded with a large number of players. The successful creation of strong brands differentiates winners from the rest of the pack.



**Figure 23: Sales and marketing spend of agrochemical companies in India**

Source: Annual reports

The marketing spend required by a player varies by its size and maturity. Most of the larger players have mature brands, even though they spend a larger absolute amount on marketing relative to new entrants or upcoming brands, it translates to a much smaller proportion of revenue. On a relative basis, smaller players with early stage brands need to invest significantly in brand creation and marketing initiatives. In Figure 23, Rallis, PI Industries, Dhanuka, UPL are all mature players with well established brands, with relatively lower marketing spend as a percentage of sales.

**Table 7: Key agrochemical brands of leading Indian companies**

<p><b>Company : DHANUKA</b>  <b>Brand : Targa Super</b>  <b>Type :</b> Herbicide  <b>Use :</b> Used to control narrow leaf weeds in broad leaf crops</p>
<p><b>Company : DHANUKA</b>  <b>Brand : Lustre</b>  <b>Type :</b> Fungicide  <b>Use :</b> Broad-spectrum systemic fungicide for control for wide range of diseases in paddy and chilli crops</p>
<p><b>Company : INSECTICIDES INDIA</b>  <b>Brand : Victor</b>  <b>Type :</b> Insecticide  <b>Use :</b> Used to control sucking pests in cotton, vegetables &amp; rice</p>

**Company : PI INDUSTRIES**

**Brand : Nominee Gold**

**Type :** Herbicide

**Use :** Post-emergent, broad spectrum systemic herbicide for all types of rice cultivation i.e., direct sown rice, rice nursery and transplanted rice

**Company : PI INDUSTRIES**

**Brand : Osheen**

**Type :** Insecticide

**Use :** Reliable solution to effectively manage the brown plant hoppers in rice

**Company : RALLIS**

**Brand : Contaf Plus**

**Type :** Fungicide

**Use :** Useful for controlling powdery mildews, rusts and leaf spots in cereals, oil seeds, horticultural and plantation crops and also for the effective control of rice sheath blight

**Company : RALLIS**

**Brand : Tafaban**

**Type :** Insecticide

**Use :** Used in control of fruit borers, stem borers and leaf eating caterpillars on a wide range of crops like cotton, pulses, oilseeds, rice, etc.

**Company : RALLIS**

**Brand : Asataf**

**Type :** Insecticide

**Use :** Particularly effective on severe infestations of sucking and chewing insects of tobacco, sugarcane, cotton, chillies, fruits, vegetables and cereals

**Company : UPL**

**Brand : Ulala**

**Type :** Insecticide

**Use :** Control of almost all important aphid species in apples, peaches, wheat, potato and vegetables

• **Strength of distribution network :** While brands may create 'pull' effect for a product, there is also a need to ensure availability of products at the grassroot level. Considering the fragmented nature of the end consumer in India, a strong distribution network is critical to the success of any agrochemicals player. Indian agrochemical players typically deploy a 3-tier distribution network comprising numerous distributors, wholesalers and retailers. Most such participants are small to medium in scale and are able to reach a small but focused set of end customers. Getting a large number of such small participants on board is the key to extensive market coverage for Indian players.

## AGROCHEMICALS ^

MNCs present in India for long have built their own sales and distribution structures<sup>1</sup>. However, establishing such fragmented networks like Indian players might prove to be a tedious task for MNCs. Hence, MNCs usually rely on a few large distributors having extensive sub-distributor and retailer network. Alternatively, many global giants have tie-ups with Indian distribution companies as their preferred route is co-distribution or co-marketing to leverage local distribution networks.

On the other hand, several MNCs have entered into strategic partnerships with Indian agrochemical manufacturers and marketers with distribution strength such as Dhanuka, PI Industries and Rallis with arrangements to market and sell their products in India. Traditionally most Japanese agrochemical companies like Hokko Chemicals, Sumitomo Chemicals, Mitsui Chemicals and Nissan Chemicals have followed this approach.

In recent times, a number of foreign players have been increasingly interested in establishing direct sales and marketing presence in the Indian market, resulting in significant inbound M&A activity particularly by Japanese agrochemical players. For instance, Nihon Nohyaku (Japan) recently acquired a majority stake (74%) in Hyderabad Chemicals (in 2014); SDS Biotech acquired 65% stake in Sree Ramcides (in 2013); Arysta LifeScience (Japan) acquired Devidayal Sales (in 2011).

- **Product pipeline :** Product innovation is vital in the agrochemicals industry across the world. Over time, pests develop immunity against commonly used agrochemicals, as a result of which agrochemical manufacturers constantly need to focus on new product development that can protect crops against resistant strains of pests. Some of the leading agrochemical companies in India make considerable investments in maintaining a strong product pipeline. For instance, Dhanuka has about 5 new products in pipeline to be launched over the next 2-3 years; PI Industries plans to launch 2-3 new products every year. The regulatory environment in India and in most of the developed generic markets require a new product to be tested for 2-3 years in local conditions before an approval is granted. In order to minimize this time, many Indian agrochemical manufacturers strengthen their product portfolio by means of obtaining licenses for globally established products or have collaborations with MNCs to jointly develop new products besides focusing on manufacturing generics. For instance, Insecticides India has a JV with OAT Agrico (Japan) to develop new agrochemical molecules.

#### D. KEY TRENDS SHAPING THE MARKET

##### Investments aimed at capacity expansion

Many Indian and global players are investing significantly in capacity expansion in India to meet the rising domestic demand during peak agricultural season, as well as to cater to the exports demand in off-peak seasons in India. This demonstrates the confidence amongst the key players on potentially creating an agrochemical manufacturing hub in India.

#### Strategic partnership model giving way to potential Inbound M&A opportunities

With a low focus on R&D due to the high capital requirements and time to market for new molecules, many Indian players rely on strategic partnerships with American, European, Japanese or Chinese agrochemical giants to add to their product portfolio. In turn, global agrochemical players benefit from leveraging the distribution network and sales infrastructure of the Indian partner. Some of the key strategic partnerships between leading Indian and global manufacturers are given in the following table.

**Table 8: International tie-ups of key agrochemical companies in India**

**Indian Company : RALLIS**

**International tie-up : Syngenta (Switzerland)**

**Comments :** Entered into a cooperation agreement with Syngenta in February 2014 to market its fungicide – Azoxystrobin in India

**Indian Company : INDOFIL**

**International tie-up : Shanghai Baijin Chemical Group (China)**

**Comments :** Formed a JV with the Chinese company in 2012 to set up a carbon disulphide plant in Dahej, Gujarat to provide raw materials to its agrochemical business

**Indian Company : DHANUKA**

**International tie-up :** Nissan Chemical (Japan), Mitsui Chemicals (Japan), Sumitomo Chemical (Japan), Hokko Chemical (Japan), Chemtura (USA), FMC (USA), DuPont (USA), Oro Agri (USA)

**Comments :** Has strategic partnerships with several American and Japanese companies to market their patented products through its strong distribution network in India

**Indian Company : INSECTICIDES INDIA**

**International tie-up :** OAT Agrico (Japan)

**Comments :** Has a JV with the Japanese company to set up an R&D facility in Chopanki, Rajasthan to develop new agrochemical molecules

This has a potential to create interesting M&A situations as MNCs are increasingly focusing on expanding footprint in India, including manufacturing as well as sales presence. This theme has been reflected in the recent acquisitions of Hyderabad Chemicals by Nihon Nohyaku (Japan) and of Devidayal Sales by Arysta Life Sciences (Japan). Both these acquisitions highlight the growing interest of Japanese corporations to move away from a pure marketing tie up towards establishing a base in India.

<sup>1</sup> Companies like Bayer, BASF, DuPont and Syngenta have developed their own distribution networks which account for a large portion of their total revenue

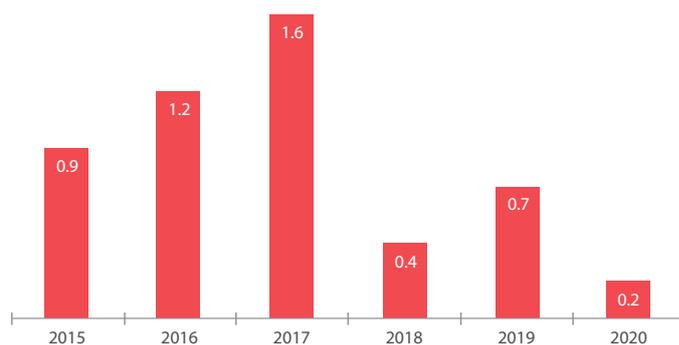
**Inorganic growth : A key trend amongst leading Indian players**

The Indian agrochemical market has witnessed reasonable outbound M&A activity in the recent years. Outbound acquisitions have largely resulted from an interest in new market access (eg. UPL's overseas acquisitions) or to diversify product portfolio (eg. acquisition of Zero Waste Agro Organics by Rallis).

Consolidation of the Indian market has also been seen with instances of acquisitions by Indian agrochemical players to gain market share within India or diversify product portfolio (for instance, Coromandel International acquired Sabero Organics in 2011; Coromandel Agrico acquired Punjab Chemical's agro formulation division in 2013).

**Opportunity in generics with the upcoming patent cliff**

Agrochemicals worth ~ USD 5 bn are expected to go off patent by 2020. Globally, patented products constitute 22% share of the total agrochemical market. This is expected to decrease to 15% by 2020 as a result of the patent cliff, offering a huge potential for the Indian agrochemical production as India emerges as a hub for generics. This has a significant potential to boost Indian agricultural exports over the next decade.



**Figure 24: Agrochemicals going off-patent (USD bn)**

Source: FICCI

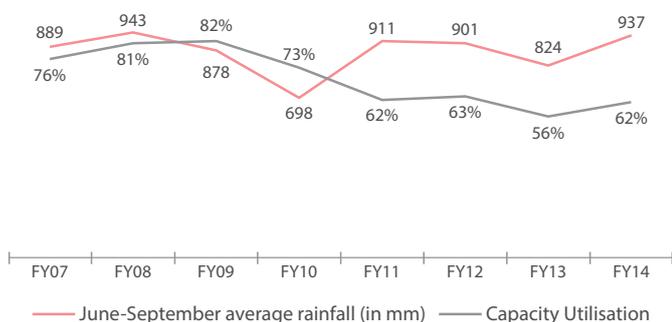
**E. KEY CHALLENGES FOR THE SECTOR**

**1. Overdependence on monsoons :** In India only 40% of the net arable area is under irrigation while the un-irrigated area is completely dependent on monsoons. Inadequate rainfall in any year adversely impacts the agro-input industry including agrochemicals. Poor monsoons have dampened the growth in the agrochemicals sector several times over the past decade. Even the strongest agricultural producers (and hence, agrochemical markets) such as Punjab, Haryana and Andhra Pradesh get affected by poor monsoons.

**Table 9: Select recent transactions involving Indian agrochemical companies**

YEAR	TYPE	ACQUIRER	TARGET	COMMENTS
2014	Inbound	Nihon Nohyaku (Japan)	Hyderabad Chemicals (India)	Acquired 74% stake to establish direct sales network in India
2013	Domestic	Coromandel Agrico (India)	Punjab Chemicals' agro formulation division (India)	Acquired the formulation division to increase its product portfolio
2012	Domestic	Rallis (India)	Zero Waste Agro Organics (India)	Acquired 22.8% stake to strengthen its product portfolio with organic manure and soil conditioner products
2011	Domestic	Coromandel International Ltd (India)	Sabero Organics (India)	Acquired 42.2% stake for USD 50 mn to derisk its subsidy business (fertilizers) by adding to the portfolio non-subsidy business (pesticides)
2011	Outbound	UPL (India)	DAV Agro Do Brazil (Brazil)	Acquired 51% stake for USD 150 mn in the fast growing Brazilian company involved in production, marketing and distribution of agrochemicals
2011	Inbound	Arysta LifeSciences (Japan)	Devidayal Sales Limited (India)	Acquired majority stake to bring Arysta's global products in to Indian through Devidayal's distribution network

AGROCHEMICALS ^



**Figure 25: Indian agrochemical capacity utilisation (technical) and monsoon rainfall in India**

Source: Annual reports; Indian Meteorological Department

**2. Introduction of GM crops may affect demand :** The use of genetically modified (GM) crops are affecting the agrochemicals industry across the world by impacting the types and volumes of agrochemicals required for such crops. In India currently GM technology is allowed only in cotton. In 2002, Bt cotton was allowed in India and it has penetrated to 90% of the total cotton cultivated in India. GM technology has not been permitted in food crops so far, but such crops are already being accepted across the world, and it may not be long before it is adopted in India to enhance food security of the country. The dynamics of certain agrochemicals is already changing, for instance, the use of "Roundup Ready" crops (tolerant to Roundup – Monsanto's herbicide, Glyphosate) while providing an immense boost to the glyphosate consumption, would severely impact the consumption of other herbicides.

**F. COMPETITIVE LANDSCAPE AND COMPANIES TO WATCH OUT FOR**

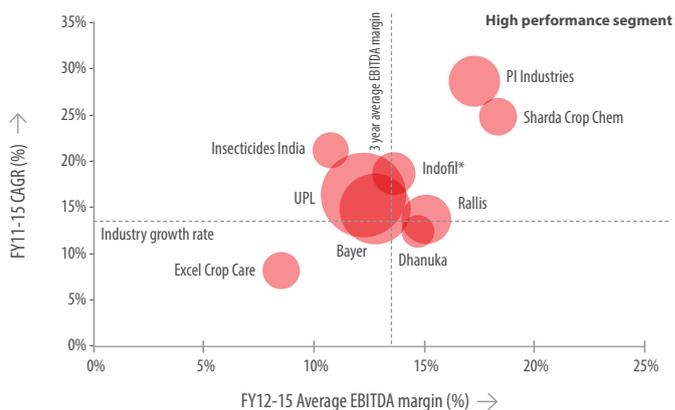
The agrochem space in India comprises several scaled up Indian and global companies, including significant market presence of global giants such as Bayer, Syngenta, Monsanto, DuPont.

The market leader is UPL Limited (earlier known as United Phosphorous Limited) which is an MNC of Indian origin. It is not only the market leader in the domestic market but has a customer base in 123 countries across the globe with 14 of its 23 manufacturing sites outside India, having grown rapidly through organic and inorganic routes.

Bayer Crop Science (Germany) and Rallis (subsidiary of Tata Chemicals) are the other two in the top 3 players in the Indian market. Other key companies are BASF (German Chemical giant), and Indian players including Indofil Industries Limited (a K.K. Modi Group company), Coromandel International Limited (part of the Murugappa Group),

PI Industries, Crystal Crop Protection, Dhanuka, Excel Crop Care and Insecticides India Limited.

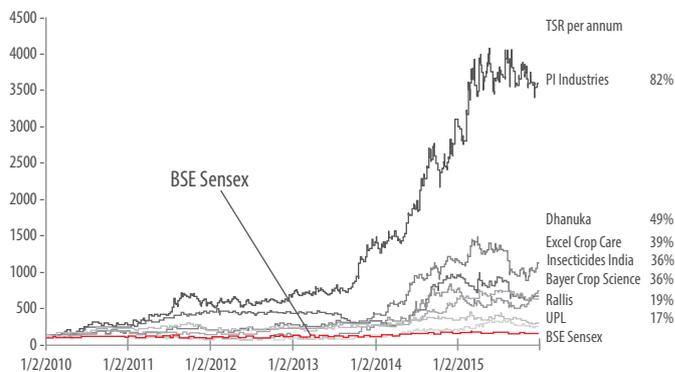
The 3 year average EBITDA margin for the leading agrochemical companies in India is 14.6%, making it quite an attractive segment. The segment enjoys high margins driven by the price premium that a strong customer interface and strength of brand command.



**Figure 26: Competitive landscape**

Source: Annual reports, Avendus analysis

\*Up to 14



**Figure 27: Stock market performance of leading agrochemical companies in India**

Source: BSE; moneycontrol.com; Stock prices and BSE indexed to 100

Note: TSR per annum for period between 1/1/2010 and 31/12/2015

The stock performance for most agrochemical companies in India has been superior to the performance of BSE Sensex. This is due to the strong revenue growth of various agrochemical companies while maintaining attractive profit margins through the phases of business cycle and economy.

Table 10: Companies to watch out for

COMPANY	SEGMENT	EBITDA MARGIN (FY12-15 AVERAGE)	SALES GROWTH (FY11-15 CAGR)	TSR (5YR PERIOD)	FUTURE PLANS
UPL	Generic agrochemicals	12.3%	16.4%	18%	Launching 9 patent protected products over next 3 years To develop at least 5 mega brands in the near future
Bayer CropScience India	Agrochemicals seeds and environmental science	12.8%	14.9%	36%	Introducing more high technology agrochemicals products Bringing globally renowned Bayer products to India
Rallis	Agrochemicals seeds and agriservices	15.1%	13.8%	20%	New growth initiatives in non pesticides portfolio (seeds, plant growth nutrients and agri-services)
Indofil*	Agrochemicals and other specialty chemicals	13.6%	18.5%	NA	Launching new products in other specialty chemicals such as leather, coatings and textile chemicals
PI Industries	Agrochemicals and custom synthesis and manufacturing	17.3%	28.1%	83%	Improving profitability through R&D and engineering initiatives Upgrading and modernising plants
Dhanuka	Agrochemicals, formulations and distribution	14.7%	12.5%	52%	Providing value for money high quality products to Indian farmers 5 new products in the pipeline
Insecticides India	Entire Agrochemicals value chain	10.8%	21.0%	39%	Focusing on R&D with Japanese collaboration to develop new molecules Increasing the product portfolio
Sharda Cropchem	Agrochemicals conveyor belts and industrial chemicals	18.4%	24.5%	NA	Building its own sales force in India and abroad to become a one-stop solution provider Expanding and strengthening its distribution presence
Excel Crop Care	Agrochemical formulations	8.5%	8.5%	42%	Focus on growth of its branded products

\*Up to FY 14

Source: Avendus analysis, company reports

Total Shareholder Return per annum for the period between 1st Jan, 2010 and 31st Dec, 2015

Table 11: Performance of companies to watch out for on the Key Success Factors

COMPANY	BRAND CREATION	DISTRIBUTION	PRODUCT PIPELINE
Rallis	Has more than 50 brands	Has 2,300 distributors reaching out to 40,000 retail counters covering 80% of India's districts	Rallis on an average launches 3 products a year
Dhanuka	Has more than 80 brands	Has 8,000 direct dealers selling to over 75,000 retailers	Five new products are in the pipeline and 2 product launches a year planned
PI Industries	Has more than 30 brands	Has 8,000 distributors & direct dealers and more than 35,000 retail points	Plans to launch 2-3 new products every year
Indofil	Has more than 35 brands	Has selling agents, C&F agents and distributors reaching out to more than 50,000 retail outlets	-

### Rallis

Rallis is a subsidiary of Tata Chemicals and is among the largest agrochemical companies in India. Rallis focuses on its branding and marketing expertise and leverages its strong distribution network. It has 2,300 distributors reaching out to 40,000 retail counters covering 80% of India's districts. Rallis' non agrochemical portfolio includes seeds, nutrients, organic manure, agri services and contract manufacturing, resulting in a fairly diversified and well rounded product portfolio.

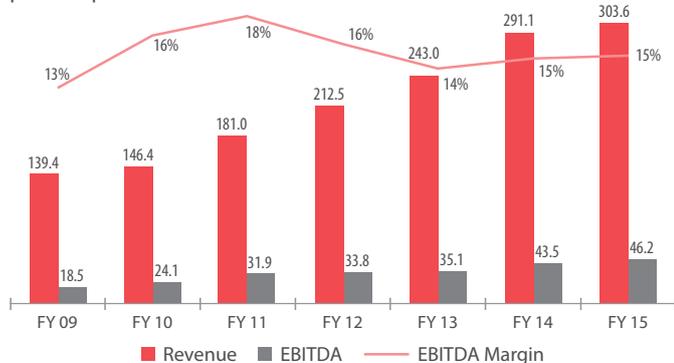


Figure 28: Financial performance of Rallis during FY09-15 (USD mn)

Source: Annual reports

Over FY09-15, the revenue of Rallis has grown at a CAGR of 14% with an EBITDA CAGR of ~ 16%. Rallis has delivered a strong financial performance driven by (a) its strong distribution network continuing to capture the domestic demand growth and (b) its agility in responding to market conditions with new product launches (average 3 new products per year). It also leverages its brand to strengthen its contract manufacturing (CRAM) and non pesticide business. The recent capacity expansion in 2011 through a new plant in Gujarat (additional capacity 5,000 MT) is expected to aid growth in international business segment.

### Indofil

Indofil is a K. K. Modi group company operating in agrochemicals and specialty and performance chemicals segments. It has a strong domestic business in agrochemicals along with growing exports. It has manufacturing plants in Thane, Maharashtra and Dahej, Gujarat.

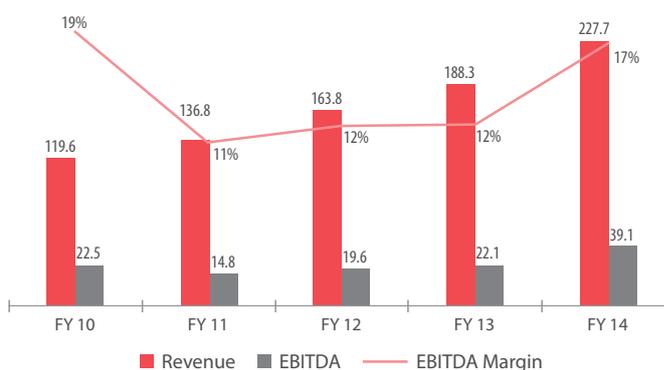


Figure 29: Financial performance of Indofil during FY10-14 (USD mn)

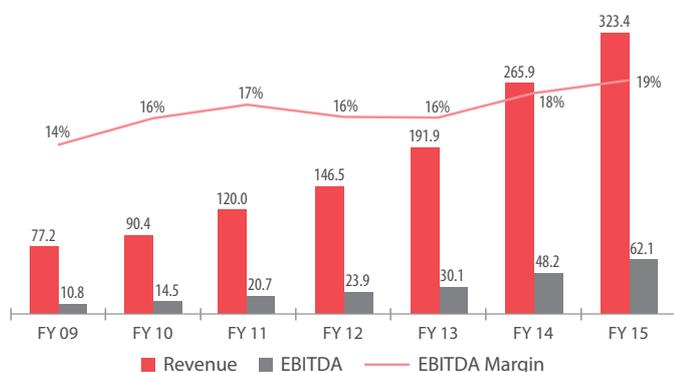
Source: Annual reports

Indofil's revenue has grown at a CAGR of nearly 18% over FY10-14, with an EBITDA CAGR of nearly 15%. The strong growth in revenue was supported by a capacity expansion from 18,000 MT to 30,000 MT p.a. of the fungicide Mancozeb in its Dahej plant in 2012 to meet the growing international demand and acquisition of the European Dithane business of Dow Agro Sciences in 2012 to gain international market share. In FY14 Indofil achieved a significant revenue growth (23% over FY13) and EBITDA margin expansion (17% compared with 12% in the previous year).

### PI Industries

PI has demonstrated a strong focus on partnering with global innovators for in-licensing their innovative products and marketing them in the domestic market. It has also established a high barrier custom synthesis and manufacturing services business catering

to global innovators to commercialise their novel molecules. The capability to partner at an early stage of development allows it to reap benefits throughout the lifecycle of commercialisation of the molecule. PI was among the first companies in India to enter this business in the mid-1990s, and is now enjoying a significant first mover advantage.



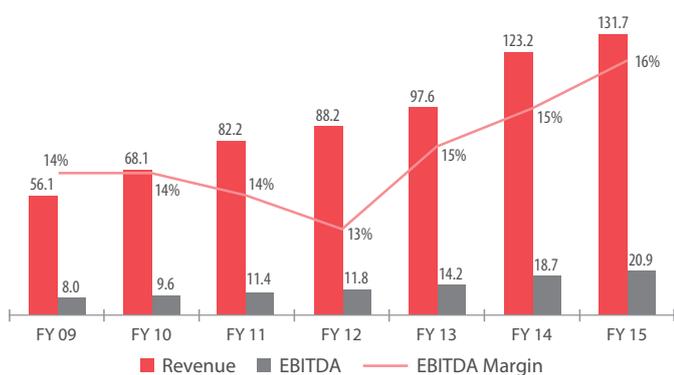
**Figure 30: Financial performance of PI Industries during FY09-15 (USD mn)**

Source: Annual reports, Avendus analysis

It has witnessed a revenue CAGR of 27% over FY09-14 and EBITDA CAGR of 34%. The financial performance is supported by a robust pipeline of novel in-licensed molecules with exclusive marketing rights as well as a strong order book for its custom synthesis business. Both these segments contribute to strong revenue growth and margins, due to the major focus on high value and high margin products.

**Dhanuka**

Dhanuka is the second largest Indian agrochemical formulation company in terms of domestic brand sales. It has a robust product portfolio with over 80 brands. It also has one of the largest rural distribution networks in India with over 8,000 direct dealers, selling to over 75,000 retailers and reaching to over 10 mn farmers across India.



**Figure 31: Financial performance of PI Industries during FY09-15 (USD mn)**

Source: Annual reports, Avendus analysis

Dhanuka achieved a revenue CAGR of ~ 15% over FY09-15 and EBITDA CAGR of ~ 17%. Dhanuka has a unique business model, having created an asset light model of producing formulations only and not technicals (which it sources from international partners), as it focuses on marketing and distribution. It has tie-ups with several leading agrochemical companies in the USA and Japan which provides it with a strong product portfolio and a robust product pipeline, with plans to launch 2 new products every year over the next three years. It has been able to create a strong rural visibility and brand on the back of its advertising and marketing efforts and strong farmer engagement programmes.

**G. FUTURE OUTLOOK**

**Marketing and product portfolio management as the key differentiators**

The Indian domestic agrochemicals market provides long term growth opportunities. Indian pesticide penetration is a mere 20% of the global average. Since 2005, when India amended its patent laws to provide greater protection to international agrochemical patents, several new agrochemical products have been introduced by foreign companies directly or through Indian partners. The major obstacle to domestic growth remains overdependence on monsoon, resulting in high seasonality.

India is also emerging as a major exporter of generic agrochemicals which is likely to further strengthen with a significant number of agrochemicals worth ~ USD 5 bn going off patent over 2015 to 2020. ~ 45% of the Indian agrochemical production is currently exported. However, growing at a faster pace, exports are expected to overtake the domestic market by 2020. The seasonal nature of the Indian domestic market (and the resultant excess capacity) and availability of low cost skilled manpower are the key drivers of growth in exports.

The Indian agrochemical market is fairly crowded with a large number of scaled up players necessitating differentiation by innovative marketing strategies. Some players like Rallis have developed a strong brand over time. Players such as Insecticides India and Dhanuka are spending significantly on marketing efforts. Such marketing and brand creation activities will continue to be of prime importance as growth drivers of agrochemical players in India.

In addition to marketing ‘pull’, strong distribution networks would continue to be a key area of focus. The ability to reach the masses will continue to define the winners in this market.

To summarize, the key differentiators with which we can identify winners in this segment include the ability to create brands, robustness of distribution network and strategic partnerships that provide a strong product portfolio and a robust product pipeline.

# FLAVOURS AND FRAGRANCES<sup>^</sup>

## OVERALL ATTRACTIVENESS



Indian Market Size



Profitability



Presence of Scaled Up Players



Market Growth Rate



Product Differentiation



---

## MARKET SIZE AND GROWTH<sup>^</sup>

- Global market size of USD 25.6 bn; to grow at 5.6% over 2014-19. Key growth drivers include evolving dietary preferences and adoption of fragrances as an essential part of daily personal care
  - Indian market size of USD 0.7 bn; to grow at 15% over 2014-19. This would be largely driven by increased penetration of personal care products in rural markets, premiumisation of personal care and cosmetic products and demand for processed food products
- 

## KEY SUCCESS FACTORS<sup>^</sup>

- For ingredient manufacturers : Securing raw material availability and price, strong customer relationships
  - For blenders : R&D capabilities and IP creation
- 

## TRENDS SHAPING THE MARKET<sup>^</sup>

- Increasing acceptance of natural flavours and fragrance ingredients globally; This is beneficial for Indian players as India is one of the leading suppliers of natural ingredients (caters to ~ 60% of global spice oleoresin demand and ~ 80% of global mint extracts)
  - Synthetic ingredients continue to dominate the Indian market, though green processes and “natural like products” are increasing in popularity
  - Indian market dominated by global F&F houses, who are further strengthening presence in India; Indian players are less likely to displace them in near future
- 

## COMPETITIVE LANDSCAPE<sup>^</sup>

- The blending segment is dominated by MNCs, with global F&F houses constituting over 60% of the Indian market and exports contributing to most of their revenue
  - Aroma chemical manufacturers face competition from Chinese aroma chemical players
  - **Companies to watch out for** - Privi Organics, Synthite Industries
- 

## CHALLENGES FOR INDIAN PLAYERS<sup>^</sup>

- Moving up the value chain for escaping stiff price competition : blenders have a higher product specialization and better bargaining power compared to ingredient manufacturers
  - Low technology barriers for ingredients manufacturer
  - Raw material price fluctuation and uncertainty of availability
  - High dependence on exports implies high impact of REACH implementation, as a result of which players need to incur additional cost of becoming REACH compliant
- 

## FUTURE OUTLOOK<sup>^</sup>

- Global market will continue to grow with a shift towards natural products
  - Indian players have an advantage of natural feedstock availability; However, they will need to optimize costs, build scale and invest in product development in order to succeed
  - Smaller players can find their niche by focusing on segments such as nutraceuticals ; Large players will have to cater to the entire value chain (from farm to fork) including value addition at consumer level
-

# Flavours and Fragrances (F&F)

*Differentiated segment driven by consumption - led demand; Opportunity in naturals*

## A. INTRODUCTION TO F&F : AN IMPORTANT CONTRIBUTOR TO SENSORIAL CONNECT

Flavours and fragrances are small but significant constituents of food & beverage and FMCG products respectively. They are directly involved in creating a sensorial connection between the product and its consumer, often contributing to a strong brand recall.

The Indian F&F market is dominated by the large global F&F houses, which contribute over 60% of the Indian production of flavour and fragrance blends. These players are strengthening their manufacturing base in India to cater to the growth in Indian demand.

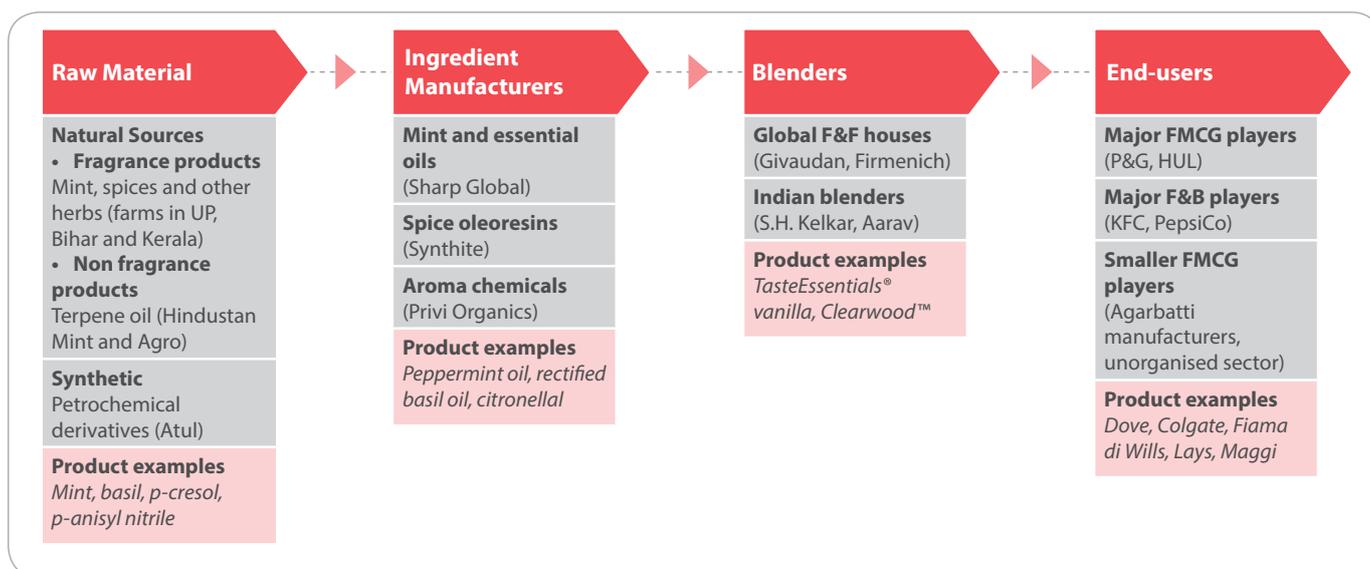
All F&F blends use a large number of ingredients, which can be either natural or synthetic, depending on the source and manufacturing process. It is important to distinguish between the F&F market and the F&F ingredients market as for the remainder of the section, we would be touching upon these two markets in parallel, often referring to very similar data points for both these markets.

India is strongly positioned as a leading natural F&F ingredients supplier to the global market, catering to 60% of the global spice

oleoresin demand and 80% of the global mint extracts demand. Currently 85% of the domestic production of F&F ingredients is exported, with exports demonstrating a double digit growth of 11% during FY09-14. The growth in exports market is led by natural ingredients, supported by the strong raw material base and sourcing advantage in natural ingredients that India offers. For instance, in eight ingredients (including mint, ginger, chilly and pepper, spices, anise, fennel and coriander, lemongrass oil, nutmeg, mace and cardamom, eucalyptus oil), India is among the top 3 producers in the world. As natural and natural like products gain global appeal, the opportunity starts getting more interesting. For instance, Synthite, Kancor and Plant Lipids' spice oleoresins can be found in processed food in most parts of the world. Access to raw material supplies, capital investments, process controls, certifications and consumer relations are some of the factors that can create differentiation within the segment. Scaled up players in natural ingredients space have the opportunity to truly break away and create differentiation and scale.

With a large and growing demand and the resultant opportunities for Indian manufacturers, the market for F&F and ingredients is set to serve up a spicy fare.

**Figure 32: Value chain in Indian flavours and fragrances market; Illustrative players in parenthesis**



 The global market for flavours and fragrances is USD 25.6 bn while the F&F ingredients market is USD 9.0 bn

Flavors and fragrances can be derived from a variety of sources of raw material. Essential oils are distilled from various herbs and spices like mint, rosemary, eucalyptus and others, whereas aroma chemicals are derivatives of organic or inorganic aromatic compounds, which are in turn derived from petrochemicals or from natural sources. The ability to secure a consistent raw material supply is a key advantage for Indian players using natural ingredients, the only challenges being seasonality and variation in yields of natural raw material. Sourcing would continue to be challenging for Indian players depending on synthetic raw material sources (especially petrochemical derivatives), since such feedstock is relatively scarce in India, is controlled by a few players and F&F constitutes a small share of downstream applications. Many players diversify sourcing by importing such feedstock.

The finished and blended flavours and fragrances space is dominated by global F&F houses (such as Givaudan, IFF, etc.), and sees participation from very few scaled up Indian blenders (such as S. H. Kelkar). These players use aroma ingredients (natural or synthetic) to create their own distinct blends. Unique blends may be protected by intellectual property rights, thus creating differentiation. Some Indian blenders (e.g. S H Kelkar) also have integrated ingredient manufacturing capability, just as some of the large global F&F houses do (such as Firmenich).

The global F&F houses and some of the scaled up Indian players are directly aligned to the major FMCG players, and supply specific fragrance or flavour blends for specific products. Few FMCG players also have blending capability for some blends, for which they source ingredients directly from ingredient manufacturers.

Indian ingredients manufacturers supplying to the global F&F houses are very closely aligned with them. It is common for F&F houses to develop new flavours or fragrances jointly with their ingredient suppliers. F&F houses also inspect and formally approve their suppliers and require them to maintain international standards.

### F&F Landscape

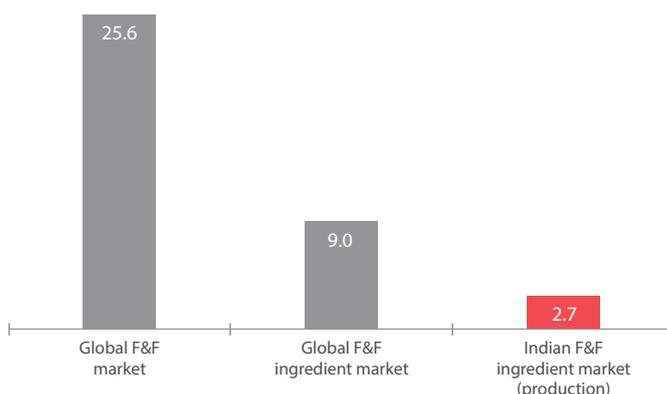


Figure 33: F&F market in 2014(USD bn)

Source: Literature review; Avendus analysis

Based on their source and processes, flavour and fragrance ingredients can be broadly classified into –

- (a) **Essential oils** : Concentrated liquids containing aroma compounds extracted from natural sources
- (b) **Aroma chemicals** : Chemical compounds with a distinct smell produced synthetically through a chemical process, derived from natural or synthetic feedstock.

Fragrances are an important part of FMCG products. Despite constituting less than 1% of a product’s volume and under 10% of its total cost of production, fragrances are instrumental in creating a distinct product association with the consumers.

India is also characterized by a large unorganised F&F blending market, estimated to be larger than the organised market, but difficult to quantify. The unorganised market largely caters to tobacco, incense (agarbatti) and other such end products with thriving unorganized markets by themselves.

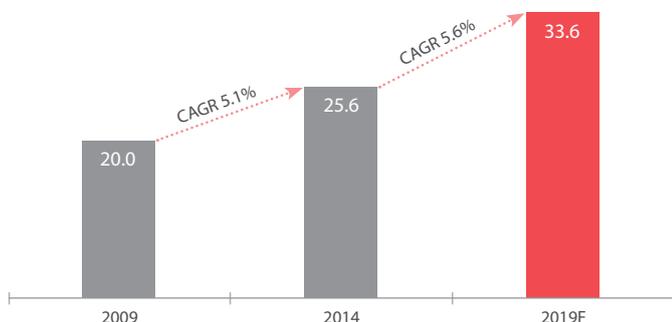
### Flavours vs Fragrances

The major difference is that the former is edible and imparts taste whereas the latter affects olfaction. However, there might be some overlap, for instance, Vanillin, an extract of the vanilla bean, imparts both flavour and fragrance. A fragrance ingredient is any substance that is listed in the Research Institute for Fragrance Materials' (RIFM) database; and one that is not banned by the International Fragrance Association (IFRA). Similarly the Food and Extracts Manufacturers Association (FEMA) has a list of permitted flavour ingredients.

FLAVOURS AND FRAGRANCES ^

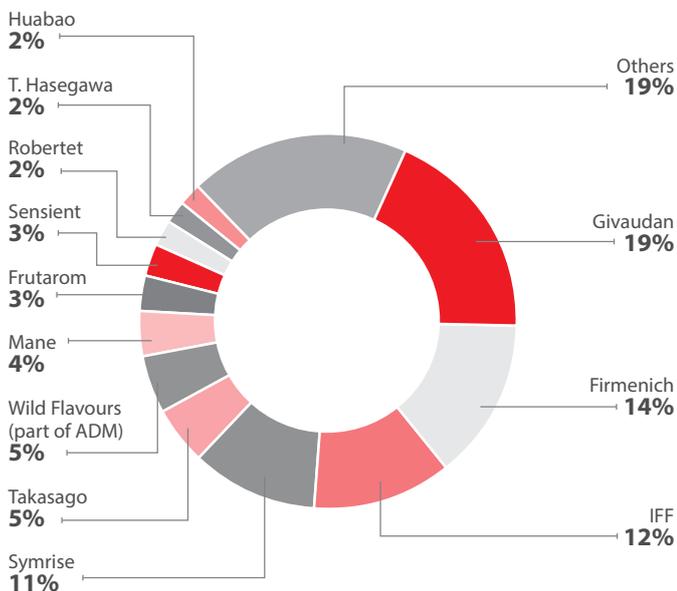
**B. MARKET SIZE AND MARKET GROWTH**

**A growing global market**



**Figure 34: Global market for flavours and fragrances (USD bn)**

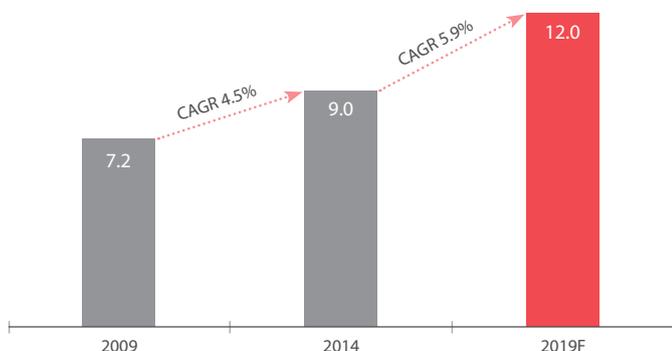
Source: BCC Research



**Figure 35: Global market share of major F&F houses**

Note: Kerry Ingredients has not been included since F&F financials are not available but has estimated sales of USD 900 mn

Source: Literature review, Avendus analysis



**Figure 36: Global market for flavour and fragrance ingredients (USD bn)**

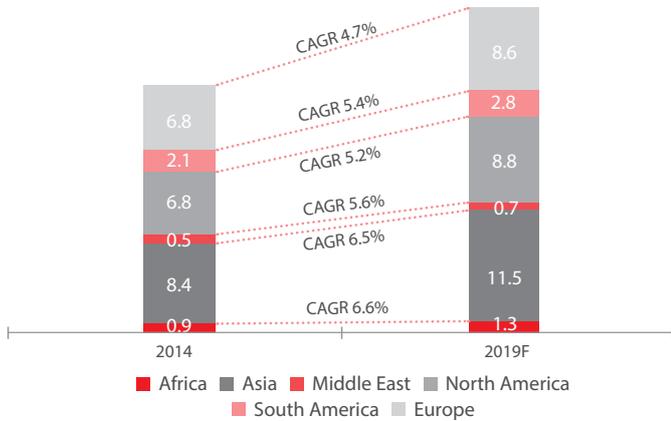
Source: BCC Research

The global market for flavours and fragrances was estimated at USD 25.6 bn in 2014 while the market for ingredients was estimated at USD 9.0 bn. The F&F market is expected to grow at 5.6%, reaching USD 33.6 bn by 2019. The ingredient market is expected to reach USD 12.0 bn by 2019, growing at a similar CAGR of 5.9%.

**The growth is driven by the following major factors –**

- 1. Strong growth in low-fat and low-carbohydrate foods and beverages in North America :** These require greater added flavours to enhance the taste. Over 35% of USA’s population is obese. There has been an increasing demand for low-calorie food due to changing lifestyle, increasing health consciousness and growing consumer confidence in these products. North America and Europe are the two largest markets.
- 2. Increased production of processed foods in developing countries causing a spurt in the demand for flavours :** Developing countries have witnessed growth of 13% in this category compared to the global growth of 4%. Large global players traditionally from developed countries are now targeting these geographies and expanding the market.
- 3. Higher consumer willingness to experiment with new flavours and fragrances :** This trend has led to additional sales in developed markets where consumers have higher disposable incomes, and thus are willing to spend on non-essential sophisticated products across food categories. For instance, in chocolates, dark chocolate and unusual flavour combinations, such as chili chocolate, are increasingly being accepted.
- 4. A shift in perception of fragrance from being a non-essential attribute to an indispensable part of personal care :** Fragrance was considered to be a discretionary attribute in several mass market products in developing countries, including China and India. However, with the increased penetration of scented personal care products in developing nations, fragrance is now perceived as more of a necessity than a luxury.

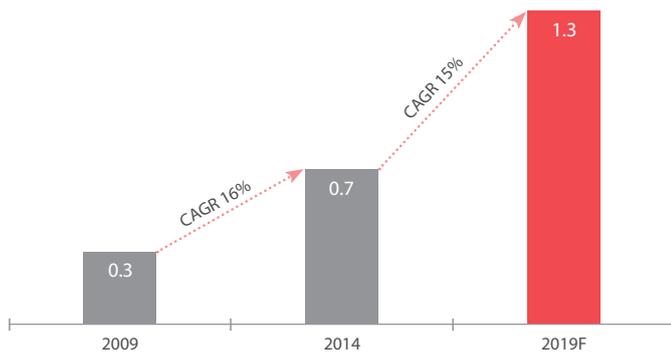
Global market growth is primarily driven by Asian markets. These markets are expected to grow at 6.5% over the next 5 years, constituting ~ 30% of the global market by 2019.



**Figure 37: Global F&F market by geography (USD bn)**

Source: Literature review; Avendus analysis

**India accounts for 30% of the world's production of F&F ingredients, exports ~ 85% of domestic production**

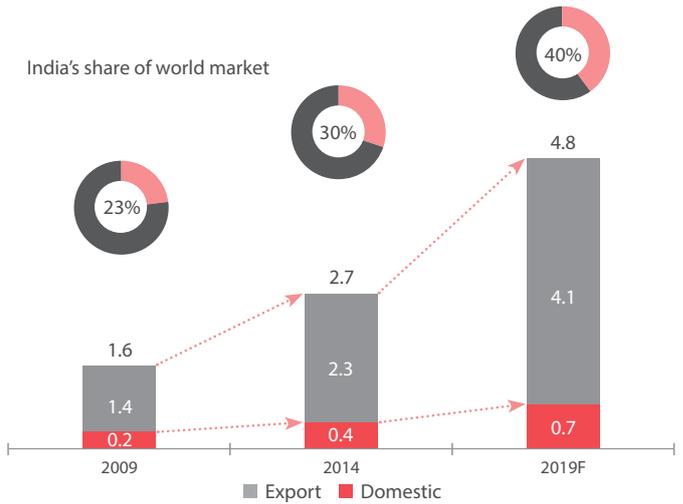


**Figure 38: Indian market for flavours and fragrances (USD bn)**

Source: FICCI, Avendus Analysis

The Indian domestic consumption market for flavours and fragrances was USD 0.7 bn in 2014. The domestic ingredients market is estimated at USD 0.4 bn in FY14. The 2014 exports of ingredients stood at USD 2.3 bn, taking the total ingredients production in India to USD 2.7 bn. This represents a 30% share of the global market for flavours and fragrances ingredients. The F&F ingredients production value in India is expected to reach USD 4.8 bn by 2019, growing at ~ 12% CAGR for the next 5 years, increasing its share to 40% of the global market.

CAGR	2009-14	2014-19
Domestic	12.0%	10.8%
Export	11.0%	12.0%
<b>Total</b>	<b>11.1%</b>	<b>11.9%</b>



**Figure 39: Indian production for flavours and fragrances ingredients (USD bn)**

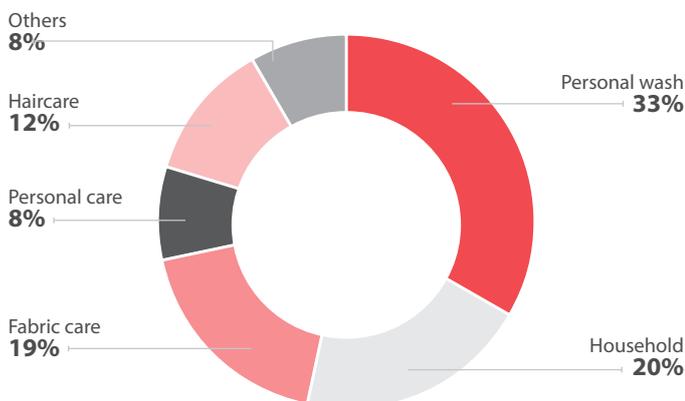
Source: IFEAT, Industry Interviews and Analysis

**Domestic growth has three major drivers :**

- 1. Increasing demand for processed food :** Processed food requires a lot of flavouring. The increasing use of new flavour concepts and flavour blends will drive growth. India's processed food industry was worth USD 45 bn in 2014 and expected to grow at 11% CAGR over the next 5 years.
- 2. Rural Penetration of FMCG :** Marketing by FMCG companies has created demand for categories like deodorants, room fresheners and perfumed soaps in rural markets. This has opened up a new opportunity for the currently underpenetrated fragrance market (penetrated only to an extent of 0.5% of the potential market). Growth of aspirational products and growth of the rural retail sector will also help in driving demand.
- 3. Premiumisation :** As Indian consumers graduate from using basic soaps and detergents to higher end products such as skin creams, lotions, hair gels and other specialised cosmetics products, the quality and value of the flavours and fragrances used in these products is expected to increase. Products like room fresheners and car perfumes are seeing increased penetration, bolstering the demand of flavours and fragrances. The air care market in India is expected to grow at 40% p.a. In the beverage space, fruit-based drinks (expected to grow at 30% p.a.) are becoming popular and consumers are demanding unique flavours. These require high value flavouring ingredients.

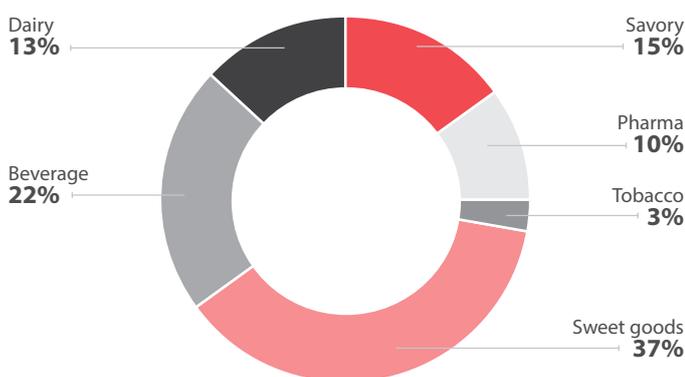
**India exports ~ 85% of its ingredients produced**

**Fragrance**



Source: IFEAT

**Flavours**



**Figure 40: Breakup of Indian F&F market by end usage**

Source: IFEAT

Exports are expected to grow at 12% CAGR over the next 5 years, driven by the increasing use of natural ingredients by global F&F houses as part of the global shift from synthetic to natural ingredients.

85% of the ingredients produced in India are exported to the global market. India is a global leader in multiple product classes. It is the world's largest producer of mint, contributing to ~ 80% of the global supply. In spices and oleoresins as well, India is a major

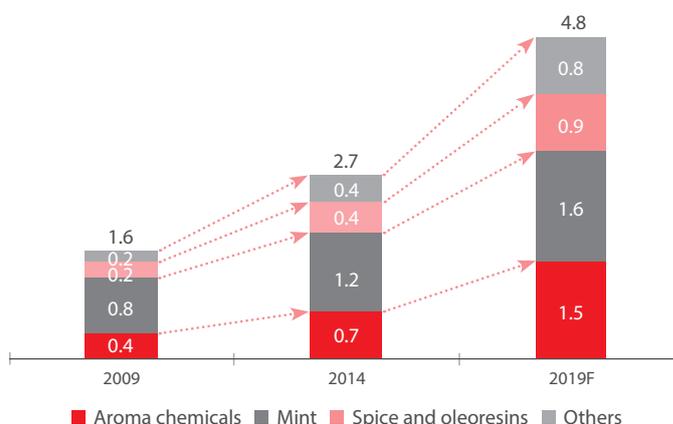
*India has a 30% share in the global ingredient market (including mint and spice oleoresins)*

---

*Three companies based in Kerala control ~ 80% of India's USD 0.5 bn spice oleoresin production*

producer of chilli, pepper, ginger, turmeric and cardamom where it is a dominant player in the global market.

CAGR	2009-14	2014-19
Aroma chemicals	13%	15%
Mint	7%	7%
Spice and oleoresins	14%	14%
Overall	11%	12%

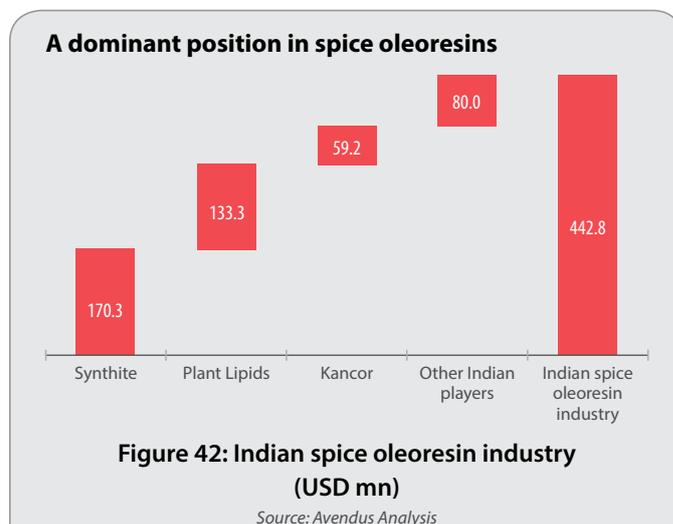


**Figure 41: Breakup of Indian flavours and fragrances ingredients production (USD bn)**

Source: IFEAT, Avendus Analysis

In the aroma chemicals space, some large Indian players are Privi Organics with FY14 turnover of USD 86 mn and Eternis (formerly Hindustan Polyamides and Fibres Ltd., HPFL) with FY14 turnover of USD 78 mn. For both these players, the majority of the revenue is contributed by exports. This is common across most scaled up Indian players.

The Indian market for flavour and fragrance is consolidated, with the top 4 players (the global F&F houses - Givaudan, IFF,



India controls the supply of 60% of the USD 0.7 bn global spice oleoresins market. Three companies based in Kerala control ~ 80% of this – Kancor, Synthite and Plant Lipids. 85% of the Indian production is exported.

In order to meet added demand, Indian companies have also started sourcing from China, another major producer of paprika. For instance, to expand its sourcing base, Synthite has acquired a firm in Korla, China for paprika and other natural ingredients. Synthite aims to almost triple its turnover to USD 0.5 bn by 2020, for which it would need to add an additional ~ 25,000 MT capacity

Firmenich and Symrise) constituting more than two-thirds of the market. The rest is shared among more than 1,000 players. Major Indian players include S.H. Kelkar and Ultra International. The global F&F houses also use India as a base to service some of the South East Asian markets.

**C. KEY SUCCESS FACTORS**

**Ingredient manufacturers :**

- **Raw material sourcing :** Access to a steady supply of raw material with minimal price fluctuation is one of the most important factors for an ingredient manufacturer. This is especially true in the case of essential oil and spice oleoresin manufacturers due to the seasonal nature of the harvest. Companies like Sharp Global, Synthite and Kancor have contract farms which ensure they have a steady supply of raw material for them to process. In the case of aroma chemical manufacturers as well, petrochemical derivatives have limited availability in the country and their prices fluctuate in line with oil prices. The ability to secure prices by means of alternate sources of feedstock is a key success factor.

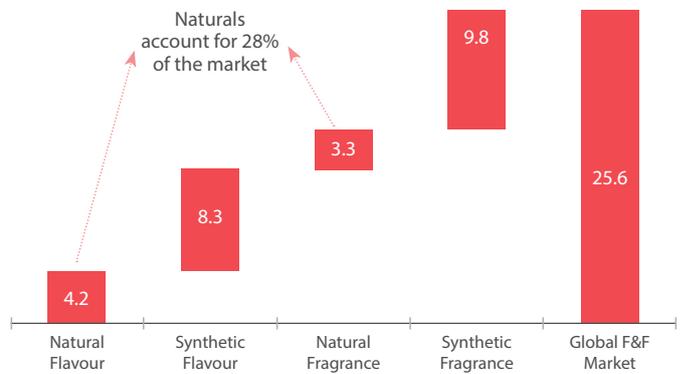
- **Customer relationships :** Given the abstract nature of fragrance and flavors and their impact on consumer perception of the end product, it is very tough to build new relationships and start supplying to the top F&F houses. These firms have strong brands and are wary of experimenting with their composition. A supplier to the large F&F houses has to generate consistent aroma or flavour in each batch, with consistent purity levels. It takes a minimum of 3 years and may even take 7-10 years to break into the vendor rosters of the large F&F houses.

**Blenders :**

- **R&D and IP :** Blenders add value by creating unique scents. These are created by unique combinations of numerous aroma ingredients and additives to produce balanced blends. There is usually considerable IP involved in creation of scents. Blenders have to be able to keep innovating, creating unique fragrances and flavours as the market demands. The global F&F houses spend an average of 9% on R&D. There is a lot of collaborative development involving end-users as well as ingredient manufacturers.

**D. TRENDS SHAPING THE MARKET**

**Global flavours and fragrances market to be driven by growth of naturals**



**Figure 43: Natural and synthetic segments of the global F&F market (USD bn)**

Source: Businesswire



*The global market for natural flavour ingredients is expected to grow at a CAGR of 6.2% over the next 5 years as compared to only <1% CAGR for synthetic ingredients*

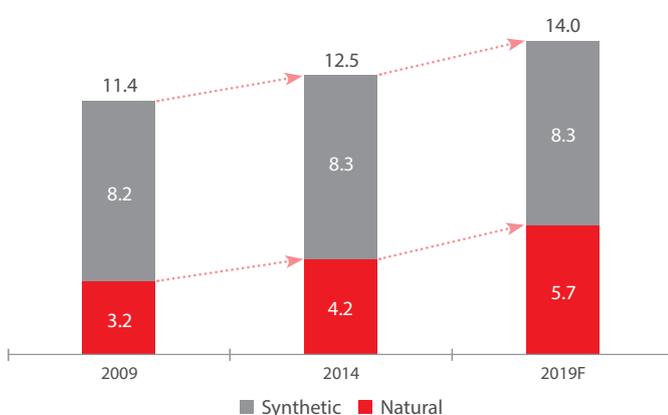
---

*The USD 0.7 bn global spice oleoresins market is primarily catered to by Indian manufacturers (60% share)*

## FLAVOURS AND FRAGRANCES ^

The USD 25.6 bn flavours and fragrances market is largely based on synthetic chemical ingredients. Natural flavours and fragrances make up only 28% of the market. However, that share is increasing. In the flavours segment, naturals accounted for 30% of the market in 2009 and increased its share to 34% in 2014. It is expected to reach ~ 40% by 2019.

CAGR	2009-14	2014-19
Synthetic	0.3%	0.01%
Natural	5.9%	6.2%



**Figure 44: Global flavours market (USD bn)**

Source: Markets & markets

The shift towards naturals can be attributed to consumer awareness towards healthy foods and government regulations<sup>2</sup> prohibiting the use of certain synthetic flavours in food production.

The global F&F houses have also been taking steps to strengthen their natural products portfolio. For example, in 2014, Firmenich entered into a joint venture with Jasmine Concrete in India, a leader in Indian floral extracts specializing in the extraction of Indian flowers, such as jasmine and tuberose. Similarly in 2014, Mane acquired Kancor, a Kerala based manufacturer of spice oleoresins.

**India is the largest producer of mint, chilly, pepper, ginger and spices in the world providing a strong sourcing base for natural ingredients**

### Synthetic ingredients continue to dominate Indian market

Currently the Indian consumption of naturals is very small due to price sensitivity of the Indian consumer. Natural ingredients may cost anywhere between 10-100 times that of their synthetic counterparts. Due to consumer demand for more healthy products, some natural-like products (refer to the next section for details) are entering the market. However, we expect synthetics to continue to dominate the segment in the near future.

### Green processes and “natural-like products” increasing in popularity

Natural-like products are semi-natural, semi-synthetic products, manufactured differently from synthetic products. The raw materials for these chemicals are derived from non-petrochemical sources, and the processes followed in manufacturing these do not use acids and other harsh chemicals. They use natural solvents such as resins which are less toxic while manufacturing.

Most of the companies in India manufacturing bulk aroma chemicals compete on price as these are standard chemicals with very little differentiation. However, by manufacturing natural-like products and using green processes, players are able to create differentiation. Asian customers are price sensitive and are less willing to pay a premium for these products; however, in Europe and other developed markets, it has the ability to command a premium.

### Increasing adoption of natural ingredients to benefit Indian players

India has a strong position in natural ingredients. There is support from Government of India for the development of agro-processing industry. It has been declared as a sunrise sector and receives many incentives in terms of income tax, excise and customs relief<sup>3</sup>.

<sup>2</sup> For instance, Aspartame and MSG are a few of the artificial flavours which citizens are asking their governments in USA and Europe to ban. Many supermarket chains have removed products containing these chemicals from their shelves.

<sup>3</sup> The Finance Minister has announced setting up of a Special Fund of USD 0.3 bn in NABARD to make available affordable credit to agro-processing units being designated as Food Parks. A loan of up to 95% of the project outlay may be availed. All goods related to food processing, imported as part of the project, irrespective of their tariff classification, would be entitled to uniform assessment at a concessional customs duty of 5%. In addition to this, against a standard excise duty of 12%, processed fruits and vegetables carry a merit rate of 2% (Without CENVAT (Central VAT) or 6% with CENVAT)

Table 12: Production of natural ingredient in India

INGREDIENT	GLOBAL RANKING	PRODUCTION	COMMENTS
Mint	1	32,000 MT	India produces 80% of the world's mint oil
Ginger	1	703,000 MT	Indian dry ginger, known in the global market as 'Cochin Ginger', is considered the best in the world
Chilly and Pepper	1	1,299,940 MT	The world's hottest chili "Naga Jolokia" is cultivated in the hills of Assam in north-east India
Spices	1	1,496,990 MT	India contributes 70% of the global spice production
Anise, Fennel and Corinder	1	537,330 MT	The essential oil from star anise is used to flavour soft drinks, bakery products and liquors
Lemongrass oil	1	1,000 MT	This oil is used in imparting scent to soaps, detergents and insect repellent preparations
Nutmeg, Mace and Cardamom	3	18,070 MT	Cardamom is the world's third-most expensive spice after saffron and vanilla
Eucalyptus oil	3	1,000 MT	It is used in small quantities to impart a fresh and clean aroma in soaps, detergents, lotions and perfumes

Source: UN

Major F&F houses have been collaborating with Indian natural players in an effort to strengthen their natural fragrance and flavours portfolio.

### Scale to become increasingly important

Scale is extremely important for flavour and fragrance ingredient manufacturers as well as blenders to be able to secure better bargaining power with their customers – F&F houses (for ingredient manufacturers) or FMCG players (for blenders). In addition, scale helps improve raw material sourcing efficiency and pricing, as well as improves cost structures by means of manufacturing efficiencies.

### Indian players less likely to displace global F&F houses

The ability to create unique and creative fragrances, often involving significant research and perfumery skills, is a major differentiation attained by top F&F houses. There are many small players in the Indian market who merely blend a combination of aroma chemicals and other fragrance ingredients to create standard fragrances

which cater to the demand of other small / unorganized FMCG players. However, the top F&F houses develop their proprietary blends, often using proprietary constituent ingredients. Only few Indian players such as S.H. Kelkar have demonstrated the capability to create unique blends. However, the global F&F houses are far ahead and protect their markets by :

- Improving fragrance delivery systems using techniques like encapsulation, sustained release
- Developing captive aroma chemical ingredients through R&D (eg. Bigaryl™ developed by Givaudan)
- Long term purchase arrangements with global FMCG players

### F&F houses strengthening India presence

India is an attractive destination for global F&F houses to cater to the large, growing Asia Pacific market. The top 10 global F&F houses have their presence in the country with others looking to enter. Eight of the top ten have a manufacturing presence in India.

Table 13: Presence of Global F&amp;F houses in India

COMPANY	HQ (GLOBAL)	GLOBAL SALES (USD MN)	INDIA SALES (USD MN)	HQ (INDIA)	YEAR ENTERED INTO INDIA	PLANT LOCATIONS
Givaudan	Vernier, Switzerland	4,716	135.6	Mumbai	1994	Daman, Bangalore
Firmenich	Meyrin, Switzerland	3,186	84.4	Mumbai	1971	Daman
IFF	New York City, USA	2,953	112.4	Chennai	1931	Chennai, Jammu, Gurgaon
Symrise	Holzminden, Germany	2,431	NA	Chennai	1994	Chennai
Takasago	Tokyo, Japan	1,345	16.7	Chennai	2012	Chennai
Wild Flavors	Zurich, Switzerland	1,189	NA	Mumbai	2011	Tarapur
Mane*	Le-Bar-sur-Loup, France	961	16.7*	Mumbai	1999	Hyderabad Ernakulum (Kancor)
Sensient	Milwaukee, Wisconsin, USA	736	61.9	Mumbai	2001	No manufacturing facility
Robertet	Grasse, France	517	16.7	Mumbai	2001	No manufacturing facility
Kerry	Tralee, Ireland	6,479	NA	Bangalore	2007	Bawal, Bangalore

\* Does not include financials of Kancor

T. Hasegawa and Robertet are major global F&F houses which do not have a significant presence in India yet. These companies are present in other developing markets and are keen to enter India. Frutarom recently entered India by means of acquisition of Sonarome.

There has been a strong interest amongst most global F&F houses to acquire or partner in India, especially amongst flavour and fragrance blenders, and this space is likely to see significant partnerships and M&A activity.

## E. CHALLENGES AND CONCOMITANT OPPORTUNITIES FOR INDIAN PLAYERS

**1. Moving up the value chain :** Most of the Indian ingredient providers are suppliers of oleoresins or aroma chemicals to the F&F houses in India or exporters of the same. Many of the synthetic aroma chemicals are not differentiated and as a result there is stiff price competition in this space. Some natural extracts and oleoresins may command a premium; however, they are seasonal in nature and are beginning to face price competition from the Chinese. As a result, manufacturers of bulk aroma chemicals or oleoresins typically experience relatively low margins (15-25% gross margins) compared to the global F&F houses which have

much higher profitability. Moving up the value chain may not be an urgent imperative for Indian ingredient manufacturers, but may be a key differentiator in the long term.

**2. Building barriers to entry :** There are no significant technology barriers in the space. However, established players have a critical advantage in terms of client relationships. Global F&F houses derive most of their revenue from mature FMCG players. Competition among the larger players is often price based, which is the consequence of limited product differentiation. Companies that are able to create product differentiation would be in a position to build better margins and protect themselves.

**3. Cost and availability of agricultural raw material :** Spices and other plants have cost and availability fluctuations during and across years. There have been times when the players have faced shortages and had to import from neighbouring countries. This impacts their cost structure quite adversely (raw materials make up 60-70% of the total cost). Companies are looking to hedge these risks by engaging with contract farmers, and planting better yield varieties which lower their raw material costs. Players who can manage their sourcing effectively can create a sustainable advantage for themselves.

**4. Impact of REACH on synthetic players :** Indian aroma chemicals manufacturers will be impacted by implementation of REACH. Those Indian companies which significantly cater to the Europe market are registering for REACH. However, overall REACH registration costs are prohibitive for smaller companies, and this would create a significant barrier between leaders and marginal players.

**F. COMPETITIVE LANDSCAPE AND COMPANIES TO WATCH OUT FOR**

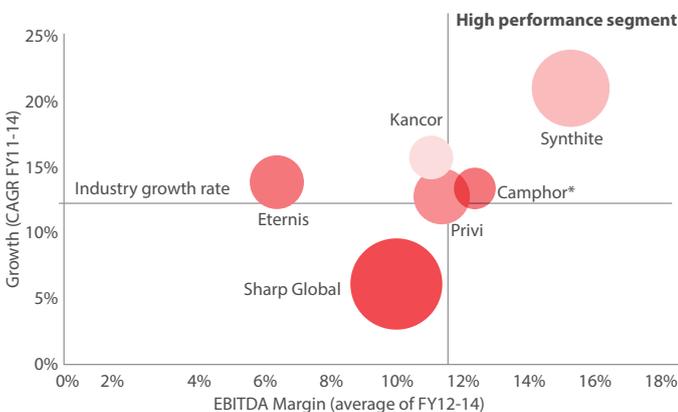
In the F&F industry, we can broadly categorise the Indian players into the following buckets –

**A. Ingredients Manufacturers**

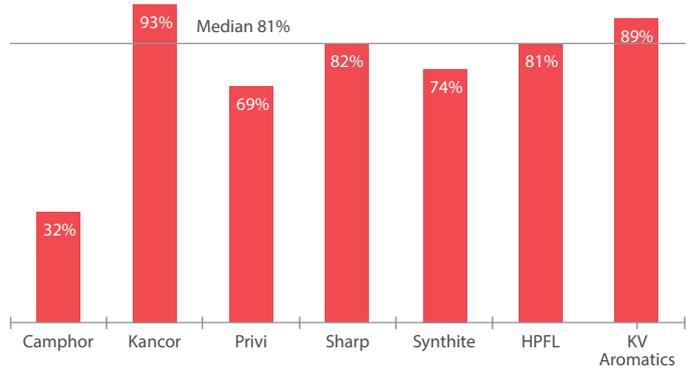
- 1. Mint extracts and menthol producers :** Some of the leading players are Sharp Global, Hindustan Mint and Agro and K.V. Aromatics.
- 2. Spice oleoresin manufacturers :** For instance, Synthite, Kancor and Plant Lipids.
- 3. Aroma chemical manufacturers :** Privi Organics, Camphor and Allied Products and Eternis are the large producers in India. This segment also faces competition from Chinese aroma chemical manufacturers particularly on pricing. While the quality of ingredients offered by Chinese manufacturers is fairly accepted, continuity of supply and tightening environmental norms are the key risks faced by their customers.

**B. Blenders**

This space is largely dominated by MNCs; most of the global F&F houses have manufacturing and / or sales presence in India, and constitute over 60% of the Indian market. Some of the key Indian players include Oriental Aromatics (parent of Camphor and Allied Products), S.H. Kelkar, Goldfield Fragrances, Aarav Fragrances, Sachee Aromatics, Ultra International.



**Figure 45: Competitive landscape**  
Source: MCA; Industry Interviews and Analysis \*Up to FY15



**Figure 46: Exports as a percentage of total revenue of Indian ingredients players**

Source: MCA; Industry Interviews and Analysis

For most organized and indigenous aroma ingredient manufacturers, exports contribute majority of the revenue. Thus, the real competition among them is not for a share of the domestic market but for international customers – global F&F houses. Camphor and Allied Products is an exception since it also produces ingredients for captive consumption for blends.

**Companies to watch out for**

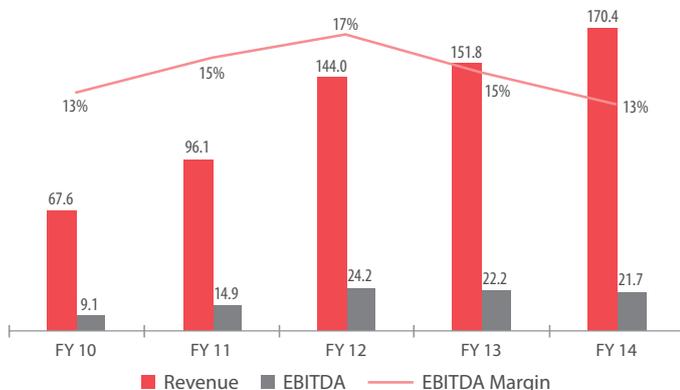
From a financial and business model standpoint, Privi and Synthite appear to be ahead of the peers.

**Table 14: Performance on companies to watch out for on key success factors**

	<b>RAW MATERIAL SOURCING</b>	<b>CUSTOMER RELATIONSHIPS</b>
<b>Privi Organics</b>	Successful backward integration gives them a steady supply of raw material, which earlier had to be imported. This protects them from price volatility	Privi is a major exporter of aroma chemicals, exporting ~ 70% of their produce, supplying F&F houses across the world
<b>Synthite Industries</b>	Has contract farms which ensure they receive a steady supply of raw material of the desired quality	Close relationship with most of the large F&F houses. Works in collaboration with F&F houses to develop new flavours

### Synthite Industries

Since its inception in 1972, Synthite has grown from a regional player in spice trade to a global incumbent, accounting for over 20% of the global oleoresin market. It has strong relationships with all the leading global F&F houses. Also, it secures raw material supply by means of tie-ups with farmers. With the commissioning of a new plant in China and plans for another in Indonesia, Synthite appears to be preparing for rapid growth. The company's stated goal is to grow its revenue to 3X its current size, from ~ USD 167 mn currently to ~ USD 500 mn by 2020. To achieve this Synthite needs to grow annually at 20% year on year. The decline in EBITDA margins due to rising raw material costs, however, might be a temporary cause for concern.



**Figure 47: Financial performance of Synthite over FY10-14 (USD mn)**

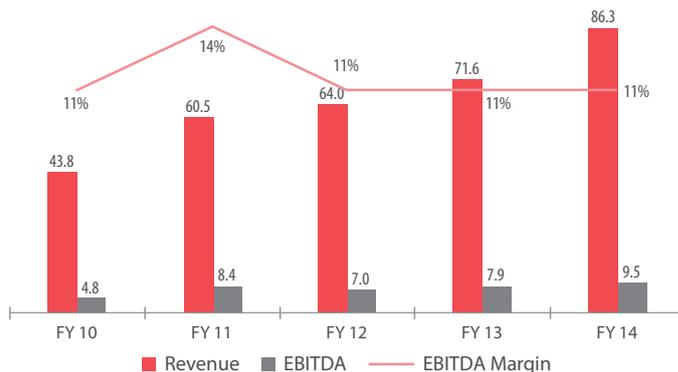
Source: MCA; Industry Interviews and Analysis

Synthite has also forayed into the seasoning space through its subsidiary Symega. Symega, which is a joint venture with Austria-based Omega food technology, makes seasonings and savoury ingredients used in snack foods, processed cheese, convenience foods and processed meats.

Synthite's major export destinations include Europe, USA and Japan. With its new plant in China, it is attempting to target the Chinese market. It is also focusing on the Middle East and North Africa as new target markets.

### Privi Organics

Privi, founded in 1992, is one of the largest manufacturers of aroma chemicals in India. It leveraged its size to its advantage to enjoy economies of scale, and is able to manufacture these ingredients in a cost competitive manner. It has also integrated backward to manufacture its raw material to secure raw material supply and improve margins, providing it an edge over competition. Privi has also made sizeable investments in developing green manufacturing processes. This ensures it is able to create differentiation in its product offerings particularly in western markets where such products and technologies find greater recognition.



**Figure 48: Financial performance of Privi over FY10-14 (USD mn)**

Source: MCA; Industry Interviews and Analysis

### G. FUTURE OUTLOOK

The global market for F&F ingredients continues to grow steadily, with a continued shift towards natural products. India is already in a strong position in terms of raw material availability and can continue to build on this advantage.

Within the Indian market for flavours and fragrances, there has not been a huge shift towards naturals yet, though it is expected to grow in line with India's FMCG growth and changing consumer preferences. Major FMCG players still use artificial ingredients though some niche players are focusing on natural products. We do not see a dramatic shift in domestic consumption patterns as yet. However, growth of the F&F segment is likely to be driven by product categories such as deodorants, perfumes and air fresheners which have a very low penetration, especially among the rural segment. There is a lot of room for growth for these products and concomitantly for fragrances constituting them.

This is good news for India's aroma chemical manufacturers, who have had the majority of their revenue coming from exports. They already possess the capabilities to supply world class ingredients for flavours and fragrances and are in a position to take advantage of India's growth story.

Indian players in the natural ingredients market will continue to have an advantage in terms of their proximity to the raw material supply. However, they have to optimize costs, build scale and invest in product development in order to capture the current market opportunity. Leaders like Synthite are already planning ahead and building plants specifically for their global markets.

Smaller players can find their niche by supplying to a certain industry like nutraceuticals or concentrate on a certain flavour like turmeric. Large Indian players have to look at the entire value chain from farm to fork and think about how they can add value even at the end consumer level. Some of the larger players are therefore looking to acquire companies that will help them move in this direction.

Table 15: M&amp;A and JVs in the Indian market

**2015<sup>^</sup>**

Frutarom Industries, an Israel based Flavors manufacturer, acquired a controlling stake (60%) in Sonarome; Frutarom has expanded its marketing presence in Indian and African markets with this acquisition, in addition to manufacturing presence in India

**2014<sup>^</sup>**

- Mane, a French F&F house, entered into a joint venture with Kancor, a Kerala based oleoresin manufacturer; This helps Mane control their natural ingredient supply and is a way for Kancor to move up the value chain
- Firmenich entered into a joint venture with Jasmine Concrete in India, a family-owned enterprise and the leader in Indian floral extracts specializing in the extraction of Indian Flowers, such as jasmine tuberose
- Agilex Fragrances, an American perfume and fragrance manufacturer acquired the North American assets of Oriental Aromatics, an Indian aroma chemicals manufacturer

**2008<sup>^</sup>**

Oriental Aromatics, a manufacturer of aroma chemicals, acquired a majority stake in Camphor and Allied Products, a manufacturer of terpene chemicals and other specialty aroma chemicals

**2007<sup>^</sup>**

Anthea Aromatics, a Mumbai based manufacturer of perfumery chemicals entered into a joint venture with Les Derives Resiniques et Terpeniques (DRT), a French MNC engaged in the research, development and manufacture of resin and terpene derivatives

**2006<sup>^</sup>**

Synthite, a spice oleoresin manufacturer entered into a joint venture with Austria-based Omega Food Technology to form Symega Savoury Technology

Apart from the above, the Switzerland based Wild Flavors (now part of Archer Daniels Midland) gained access to the Indian market through its acquisition of the US based natural oils and ingredients manufacturer A.M. Todd in 2011, which was already operational in India.

Likewise, the Swiss F&F major Givaudan consolidated its global market share by acquisition of Quest International in 2006 and in the process also strengthened its India market share from 13% to 19%.

# DYES AND PIGMENTS^

OVERALL ATTRACTIVENESS



Indian Market Size



Profitability



Presence of Scaled Up Players



Market Growth Rate



Product Differentiation



---

## MARKET SIZE AND GROWTH<sup>^</sup>

- Global market size of USD 27.8 bn; to grow at 4.0% over 2014-19 driven by growth in end-user industries, increase in demand for high performance pigments and increase in environmental consciousness
  - Indian market size (production) of USD 4.9 bn; to grow at 11.4% over 2014-19. Growth to be driven by growth in textile industry, increase in exports particularly due to shift of supply from China to India as a result of shutdown of many Chinese plants due to implementation of stringent environmental laws
- 

## KEY SUCCESS FACTORS<sup>^</sup>

- Compliance with international quality and environmental norms is necessary for supplying to the large European market
  - Portfolio comprising high value added and performance colorants for niche applications in high growth end industries is key to preserving profitability
- 

## TRENDS SHAPING THE MARKET<sup>^</sup>

- Environmental pressures and cost considerations are resulting in a shift of production from Europe to Asia
  - Stringent regulatory steps in China have been favourable to Indian players as they have been able to capture the resultant opportunity
- 

## COMPETITIVE LANDSCAPE<sup>^</sup>

- Indian market has the presence of MNCs, large Indian players and a large number of SMEs. MNCs offer relatively more specialised products than most Indian players
  - **Companies to watch out for** - Aarti Industries, Sudarshan Chemicals, Neelikon Food Dyes and Chemicals
- 

## FUTURE OUTLOOK<sup>^</sup>

- A medium term boom for Indian dyes and pigment industry is expected due to shut down of Chinese plants
  - Overall the market will continue to thrive on volume play; However, differentiated offerings will witness faster and more sustainable growth
  - REACH compliance will particularly impact this segment as European players import from India and China, and a large volume of Indian production is exported
-

# Dyes and Pigments

*Product specialization and the ability to cater to niche end markets key to success in a otherwise volume driven market*

## A. INTRODUCTION TO THE MARKET

### Introduction to Dyes and Pigments

The Indian dyes and pigments market has grown at CAGR ~ 9.7% over 2009–14, reasonable but not exceptional by Indian manufacturing industry benchmarks. There is significant overcapacity in the Indian industry. China produces three times as much as India by volume. So far, this seems to be a story similar to many other manufacturing sectors.

But this scenario has been changing rapidly. Environmental regulations have forced many western players to look eastward. The Chinese players, traditionally supported by the Government, are now beginning to face repercussions of using polluting processes, as a result of the increasing environmental consciousness of Chinese policymakers. This has given a sudden boost to Indian industry as spare capacity has come in as an opportunity to capture the shift in demand. However, this cannot be generalized for the entire universe of manufacturers. Additional cost of becoming regulatory compliant has been a deterrent to the growth of sub-scaled players, thereby creating a significant entry barrier and providing scaled up Indian players with an explosive growth opportunity. Some players have capitalized on the opportunity to demonstrate dramatic growth and margin expansion in a span of one year.

On the face of it, this may seem to be environmental arbitrage. However, many Indian players have used this opportunity to create a global presence on the back of internationally accepted product quality, scale and improving their processes to manage environment well within industry norms, and to create a niche for themselves through differentiated offerings. Many scaled up players are using this market opportunity to strengthen their competitive position and move up the value chain.

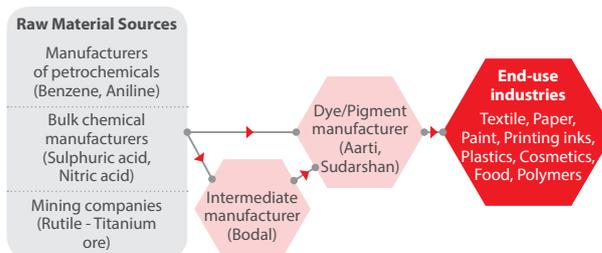
### Applications of dyes and pigments

The most common application of dyes is as colorants for textiles. They are also used in a variety of end applications including but not limited to paper, adhesives, art supplies, food and beverages, ceramics, construction, cosmetics, glass, paints, plastics and soap.

Pigments predominantly find application in paints and coatings, automotive finishes, emulsion paints and distempers. They are also used in printing inks, polyester textiles and plastics like PVC, rubber and synthetic polymers and nylons, cosmetics and paper.

The key differences between dyes and pigments are their size and solubility - dyes are soluble while pigments form a suspension – this results in a difference in applications and process of application.

### Value Chain



**Figure 49: Value chain for the dyes and pigments industry**

Petrochemical derivatives such as benzene and naphthalene are key raw materials for this industry. In addition, many reagents and inorganic chemicals are also used, including sulphuric acid, oleum, nitric acid, chlorine, bromine, caustic soda, caustic potash, etc. Heavy metals (copper, chromium, mercury, nickel, and zinc) are used as catalysts in the synthesis of dyes and dye intermediates. Some ores like rutile (a mineral composed primarily of titanium dioxide) and iron oxide are also used in inorganic pigments.

Many Indian manufacturers produce intermediates which are then exported to Europe where the final production of colorants is carried out by global or local European players.

The final products, dyes and pigments, find applications in multiple industries including textiles, paint, adhesives, polymers, printing inks, plastics and cosmetics.

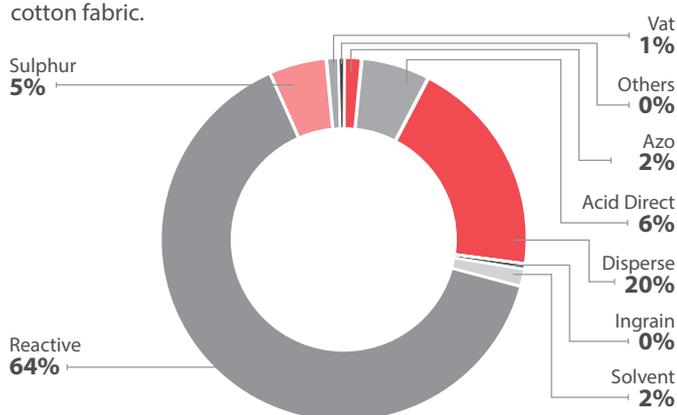


*The global market for dyes and pigments is USD 27.8 bn and is projected to grow at a CAGR of 4% over the next 5 years*

### Classification of dyes and pigments

Dyes can be classified as –

- **Azo Dyes** : They are insoluble and typically toxic. These dyes are used in printing inks and pigments.
- **Acid Direct Dyes** : Dyeing with acid direct dyes is normally carried out in a neutral or slightly alkaline dye bath, at or near boiling point, with the addition of either sodium chloride (NaCl) or sodium sulphate (Na<sub>2</sub>SO<sub>4</sub>) or sodium carbonate (Na<sub>2</sub>CO<sub>3</sub>). Direct dyes are used on cotton, paper, leather, wool, silk and nylon.
- **Disperse Dyes** : These are water-soluble dyes. The dye bath may require high temperature. These are typically used to dye synthetic fibres like polyester.
- **Ingrain Dyes** : Ingrain dyes are those which are synthesized directly on the fabric. Ingrain dyeing is particularly suitable for cotton fabric.



**Figure 50: Split between types of dyes produced (by volume) in 2013-14**

Source: Ministry of Chemicals

- **Solvent Dyes** : These are dyes soluble in organic solvents. Solvent dyes are used to colour organic solvents, hydrocarbon fuels, waxes, lubricants, plastics and other hydrocarbon-based nonpolar materials.
- **Reactive Dyes** : These dyes utilize a chromophore capable of reacting directly with the substrate. They are among the most permanent of dyes. Reactive dyes are used in dyeing cotton and other cellulose fibres.
- **Sulphur Dyes** : These are two-part dyes used on cottons to impart dark colours. The initial bath imparts a yellow colour. This is then treated with a sulphur compound to produce a dark black colour.
- **Vat Dyes** : These are insoluble in water but soluble in alkaline liquor. These dyes are used for dyeing cotton, cellulosic and blended fibre.

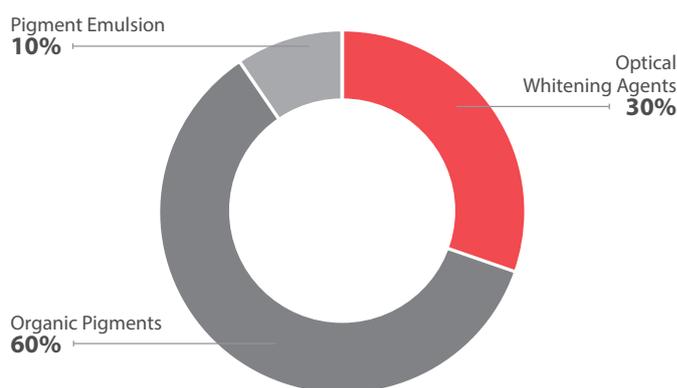
### Pigments are classified as -

#### 1. Organic Pigments

- **Optical Whitening Agents** : These pigments absorb light in the ultraviolet and violet region of the electromagnetic spectrum, and re-emit light in the blue region. In this manner, they make fabric and paper appear whiter.
- **Organic Pigments** : These are molecules that are made of carbon atoms along with hydrogen, nitrogen or oxygen atoms. They may be natural or synthetic. These pigments are generally very bright, but fade away quite quickly on exposure to light.
- **Pigment Emulsion** : A mixture of water and pigment causes a dispersed suspension of pigments which is termed pigment emulsion. This is used in plastic, textile, leather and paper industries.

#### 2. Inorganic Pigments

- **Carbon black** : Carbon black is a material produced by the incomplete combustion of heavy petroleum products such as FCC tar, coal tar and ethylene cracking tar. Carbon black is mainly used as reinforcing filler in tires and other rubber products. In plastics, paints and inks carbon black is used as a colour pigment.
- **Titanium Dioxide** : Titanium dioxide is sourced from the minerals ilmenite, rutile and anatase. When used as a pigment, it is called titanium white. It has a wide range of applications, from paint to sunscreen to food colouring.



**Figure 51: Split between types of organic pigments produced (by volume) in 2013-14**

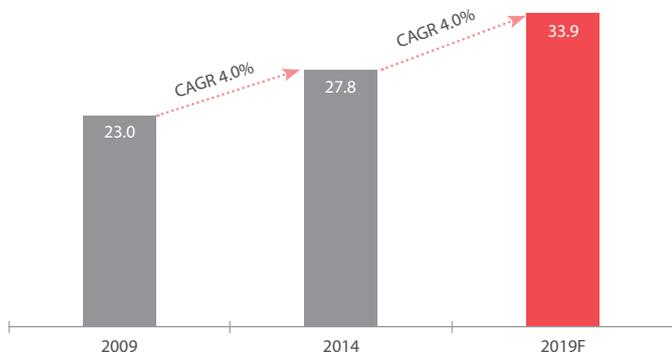
[Inorganic pigments form ~ 85% of the total pigment production by volume (Carbon black ~ 75% and titanium oxide ~ 10%), the balance ~ 15% is organic pigments]

Source: Ministry of Chemicals

DYES AND PIGMENTS 

**B. MARKET SIZE AND MARKET GROWTH**

**Global market growing steadily; APAC region leading the growth**



**Figure 52: Global market for dyes and pigments (colorants) (USD bn)**

Source: Markets and Markets

The global market for dyes and pigments is estimated at USD 27.8 bn for 2014. It is projected to grow at a CAGR of 4.0% over the next 5 years to reach USD 33.9 bn by 2019. This growth is expected to be driven by Asia-Pacific economies as their manufacturing bases expand.

**The major growth drivers of the global colorants market are :**

1. **Growth in end-user industries :** Dyes and pigments are used in a large number of applications. Paints and coatings industry, one of the major users, is expected to grow steadily due to investments in infrastructure and construction (estimated CAGR of 5% during 2014-19). Growth of printing ink, another major end-use, is expected to be boosted with technological developments including digital inks (estimated CAGR ~ 8% over the next five years), development of eco-friendly inks and steadfast products with better resistance to solvents and cleaners.

2. **Demand for high performance pigments (HPP) :** These are highly durable pigments, resistant to UV radiation, heat and chemicals. Other properties of some of the HPPs include fluorescence, luminescence, thermo-chromatic and certain other effects not provided by ordinary pigments. Due to the weather-fastness property, their growth is largely driven by the automotive sector (particularly glossy and / or sparkling finishes) and outdoor housing coatings and paints for outdoor signs. These are relatively high value pigments and are used in specialized and less price sensitive applications such as automotive and inkjet printing (unlike regular printing inks where azo dyes are preferred). In this context, high performance pigments are projected to grow at a CAGR of 5% over the next five years.

3. **Environmental consciousness :** The use of eco-friendly colorants such as low impact dyes is emerging, with features such as low water requirement to rinse off residues during dyeing and rinsing process, low dye runs off in water creating lower pollution, reclaimability from run-off water which can then be recycled, non-requirement of toxic mordants or heavy metals, high absorption rate requiring less quantities of dyestuff resulting in lighter fabric, etc.

**Indian production of colorants**

CAGR	2009-14	2014-19
Total	9.7%	11.4%
Domestic	6.0%	7.5%
Net Exports	11.9%	13.2%



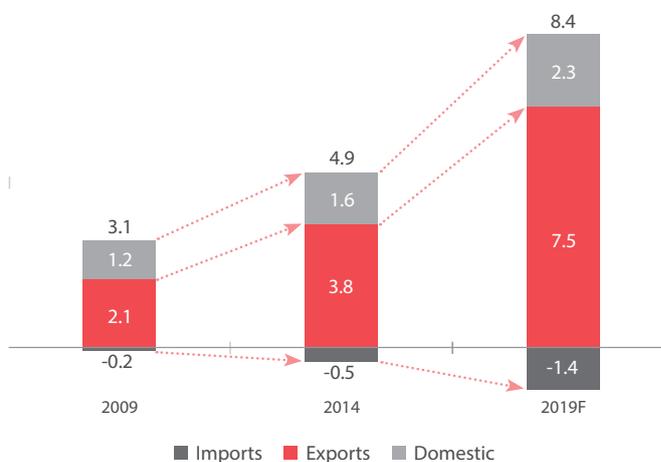
*In 2014, India produced dyes and pigments worth USD 4.9 bn*

---

*Indian production caters to ~ 18% of the global dyes and pigments market by value*

---

*Indian production is expected to grow at a CAGR of 11.4% over 2014-19, largely driven by exports, expected to grow at a CAGR of ~ 15% over the next 5 years*



**Figure 53: Indian colorants market (USD bn)**

Source: Ministry of Chemicals, Literature review; Industry Interviews and Analysis

The Indian production of dyes and pigments is estimated to be USD 4.9 bn for 2014. It is expected to grow at 11.4% CAGR till 2019 driven by the following :

1. Due to strict environmental laws, many Chinese players have discontinued operations, as a result of which Indian players have gained from redirected business. This is set to continue in the near term and will cause a spike in growth for Indian players
2. The textile industry in India, which is the major consumer of dyes, is projected to grow at over 10% CAGR over the next 5 years
3. This is an export focused industry and Indian players are focusing on high performance pigments for value added applications, largely catering to international markets

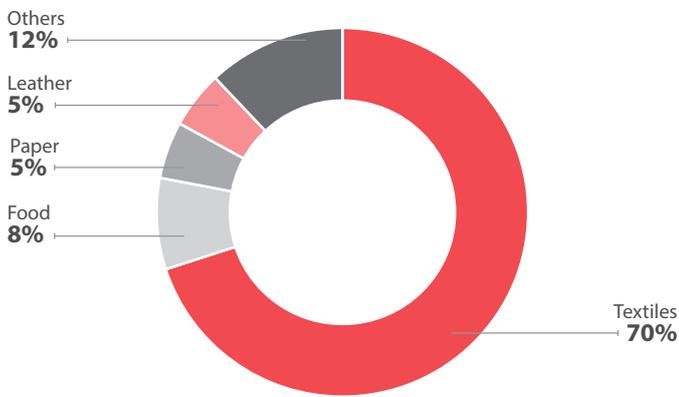


Figure 54: Breakup of Indian dye market by end-use

Source: Industry Interviews and Analysis

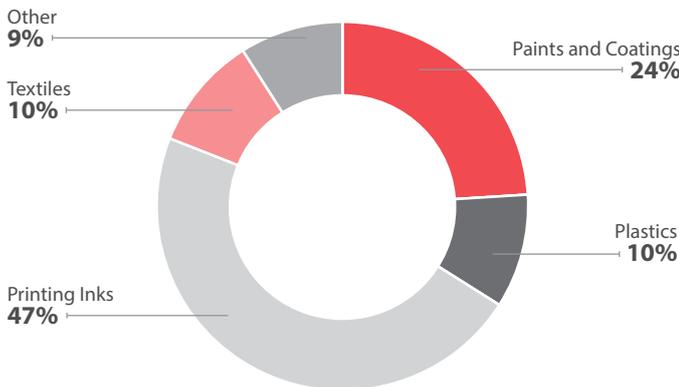


Figure 55: Breakup of Indian organic pigment market by end-use

Source: Meghmani Quarterly Report

**Indian dyes and pigments production**

The total installed capacity for manufacturing dyes in India is 277,640 MT. In 2013-14, 158,480 MT of dyes were produced implying a capacity utilization of 57%. Reactive dyes account for most of the installed capacity, followed by acid direct and disperse dyes. Overcapacity means that Indian facilities could rapidly absorb any extra demand arising from stringent norms in China and the resultant limited production there.

Reactive dyes is a large market, has been growing fast over FY09-14 (CAGR of 17%) and also has an above average capacity utilization of ~ 61%. The growth of Azo and Ingrain dyes has been slowing down due to their polluting effect, and these segments are facing low capacity utilizations. Most Indian players have a presence across multiple segments of dyes.

The capacity utilization of pigment manufacturers has been relatively better than that of dyes. With an installed capacity of 104,410 MT, and production at 77,630 MT the capacity utilization of organic pigments stood at 74% in 2013-14. The capacity utilization of inorganic pigments (carbon black and titanium oxide) stood at 67% in the same period.

Over 80% of the country's colorant production capacity is located in Maharashtra and Gujarat. This is driven by a number of reasons such as proximity to feedstock (largely petrochemicals), concentration of end-user industries such as textiles, paints, etc. in the area and proximity to ports, a conducive factor for exports.

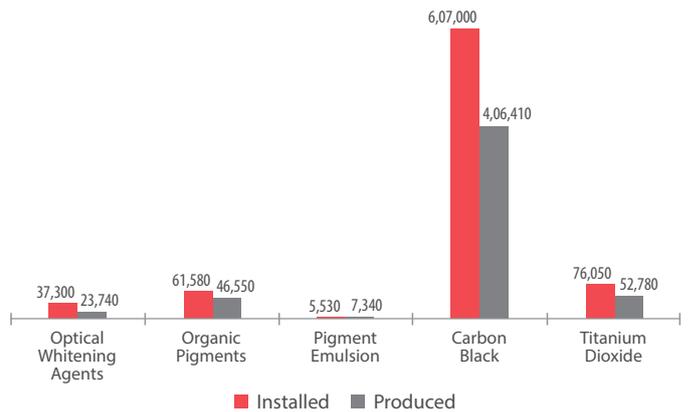


Figure 56: Production of pigments in India in 2013-14 (in MT)

Source: Ministry of Chemicals

**C. KEY SUCCESS FACTORS -**

- **Compliance with international quality and environmental norms**

In order to be able to supply to the large European market, companies need to comply with REACH regulations. While scaled up players are already REACH compliant or are in the process of becoming so, the cost and effort required in the process may discourage mid to small scale players from entering and catering to the European market. Likewise, other environmental and quality standards expected by customers in western markets imply a clear advantage to players with well established processes and quality control systems.

~ 70% of the dyes produced in India find application in the textile industry

## DYES AND PIGMENTS ^

- **Portfolio comprising high value added and performance colorants for niche applications in high growth end industries**

The colorants segment has witnessed high degree of commoditization. Margins are generally low except for specialized offerings. However, specialized products such as performance colorants resistant to degradation, eco-friendly pigments, etc. are currently in high demand and command premium pricing. Catering to end-use industries where purity is important may also be a way to differentiate them. Consumer driven segments such as personal care and food & beverages demand strict quality control. Players catering to such applications are able to enjoy higher margins.

#### Opportunities to move up the value chain

There is significant technology and process know-how involved in certain specialty dyes and pigments, which potentially offers a differentiated and relatively more profitable opportunity to manufacturers. For instance, Clariant's global pigment operation is one of its most profitable businesses with EBITDA margins of over 20%. Clariant is also focusing its R&D efforts on developing alternative pigments which use renewable raw materials. BASF, another leading player in high end printing ink pigments, has been continuing to focus its R&D on performance pigments.

#### D. KEY TRENDS SHAPING THE MARKET

##### The shift from Europe to Asia

BASF and Clariant are among the largest dye and pigment manufacturers in the world, and both these companies are headquartered in Europe. Stringent environmental regulations in Europe and other developed countries, coupled with

**Table 16: Plant shutdowns at or relocation from Europe and Americas**

#### BASF

##### 2013 :

Discontinued a pigment production plant in Paisley, Scotland.

##### 2011 :

Shut down the production facility of basazol dyes at Ludwigshafen, Germany

##### 2010 :

Discontinued optical brighteners production operations in Grenzach, Germany

##### 1999 :

Shut one of Europe's last two plants for manufacturing indigo textile dyes, at Ellesmere Port, Northwest England

Shut its dyestuffs plant at Rensselaer, NY as a result of competition from Asian dyestuff manufacturers and the resultant erosion in pricing and margin

#### CLARIANT

##### 2010 :

Discontinued production of textile dyes and chemicals production at its home site at Muttenz, Switzerland

##### 2009 :

Clariant's sites at Huningue in France, Pontypridd in the UK and at CIVAC in Cuernavaca, Mexico, along with parts of two plants at sites in Gendorf and Frankfurt, Germany, were discontinued

competition with low cost Asian players, has forced some of the large players to discontinue operations at their European plants and to transfer capacities to countries such as India, China and South Korea through greenfield expansion.

The current strategy of most European pigment producers is to use their local facilities for high-end performance colorants for new and niche markets and source non differentiated dye, pigments and intermediates from low-cost facilities based in China and India.

Foreign players have traditionally adopted three strategies for sourcing from India :

1. Establishing their own production facilities (For instance, BASF has facilities at Mangalore - the largest BASF site in South Asia, at Ankleswar and Dahej for colorants and related businesses)
2. Entering into JVs with local manufacturers
3. Toll manufacturing or sourcing intermediates from SMEs or unorganized players



*India exported close to 70% of the dyes and pigments it produced in 2014 worth USD 3.8 bn*

*"We are often faced with the strange situation that we purchase raw material in China, ship it to Europe, manufacture our products at significantly higher costs, and then ship them back to Asia, where our customers are. Obviously this is against any economic logic and severely harms our competitiveness in these areas. Hence there is no value-creating alternative but transferring our production to Asia."*

- Hariolf Kottmann, CEO Clariant

*"If you are not established or positioned in the Asian market, particularly India and China, you will have a difficult time running a successful business going forward," because "our most important customers have migrated over the past decade from Western Europe and North America to the East."*

- Paul Hulme, President of Huntsman's Textile Effects division

China, Bangladesh, India, Vietnam, and Thailand are major consumption centres for the dyeing industry due to a large textile industry in these geographies.

### Regulatory changes in China have been favourable to Indian players

Sweeping changes have been made to China's national Environmental Protection Law rendering greater powers to environmental authorities and resulting in potentially harsher punishments to non-compliant manufacturers.

Under the new law, the penalty for non compliance has been hiked, including higher monetary fine and potential imprisonment. At the same time, a compulsory disclosure element implies the supply chain partners will have to be chosen carefully. There has been stringent implementation since the law formally came into force (Jan'15), with over 375 polluting facilities have been shut down in 2014 itself across various manufacturing segments, including dyes and textiles. For instance, Ningxia Mingsheng Dye Chemical Company was forced to shut down operations due to the extent of water pollution caused by the facility.

The higher cost of complying with regulations will also force many small dye manufacturers in China out of business. Also, global players would be wary of sourcing from such companies. As a result, customers are increasingly expected to turn towards the next largest manufacturing region, India. However, in short term till new capacity is commissioned, global supply would remain constrained and would enable existing

players to command a premium on prices. Indian players with excess capacity and compliant with international quality and environmental standards are well positioned to benefit from this situation.

Reduction in support by the Chinese government in terms of tighter pollution control norms, reduction in export duties and subsidies as well as appreciation of CNY have been favourable for the Indian chemical manufacturers, as evident in India's export realization improvement.

India's net exports have been growing steadily at a CAGR of ~ 12% over 2009-14. This has been contributed largely by the growth of export realizations driven by the ability to supply quality products, movement towards value added colorants, and to some extent, displacement of China's production by Indian players due to regulatory dynamics at China.

The segments which registered the maximum growth were Acid Direct Dyes (119%), Reactive Dyes (70%), Disperse Dyes (70%) and Azo Dyes (55%).

### E. COMPETITIVE LANDSCAPE AND PLAYERS TO WATCH OUT FOR

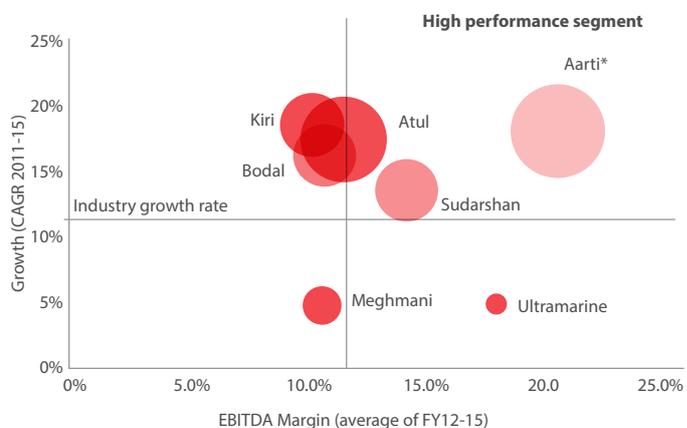


Figure 57: Competitive landscape: Indian players

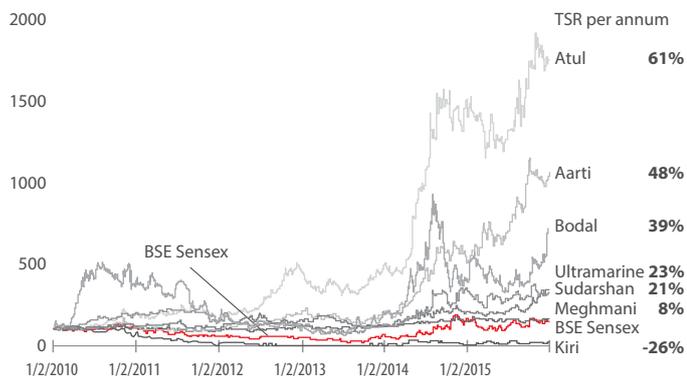
Source: Annual Reports; Avendus Analysis

Note: \* Dyes and pigment

MNCs as well as Indian players operate in the Indian colorants market; however, MNCs have a slightly better pricing power than domestic players, combined with relatively more specialized offerings compared to most medium and small Indian manufacturer.

Many large Indian players in this segment have benefited from the increased Chinese regulation, with median revenue growth ~ 26% in FY13-14. For instance, Bodal registered 82% revenue growth in FY13-14, by capturing market share from Chinese players.

**Solid stock market performance**



**Figure 58: Stock market performance of Indian players along with total shareholder returns (TSR)**

Source: NSE; moneycontrol.com; Stock prices and BSE indexed to 100  
 Note: TSR per annum for period between 1/1/2010 and 31/12/2015

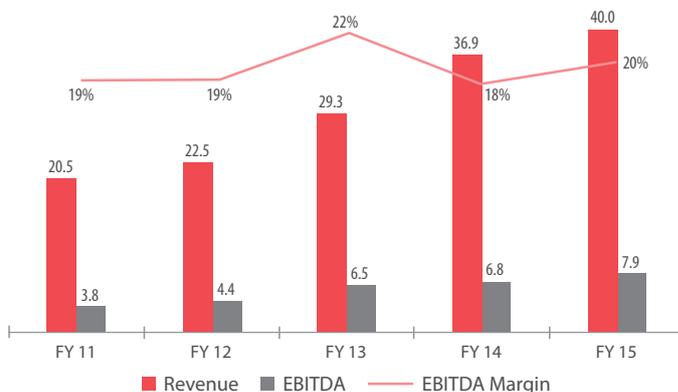
With the exception of Kiri and Ultramarine, the stocks of Indian dye and pigment companies have outperformed the BSE Sensex over the past 6 years. During this time period, BSE Sensex gave an annual return of 20%, whereas Atul demonstrated a return of ~ 60%, about 3.0 times the former. Sudarshan and Aarti achieved significantly high returns of ~ 40%.

**Companies to watch out for**

**Aarti Industries**

Aarti was founded in 1975 manufacturing a single product Dimethyl sulphate. Today Aarti is a leading supplier to global manufacturers of dyes, pigments, agrochemicals, pharmaceuticals and rubber chemicals. Aarti is amongst the largest producers of benzene based basic and intermediate chemicals in India. It has 16 manufacturing units spread across

Gujarat and Maharashtra. It focuses on exports and plans to further expand its capacity to cater to the export potential of specialty chemicals. Also it plans to backward integrate to cater to feedstock requirements (such as Nitro Toluenes and derivatives) of dyestuff as well as other specialty chemicals in its portfolio.



**Figure 59: Aarti Industries – Specialty Chemicals Division (USD mn)**

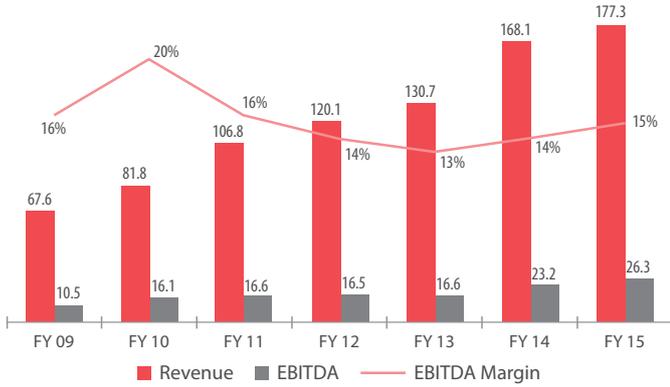
Source: MCA; Industry Interviews and analysis

**Sudarshan Chemicals**

Sudarshan Chemicals is the largest pigment producer in India. Apart from producing general purpose pigments, it specialises in effect pigments for cosmetics and personal care coloration (such as pearlescent pigments) – it is the only Indian manufacture in this segment, which is otherwise largely dominated by European players. Also, its focus on customization and technical support offers a partnership approach to its customers.

**Table 17: Performance of Companies to watch for on Key Success Factors**

	<b>COMPLIANCE WITH INTERNATIONAL QUALITY AND ENVIRONMENTAL NORMS :</b>	<b>PRODUCT PORTFOLIO AND END INDUSTRIES</b>
<b>AARTI</b>	The Company has two “Zero Discharge” units and is reviewing the viability for converting other units into Zero discharge. It has recently received ISO14001:2004 and OHSAS 18001:1999 from SGS for its Vapi unit. REACH compliant since 2011.	Though a major supplier of dye and pigment intermediates, Aarti now supplies chromium free dyes in powder and liquid form for swimming pool and spa applications as well as liquid dyes in eco friendly packaging.
<b>SUDARSHAN</b>	First chemical company in India to be awarded the ISO 9001 certificate in 1993. Also accredited with ISO 14001, OHSAS 18001 and ISO 17025 international quality standards. In process of achieving REACH compliance.	Specializes in effect pigments for cosmetics and personal care coloration.
<b>NEELIKON</b>	Neelikon is an ISO 9001:2008, ISO 22000:2005, GMP and REACH compliant company. Further, its product portfolio of colours is - Halal, Kosher, ISI and non-GMO certified.	Engaged in the manufacturing of food, pharmaceuticals and cosmetic colours.

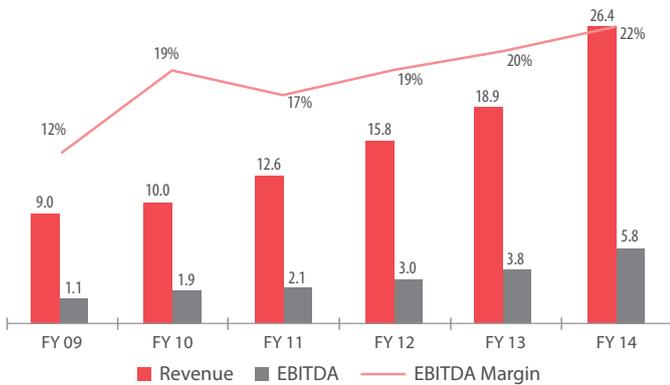


**Figure 60: Sudarshan Chemicals (USD mn)**

Source: MCA; Industry Interviews and analysis

**Neelikon Food Dyes & Chemicals**

Founded in 1983, Neelikon produces high quality food dyes with exports contributing to over 80% of its revenue. Neelikon is looking at backward integration to manufacture its raw materials – naphthalene, aniline, sulphuric acid. It also plans to diversify within the dye industry. The Company plans to achieve this by way of acquiring niche companies with a focus on maintaining environmental compliance.



**Figure 61: Neelikon Food Dyes & Chemicals (USD mn)**

Source: MCA; Industry Interviews and Analysis

**F. FUTURE OUTLOOK**

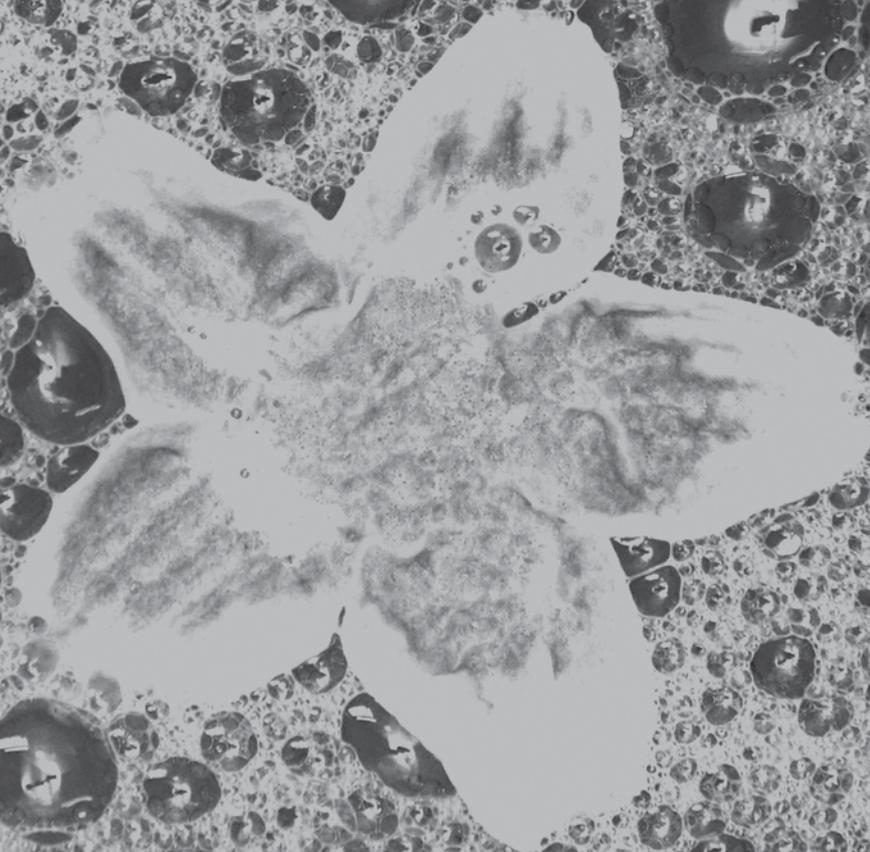
There is significant re-organisation taking place in the dye and pigment industry globally. This is due to the supply chain disruptions caused to European companies by the effect of REACH regulation and increased environmental standards in China. Many European companies depend on supplies from India and China; some are setting up their own plants in those countries or establishing JVs with large local players.

A short to medium term boom for the Indian dye and pigment industry is expected as Indian companies fill in shortages caused by Chinese plant shut downs. The benefits would largely be reaped by scaled up players who are compliant with international environmental and quality standards. Companies like Bodal have benefited from these trends - this opportunity may also be captured by other players in the colorant industry.

The overall commoditized market thriving on volume play has gained due to supply side dynamics originating in China, and will continue to do so in the immediate future. However, those focused on differentiated offerings catering to niche applications such as in personal care, F&B, healthcare, etc. will witness faster and more sustainable growth over the long run.

# SURFACTANTS<sup>^</sup>

<b>OVERALL ATTRACTIVENESS</b>	★ ★ ★ ★
Indian Market Size	★ ★ ★ ★
Profitability	★ ★ ★ ★
Presence of Scaled Up Players	★ ★ ★ ★
Market Growth Rate	★ ★ ★ ★
Product Differentiation	★ ★ ★ ★



---

### MARKET SIZE AND GROWTH<sup>^</sup>

- Global market size of USD 30.4 bn; to grow at 5% over 2014-19. Growth to be driven by end-user industries' growth and increasing demand for eco-friendly (bio based) surfactants
- Indian market size (production) of USD 2.6 bn; to grow at 13% over 2014-19. Growth largely driven by personal care applications

---

### KEY SUCCESS FACTORS<sup>^</sup>

- Scale : Price competition implies that scale and process efficiencies are key to succeed
- Specialization : Differentiated players catering to niche applications are less likely to suffer from margin pressures

---

### TRENDS SHAPING THE MARKET<sup>^</sup>

- Ideal time for MNCs to expand in India and consolidate the market to build scale

---

### COMPETITIVE LANDSCAPE<sup>^</sup>

- Few Indian players in this sector are Godrej Industries, Aarti Industries, Venus Ethoxyethers, Viswaat Chemicals, Advance Surfactants and Unitop Chemicals

---

### FUTURE OUTLOOK<sup>^</sup>

- Segment to witness growth, however, profitability would remain challenged in the medium term
  - For Indian players the opportunity lies in moving towards surfactants for niche applications
-

# Surfactants

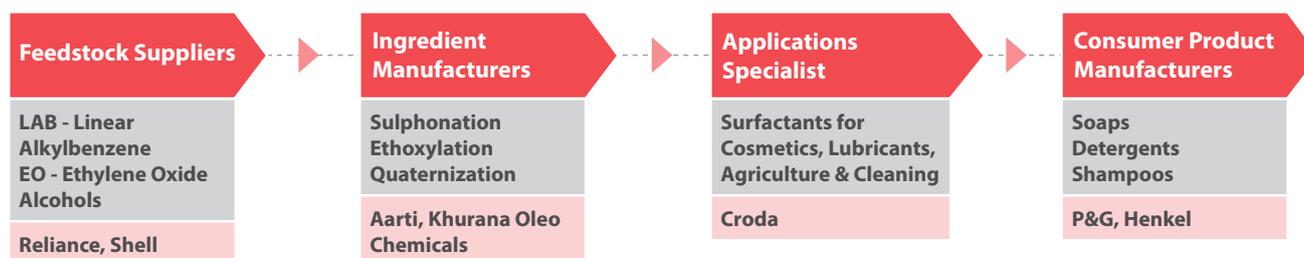
*A market ready for consolidation*

## A. INTRODUCTION TO THE MARKET

Surfactants or surface active agents are organic compounds that lower surface tension between two liquids or between a liquid and a solid. Functionally, they are used to improve cleaning efficiency, emulsifying, wetting or dispersing actions, solvency, foaming/de-foaming and lubricity of cleaning agents and other products.

Unlike most other segments mentioned in this report, surfactants are not aligned to any particular end-user industry. They find application across a wide array of industries, including home and personal care (HPC), textile, water treatment, agrochemicals and flavours and fragrances. Surfactants are used most ubiquitously as basic cleaning agents in consumer products such as detergents for washing clothes, dishes, floors, as well as shampoos, body washes and toothpastes. Hence, HPC represents the largest end-user consumer for surfactants, consuming ~ 80% of the surfactants produced globally.

### Value Chain



**Figure 62: Value chain of the surfactants industry**

Surfactant manufacturers mostly use petrochemicals (and sometimes oleochemicals) as their feedstock. The feedstock is a set of chemicals like ethylene oxide, linear alkyl benzene and linear alpha olefins which are crude derivatives. Typical suppliers include large petrochemical companies like Reliance or Shell.

Surfactant manufacturers like Aarti convert feedstock into surfactant by sulphonation or other processes. This, however, has to be modified according to the final application. Such conversion is carried out by application specialists such as Croda. Most of these application specialists are also backward integrated.

The final surfactant is used by FMCG players such as P&G and Henkel who manufacture detergent and other cleansing products. They are able to exert pricing pressure on surfactant manufacturers to some extent.

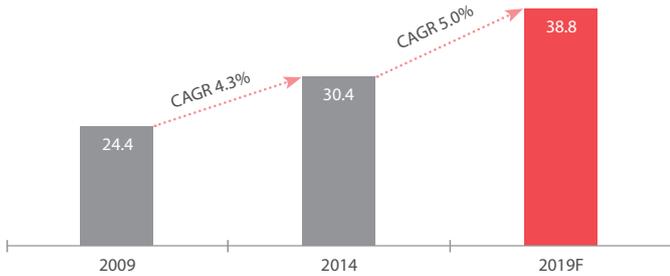
At the same time, surfactant manufacturers have limited bargaining power with their suppliers since the price of the feedstock is driven by crude oil price. Application specialists may have some bargaining power with the converters and their margins are slightly higher.

Some niche surfactant applications include emulsifying / wetting agents, etc. in agrochemicals, oil field chemicals, pharmaceuticals, etc. Such applications command higher margins than the conventional home care applications for surfactants.

 *The global market for surfactants is USD 30.4 bn and is projected to grow at a CAGR of 5.0% over 2014-19*

**B. MARKET SIZE AND MARKET GROWTH**

**Global market driven by end industry growth; Eco-friendly surfactants trending globally**



**Figure 63: Global market for surfactants in USD bn**

Source: Markets and Markets, Avendus Analysis

The global market for surfactants was estimated at USD 30.4 bn in 2014. It is expected to grow at 5% CAGR over the next 5 years and reach USD 38.8 bn by 2019.

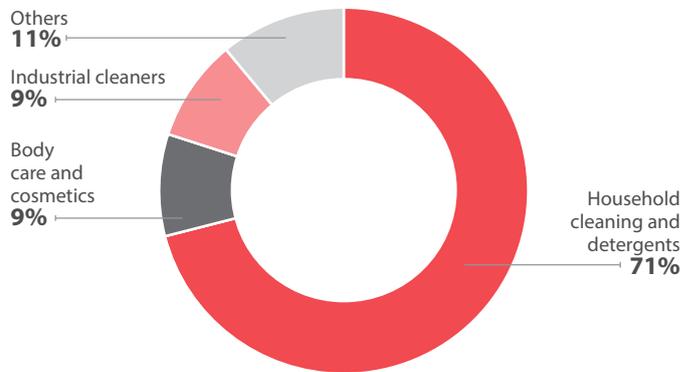
In addition to the growth in end-user industries, increasing demand of eco-friendly (bio-based) surfactants, specifically from European and North American regions is being witnessed; Regulations in these regions are also favouring bio-based surfactants<sup>5</sup>.

The systemic shift to eco-friendly products is happening as some of the traditional surfactants are known to be toxic to animals, ecosystems and humans, and can increase the diffusion of other environmental contaminants. As a result, there are proposed or existing restrictions on use of some synthetic surfactants. However, bio-based surfactants are costlier than synthetic surfactants because their raw materials are priced higher than conventional synthetic feedstock.

**Home and Personal Care industry is the largest consumer for surfactants**

Household cleaning products and detergents are by far the biggest users of surfactants globally, accounting for ~ 70% of the total surfactant usage. Body care, cosmetics and industrial cleaners are two other major users of surfactants. An important thing to note is that usually the same surfactant fulfils multiple roles. The same surfactant compound is used across detergents, industrial cleaners as well as in cosmetics. The difference across applications, however, lies in the concentration and purity requirements.

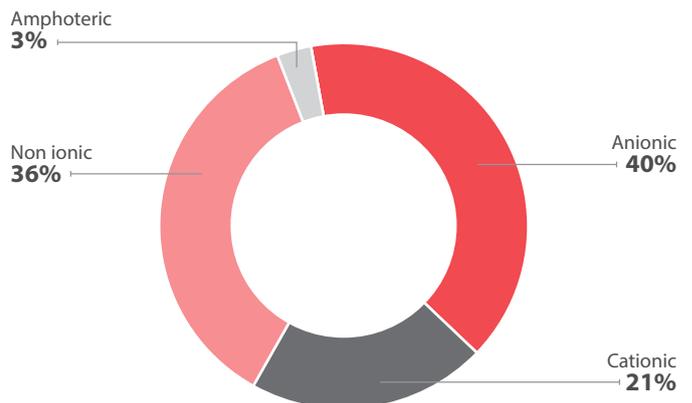
**Globally household cleaning and detergents is the largest consumer of surfactants accounting for ~ 70% of total consumption**



**Figure 64: Global usage of surfactants**

Source: Cerasana

**Anionic surfactants dominate the global market**



**Figure 65: Breakup of global market by volume, based on surfactant type**

Source: Markets and Markets

A surfactant owes its properties to its chemical structure, which comprises a hydrophilic head and a tadpole shaped hydrophobic tail. Surfactants are also often classified by the composition of their head – anionic, non-ionic, cationic and amphoteric.

Anionic surfactants dominate the market, followed by non-ionic surfactants. Non-ionic surfactants are expected to grow the fastest because of their inherent bio-friendly properties and degradability.

<sup>5</sup> For instance, the persistence, toxicity, and widespread occurrence in the blood of general populations and wildlife, of surfactants such as perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), and perfluorononanoic acid (PFNA) has led to PFOS being declared a persistent organic pollutant by the Stockholm Convention. Additionally, PFOA has been subject to a voluntary agreement by the U.S. Environmental Protection Agency and eight chemical companies to reduce and eliminate emissions of the chemical and its precursors.

## SURFACTANTS ^

Table 18: Types of surfactants

<p><b>Type : ANIONIC SURFACTANTS</b></p> <p><b>Characteristics :</b> High foam and dirt removal properties</p> <p><b>Uses :</b> Shampoos, toothpastes, body wash formulations, laundry detergents and dishwashing products</p>
<p><b>Type : NONIONIC SURFACTANTS</b></p> <p><b>Characteristics :</b> Can be used with high salinity or hard water; compatible with other types, excellent candidates for complex mixtures; low toxicity levels</p> <p><b>Uses :</b> Cosmetics, personal care products like shampoos, bath and shower products, home care products like liquid detergents</p>
<p><b>Type : CATIONIC SURFACTANTS</b></p> <p><b>Characteristics :</b> Helps in conditioning due to substantiality to hair and antimicrobial properties</p> <p><b>Uses :</b> Hair conditioners and fabric softeners</p>
<p><b>Type : AMPHOTERIC SURFACTANTS</b></p> <p><b>Characteristics :</b> Dermatological properties and reduction of skin irritation</p> <p><b>Uses :</b> Personal care and household cleaning products</p>

**Strong growth in Indian market; Personal care is growing at the fastest rate**

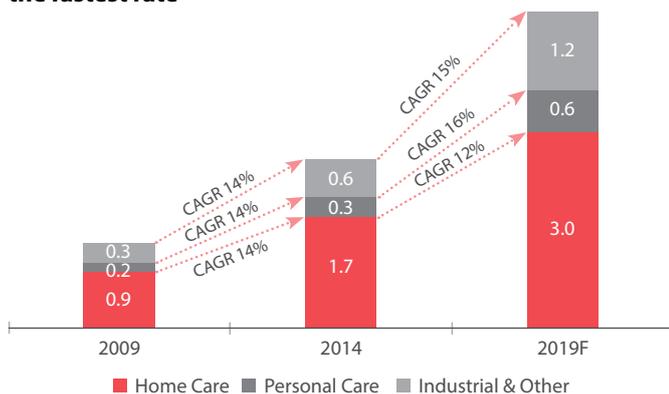


Figure 66: Indian market for surfactants in USD bn (production)

Source: Emkay, Frost and Sullivan, Avendus Analysis

The Indian market for surfactants is estimated at USD 2.6 bn in 2014 (8.5% of the global market). It is expected to grow at a CAGR of 13% over 2014-19, more than twice the global rate to reach USD 4.8 bn by 2019. The personal care segment of the surfactants market is estimated at USD 0.3 bn in 2014 and is growing the fastest. It is expected to reach USD 0.6 bn by 2019, growing at a 16% CAGR.

### C. KEY SUCCESS FACTORS

- Scale :** In India, competition is largely price driven and based only to a small extent on product attributes. Bio-surfactants are expensive and would provide higher margins but the Indian market has not yet reached a point where consumers would be willing to pay a higher price for similar functionality. Understandably, for synthetic products, scale and process efficiencies are key to being profitable. Price based competition and accompanying commoditization has driven down margins in many product categories. Also, in many cases, scaled up Chinese players with favourable costs structures are affecting the competitiveness of Indian players. In order to survive and succeed in such an environment, scale is necessary to lower unit costs.
- Specialization :** Differentiated players offering specialty surfactants to niche applications such as that in personal care, agrochemicals, paints, textile, oil drilling, etc. are less likely to suffer from margin pressures arising from commoditisation. Such products may offer unique properties such as anti-foam, adhesion, antistatic, corrosion inhibition, leveling, etc. or application specific properties.

### D. TRENDS SHAPING THE MARKET

#### Ideal time for MNCs to expand presence in India

Though the industry faces certain challenges, this is an ideal time for MNCs to acquire Indian players and expand their presence in the Indian market driven by the following factors –

- Demand is expected to grow rapidly :** Demand for surfactants in India is expected to grow at more than twice the global rate. MNCs already present in India (BASF, Croda, Solvay) are focused on consolidating their position, whereas other large global players would look at entering a high-growth market.



The Indian market for surfactants is USD 2.6 billion and is projected to grow at a CAGR of 13% over 2014-19

Personal care surfactants is the fastest growing segment of the Indian market, projected to grow at a CAGR of 16% over 2014-19

**2. MNCs have the ability to consolidate and build scale :**

Most Indian players are struggling since they are not sizeable enough to take advantage of the economies of scale. MNCs may be able to acquire few medium sized Indian players and have a large enough scale to operate profitably.

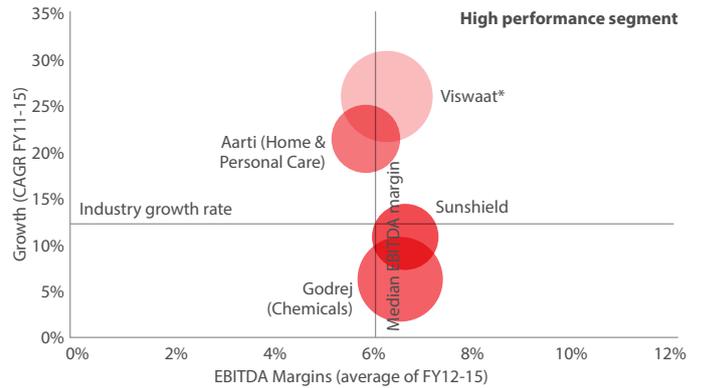
Building scale and backward integration are capital intensive solutions. Currently most Indian players are not in a position to make such investments. However, MNCs may be able to make the best of this opportunity.

**E. COMPETITIVE LANDSCAPE**

The average industry EBITDA margin stands at ~7.4%. The margins are expected to stay at these levels, despite reduction in price of crude oil, as most of the benefits are passed on to the customers.

**Table 19: M&A activity and capital expansion**

<p><b>2013 :</b> Godrej commissioned a new oleo-chemicals facility at Ambernath with an investment of ~ USD 50 mn</p>
<p><b>2012 :</b></p> <ul style="list-style-type: none"> <li>Solvay, a Belgian chemical company, acquired Sunshield Chemicals, an Indian surfactants manufacturer</li> <li>BASF invested USD 167 mn to setup a new production facility in Dahej, Gujarat; This would produce surfactants to cater to home and personal care segments</li> </ul>
<p><b>2011 :</b> Huntsman acquired the chemicals business of Laffans Petrochemicals taking ownership of their 60 KT ethylene oxide derivatives facility in Ankleshwar, Gujarat; This added specialty intermediates for use in agrochemicals, household and personal care products, oil and gas applications and automotive lubricants and brake fluids to its portfolio</p>



**Figure 68: Competitive landscape of surfactants in India**

Source: Annual Reports, MCA  
\*Up to FY14

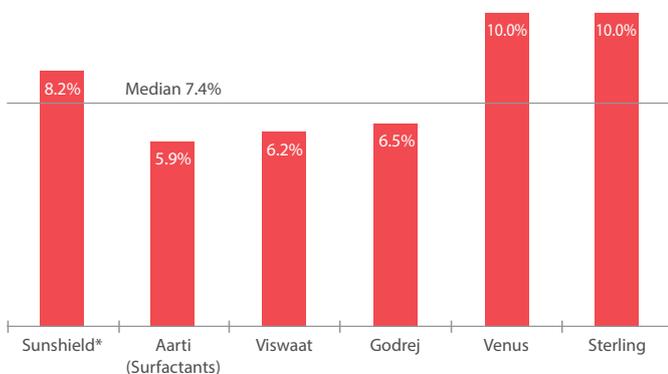
A few Indian players are Godrej Industries, Aarti Industries, Advance Surfactants, Unitop Chemicals, Venus Ethoxyethers, Sterling Auxiliaries and Viswaat Chemicals.

**F. FUTURE OUTLOOK**

The segment is expected to witness solid growth, however, profitability would continue to remain challenged in the near term. This is expected due to the following :

1. Surfactant manufacturers have little bargaining power with raw material suppliers who are much larger than them.
2. Customers (FMCG giants) compete on price and in turn squeeze suppliers including surfactant manufacturers.
3. Price competition with Chinese imports is a threat to the domestic industry.

For Indian players the opportunity lies in the movement towards specialized surfactants. This is also an opportunity for MNCs with capabilities in specialty surfactants to enter the market. With a high growth rate and better margins than conventional surfactants, specialty surfactant presents a ripe opportunity in the Indian surfactants space.



**Figure 67: EBITDA margins of some Indian players (FY12-15)**

Source: Annual Reports, MCA

\*FY15 data not included due exceptional events; Viswaat – Up to FY14; Venus and Sterling – Management estimates

# POLYMER ADDITIVES^

OVERALL ATTRACTIVENESS



Indian Market Size



Profitability



Presence of Scaled Up Players



Market Growth Rate



Product Differentiation



---

### MARKET SIZE AND GROWTH<sup>^</sup>

- Global market size of USD 43.4 bn; to grow at ~ 5% over 2014-19. Growth to be driven by shift towards environmentally safe and high performance polymer additives
- Indian market size of USD 0.4 bn; to grow at 10% over 2014-19. Growth to be driven by growth in automobiles and white goods

---

### KEY SUCCESS FACTORS<sup>^</sup>

- Product differentiation to prevent the otherwise common commoditization in the segment
- Diversification of product portfolio and applications / customer base

---

### TRENDS SHAPING THE MARKET<sup>^</sup>

- Environmental regulations are tightening, resulting in a shift towards environmentally safe, high value products

---

### COMPETITIVE LANDSCAPE<sup>^</sup>

- Indian polymer additive market is dominated by MNCs; BASF is the market leader in high margin segments like flame retardants, light stabilizers and antioxidants
- The plasticizers segment has a large number of unorganized players, leading to intense price competition and margin pressure

---

### FUTURE OUTLOOK<sup>^</sup>

- Differentiated players will capitalize on the segment growth
-

# Polymer Additives

*Sector dominated by global majors, with few differentiated Indian players*

## A. INTRODUCTION TO THE MARKET

Polymer additives are substances added to plastic resins to form process ready polymer compounds or to modify or impart specific changes to their property. The result of introducing an additive into a compound can vary from enhancing its properties to merely changing its colour.

Additives can also be used to improve the characteristics of polymers such as strength, lustre, durability or heat sensitivity. Polymer additives comprise less than 1% of the total weight of the end product (additionally, fillers may comprise a much higher percentage by weight, however, they are bulk materials and are not covered in this report).

The Indian polymer additives industry is small but is growing rapidly, driven by increase in usage by end-use industries such as automobiles and white goods. Globally, there is untapped potential in construction industry.

A major challenge faced by plastics segment is environmental impact – a lot of effort is concerted globally on recycling. Addition of fillers and certain colorants may adversely impact the recyclability of plastics. Certain additives, however, help retain properties of the plastics during recycling process. Recycling of plastics, however, is still at a nascent stage in India.

### Value Chain

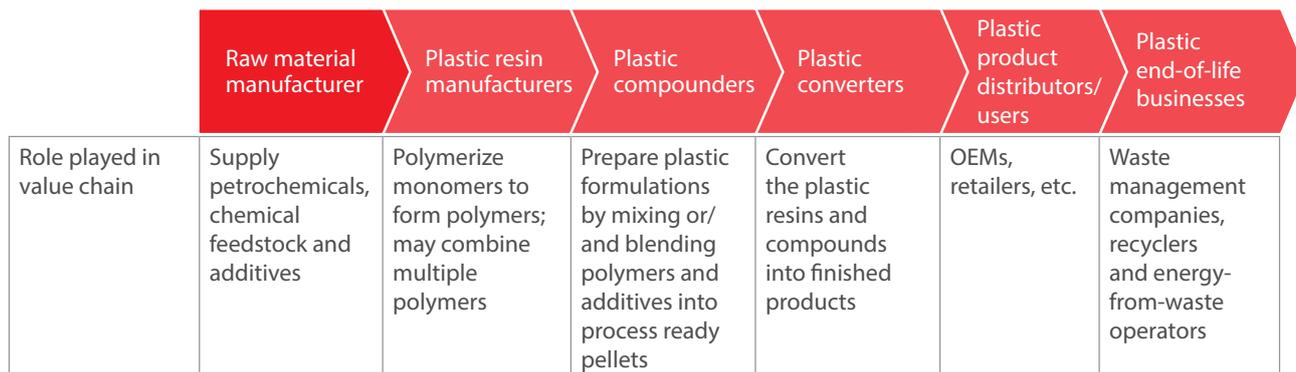


Figure 69: Value chain of plastics

### Types of polymer additives

- Plasticizers** : These are additives that improve the ease of processing of intermediates to plastic compounds. They increase fluidity (reducing viscosity), and impart greater flexibility and durability (plasticity) to the end material (plastics). Applications includes PVC products, particularly the ones used for cables and wires.
- Heat stabilisers** : These protect plastics from the degrading effects of heat. The major application includes PVC products used in construction such as window profiles, pipes and cable ducts.
- Antioxidants** : These prevent oxidative degradation (across manufacturing, processing and end-use stages) of polymers / plastics in order to minimize changes in colour, physical and mechanical properties such that they are within acceptable limits.
- Others** : Other significant additives are light stabilisers and flame retardants. Light stabilisers protect polymers (especially polypropylene and polyethylene) from the long term degradation from ultraviolet component of light. Flame retardants inhibit, suppress or delay development of flames to prevent spread of fire.

 *The global market for polymer additives was USD 43.4 bn in 2014  
This market is expected to grow at 4.9% p.a. over the next five years*

**Table 20: Polymer additives application by segment**

<p><b>Segment : PLASTICIZERS</b></p> <p><b>Key manufacturers :</b> Clariant, KLJ Group, Amines Plasticizers Limited, Payal Group, Adeka India, Makwell Plasticizers</p> <p><b>Applications :</b> Wire and cable insulation, construction, flooring and carpets, automotive, household, medical</p>
<p><b>Segment : HEAT STABILISERS</b></p> <p><b>Key manufacturers :</b> Baerlocher India, Adeka India, Suvarana Additives</p> <p><b>Applications :</b> Wires and cables, engineering plastics, white goods</p>
<p><b>Segment : ANTIOXIDANTS</b></p> <p><b>Key manufacturers :</b> BASF, HPL Additives, Adeka India</p> <p><b>Applications :</b> Engineering plastics, automobile, water treatment, corrosion inhibitors</p>
<p><b>Segment : OTHERS</b></p> <p><b>Key manufacturers :</b> Clariant, BASF, Adeka India, Pluss Polymers</p> <p><b>Applications :</b> Construction, automobile, white goods, adhesives, engineering plastics</p>

The global market size of polymer additives market was USD 43.4 bn in 2014. Over 2009-14 the market has grown from USD 37.4 bn at a CAGR of 3.0%. Over the next five years the growth rate is expected to accelerate to 4.9% p.a. and the market is to reach USD 55.2 bn in 2019.

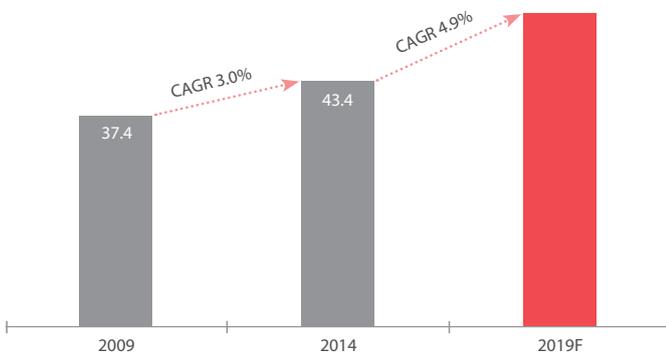
The increase in growth rate is expected due to the shift towards environmentally safe, high performance polymer additives. Rise in environmental awareness and interventions by governments to promote non-toxic polymer additives are encouraging global companies to concentrate R&D efforts towards development of environmentally safe additives. Certain segments, such as phthalate-based plasticizers, are facing stringent regulations in developed nations (especially in the European Union) due to their adverse health impacts.

Key global players include BASF (Germany), Chemtura (USA), Exxon Mobil (USA), Bayer (Germany), Clariant (Switzerland), Kaneka (Japan), Lanxess (Germany), Zeon Chemicals (USA), Axel Plastics Research Laboratories (USA) and Dow Plastic Additives (USA).

Globally the major end-use industries for plastics and polymers utilising specialty polymer additives include construction, automobile and white goods.

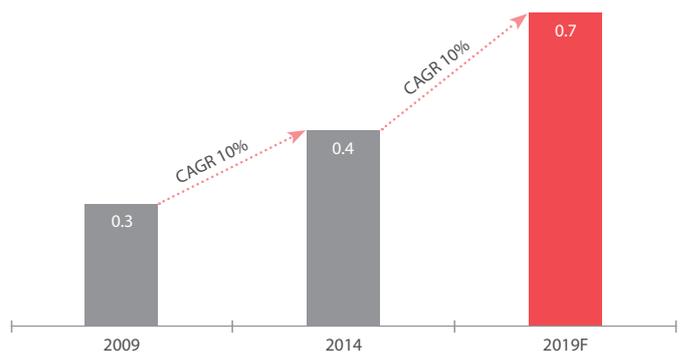
**B. MARKET SIZE AND MARKET GROWTH**

**Modest growth in global demand**



**Figure 70: Global market for polymer additives (USD bn)**  
Source: BCC Research; Allied Market Research; Literature review

**Small base, but sustained growth in the Indian market**



**Figure 71: Indian market for polymer additives (USD bn)**  
Source: FICCI; Literature review

**Indian market was USD 0.4 bn in 2014, quite small by global standards**

*It is expected to grow at ~ 10% p.a. over 2014-19*

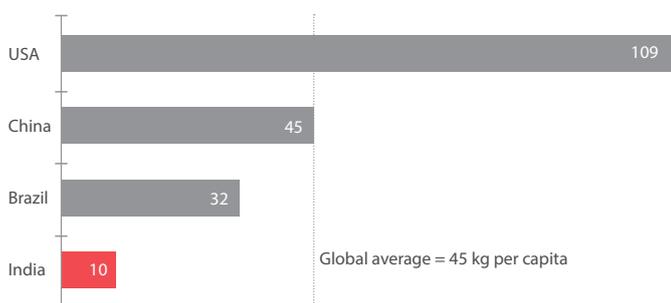
## POLYMER ADDITIVES

Pegged at USD 0.43 bn in 2014, the Indian market for polymer additives is very small compared to the global market. The market has grown at a 10% CAGR over 2009-14 (USD 0.27 bn in 2009). Over the next 5 years the market is expected to continue growing at the same rate to reach a market size of USD 0.7 bn in 2019, still constituting only 1.3% of the world market.

The demand for plastics is increasing in India leading to growth in demand for polymer additives. In India the largest consumer of plastics include automobile and white goods. Construction is an emerging opportunity, with the use of performance products such as Wood Plastic Composite (WPC) and Aluminium Composite Panel (ACP) increasing steadily.

One of the high growth segments in polymer additives in India is flame retardants which finds applications in white goods, automobiles and construction sector. The Bureau of Indian Standards has introduced mandatory norms advocating the use of flame retardant materials in various industries to promote safety against fire hazard. Implementation so far, however, leaves a lot to be desired.

### Low per capita consumption of plastic in India, significant headroom for growth



**Figure 72: Per capita consumption of plastic (kg per capita)**

Source: Statista; Plastindia Foundation; Literature review

The per capita consumption of plastic in India is less than one-fourth of that of the world average, with some developed markets consuming over ten times the per capita consumption of India. This exemplifies the headroom for growth in this area.



Worldwide the biggest consumer industries for polymer additives include construction, automobile and white goods

---

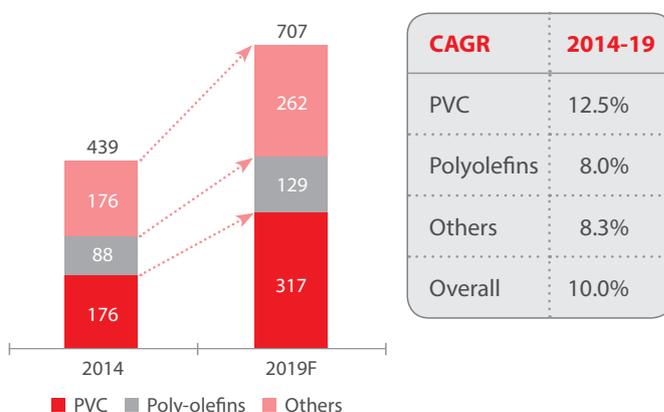
Low penetration of plastics in India, with per capita consumption of less than one-fourth of the global average

### End-use applications are growing

PVC accounts for ~ 40% of application of additives in India, followed by poly-olefins which constitute ~ 20%. The consumption of PVC in India has grown rapidly in the last decade due to its end-applications in pipes, conduits, wires and cables, medical packaging, doors, partitions and windows.

Poly-olefins find application in industries such as packaging, film and sheet, automobiles, white goods, construction, etc. India is also among the fastest growing markets in the world for polyethylene and polypropylene.

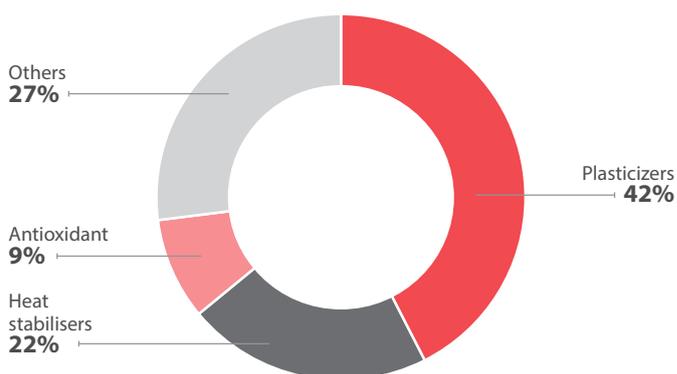
Other applications include synthetic adhesives, thermal stabilisers for wires and cables, engineering plastics, etc.



**Figure 73: Indian polymer additives consumption by application (USD mn)**

Source: FICCI; Plastindia Foundation; Platts; Avendus Analysis

### Commoditization in the plasticizers segment



**Figure 74: Indian polymer additives market segmentation**

Source: FICCI; Literature review

42% of the Indian market comprises of plasticizers. However, this segment is witnessing commoditization and price competition from unorganised sources, resulting in margin pressures. Major Indian players and MNCs are focusing on value added segments such as heat stabilisers (22% share) and antioxidants (9% share) or

specialized applications such as plastics or polymers for automotive coatings, food grade packaging, medical devices / packaging, etc.

**C. KEY SUCCESS FACTORS**

• **Product differentiation**

Certain polymer additives tend to become commoditised resulting in squeezed margins over time. Plasticizers as a category has witnessed fall in margins as product differentiation has faded away. Players such as HPL additives have stayed ahead of the peers by focusing on alternate, differentiated products.

• **Diversified portfolio**

Polymer additive manufacturers with a concentrated customer base or application focus have seen their profitability getting hit over time. With increasing competition in end industries such as automobiles, wire and cables resulting in cost optimization efforts, many polymer additive players have been adversely affected by price wars. However, niche end-use segments like medical packaging and construction have been highly attractive and profitable. Players with a broad set of customers across diverse industries perform better than those with customer and / or end industry concentration.

**D. KEY TRENDS SHAPING THE MARKET**

**Environmental regulations are tightening**

With the tightening of environmental norms both globally and in India, the polymer additives market is shifting to environmentally safe, higher value products.

The European Union legislation, REACH exempts polymers supplied to European nations from registration. However, all monomers and other ingredients present in the polymer (constituting over 2%) need to be registered. Thus European manufacturers as well as importers of polymers need to register all such raw materials. This would impact several polymer additives as well, potentially increasing the cost of manufacturing.

**E. COMPETITIVE LANDSCAPE AND COMPANIES TO WATCH OUT FOR**

There are 30+ organised players in the Indian polymer additives market. The organised market is dominated by MNCs such as Clariant Chemicals, BASF, Lanxess, Baerlocher, Akzo Nobel, Adeka and Dow Chemicals. Some of the organised Indian players are KLJ Group, Fine Organics, HPL Additives and Pluss Polymers.

BASF, after its acquisition of Ciba, is the market leader in higher margin segments such as flame retardants, light stabilisers and antioxidants. In plasticizers category, there are a large number of unorganised players, leading to intense price competition and resultant margin pressure. Most Indian companies offer plasticizers, however, some large players are moving towards differentiated high value segments.

**Table 21: Polymer additive MNCs in India**

<p><b>CLARIANT CHEMICALS (SWITZERLAND)</b></p> <p><b>Current Indian operations :</b> Produces polymer additives like antioxidants, processing/ light stabilisers, flame retardants and antistatic agents in India</p> <p><b>India strategy :</b> Focusing on flame retardants for automobiles and white goods</p>
<p><b>BASF (GERMANY)</b></p> <p><b>Current Indian operations :</b> Present in antioxidants, light stabilisers and flame retardants in India</p> <p><b>India strategy :</b> Expecting increase in light stabilisers due to increase in demand from major polymer producers and increasing use of plastic in packaging sector</p>
<p><b>LANXESS (GERMANY)</b></p> <p><b>Current Indian operations :</b> Manufactures antioxidants, flame retardants and plasticizers for PVC; Has a plant for polymers and intermediates in Jhagadia, Gujarat</p> <p><b>India Strategy :</b> Expects growth opportunities in automotive sector for innovative polymer products</p>
<p><b>BAERLOCHER (GERMANY)</b></p> <p><b>Current Indian operations :</b> Has polymer additive production capacity of 17,000 MTPA in India and its plant is located in Dewas, Madhya Pradesh; Their main focus is in heat stabilisers in India</p> <p><b>India Strategy :</b> Bullish about the Indian market and has recently doubled the capacity of its Dewas plant producing solid and liquid PVC stabilisers; Expects huge potential in PVC for construction</p>

Some Indian companies like HPL Additives and Pluss Polymers are focussing on bringing niche innovative products in the value added segments. For instance, one of the innovative products of Pluss Polymers is a compatibilizer, which works with different polymers and is useful in mixed plastic recycling.

For many polymer additive businesses raw materials constitute 60-65% of their total sales, and labour is 10-15%. Gross margins are generally 20-30% while EBITDA margins are in the 10-15% range. However, EBITDA margin for commoditised products such as plasticizers is low, usually under 10%.

**Companies to watch out for**

**HPL ADDITIVES**

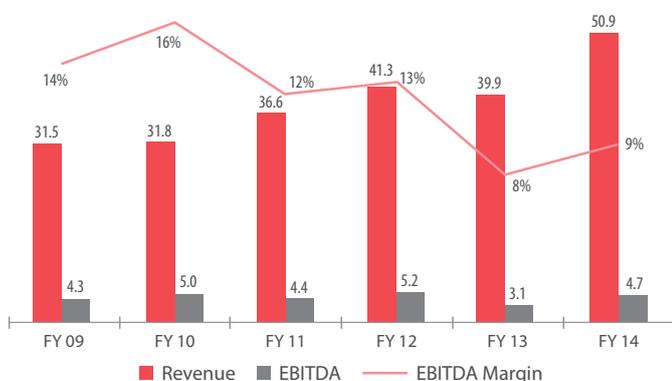
**Product Differentiation :** Offers specialty polymer additives such as anti-oxidants, blowing agents, clarifying agents, etc.

**Diversified Portfolio :** Wide product range across the additives segment

Diversified customer base across domestic market and access to export geographies

**HPL Additives**

HPL Additives (formerly known as High Polymer Labs Limited) is an Indian polymer additives provider, also operating in other related specialty chemicals such as hydrazine derivatives, water treatment chemicals, etc. It has over 50 years of experience in this space, with indigenous technology in specialty additives chemicals. It has a widespread geographic access, both in domestic and export markets (supplies across ~ 50 countries). Exports to Europe and US account for ~ 50% of its turnover. The key differentiators for the business are its product portfolio and market access, resulting in a well established market position – it is the market leader in the polymer additives space with a large majority of domestic market share.



**Figure 75: HPL Additives (USD mn)**

Source: MCA; Avendus analysis

**F. FUTURE OUTLOOK**

**Differentiated players will capitalise on the segment growth**

The Indian polymer additives market accounts for only ~ 1% of the global market, and the growth opportunity has not materialised in full. The model of usage and application of polymers in developed countries suggests that there is a huge market potential in India for similar applications. This is further driven by opportunities in growing end industries such as automobiles, white goods, packaging, construction, medical supplies, etc.

The polymer additives segment is fairly capital intensive and commands significant investments. R&D and new product development is largely the domain of global giants. As a product matures it tends to get commoditised and its margins fall, thus to succeed in this segment it is important to stay ahead and focus on launching innovative products.

Most of the global polymer additive companies are already present in India with their product range largely focused on high margin segments. Most of the Indian companies face price competition in less differentiated segments. However, there are a few players focussing on differentiated segments by investing in product innovation. As the traditional segments mature and stagnate with declining profitability, it would be important for them to make a move towards newer opportunities.



# PERSONAL CARE INGREDIENTS<sup>^</sup>

**OVERALL ATTRACTIVENESS**



**Indian Market Size**



**Profitability**



**Presence of Scaled Up Players**



**Market Growth Rate**



**Product Differentiation**



---

### MARKET SIZE AND GROWTH<sup>^</sup>

- Global market size of USD 2.7 bn; to grow at 5.7% over 2014-19. Growth to be driven by emerging markets in Asia Pacific and shift towards natural ingredients
- Indian market size of USD 0.3 bn; to grow at 15% over 2014-19. Growth to be driven by increasing penetration of personal care products particularly in rural India and trend towards premiumisation

---

### KEY SUCCESS FACTORS<sup>^</sup>

- Product innovation and differentiation is critical to maintaining profitability
- Strong relationship with clients for business continuity, price protection and enabling customization as a part of product development

---

### TRENDS SHAPING THE MARKET<sup>^</sup>

- Product differentiation and R&D is the key to profitability
- Premiumisation trend in personal care products is driving demand
- Shift towards natural active ingredients for personal care products in global markets

---

### COMPETITIVE LANDSCAPE<sup>^</sup>

- The personal care ingredients market in India is dominated by MNCs including Merck, DuPont, DSM, BASF, etc
- Many Indian players, especially small and mid-sized companies, are largely present in inactive ingredients as compared to active ingredients; Actives players include Kumar Organic Products, Vivimed Labs, Sami Labs
- **Companies to watch out for** - Kumar Organic Products

---

### FUTURE OUTLOOK<sup>^</sup>

- Strong margins will persist coupled with huge growth opportunities
-

# Personal Care Ingredients

*Market dominated by MNCs; Innovation is key to success*

## A. INTRODUCTION TO THE MARKET

Personal care products cover a diverse array of products we use in our daily life, including skin care, hair care, cosmetics and oral hygiene products. It represents a large market, dominated by MNCs with some of the most recognizable brands globally.

While brands are known to all, there is less awareness of the chemistry behind these products or the ingredients constituting them.

Ingredients used for personal care products can either be undifferentiated bulk chemicals (waxes, solvents, etc.) or specialty chemicals.

Specialty personal care ingredients constitute ~ 30% of the overall personal care ingredients market and are further sub-divided into active or inactive ingredients.

This section focuses on active ingredients. Few key inactive ingredients are covered within the sections on surfactants and polymer additives.

### Types of personal care ingredients

Personal care specialty ingredients are classified into active and inactive ingredients based on their role in the product.

Inactive ingredients alter physical properties of personal care formulations. These include surfactants, preservatives, colorants and polymer ingredients.

Active ingredients add functionality to products, offering specific benefits to the end-user. Active ingredients include anti-ageing agents, exfoliants, conditioning agents and UV protecting agents.

**Table 21: Illustrative composition of a conditioning shampoo : Actives constitute a small part by weight of end product**

INGREDIENT	WEIGHT (%)	FUNCTION	CATEGORY
Deionized water	68.7%	Diluent	-
Carbomer	0.5%	Rheology modifier	Inactive specialty ingredient
Sodium Hydroxide	0.4%	Neutralizer	Bulk chemicals
Glycerin	1.2%	Humectant	Bulk chemicals
Sodium Trideceth Sulfate	13.9%	Surfactant	Inactive specialty ingredient
Cocamidopropyl Betaine	8.0%	Surfactant	Inactive specialty ingredient
<b>Polyquaternium -22</b>	<b>1.0%</b>	<b>Conditioner</b>	<b>Active specialty ingredient</b>
<b>Polyquaternium -53</b>	<b>1.8%</b>	<b>Conditioner</b>	<b>Active specialty ingredient</b>
Citric Acid	0.2%	pH Adjuster	Bulk chemicals
<b>Polyquaternium -10</b>	<b>0.3%</b>	<b>Conditioner</b>	<b>Active specialty ingredient</b>
<b>Ethylexyl Methoxycinnamate</b>	<b>1.0%</b>	<b>UV Filter</b>	<b>Active specialty ingredient</b>
Glycol Disterate	0.8%	Pearlescent Agent	Inactive specialty ingredient
Glyceryl Stearate	1.5%	Pearlescent Agent	Inactive specialty ingredient
PEG-120 Methyl Glucose Trioleate	0.7%	Thickener	Inactive specialty ingredient
Benzyl Alcohol	0.2%	Preservative	Inactive specialty ingredient

Source: Lubrizol website



*Personal care specialty ingredients comprises active and inactive products*

**Table 22: Common active ingredients and their uses**

INGREDIENT NAME	USED AS	USED IN
Triclosan	Anti fungal agent	Shampoos and soaps
Hexylresorcinol	Anesthetic, antiseptic and anthelmintic agent	Skin care products including anti ageing creams
Saccharomyces ferment lysate filtrate	Skin conditioning agent	Anti ageing creams and moisturizing creams
Pro-Cysteine	Anti ageing, skin whitening and depigmentation agent	Anti ageing creams and skin whitening creams
Zinc pyrithione	Anti fungal and anti bacterial agent	Anti dandruff shampoos
Piroctone olamine	Anti fungal agent	Anti dandruff shampoos
Minoxidil	Vasodilator	Hair loss prevention products
Aminexil	Vasodilator	Hair loss prevention products
Ciclopirox olamine	Anti fungal agent	Shampoos and nail paints
Hyaluronic Acid	Anti ageing agent	Anti ageing products
Ethylhexyl triazone	UV agent	Sunscreen

**Natural active ingredients**

Specialty active ingredients can be further classified as synthetic or natural, based on the feedstock and the conversion process. Synthetic ingredients are made of chemical feedstock and the process involves chemical reactions. Plant extracts

are usually the raw materials for natural ingredients, modified by physical and biological processes. Natural ingredients tend to be much more expensive than synthetic ingredients due to the high raw material cost and greater complexity of the manufacturing process employed.

**Value Chain of personal care products**

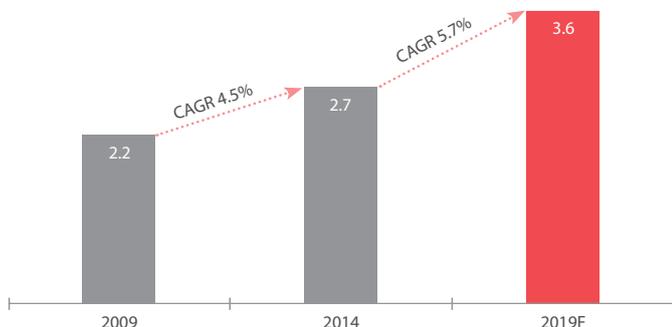


The personal care products value chain starts with the basic feed stock producer and moves to the ingredients manufacturer, FMCG manufacturer, retailer and finally the consumer. The basic feed stock can be petrochemical derivatives or natural products such as palm oil, palm kernel oil, coconut oil, soy bean oil, rapeseed oil, etc.

Personal care ingredients manufacturers are usually at risk of being squeezed between suppliers and customers as both groups have strong bargaining powers - suppliers are mostly the large petrochemical companies while customers are FMCG giants. Therefore innovation and differentiation is a critical factor for ingredient manufacturers to maintain their market position and financial performance.

**B. MARKET SIZE AND MARKET GROWTH**

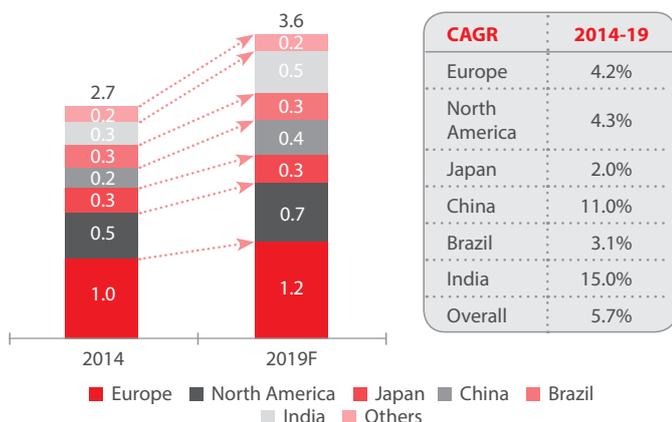
**Continued growth in the global market**



**Figure 76: Global market for personal care active ingredients (USD bn)**

Source: Kline Group; Literature review

The global market for personal care active ingredients in 2014 is estimated to be around USD 2.7 bn. Over 2009-14 the global personal care active ingredients market has experienced a CAGR of 4.5%. Over the next 5 years it is estimated to grow at 5.7% CAGR resulting in an USD 3.6 bn market by 2019.

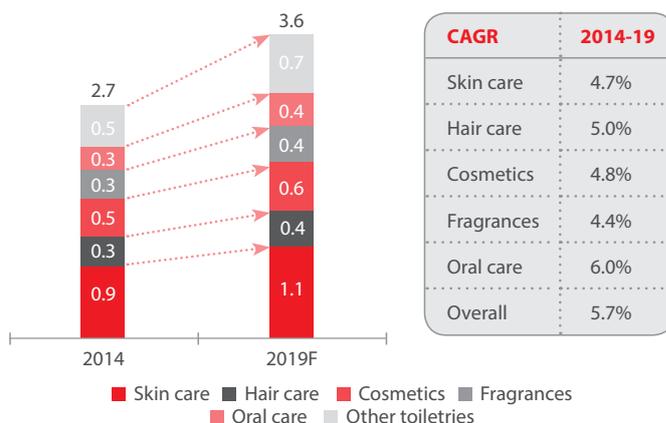


**Figure 77: Global market growth for personal care active ingredients by regions (USD bn)**

Source: Literature review; Avendus analysis

Europe is the largest market accounting for 35% of total demand. North America is the second largest market with 20% share. Other large markets include Japan, China, Brazil and India.

The growth in the global demand for personal care products is driven primarily by emerging markets in the Asia-Pacific region, particularly China and India which are expected to grow at 11% and 15% respectively in 2014-19F. USA and Europe are expected to grow at 4.3% and 4.2% respectively primarily driven by the shift towards natural active ingredients.



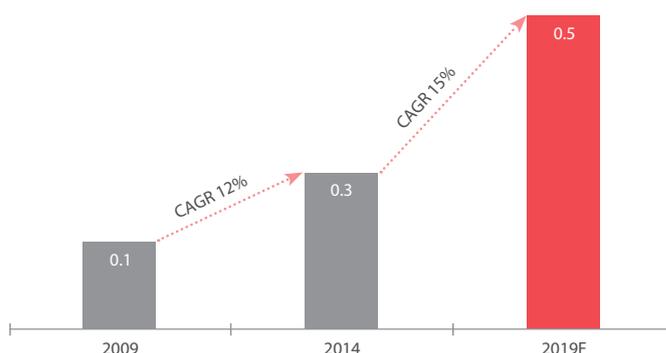
**Figure 78: Global market growth for personal care active ingredients by product class (USD bn)**

Source: Literature review; Avendus analysis

Skin care is the largest segment, constituting 32% share of the overall market and is expected to grow at ~ 4.7% over the next 5 years. With a CAGR of 6%, oral care is expected to be one of the fastest growing segments in the 2014-19 period. Growth drivers of oral care ingredients vary by geography – in developing countries it is driven by the growing affluence and purchasing power of consumers, while in developed countries it is the increasing sophistication in oral hygiene routines that is driving growth.

The personal care ingredients industry is dominated by a few large MNCs which together account for over 50% of the total market. Some of the large MNCs operating in this sector include BASF, Cognis, Dow Corning, DSM, ISP and Merck.

**Indian market growing on the back of domestic demand and export opportunities**



**Figure 79: Indian market for personal care active ingredients (USD bn)**

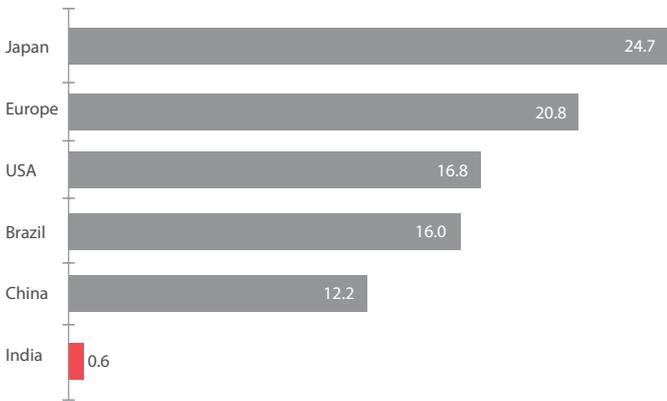
Source: FICCI; Literature review

**In 2014, the global personal care active ingredients market was worth USD 2.7 bn and is expected to grow at 5.7% p.a. over the next five years**

The Indian market for personal care active ingredients grew at 12% CAGR over the last five years, from USD 0.1 bn in 2009 to USD 0.3 bn in 2014. Over the next five years the industry is expected to grow at 15% to reach USD 0.5 bn by 2019.

Increasing growth in the 2014-19 period is primarily driven by the following factors :

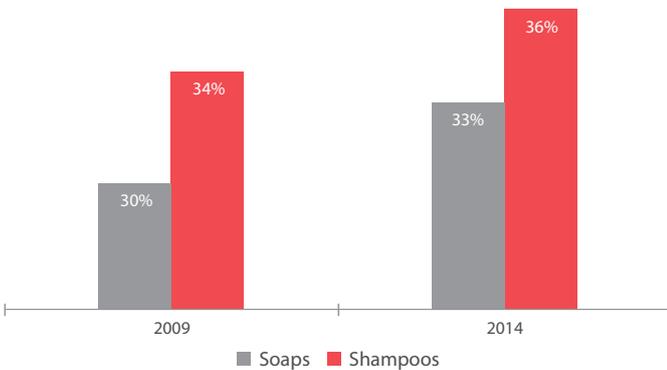
- a) **Better market outlook** : Improvement in economic environment and increasing purchasing power of the Indian population
- b) **Increasing penetration** : Penetration of personal care products in India has been (and still is) very small compared to developed or even other developing economies; We expect a rapid increase in the adoption of personal care products, especially in rural markets



**Figure 80: Per capita monthly spend on personal care products (in USD)**

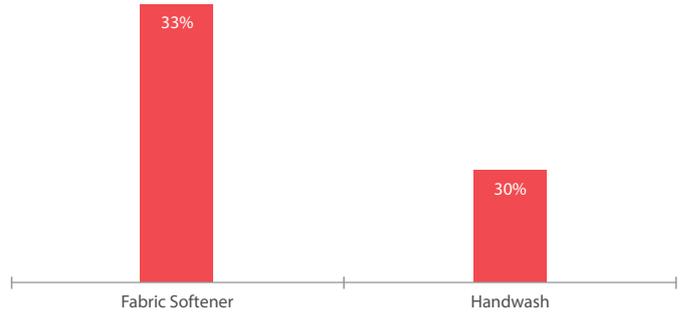
Source: Euromonitor

c) **Premiumisation** : India is also witnessing increasing consumption of higher end, discretionary and prestige products, which typically use higher value active ingredients driving growth in the ingredients market. For instance, nearly 50% of the total new launches in the personal care space were premium brands driven by increase in disposable income, rising young working population and growth in organized retail.



**Figure 81: Share of spend on premium brands**

Source: IMRB



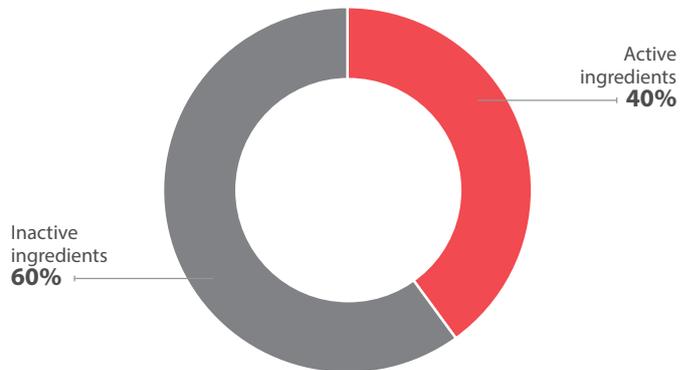
**Figure 82: 2009-14 Growth rates of some premium home & personal care products**

Source: IMRB

Traditionally this market has been dominated by global majors such as BASF, DSM, Merck, etc. Some of the prominent Indian players in personal care ingredients are Kumar Organic Products Limited, Vivimed Labs and Sami Labs. Some of these players (eg. Kumar Organic) focus exclusively on synthetic active ingredients while players such as Sami Labs focus on natural active ingredients.

**Table 23: Exports and expansion scenario**

COMPANY	EXPORTS FOCUS	NEW INVESTMENTS/ CAPACITY EXPANSION
Vivimed Labs	US, Canada, Europe, CIS countries, SE Asia	Expanding Alathur (Tamil Nadu) plant acquired in 2014 to meet requirements from Europe, Canada and CIS customers
Kumar Organic Products	US and Europe	25 acre manufacturing facility in SEZ at Hasan, Karnataka
Sami Labs	US	Expanding existing plants
Merck India	Sri Lanka, Nepal, Lebanon, Kenya, Libya	None



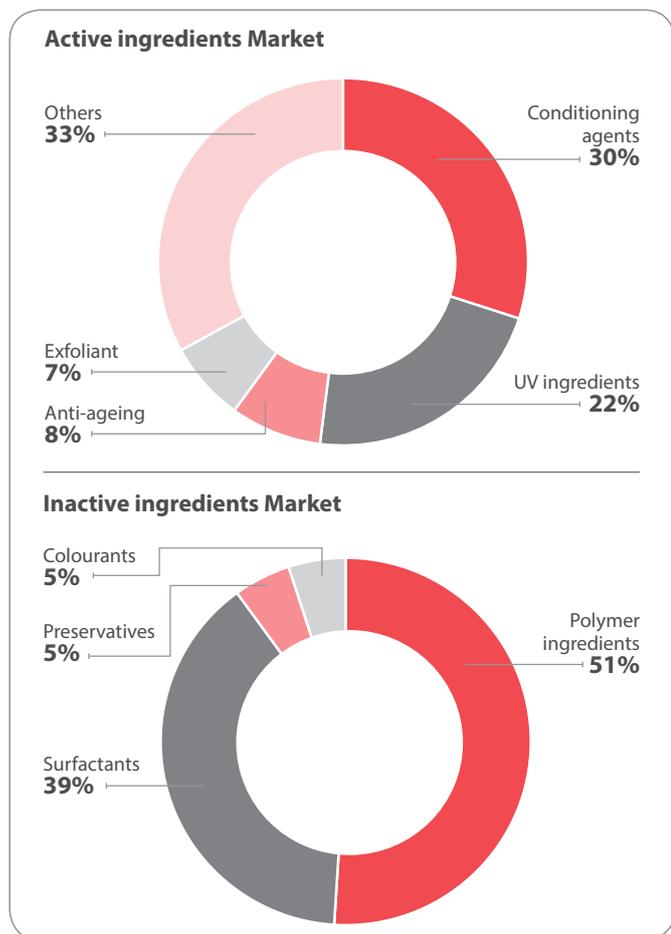
**Figure 83: Personal care ingredients segmentation**

Source: FICCI ; Literature review

PERSONAL CARE INGREDIENTS ^

**Segmentation**

Personal care specialty ingredients can be segmented into active and inactive ingredients. In India active ingredients account for 40% of the market by value, while the balance 60% is inactive ingredients.

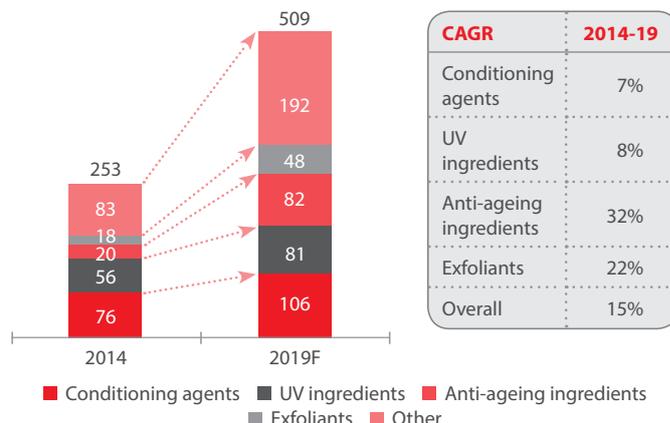


**Figure 84: Indian personal care ingredients market segmentation (by value)**

Source: FICCI Industry Reports; Literature review

Active ingredients comprise of conditioning agents, UV ingredients, anti-ageing ingredients, exfoliants and others. Currently the largest segment within actives is conditioning agents with a 30% share. This is followed by UV ingredients, with a 22% share. However, these categories are now reaching saturation, and are expected to witness steady, single digit growth rate. Both anti-ageing ingredients and exfoliants have ~ 8% share each, but are expected to grow at a much more rapid pace.

**The Indian personal care active ingredients market in 2014 was worth USD 0.3 bn and is expected to grow at 15% p.a. till 2019**



CAGR	2014-19
Conditioning agents	7%
UV ingredients	8%
Anti-ageing ingredients	32%
Exfoliants	22%
Overall	15%

**Figure 85: Indian market growth for personal care active ingredients by segment (USD mn)**

Source: Literature review; Avendus analysis

**C. KEY SUCCESS FACTORS**

**Product innovation**

Innovation and differentiation is critical for players to maintain profitability and prevent commoditization of ingredients. Regulatory environment is another driver of innovation, as a number of synthetic active ingredients have been banned across the globe due to potential health hazards. Ingredient manufacturers have to focus on R&D to develop safer natural or synthetic ingredients to replace such products.

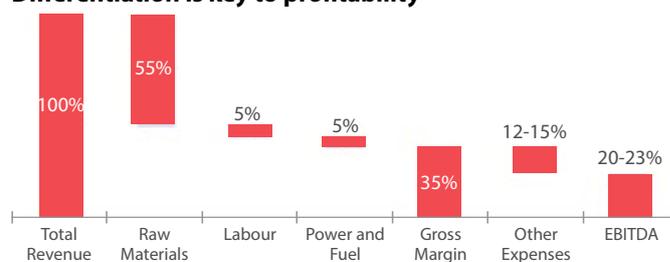
Innovation and differentiation has been the focus for Indian players such as Kumar Organic Products, Vivimed Labs and Sami Labs. For instance, Kumar Organic is constantly looking out for newer requirements from the USA and European markets and focuses its R&D efforts accordingly.

**Relationship with clients**

Strong relationship with clients based on differentiated product offering is critical for players to be able to prevent squeezing of prices by customers and thus to maintain financial profile. Further, collaboration with customers is essential to develop customized ingredients for their current portfolio and product pipeline.

**D. TRENDS SHAPING THE MARKET**

**Differentiation is key to profitability**



**Figure 86 : Illustrative cost structure of an ingredient manufacturer (average of key Indian players over FY13 and FY14)**

Source: MCA; Annual reports; Avendus analysis

Raw materials on an average constitute 50-55% of the revenue for a personal care ingredients manufacturer. As recently as 10 years ago many of the raw materials used in manufacturing personal care ingredients were not available in India and had to be imported. This has changed, but most manufacturers still use a combination of local and global sourcing.

For synthetic ingredients one of the major raw materials used is phenols. There are very few domestic manufacturers of phenols and much of this is sourced from global chemical giants like Dow Corning and BASF. Typically such large chemical giants hold huge bargaining power over ingredients manufacturers and govern price trends.

Manufacturers of natural ingredients use plant extracts as raw materials. Some players have integrated backwards towards contract farming (within and outside of India, as required) to ensure steady supply of raw materials. For instance, Bangalore based Sami Labs does contract farming in Tamil Nadu and Andhra Pradesh and also in Uganda and Kenya to secure access to key raw material.

### **Premiumisation in personal care products**

Indian urban personal care market, especially in the metros, is witnessing a premiumisation trend. Consumers are demanding premium personal care products. This opens up a larger domestic market for high margin active ingredients. Some Indian players already had premium active ingredients in their product portfolio which they had been exporting to the western markets. Now such players can increasingly target the domestic market with their premium products as well.

### **R&D is crucial for margin enhancement**

Like many specialty chemical segments, R&D capability and focus on innovation is a key differentiator in this industry, especially for active ingredients. Major global active ingredients players focus a lot on R&D and hold product and process patents for several active ingredients. Indian players have traditionally manufactured off-patent actives. However, increasing number of Indian players are realising the importance of innovation and expanding the scale of their research efforts to develop new active ingredients.

### **Stricter regulatory norms to impact competitiveness of small companies**

Indian companies exporting to developed countries, particularly to USA or European Union, have to comply with various international regulations. For exports to USA, some categories of personal care ingredients require FDA approval<sup>6</sup>. For European Union personal care ingredients will fall under the purview of REACH from 2018. Such regulations impose additional costs on Indian manufacturers but are necessary for establishing product acceptance for exports.

### **Back to nature?**

There is a global shift towards natural ingredients for personal care products. In the USA and Europe, several synthetic ingredients have been banned or highlighted as potentially unsafe in the recent past due to their adverse health effects. For instance, DEA (Diethanolamine), MEA (Monoethanolamine), TEA (Triethanolamine) are commonly used in shampoos, soaps, bubble baths and facial cleansers around the world, including in the USA. But research indicates that these three are hormone-disrupting chemicals that are suspected to be carcinogenic and have been banned in Europe. Such cases have led to greater demand for natural ingredients for personal care products.

Several Indian companies are targeting export market and domestic premium personal care product market for natural ingredients. Certain nutraceutical players like Sami Labs have also diversified into natural personal care ingredients with sourcing and process related synergies.

However, since natural active ingredients are estimated to be priced much higher than their synthetic counterparts, the latter is expected to continue to dominate the market in the near term. Thus the segment is witnessing greater R&D efforts to launch new and safer synthetic active ingredients with relatively low focus on natural ingredients.

Perhaps as a compromise, there is a trend towards natural like products. Such products are derived from a combination of natural and synthetic ingredients or intermediates and are usually priced at a small premium over the corresponding synthetic ingredients.



*R&D capabilities are a key differentiator in the global market*

*The two fastest growing segments in the Indian market over 2014-19 are anti-ageing ingredients (CAGR : 30%) and exfoliants (CAGR : 20%)*

<sup>6</sup> FDA defines cleansing and beautification products such as moisturizers, lipsticks, fingernail polishes, shampoos, deodorants, etc. as cosmetics not requiring FDA pre-market approval. Products affecting structure or function of the body are classified as drugs, such as anti-dandruff shampoos, acne creams, sunscreen products, antiperspirants and require FDA approval

PERSONAL CARE INGREDIENTS ^

**E. COMPETITIVE LANDSCAPE AND COMPANIES TO WATCH OUT FOR**

For players in this space, the risk of being squeezed between large vendors on one side and global MNCs on the other side is not a desirable option. Most companies are working to enhance scale, improve their differentiation, and enhance their bargaining power.

Personal care ingredients market in India is dominated by MNCs including Merck, DuPont, DSM, BASF and Croda. The major Indian companies producing active ingredients are Vivimed Labs, Kumar Organic and Sami Labs.

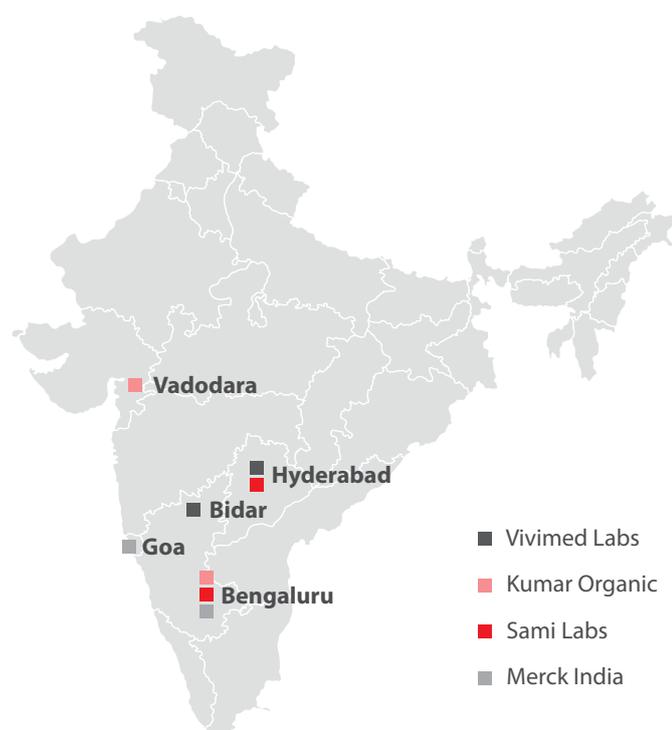


Figure 87: Personal care ingredients manufacturing facilities

**Active ingredient manufacturers in India have attractive double digit EBITDA margins**

*Small Indian companies are facing a regulatory squeeze in the export market due to increasing cost of meeting compliance norms per European regulations*

Many Indian players, especially the small and mid-sized companies, are largely present in inactive ingredients which have lower margins compared to active ingredients. Active ingredients require extensive R&D and are mostly produced by MNCs who typically import them into India. However, a few Indian players like Kumar Organic and Vivimed Labs do produce synthetic active ingredients and sell them to both MNCs and Indian majors.

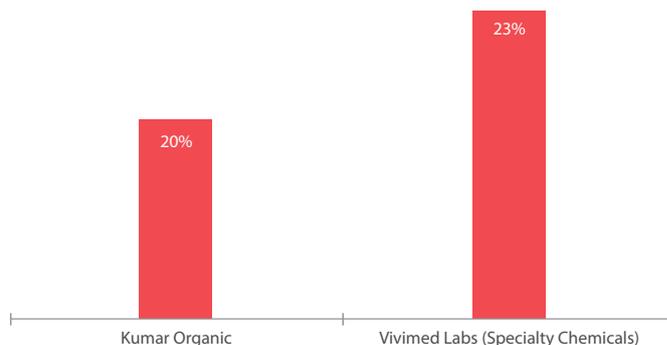


Figure 88: 3 year average EBITDA margins of key personal care active ingredient manufacturers in India

Source: Annual reports; Avendus analysis

Personal care active ingredients have very attractive margins. Differentiated and pure-play personal care ingredient manufacturers such as Kumar Organic and Vivimed Labs have 20%+ EBITDA margin. This is due to the paucity of other large domestic active ingredient manufacturers and the effort these companies put on product innovation and building relationships with clients.

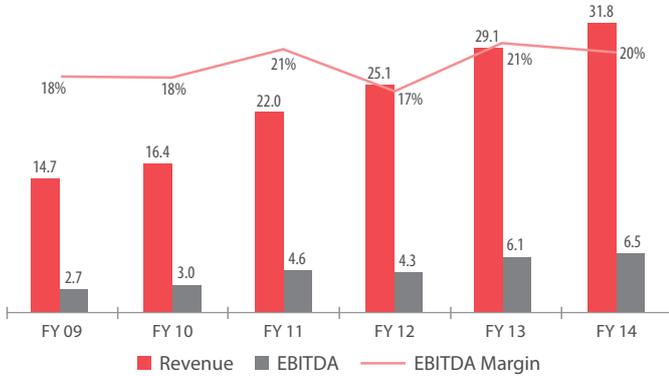
**Companies to watch out for**

COMPANY	PRODUCT INNOVATION	RELATIONSHIP WITH CLIENTS
Kumar Organic	Spends ~ 2% of revenue on R&D; All technology development is in house; Continuous product innovation to produce products compliant with European regulations	Has long term relationships with several major FMCG companies in India and abroad such as Unilever and P&G

**Kumar Organic Products**

Kumar Organic Products Ltd. is an Indian synthetic active ingredients company headquartered in Bengaluru. It also produces ingredients for food and paint industry. Almost 65% of its revenue come from exports which are primarily to the US and Europe. In India it supplies to multiple FMCG companies (both Indian

and MNCs) operating in the personal care products segment. To capture the high margin exports market Kumar Organic focuses its R&D efforts on new product development to meet even niche demands.



**Figure 89: Kumar Organic (USD mn)**

Source: MCA; Avendus analysis

**F. FUTURE OUTLOOK**

**Strong margins; huge growth opportunities**

Personal care ingredients manufacturers are often caught between large suppliers (petrochemical players) and strong customers (FMCG giants). They have been able to solve for this problem through a few strategies – product differentiation (increasing

power vis-a-vis buyers), scale (getting monopolistic power) and backward integration (reducing the power of suppliers). The growth in demand, coupled with the increased move to naturals and high end synthetics will provide significant opportunities for these companies.

The domestic personal care market presents an interesting opportunity area for active ingredient manufactures. The increase in penetration of rural market will drive the growth of personal care products in the near future. In the urban market premiumisation trend is evident which provide greater market opportunity for high margin active ingredients.

The global trend of shifting towards naturals will still take some time to become a factor in India due to cost considerations. Natural ingredients are priced significantly higher, thus find it challenging to be able to become mainstream in India (or even globally) in near future. However, they present an interesting niche in the domestic market and offer export opportunities.

Players that have focussed on R&D have developed a strong product portfolio to cater to both the domestic as well as the export market. To succeed in this segment companies need to develop a strong product portfolio and build lasting relationships with personal care product manufacturers.

# CONSTRUCTION CHEMICALS<sup>^</sup>

**OVERALL ATTRACTIVENESS**



**Indian Market Size**



**Profitability**



**Presence of Scaled Up Players**



**Market Growth Rate**



**Product Differentiation**



---

### MARKET SIZE AND GROWTH<sup>^</sup>

- Global market size of USD 17.5 bn; to grow at 6.5% over 2014-19. Growth to be driven by increase in construction projects across emerging markets
  - Indian market size of USD 0.6 bn; to grow at 15% over 2014-19. Growth to be driven by housing projects, infra projects and rising focus on quality of construction
- 

### KEY SUCCESS FACTORS<sup>^</sup>

- Branding and Marketing are key differentiators for success in the B2C segment
  - Technical expertise and good references are the key for success in B2B segment
- 

### TRENDS SHAPING THE MARKET<sup>^</sup>

- Globalisation of the value chain; Manufacturing capability is expected to remain in China, North America and Europe while consumption would grow in emerging markets
- 

### CHALLENGES FACING THE MARKET<sup>^</sup>

- Lack of trained workforce which is able to handle and apply construction chemicals
  - Tendency of Indian construction companies to trade long term benefits of construction chemicals with short term reduction in construction costs
- 

### COMPETITIVE LANDSCAPE<sup>^</sup>

- Largely an organized market however, with low margins
  - MNCs dominate B2B market due to references in large construction projects. Indian players dominate B2C segment due to a better understanding of local distribution channels
  - **Companies to watch out for** - Pidilite
- 

### FUTURE OUTLOOK<sup>^</sup>

- Indian market is still in a nascent stage with significant growth opportunities ahead in both B2B and B2C segments
-

# Construction Chemicals

*Fragmented industry with strong macro drivers*

## A. INTRODUCTION TO THE MARKET

Construction chemicals are specialty chemicals used in construction projects (residential, industrial and infrastructure) to increase the structural life or strength, impart additional protection against environmental conditions, or to reduce the quantity of raw material required.

The global construction chemicals market has witnessed the emergence of China as a leading consumer over the last decade. China currently accounts for about a fourth of the global market.

The Indian construction chemicals market has quite a few domestic companies, but only a handful have been able to create strong consumer brands of scale. Many global companies have also entered India, both organically as well as inorganically, and dominate the institutional (B2B) market.

Construction chemicals globally constitute less than 5% of the cost of a construction project. However, the Indian construction industry is very price sensitive and has not been an active consumer of construction chemicals. With the adoption of global construction techniques, the use of construction chemicals is expected to rise rapidly.

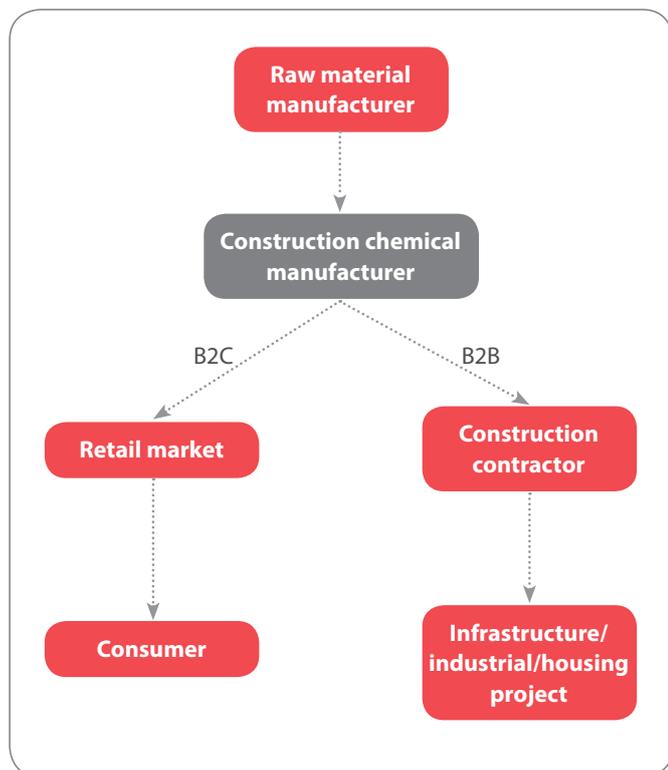


Figure 90: Value chain

Construction chemicals follow both B2B and B2C model for marketing. These models have different products, players and key success factors :

1. **B2B** : In this model, construction chemical manufacturers cater to various industrial, residential or infrastructure construction projects. In this space, the past track-record of the construction chemical company and ability to meet technical specifications of the project are important factors. In India, this segment is largely dominated by MNCs such as FOSROC, Sika, BASF and SWC-Chryso.
2. **B2C** : In this model, chemicals are sold through retail outlets directly to consumers or small contractors. Branding and marketing are the most important drivers for this segment. Indian companies dominate this segment with Pidilite as the market leader. This is largely a result of the fragmented nature of distribution network in India, which is better understood by local players.

### Type of products

The major product categories in construction chemicals market are :

1. **Concrete admixtures** : These are ingredients in concrete other than cement, water and aggregate that are added to the mix immediately before or during mixing. Normally, admixtures constitute less than 5% the mass of cement in the mixture. These are added to provide the mixture certain characteristics such as extra strength, protection against corrosion, reduction of water in the mix, coloration for aesthetics, etc.
2. **Waterproofing chemicals** : These enhance the shelf life of concrete, in turn providing longer durability to a structure while reducing maintenance costs. They reduce water damage to the structure, thereby preventing metal corrosion, electric hazards, rotting of timber structures and finishes, swelling of plasterboards and growth of fungus.



*The global construction chemicals market was USD 17.5 bn in 2014*

*The global market is expected to grow at 6.5% p.a., driven by growth of the emerging markets*

3. **Adhesives and sealants** : Adhesives are substances which on application between two surfaces, binds them together and resists separation. Sealants are substances that block the passage of gases or liquids through the surface, joints or openings in materials. These products have a variety of applications in construction.

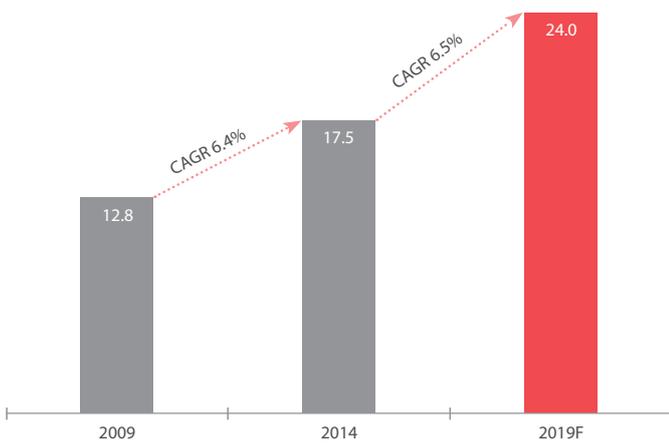
4. **Flooring chemicals** : These chemicals are used in flooring and are particularly important for industrial construction. Some of the most commonly used flooring chemicals are epoxy and floor hardeners, polyurethane coatings and polyurea based flooring chemicals.

5. **Repair and rehabilitation chemicals** : These chemicals are used for repair and strengthening of structures. They are used in maintenance of historical structures, industrial building and infrastructure.

6. **Others** : One of the major construction chemical in this segment is grout. It is a construction material used to embed rebars in masonry walls, connect sections of pre-cast concrete, fill voids and seal joints (such as those between tiles).

**B. MARKET SIZE AND MARKET GROWTH**

**China dominates the global market**

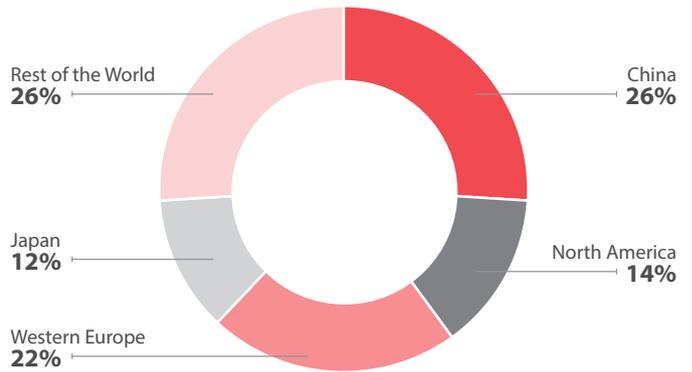


**Figure 91: Global market for construction chemicals (USD bn)**

Source: MarketsandMarkets; Literature review

The global market for construction chemicals in 2014 is estimated to be worth USD 17.5 bn. In the last five years, global construction chemicals market has witnessed a robust 6.4% p.a. growth, rising from USD 12.8 bn in 2009. Over the next five years, the market is expected to grow faster at 6.5% p.a. to reach a market size of ~ USD 24.0 bn by 2019. The key driver behind this growth is the expected

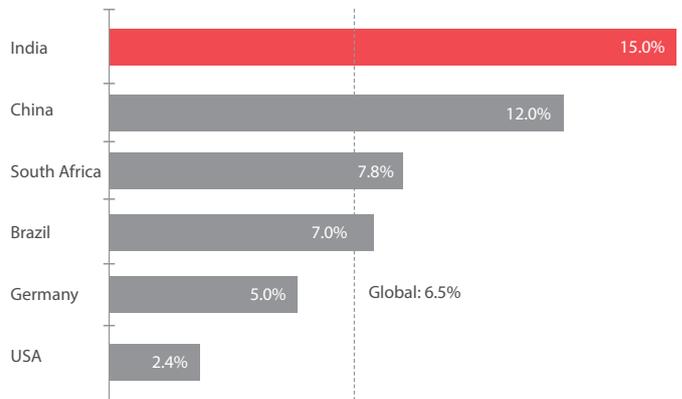
rise in construction projects across emerging markets and increased adoption of construction chemicals for improvement in quality of projects.



**Figure 92: Construction chemicals consumption by region, 2011**

Source: FICCI

Currently China is the biggest market for construction chemicals globally followed by North America. Other major global markets for construction chemicals are Western Europe and Japan.



**Figure 93: Growth rate forecasts (2014-19)**

Source: Literature review; Avendus analysis

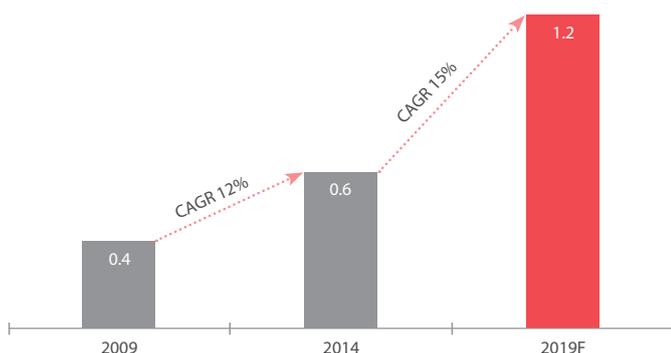
The global growth is driven by emerging markets such as China, India, Brazil and South Africa. Despite the large size, the Chinese market is expected to witness continued growth due to rising urbanisation and investments in infrastructure. Other emerging markets are also growing on back of similar drivers.

China accounts for 26% of the global market and is expected to grow at a CAGR of ~ 12%

## CONSTRUCTION CHEMICALS

The European and North American markets are growing moderately. Their growth is primarily driven by renovation of older structures. Germany is the largest market in Europe and also the fastest growing. Its growth is expected from growth in residential and commercial applications, driven by the growth of the German economy.

### Huge growth opportunity in India



**Figure 94: Indian market for construction chemicals (USD bn)**

Source: Literature review; Industry Interviews and analysis

The Indian market for construction chemicals is still small at USD 0.6 bn (4% of global market). However, it has experienced a significant growth of 12% p.a. between 2009-14.

The Indian construction industry is expected to continue to grow over the next five years, driven by housing and infrastructure projects, as well as increased penetration of construction chemicals in such projects. The construction chemicals market is expected to grow at a CAGR of ~15% over the next five years, to reach USD 1.2 bn by 2019.

As global standards of construction are gradually adopted in India, the market for construction chemicals will continue to grow. Government policies promoting more environment friendly buildings and push towards constructing green buildings will also impact usage patterns.

In India, the key challenge is lack of awareness about construction chemicals. Most construction chemicals manufacturers in India need to employ technically trained business development teams to educate end-users and build the market.

The spending on concrete admixtures per square foot of construction in India is half that of in China, and less than one fourth that of the USA. This highlights the untapped potential for construction chemicals in India.

Most small and medium construction projects in India trade-off long term benefits for reduction of short term construction costs. This is a major challenge, as construction chemicals typically constitute 2-5% of the total cost of a construction project but their benefits far outweigh the cost, though they are seen in a longer term.

In case of infrastructure projects, there are frequent situations where a builder is responsible for operating the project. Consequently, the acceptance of construction chemicals is higher in such cases.

### C. KEY SUCCESS FACTORS

#### • Branding (in B2C segment)

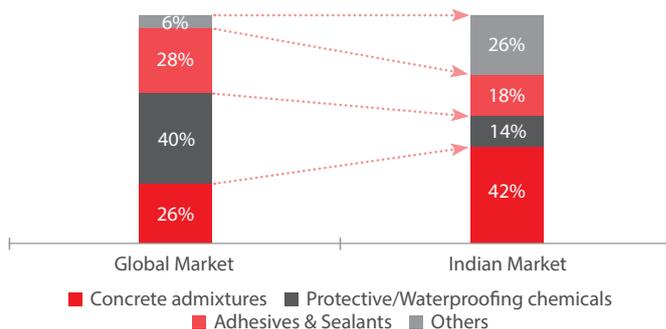
In the retail segment, branding and marketing are the key differentiators in construction chemicals. For instance, strong marketing efforts have helped Pidilite establish its brand and emerge as a market leader in this segment. Other players like CICO and Chembond are also concentrating on marketing and have managed to establish regional brands (CICO in northern and Chembond in western parts of the country).

#### • Technical expertise (in B2B segment)

In the B2B segment, technical expertise and references constitute the most important elements in winning a bid for a major construction project, whether industrial or infrastructure. The leaders in this segment are MNCs such as FOSROC, Sika, BASF and SWC-Chryso who capitalise on their global experience to capture projects in the Indian market.

### D. TRENDS SHAPING THE MARKET

#### Indian market dominated by concrete admixtures



**Figure 95: Global and Indian market segmentation for construction chemicals**

Source: Literature review; Avendus analysis

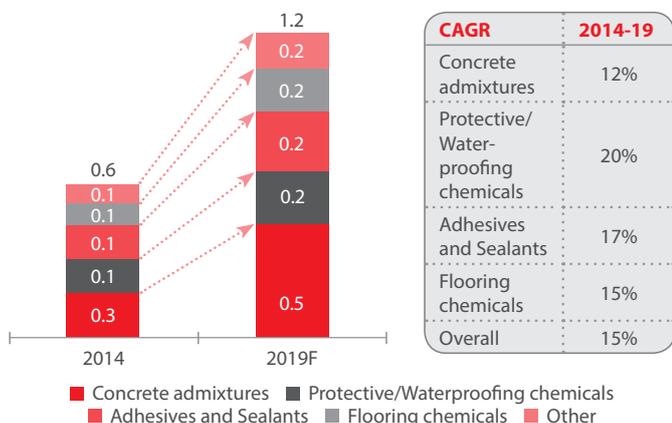
 Globally construction chemicals constitute less than 5% of the total cost of a construction project

Construction chemicals can be segmented into concrete admixtures, protective / waterproofing chemicals, adhesives & sealants and other construction chemicals. Protective chemicals are the largest segment globally, constituting 40% of the total market due to widespread use in USA and Europe against environmental conditions such as cold weather.

In India, the market is segmented differently, with concrete admixtures constituting the largest part (42% share) of the market. It is followed by adhesives and sealants at 18% and water proofing chemicals at 14%. Other construction chemicals (including flooring chemicals) constitute the remaining 26%.

The difference in structures of the Indian and the global markets highlights the lack of awareness about the long term benefits of specialized construction chemicals. Only products such as concrete admixtures that provide immediate tangible benefits (such as reduction of the amount of concrete and/or water used thus savings costs) are popularly employed. Products such as protective chemicals that provide protection against adverse environmental conditions and increase the overall life of structures are less commonly used.

Another major challenge is the widespread use of unskilled or semi-skilled labour at construction sites. The application of most construction chemicals (other than concrete admixtures) requires a certain level of expertise at the workforce level, while most projects in India lack trained workforce.



**Figure 96: Segment wise growth for construction chemicals**  
 Source: Literature review; Avendus analysis

**Globalisation of the value chain**

Traditionally North America and Western Europe have constituted the largest markets as well as production hubs for construction chemicals. These regions possess well established construction chemical value chains. However, with the rapid rise of the Chinese construction industry, the construction chemical value chain developed in China as well. Now, with the growth in construction market in other emerging nations and others such as Australia, a more globalised model is being increasingly adopted. While

manufacturing capabilities are expected to continue to remain in China, North America and Western Europe, while consumption would grow in emerging nations.

**E. COMPETITIVE LANDSCAPE**

**An organised market, but with low margins**

There are ~ 300 players in the Indian construction chemicals space. 85% of the Indian market is organized. Some of the prominent names in this segment include FOSROC, Sika, BASF, Pidilite, SWC-Chryso, Chembond , CICO Technologies and Sunanda Specialty Coatings.

**Chryso's acquisition of SWC**

Chryso is a leading French company specialising in construction systems. In 2013, Chryso acquired a 100% stake in 83 year old Indian construction chemical company – Structural Waterproofing Company (SWC). Earlier in 2006, Chryso had formed a partnership with SWC when it had acquired a limited stake in the company.

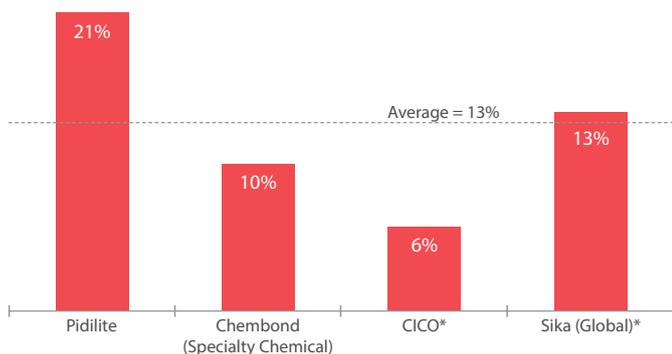
Chryso-SWC has manufacturing facilities located in West Bengal, Gujarat, Tamil Nadu and Rajasthan. It also has a state-of-the-art R&D centre in Navi Mumbai. Its products include concrete admixtures, cement grinding aids & activators and waterproofing chemicals. Its target customers are in the B2B and infrastructure segments.

MNCs and large Indian companies target construction projects in which they are typically able to charge premium prices (to achieve gross margins in 20-30% range). However, the low cost construction chemicals segment has relatively lower entry barriers resulting in presence of many small and unorganised players.

MNCs have traditionally been more successful in the B2B segment (particularly infrastructure) than Indian companies due to a stronger product portfolio and international experience in large industrial and infrastructure projects. The larger Indian companies tend to be more successful in the B2C segment due to their better reach and branding efforts. Pidilite is the biggest Indian company in construction chemicals and largely focuses on the B2C segment. Other Indian companies targeting B2C segment include CICO Technologies and Chembond.

Protective / waterproofing chemicals constitute the largest segment of the global market, with ~ 40% share

## CONSTRUCTION CHEMICALS



**Figure 97: EBITDA margins of key companies in Indian and global construction chemicals market (FY12-15)**

Source: Annual reports; MCA; Industry Interviews and analysis

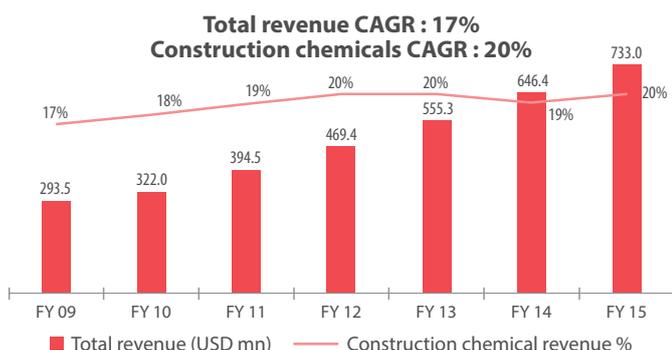
\*Note: Up to FY14

Indian construction chemical players operate at relatively lower margins vis-a-vis their MNC counterparts. With the exception of Pidilite, other Indian companies typically operate at a ~ 10% (or lesser) margin.

### Companies to watch out for

#### Pidilite

Pidilite is the largest adhesive manufacturer in India. It is also present in other segments such as construction chemicals, art materials and other industrial chemicals. Although it has some presence in B2B segment through industrial adhesives, but it dominates the retail segment in construction chemicals. It has several strong brands such as Fevicol (adhesive), Dr. Fixit (waterproofing) and M-seal (sealant). It is the largest Indian company in the construction chemicals space.



**Figure 98: Pidilite's financial performance**

Source: Annual reports

Construction chemicals constituted 20% of Pidilite's overall revenue in FY15. While its overall revenue have grown at a CAGR of ~ 17% over the past five years, construction chemicals have clocked nearly ~ 20% CAGR over the same period.

### F. FUTURE OUTLOOK

#### Indian market is still at a nascent stage; significant opportunities lie in the future

India remains a largely untapped market for construction chemicals due to lack of awareness and a focus on short term costs. With penetration levels being a fraction of global comparables, India represents barely ~ 4% of the world consumption of construction chemicals. With growth tempering in China, the attention has shifted to other emerging markets and India is among those growing the fastest.

The most significant challenge faced by Indian construction chemical players is the pressure on profitability. Small scale construction projects are highly price-sensitive as the builders involved in such projects are focussed on short term returns rather than long term sustenance. B2B (especially infrastructure) segment offers better profitability but requires specific products matching global standards.

Significant opportunities are expected in India going forward, as both B2C and B2B markets are still underpenetrated. In B2C segment, more manufacturers need to focus on their marketing efforts and build successful brands.

In B2B segment, opportunities lie in infrastructure segment, where many projects are expected over the next few years. Several global players are already present in Indian market and are vying for this opportunity. Indian players often miss out due to their limited experience and technical expertise. The need of the Indian manufacturers is to tie up with global players to build their expertise in this segment as well.



# WATER CHEMICALS<sup>^</sup>

OVERALL ATTRACTIVENESS	★★★★
Indian Market Size	★☆☆☆
Profitability	★★☆☆
Presence of Scaled Up Players	★☆☆☆
Market Growth Rate	★★★★
Product Differentiation	★★☆☆

---

### MARKET SIZE AND GROWTH<sup>^</sup>

- Global market size of USD 25.1 bn; to grow at 5.8% over 2014-19. Growth to be driven by strengthening environmental regulations and rising water quality standards
- Indian market size of USD 0.4 bn; to grow at 15% over 2014-19. Growth to be driven by industrial and municipal water treatment sectors in the short and long term respectively

---

### KEY SUCCESS FACTORS<sup>^</sup>

- Integrated value chain with ability to provide end to end water solutions

---

### TRENDS SHAPING THE MARKET<sup>^</sup>

- Industrial water market is driven by power and energy segments while municipal water market is driven by urbanization
- Integrated play on a rise with companies adopting solutions approach; either by offering end to end solutions themselves or by tying up with other companies

---

### COMPETITIVE LANDSCAPE<sup>^</sup>

- Organised players dominate the market for water chemicals with a 80% share
  - The sector has the presence of both MNC and large Indian players
-

# Water Chemicals

Largely an integrated "water solutions" play in India

## A. INTRODUCTION TO THE MARKET

The Indian water chemicals market is currently just 1.5% of the global market. However, it is among the fastest growing markets and presents an interesting opportunity for both global and Indian companies.

Water treatment chemicals are used to add some specific properties to water or alter the physical or chemical properties of water for domestic, commercial and industrial applications. In some developing countries, chemical water purification is conducted at household level to provide safe drinking water. In developed countries and urban centres of developing countries, this is generally done at the municipal level by civic authorities or by water management organizations.

The industrial applications of water treatment chemicals largely entail waste water management, and enhancing efficiency of industrial equipment by minimizing corrosive and other adverse impacts of water. This section of the report is focused on industrial and municipal market for water chemicals.

### Types of water chemicals

Based on their action, water chemicals are further classified into coagulants, flocculants, biocides, disinfectants, algaecides, defoamers, neutralizing agents, oxidants, oxygen scavengers, pH adjusters, boiler water chemicals, resin cleaners and scale inhibitors.

### The major categories are :

- Coagulants and flocculants** : They are chemicals that aid the formation of floc or aggregates of suspended particles in a solution. They are a key component of any wastewater treatment process as they aid the removal of suspended solids.
- Biocides and disinfectants** : They are used to kill unwanted microorganisms present in water for wastewater and industrial water treatment. The common applications of biocides include the use of chlorine for disinfection of water, and to prevent algae growth in industrial water handling equipment.
- Defoamers or antifoams** : They prevent the formation of

foam in industrial liquids. Foam can hamper the operation of industrial processes and affect the quality of the finished product. If not controlled, foam can reduce efficiency of equipment and increase the duration of the industrial process, resulting in higher operating and maintenance costs.

4. **pH adjusters** : They are chemicals used to adjust the pH (acidity or alkalinity) of water in industrial and municipal water treatment. For instance, municipal water plants use pH adjusters to maintain the pH of the water supply in the range of 7.0 – 7.5 to prevent corrosion of pipes and dissolution of toxic chemicals into water.

5. **Boiler water chemicals** : A boiler is used for generating steam and is used in various industrial processes. Boiler water chemicals are mainly used to prevent corrosion and scale formation in boilers. This helps in improving the efficiency and useful life of the boiler.

## B. MARKET SIZE AND MARKET GROWTH

### Emerging markets driving global growth

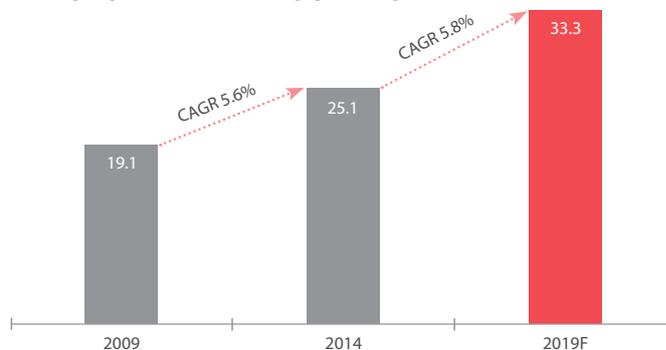


Figure 99: Global market for water chemicals (USD bn)

Source: Markets and Markets; Literature review

The global demand for water chemicals in 2014 is estimated at USD 25.1 bn. In the past five years the market has grown from USD 19.1 bn at a CAGR of 5.6%. In the next five years the market is estimated to grow at 5.8% p.a to reach USD 33.3 bn in 2019.

The major global players include Nalco-Ecolab (USA), Kemira (Finland), Solenis (USA), Kurita (Japan), BASF (Germany), Air Products and Chemicals Inc. (USA), AkzoNobel (Netherlands), Dow



The global demand for water chemicals is estimated to be USD 25.1 bn

Over 2014-19 global demand is expected to grow at 5.8% p.a., driven primarily by emerging economies

Chemical Company (USA), BWA Water Additives (UK), GE Water & Process Technologies (USA) and Lonza Group (Switzerland). Many of these are present in India.

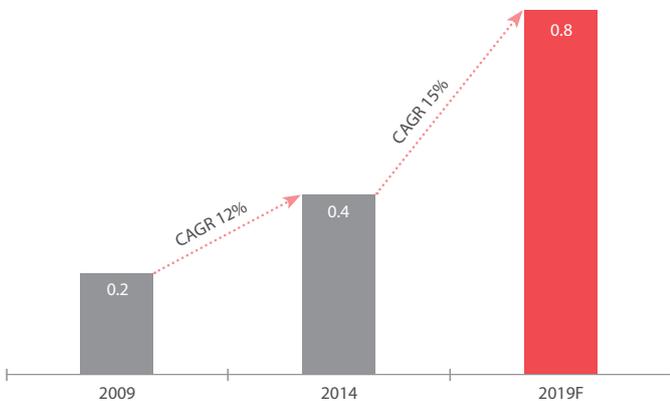
The Asia-Pacific region accounts for 36% of the global demand. North America and Europe together constitute 49% of the market. Global growth is majorly driven by emerging economies such as Brazil, China and India.

The developed countries in North America and Europe are relatively stagnant as the market for water chemicals is already well established and mature. Their growth mainly results from strengthening environmental regulations and rising water quality standards for municipal consumption. Preference for lower dose, higher value water chemicals is another opportunity area in these markets.

The Asia-Pacific market is growing at a CAGR of ~ 8% driven by rising standards of industrial water quality, adoption of complex manufacturing processes and strong economic growth resulting in greater municipal and industrial spending in water treatment efforts. Growth is also driven by increase in environmental concerns and greater efforts to modernise municipal water treatment facilities.

Within Asia-Pacific, India and China are expected to grow the fastest over the next five years (expected CAGR ~ 15% and 10% respectively). The Chinese market is estimated to be worth USD 2 bn (8% of global market and 22% of Asia-Pacific market) while Indian market is estimated to be worth USD 0.4 bn (1.5% of global market and 4% of Asia-Pacific market).

**Vast untapped potential for water chemicals in India**



**Figure 100: Indian market for water chemicals (USD bn)**

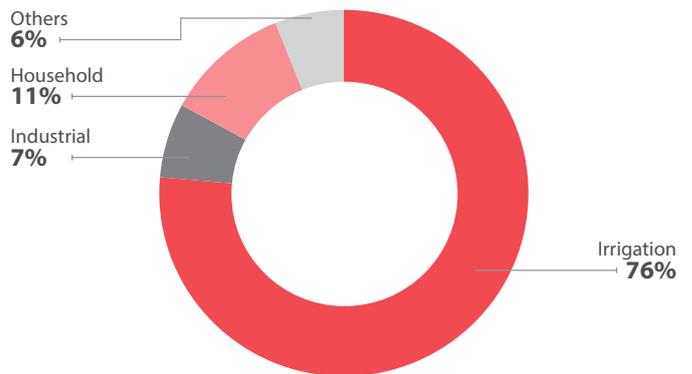
Source: Literature review; Avendus analysis

In India, the market has grown from USD 0.2 bn in 2009 to its present size at a CAGR of 12% over 2009-14. In the next five years this growth rate is expected to further accelerate to ~ 15% p.a., leading to a market size of USD 0.8 bn by 2019.

The industrial and municipal water treatment sectors are driving the growth of water chemicals in the short term and long term respectively.

The short term growth in demand for water chemicals would be largely fuelled by the stricter industrial effluent discharge norms being enforced by the Central Pollution Control Board. Power and energy sectors are the largest industrial consumers of water chemicals (constituting ~ 88% of the total industrial water consumption in India). Power plants require cooling and boiler chemicals for controlling corrosion and boiler treatment, respectively. India has a huge power deficit, and the Government has been planning several power projects since past few years which are expected to be commissioned soon, further boosting demand for the water chemicals industry. Other major industrial uses are engineering, pulp and paper, textiles, steel, sugar and fertilisers.

The long term growth for water chemicals will also be driven by municipal water consumption. The growing urban population is adding to the demand for water purification and waste water management across India. In the long run there may be a huge demand from implementation of the government’s vision of 100 new ‘smart’ cities.



**Figure 101: Sector wise water consumption in India**

Source: Literature review

Asia-Pacific accounts for 36% of global demand and is the fastest growing with ~ 8% annual growth

## WATER CHEMICALS

Irrigation has traditionally been the largest consumer of water (76% of the total water consumption in India). The segments employing water treatment chemicals, municipal and industrial segments, together constitute ~ 18% of the water consumption in India. Most industrial water treatment companies produce a variety of products used commonly across these end industries.

### End industries are growing

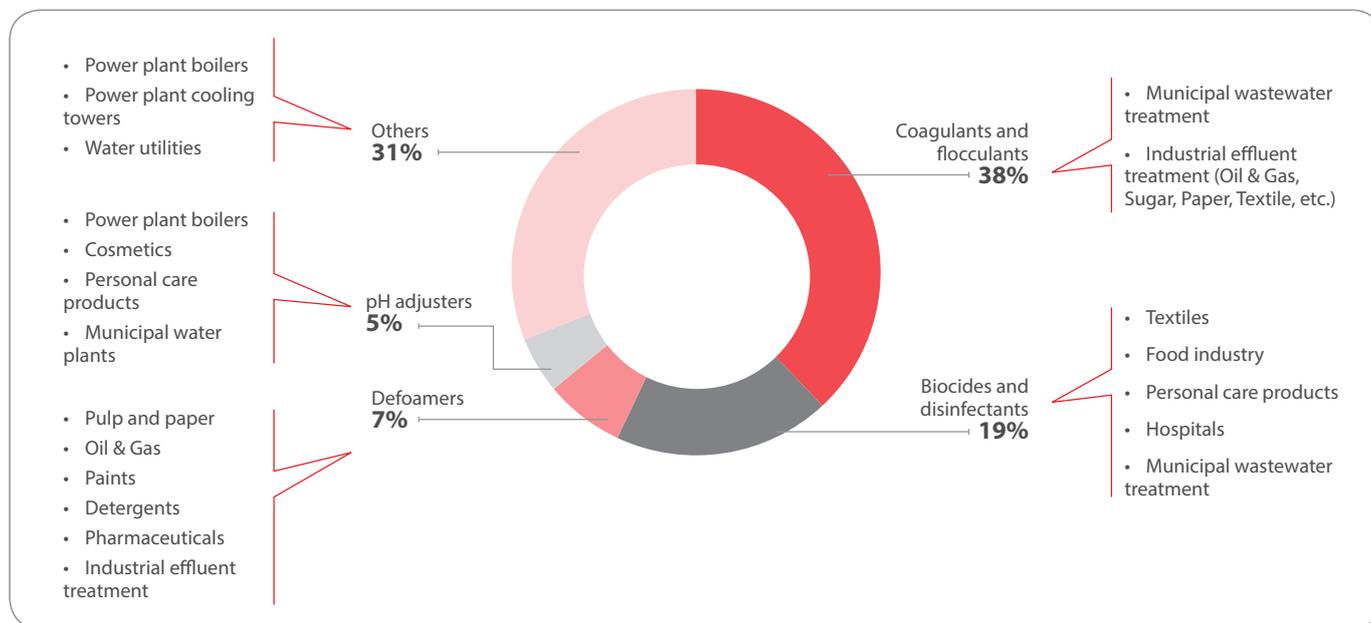


Figure 102: Indian water chemicals market segmentation, 2013

Source: FICCI; Literature review

In terms of application, coagulants and flocculants constitute the largest segment, ~ 38% of the total market, followed by biocides and disinfectants, constituting ~ 19% of the market. Other large segments are defoamers (7% share) and pH adjusters (5% share).

The growth of these segments is driven by their end-use applications. Coagulants and flocculants are used for waste water management and are replacing traditional products such as alum. Driven by high growth industrial and municipal water treatment, coagulants and flocculants are expected to grow at ~ 17%.

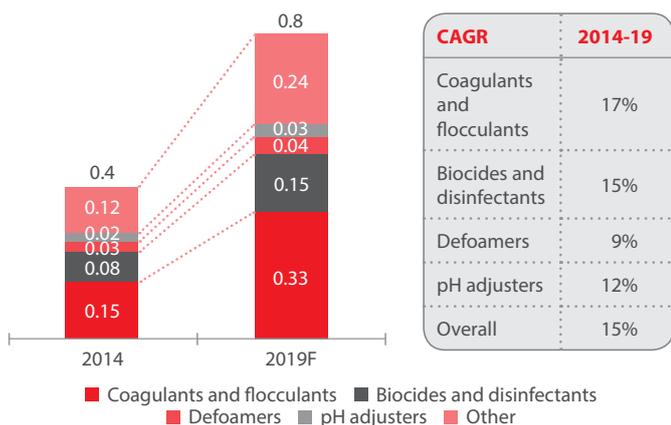


Figure 103: Segment wise growth for water chemicals in India (USD bn)

Source: Literature review; Avendus analysis

Biocide and disinfectant market in India is expected to grow at 15% driven by demand from oil and gas (eg. application in drilling fluids, where the drilling efficiency increases greatly by eliminating microbial growth), hygiene and industrial preservative industries. The other segments including defoamers and pH adjusters are small, but growing segments. Defoamers find application in the pulp and paper, and oil & gas industries and are expected to grow at 9%. pH adjusters are expected to grow at 12%, driven by their application in the rapidly growing soil treatment market in India.

### C. KEY SUCCESS FACTORS

- Integrated value chain** : In the water chemicals market, most players are integrated end to end water solutions providers or are in process of expanding in the value chain. This also implies that most water projects players have their own water



Indian market is worth USD 0.4 bn and though a small part of, but the fastest growing region within APAC, with ~ 15% growth p.a.

chemical manufacturing capabilities as well. Complete water solution providers like Thermax or Ion Exchange provide solutions ranging from designing and building a water treatment plant to running and maintaining it, including providing water chemicals. This also provides a captive market and competitive advantage.

#### D. TRENDS SHAPING THE MARKET

##### Short term growth driven by industrial water market

On the industrial side, the largest end-use sector is power and energy. Given the power deficit faced by India and the upcoming power projects, this sector will continue to drive growth. The tightening of environmental norms on industrial effluents and their strict implementation is also fuelling growth in water chemicals.

**Table 24: Some recent industrial water treatment projects in India**

<p><b>Year : 2014</b>  <b>Industry : Oil &amp; Gas</b>  <b>Client :</b> HPCL-Mittal Energy Ltd.  <b>Water solution provider :</b> Aquatech  <b>Project outline :</b> Ordered a high efficiency reverse osmosis plant for a refinery in Bathinda, Punjab</p>
<p><b>Year : 2014</b>  <b>Industry : Chemicals</b>  <b>Client :</b> Chemplast Sanmar Limited  <b>Water solution provider :</b> Aquatech  <b>Project outline :</b> Ordered a wastewater treatment plant for their manufacturing plant in Mettur, Tamil Nadu</p>

<p><b>Year : 2014</b>  <b>Industry : Power</b>  <b>Client :</b> Coastal Gujarat Power Limited, a Tata Power group company  <b>Water solution provider :</b> Aquatech  <b>Project outline :</b> Ordered a seawater reverse osmosis plant for India's first 4,000 MW ultra mega power project</p>
<p><b>Year : 2012</b>  <b>Industry : Power</b>  <b>Client :</b> Aravali Power Company  <b>Water solution provider :</b> Triveni Group  <b>Project outline :</b> Ordered effluent recycling system to recycle wastewater streams of the power plant for cooling towers</p>
<p><b>Year : 2012</b>  <b>Industry : Oil &amp; Gas</b>  <b>Client :</b> GAIL  <b>Water solution provider :</b> Triveni Group  <b>Project outline :</b> Ordered a demineralised water plant and condensate polishing unit to meet expanded plant capacity requirement</p>

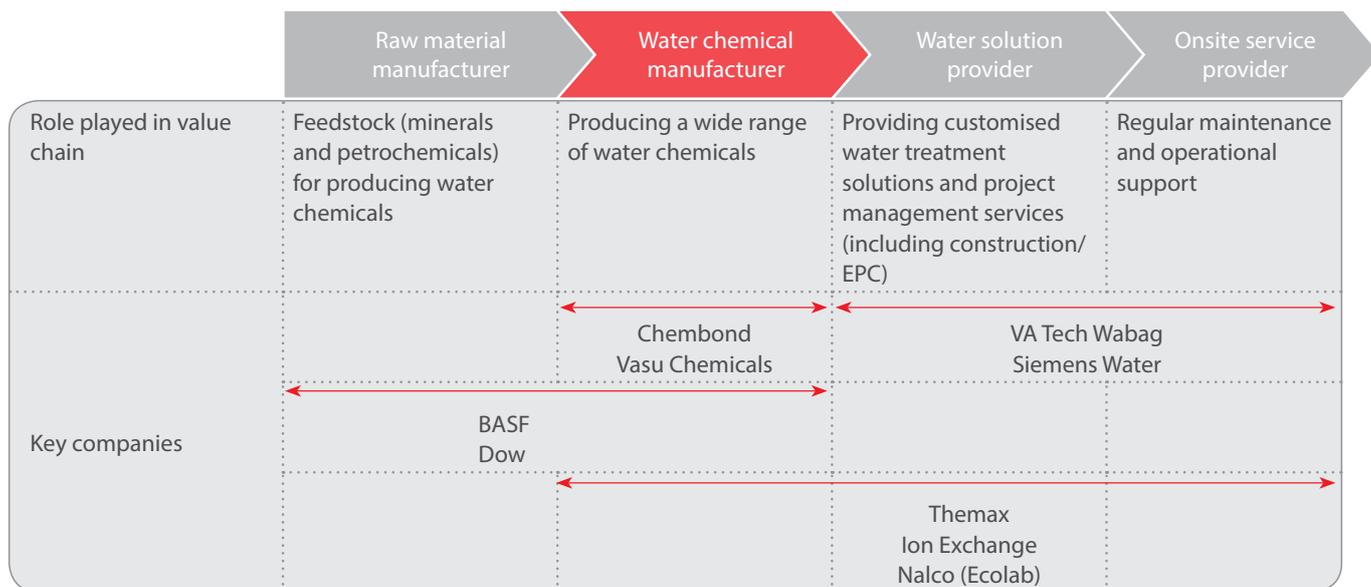
##### Long term growth driven by municipal water market

Municipal usage of water chemicals is rising due to increasing urbanisation. As per the 2011 census, more than 30% of the Indian population lived in urban areas and this is expected to grow to nearly 40% over the next decade. This would result in a greater need of providing clean water to urban areas, and effectively dealing with wastewater. Newer, innovative and cost effective water solutions are being proposed and implemented across India to meet this challenge.

**Table 25: Some recent municipal water treatment projects in India**

<p><b>Year : 2013</b>  <b>Location :</b> Delhi  <b>Water solution provider :</b> VA Tech Wabag  <b>Project outline :</b> 45 mn gallons per day Kondli sewage treatment plant commissioned for Delhi Jal Board inaugurated in 2013  <b>Status :</b> Commissioned</p>	<p><b>Year : 2013</b>  <b>Location :</b> Vishakhapatnam, Andhra Pradesh  <b>Water solution provider :</b> Thermax  <b>Project outline :</b> Sewage treatment plant announced for Greater Vishakhapatnam Municipal Corporation  <b>Status :</b> Planned</p>
<p><b>Year : 2013</b>  <b>Location :</b> Rajasthan  <b>Water solution provider :</b> L&amp;T  <b>Project outline :</b> USD 170 mn project announced in September 2013 to supply drinking water to 650 villages in rural Rajasthan  <b>Status :</b> Planned</p>	<p><b>Year : 2012</b>  <b>Location :</b> Gurgaon, Haryana  <b>Water solution provider :</b> Triveni Group  <b>Project outline :</b> USD 100 mn project to set up a 100 mn liters per day sewage treatment plant announced by Haryana Urban Development Authority (HUDA)  <b>Status :</b> Planned</p>

**Largely an integrated play**



The value chain for water chemicals consists of four participants: raw material manufacturers, water chemical manufacturers, water solution providers and onsite service providers. The basic feedstock for producing water chemicals is provided by chemical giants such as BASF and Dow which are vertically integrated into water chemicals as well.

Players such as Thermax, Ion Exchange and Nalco (Ecolab) are end-to-end water solution providers and are present across the value chain. They have their own water chemical manufacturing capability, provide complete water projects on a turnkey basis (including EPC) and provide onsite service support as well. These companies are involved in all stages of a water treatment project:

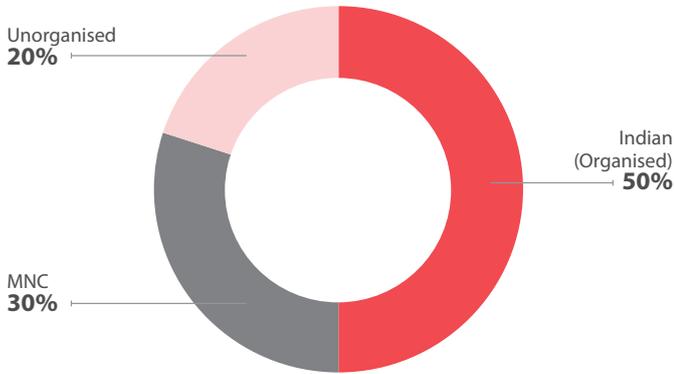
from constructing the treatment plant to its operations and maintenance to manufacturing and supplying the required water chemicals.

Water treatment companies such as VA Tech Wabag and Siemens do not operate in chemical manufacturing segment, but focus on construction and maintenance of water treatment plants.

There are a few mid-scale players such as Vasu Chemicals and Chembond which are pure-play chemical manufacturers operating in this segment. Some of these are planning integration into project management to leverage on the existing customer base.

**E. COMPETITIVE LANDSCAPE**

**A large share of the Indian market is with organised players**

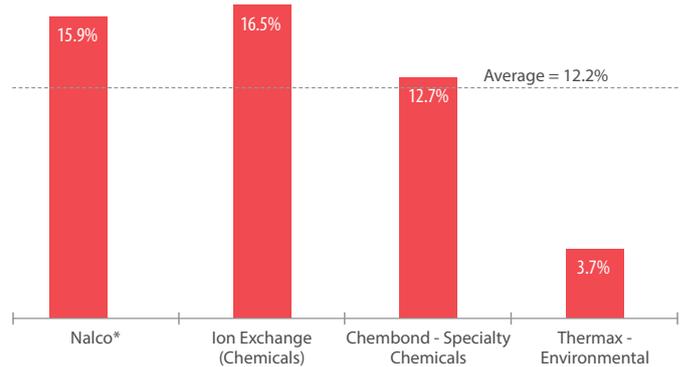


**Figure 104: Water chemicals market structure**

Source: Industry Interviews and analysis

It is estimated that 80% of market share for water chemicals in India belongs to the organised sector. Several large companies, both Indian and MNC, are present and many of the Indian companies have a global footprint as well.

Some of the key companies are Nalco (Ecolab), GE Water and Process Technologies, Thermax, Ion Exchange, Chembond and Vasu Chemicals. Several of the larger water treatment companies possess water chemical manufacturing capabilities (eg. Thermax and Ion Exchange) or have tie-ups with other manufacturers (eg. Dow’s JV with Voltas for water treatment) to provide complete water treatment solutions.



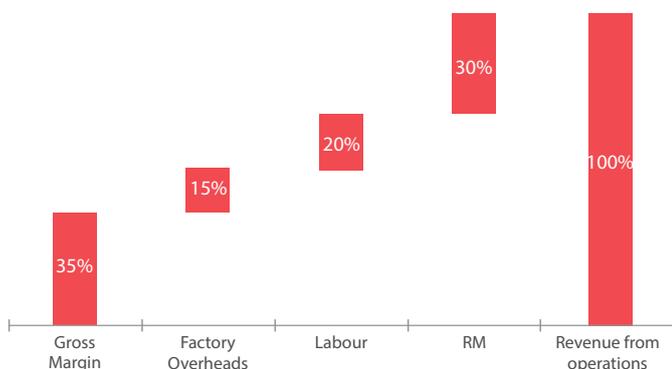
**Figure 105: Revenue CAGR (FY09-15) of leading water chemical companies**

Source: MCA; Annual reports; Avendus analysis

\* Up to FY14

**Table 26: India presence and strategy of MNCs in water chemicals**

WATER CHEMICAL MNC	GLOBAL STRATEGY	CURRENT INDIA OPERATIONS	INDIA STRATEGY
<b>Nalco-Ecolab (USA)</b>	Focusing on innovations, service, social responsibility and sustainability	Has an Indian subsidiary Nalco Water India with offices in Pune, Mumbai, Vadodra, Kolkata, Delhi and Chennai	Focusing on providing localised solutions to various geographical area in India as per local needs
<b>Kemira (Finland)</b>	Focusing on pulp and paper, oil and gas and mining industry by developing innovative chemical products suited to their needs	Has an Indian subsidiary Kemira Chemicals India in Hyderabad and entered into a JV with IVRCL in 2010 to set up Kemira-Indus which has a coagulant plant in Vizag (became operational in 2012)	Aiming to setup another coagulant plant in India to capture industrial and municipal water treatment market in India
<b>Solenis (USA)</b>	Pursuing new opportunities and developing new products that will deliver better value to customers and result in steady growth and improved margins	Has a JV with Chembond (Chembond Solenis) and produces water chemicals for industrial and municipal water treatment	Increasing focus on industries like steel, power, fertilisers, refineries, petrochemicals, mining, sugar, textile and also municipal segment
<b>Dow Chemical (USA)</b>	Focusing on developing new game-changing innovative products for developing markets which are cost effective	Established a JV with Voltas (Voltas Water Solutions) in February 2014	Targeting the untapped potential in Indian water treatment and waste water treatment market
<b>GE Water &amp; Process Technologies (USA)</b>	Leveraging GE scale and technology leadership to solve water scarcity and quality problems in developing markets	GE Water & Process Technologies India produces water treatment solutions for both industrial and municipal use	Providing water and wastewater treatment solutions to increase productivity, reduce costs and help customers meet environmental regulations

**Water chemicals have attractive margins**

**Figure 106: Illustrative cost structure of a water chemical manufacturer**

Source: MCA; Avendus analysis

Raw materials are the major cost for most water chemical manufacturers constituting 30-55% of their total revenue. Some of the high value raw materials have to be imported. The other major cost is labour which constitutes 15-20% of total revenue. Gross margins are fairly attractive for most water chemical manufacturers and are generally in the 30-40% range.

**F. FUTURE OUTLOOK****An interesting opportunity area**

At present, water chemical segment constitutes a small part of the overall specialty chemicals sector in India. Even compared to the global water chemicals market, the Indian market is still very small and accounts for just 1.5% of the overall market. However, as one of the fastest growing markets of the world, the Indian water treatment chemicals segment presents an interesting opportunity area going forward.

Water chemicals for both industrial and municipal usage are expected to grow rapidly. The industrial segment in India is expected to drive the growth in the short term driven by demand from power sector and implementation of stricter effluent norms. The municipal segment is expected to provide a huge growth opportunity in the long run. With growing urbanisation, the demand for both water treatment of municipal water supply and industrial wastewater treatment is expected to rise.

Most global players in the water chemicals space are already present in India. Indian companies in the space have also grown and are exporting innovative solutions across the world. Unlike some other specialty chemical segments in India, water-chemicals is a largely organised market with integrated players. Since most water projects and solutions providers have established in-house water chemical manufacturing capabilities, the pure-play companies will either need to integrate forward or develop strong partnerships with solution providers to be able to offer integrated packages.



*Nearly 88% of industrial water consumption in India is by the energy and power sector alone*

*Coagulants and flocculants account for 38% of the Indian market and are the fastest growing at 17% p.a. due to rising demand for wastewater and effluent treatment from the industrial and municipal segment respectively*

*In India most water chemical manufacturers are end-to-end water solution providers*

# TEXTILE CHEMICALS<sup>^</sup>

**OVERALL ATTRACTIVENESS**



**Indian Market Size**



**Profitability**



**Presence of Scaled Up Players**



**Market Growth Rate**



**Product Differentiation**



---

### MARKET SIZE AND GROWTH<sup>^</sup>

- Global market size of USD 20.3 bn; to grow at 3.6% over 2014-19. Growth to be driven by demand for value added textiles with improved aesthetics and functional properties
- Indian market size of USD 1.1 bn; to grow at 11.9% over 2014-19. Growth to be driven by domestic demand for quality textiles and exports of high quality textiles

---

### TRENDS SHAPING THE MARKET<sup>^</sup>

- The segment has witnessed M&A activity driven by market access and consolidation opportunities
- Largely commoditized products, resulting in low to moderate profitability

---

### CHALLENGES FACING THE MARKET<sup>^</sup>

- Little differentiation resulting in price competition
- Cyclical nature of textile industry
- Highly fragmented market : most companies are dependent on single chemical or a small basket of chemicals

---

### COMPETITIVE LANDSCAPE<sup>^</sup>

- Highly fragmented industry structure as a result of a largely unorganized end industry. This is also driven by poor implementation of environmental norms, as well as concessions provided by the Government
-

# Textile Chemicals

*Highly fragmented industry in India, caters to a large and growing segment*

## A. INTRODUCTION TO THE MARKET

India is the world's second largest producer of textiles and garments. Textiles play a major role in the Indian economy contributing 14% to industrial production and 4% to GDP.

Textiles require a range of treatment processes before reaching the end-user. Textile chemicals are specialty chemicals used during dyeing and processing of textiles to impart desired properties to the end product. For instance, finishing agents are commonly used for managing stains and wrinkles before supplying textiles to market. In recent time, additional treatments for making textiles more resistant to water, stains, wrinkles, and pathogens such as, bacteria and fungi have become common.

Globally, the textile chemical industry is dominated by large multinational companies like Archroma, BASF, Bayer, Dow Chemical, and Huntsman which together account for more than 50% of the global organized market.

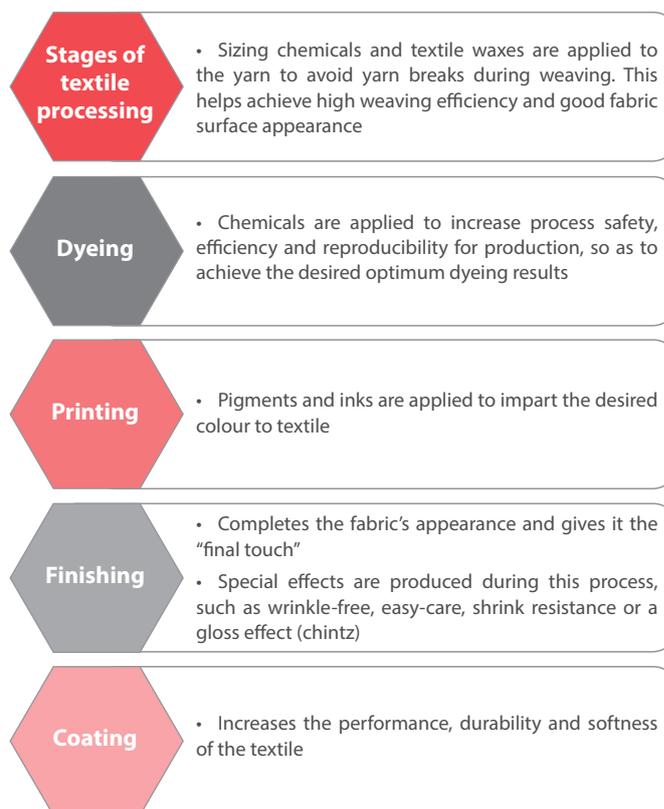
The Indian textile chemical industry is highly fragmented and largely unorganised. There are more than 500 textile chemical manufacturers. This is a result of the textile industry structure : 70% of the fabric sold in India is unbranded. It is a mature and fairly commoditised industry with low margins.

However, a large domestic demand for textiles means that this market cannot be ignored and there will be niches within this segment. MNCs like BASF, Archroma and Huntsman dominate the Indian industry with more than 70% share of the organised market.

The three main applications for textile chemicals are home furnishings, apparels and industrial and other uses. Home furnishings accounts for ~ 40% of the global market, closely followed by industrial applications.

The various types of textile chemicals include coating and sizing chemicals, colorants and auxiliaries, finishing agents, surfactants, de-sizing agents, bleaching agents and yarn lubricants.

### Stages of textile processing



**Figure 107: Stages of textile processing**

Most of the Indian textile chemical industry is concentrated in Maharashtra and Gujarat. The domestic opportunity for textile chemicals is vast, but the profitability is subdued, and not as attractive as other specialty chemicals. There are opportunities for Indian players in supplying higher value added functional chemicals such as fire retardants, water repellents, etc. to the technical textile markets at home (CAGR ~ 20%) and abroad (~ 4% CAGR).



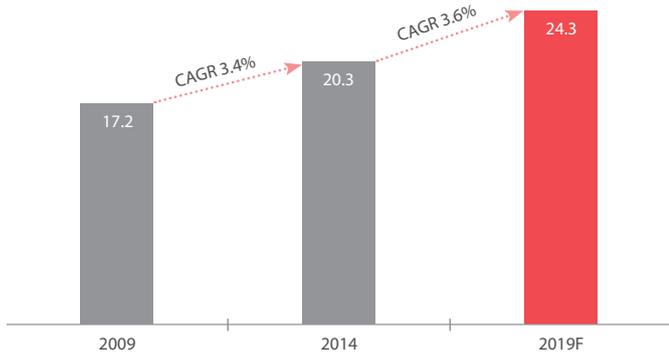
The global market for textiles is worth USD 4.4 tn while the textile chemical market is USD 20.3 bn

---

Archroma, BASF, Bayer, Dow Chemical and Huntsman account for more than 50% of the global organized market

**B. MARKET SIZE AND MARKET GROWTH**

**Global market growing steadily**



**Figure 108: Global market for textile chemicals (USD bn)**

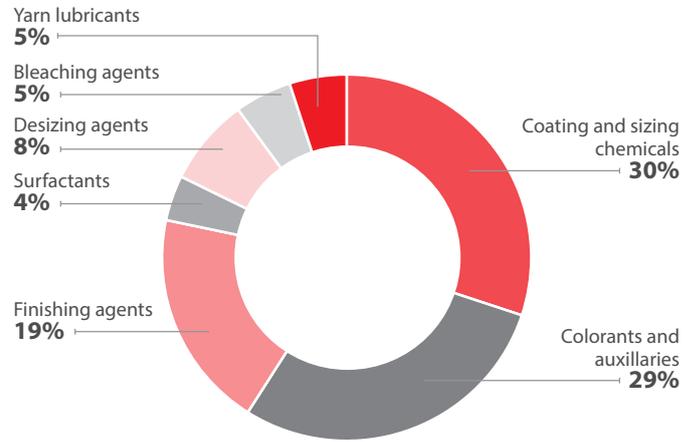
Source: Transparency Market Research

The global market for Textile Chemicals is estimated to be USD 20.3 bn, and is expected to reach USD 24.3 bn in 2019. The market for textile chemicals is driven by the growth of apparels and technical textiles. The textile chemicals market is expected to grow at a CAGR of 3.6% for the next 5 years.

The main growth driver is the increasing demand for finishing chemicals. Recent innovations in finishing chemicals allow a variety of beneficial properties like anti-microbial properties, wrinkle-free properties, stain-resistance, etc. to be imparted to the textile. The use of these chemicals has almost become a norm rather than exception.

Coating and sizing chemicals (extensively used in pre-treatment) constitute 30% of the market. Sizing chemicals are used to increase the strength and abrasion resistance of the yarn to prevent breakage. The growing demand for high quality textiles has resulted in increased demand for coating chemicals that increase the performance, durability and softness of the textile.

Coating and sizing chemicals are closely followed by colorant auxiliaries with 29% of the market. These chemicals enable dyeing or printing to be carried out more effectively and help give effects like colour deepening. Finishing agents constitutes 19% of the market, though the share is expected to increase in future years. Finishing refers to the method whereby deficiencies in textiles are corrected or specific properties are introduced. Surfactants, desizing agents, bleaching agents and yarn lubricants together form the remaining 22%.

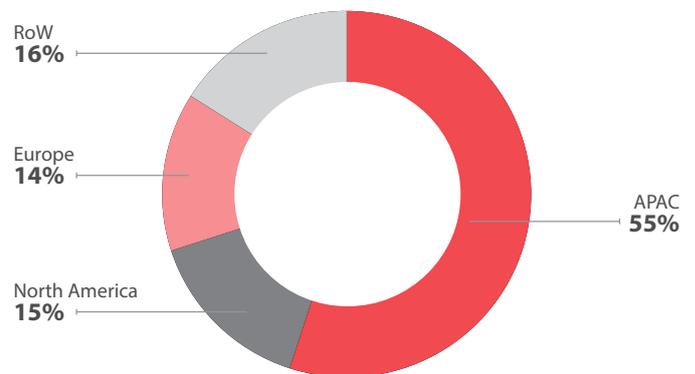


**Figure 109: Break-up of global textile chemical market by product type, 2013**

Source: Transparency Market Research

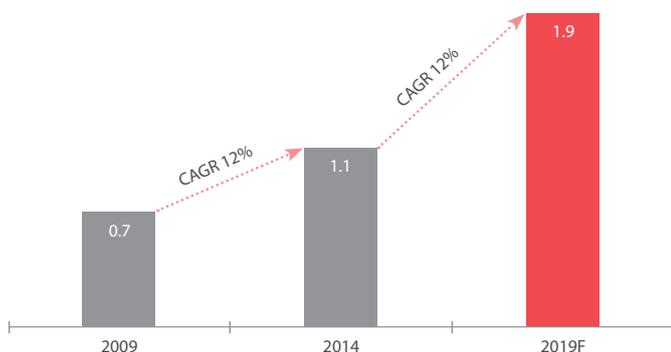
Asia-Pacific accounts for more than half the world's consumption of textile chemicals. It is also expected to grow at 4% CAGR over the next 5 years. North America and Europe closely follow, and are expected to grow slower than the global average of 3.6% CAGR.

Global majors in this sector (BASF, Archroma and Huntsman) are focusing on eco-friendly and high-end products that add functional properties to the textiles. They are using environment friendly chemicals like bio-auxiliaries in order to decrease their overall pollution load and meet global standards. As a result, a significant value growth is expected in the market.



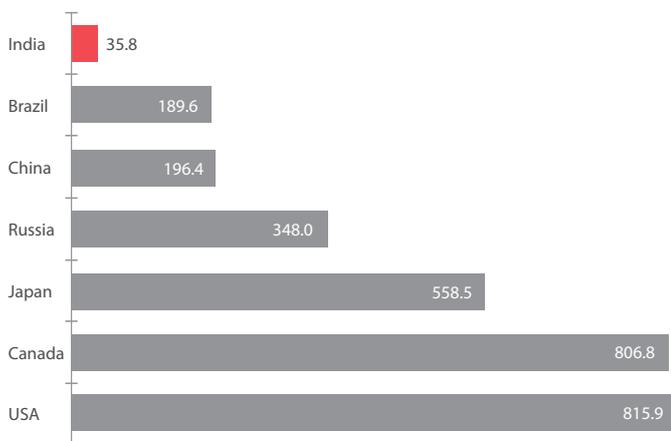
**Figure 110: Breakup of global textile market by geography, 2013**

Source: Avendus analysis, Literature review

**Potential for growth in the Indian market****Figure 111: Indian market for textile chemicals (USD bn)**

Source: McKinsey

The Indian textile chemicals market is estimated at USD 1.1 bn in 2014. It is expected to reach USD 1.9 bn by 2019, growing at 11.9% p.a. Growth is driven by domestic demand and exports of high quality textiles. The latter has been growing at a CAGR of 11.6%. Increasing penetration of solutions such as negative ion therapy<sup>7</sup>, stain releases, anti-microbial effect (growing at 20% CAGR over FY11 to 17) are additionally driving market growth.

**Figure 112: Per capita apparel expenditure by major countries (USD, 2014): Indian market highly underpenetrated despite a large textiles market**

Source: Euromonitor

**C. TRENDS SHAPING THE MARKET****M&A activity driven by the need for market access**

In 2006, Huntsman acquired the global textile effects business of Ciba Specialty Chemicals for USD 253 mn. This also included Ciba Specialty Chemicals in India which was sold to Huntsman Advance Materials India for USD 27.5 mn.

In 2009, Huntsman further increased its presence in India by acquiring the Baroda Division of Metrochem Industries, a manufacturing facility for the production of intermediates and specialty products for textiles. The division had annual sales of ~ USD 40 mn. This move came in as Huntsman's strategy to realign its manufacturing footprint towards Asia.

In 2013, SK Capital Partners, a US-based private investment firm acquired the textile chemicals, paper specialties, and emulsions businesses of Clariant for USD 500 mn. This was integrated into a company called Archroma. The acquisition also included the India business which was sold to Archroma India Pvt Ltd for USD 34.9 mn.

In October, 2014, Archroma announced that they have entered an agreement to acquire the global textile chemicals business of BASF. The driver for the acquisition was BASF's ability to offer solutions across the value chain and the strong focus on Asian markets. BASF however decided to exclude its plants in India (Thane and Mangalore) from the deal.

Environmental regulations form a significant entry barrier in the Indian industry. It takes a minimum of 18 months to get an Environmental Impact Assessment (EIA) done and receive permission to setup a plant. This implies that acquiring an established player gives the acquirer a significant headstart compared to investing in Greenfield projects. This is likely to be the single biggest driver of MNC driven M&A in this sector.

**D. COMPETITIVE LANDSCAPE****Fragmented industry structure resulting from a largely unorganized end-industry**

The market for textile chemicals in India is highly fragmented and comprises over 500 large and small players. In India, large majority of textiles manufactured and sold is unorganized, catering to price sensitive customers. This means that the majority of the end market is price sensitive. This large

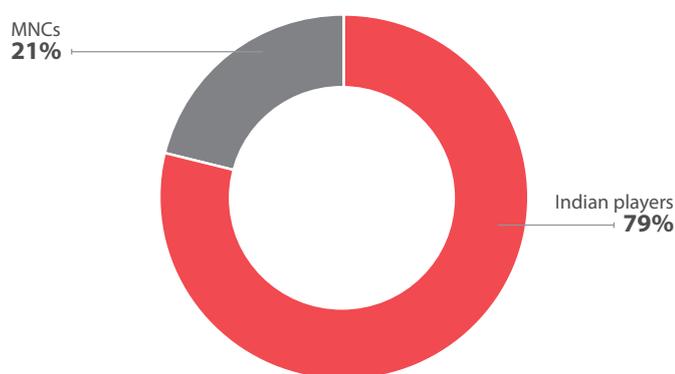


*The Indian textile market is USD 117 bn while the textile chemical market is USD 1.1 bn*

<sup>7</sup> Products are made from Carbonized Charcoal and some products are mixed with Germanium. Carbonized Charcoal fibre and Germanium both release negative ions while worn. Negative ions stimulate molecular vibration which increases blood flow and blood speed and helps bring more oxygen to the area of use.

unbranded market is a target for the unorganised textile chemical manufacturers. There are ~ 500 players who manufacture textile chemicals, but there is a large number of players who blend and resell chemicals in unorganized markets. The count including such players is 800. Fragmentation of the market can also be attributed, in part, to the weak enforcement of environmental norms for small players, as well as concessions provided by the Government of India<sup>8</sup>. The increasing preference for quality products, as well as a growing market penetration of technical textiles, is likely to have some impact on the level of fragmentation going forward.

**Indian textile chemical market**



**Figure 113: Competitive landscape**

*Source: Annual reports; Industry interviews and analysis*

A few Indian players in this industry like Rossari Biotech are focusing on product innovation. Rossari Biotech, a diversified player offering textile auxiliaries, and other specialty chemicals, manufactures chemicals to enhance anti-microbial and anti-fungal properties, flame retardant properties, fragrance, and UV absorbing properties of the textiles. These are value added products with relatively better margins, where even the MNCs are focusing their efforts; rather than regular textile chemicals which have essentially become commoditized.

**E. CHALLENGES FOR TEXTILE CHEMICALS**

**Similar products, little differentiation**

A majority of the Indian players sell chemicals with little differentiation, thus competing largely on price. As a result they find it difficult to compete with MNCs who have an advantage with regard to access to high quality raw materials as well as being able to sell a quality product at a premium.

**Cyclicality of textile business**

Another challenge for Indian players is to deal with the cyclicality in the textile manufacturing business. There are hot and cold cycles. Surviving through periods of low demand is tough for the small players.

**Single product dependencies**

Many Indian players concentrate on manufacturing a single chemical or a small basket of chemicals. As a result, they are vulnerable to shift in regulations and/ or market trends. For example, banning formaldehyde resulted in a major loss for Chemipol.

**F. FUTURE OUTLOOK**

A large domestic demand for textiles, growth in branded apparel, strength in exports and opportunities for technical textiles, together provide a large and growing market for textile chemicals. However, the supply base continues to remain fragmented with moderate margins. An increase in regulatory standards is likely to cause some reduction in fragmentation, but we do not foresee any major shifts in the near future. Due to the commoditization of existing textile chemicals, major players such as BASF, Archroma, Huntsman as well as a few scaled up Indian players, are focusing on innovation in eco-friendly and functional textile chemicals. As far as general textile chemicals are concerned, players need to remain cost competitive and offer differentiated products.

<sup>8</sup>The government is also taking initiatives to encourage new players to enter the market of technical textiles by introducing Technological Mission, which aims to support new industry players by offering them knowledge about technical textiles. Another important scheme is the Revised Restructured Textile Upgradation Fund Scheme (RR-TUFS), where the government is giving funds to existing players in the textile market to upgrade their capacity and machinery. The plan allocation is USD 2 bn, and the government is reimbursing between 5-6% of the interest and 15-30% of the capital depending on the sector. The goal is to increase scale and modern equipment comparable with that of Bangladesh, which entered the global textile scene after India.

# APPENDICES



**APPENDIX - I**

**Segment Attractiveness : Scoring Methodology**

**India Market Size** – 2014 Indian market size has been used to determine this. The ratings are distributed as follows

MARKET SIZE (USD BN)	RATING
> 3.3 <sup>1</sup>	⊕
1.7-3.3 <sup>2</sup>	⊕
0.8-1.7 <sup>3</sup>	⊖
< 0.8	⊖

**India Growth Rate** – The expected CAGR of Indian market over 2014-19 has been used. The ratings are distributed as follows :

GROWTH RATE	RATING
>= 15%	⊕
13% - 15%	⊕
11% - 13%	⊖
< 11%	⊖

**EBITDA Margin** – The average EBITDA margins over FY11-14 have been used. The ratings are distributed as follows :

EBITDA MARGIN	RATING
>= 15%	⊕
13% - 15%	⊕
11% - 13%	⊖
< 11%	⊖

**Product Differentiation / Specialization** – This rating is based on a subjective criteria. For each segment, the factors that determine the extent and sources of differentiation have been considered, followed by a rating to reflect our view of the overall differentiation the companies in the sector are able to achieve based on these factors.

INDUSTRY	SOURCES OF PRODUCT DIFFERENTIATION	RATING
Agrochemicals	Brands, Distribution	⊕
Flavors & Fragrances	IP, Sourcing	⊕
Personal Care	Product Innovation	⊕
Dyes and Pigments	Specialized & more attractive applications ; Regulatory compliance	⊖
Surfactants	Specialized applications ; Sourcing	⊖
Polymer Additives	Product Portfolio	⊕
Construction	Brands, References	⊖
Water Treatment	Breadth of offerings	⊖
Textiles	-	⊖

**Presence of Scaled Up Players** – The number of companies in the segment with revenue > USD 30 mn is used as a criterion for benchmarking the sectors on this parameter

Number of Companies	Rating
>= 20	⊕
10 – 20	⊕
5 – 10	⊖
< 5	⊖

**Overall Attractiveness**

The overall attractiveness for each segment has been determined by combining the ratings on the individual components of that segment. This indicates the potential attractiveness of the segment to an investor based on the above mentioned parameters : market opportunity, the expected market growth, defensibility of the business model, profitability of key players and number of scaled up players in the segment.

<sup>1</sup> Refers to > INR 200 bn

<sup>2</sup> Refers to INR 200 bn - INR 100 bn

<sup>3</sup> Refers to INR 100 bn - INR 50 bn

**APPENDIX - II****Recent Inbound and Outbound Transactions : Strategic M&A****Table 26: Some recent M&A activities involving Indian specialty chemical companies**

<b>YEAR</b>	<b>SEGMENT</b>	<b>ACQUIRER</b>	<b>ACQUIRED COMPANY</b>	<b>COMMENTS</b>
2016	Others	Dorf Ketal Chemicals	Filtra Catalysts & Chemicals	Dorf Ketal has acquired Filtra Catalyst in order to strengthen its specialty chemicals portfolio
2015	Personal Care	Clariant Chemicals (India)	Vivimed Labs (Personal Care portfolio)	Clariant (India) has agreed to acquire the personal care portfolio assets of Vivimed Labs for USD 57.4 mn
2015	Agrochemicals	Godrej Agrovet	Astec Lifesciences	Godrej Agrovet has agreed to acquire 45.3% stake in manufacturer of agrochemicals and pharmaceutical intermediates, Astec LifeSciences
2015	Flavours and fragrances	Frutarom	Sonarome	Israel based Frutarom has agreed to acquire 60% in F&F producer Sonarome in order to increase presence in India
2015	Agrochemicals	Valagro	Sri Biotech Laboratories	Italy based fertilizers manufacture has acquired 80% in Sri Biotech Laboratories, manufacturer of bio-organic agri inputs for nutrition and protection
2015	Others	Evonik Industries	Monarch Catalyst	Evonik Industries has acquired Monarch Catalyst, manufacturer of nickel catalyst for oils and oleo chemicals
2014	Flavours and fragrances	V. Mane Fils	Kancor Ingredients	V. Mane Fils has acquired a majority stake in Kancor Ingredients in order to increase control over sourcing
2014	Agrochemicals	Nihon Nohyaku (Japan)	Hyderabad Chemicals (India)	Acquired 74% stake to establish direct sales network in India
2014	Construction Chemicals	Astral Poly Technik	Resinova Chemie	Astral Poly Technik has acquired a 76% stake in Resinova Chemie, manufacturer of chemical and adhesive products for USD 34.26 mn
2014	Dyes and Pigments	Clariant Chemicals (India)	Plastichemix Industries	Clariant (India) has acquired Plastichemix Industries, manufacturer of masterbatches for USD 22.4 mn
2014	Agrochemicals	Coromandel Agrico	Punjab Chemicals & Crop Protection	Coromandel Agrico has agreed to acquire the Agro formulation division of Punjab Chemicals and Crop Protection, manufacturer of pesticides, herbicides, fungicides, and biocides
2013	Construction chemicals	Chryso (French)	Structural Waterproofing Company (India)	French MNC Chryso acquired 100% stake in Indian construction chemical company SWC
2012	Surfactants	Solvay (Belgium)	Sunshield Chemicals (India)	Belgian chemical company, Solvay acquired the Indian surfactants manufacturer Sunshield Chemicals

YEAR	SEGMENT	ACQUIRER	ACQUIRED COMPANY	COMMENTS
2011	Agrochemicals	Coromandel International Ltd(India)	Sabero Organics (India)	Acquired 42.2% for USD 41.7 mn stake to derisk its subsidy business (fertilisers) by adding to the portfolio non-subsidy business (pesticides)
2011	Agrochemicals	UPL (India)	DVA Agro Do Brazil (Brazil)	Acquired 51% stake for USD 150 mn in the fast growing Brazilian company involved in production, marketing and distribution of agrochemicals
2011	Agrochemicals	Arysta LifeSciences (Japan)	Devidayal Sales Limited (India)	Acquired majority stake to bring Arysta's global products in to India through Devidayal's distribution network
2011	Dyes and pigments	Kiri (India)	SMS Chemicals (Taiwan)	Kiri acquired SMS Chemicals, which was involved in distribution of chemical products
2009	Surfactants	Galaxy (India)	Tri-K Industries (USA)	Galaxy acquired the American manufacturer of specialty ingredients in cosmetics and personal care
2009	Textile chemicals	Huntsman (USA)	Baroda division Metrochem Industries (India)	Acquired the Baroda manufacturing facility producing intermediates and specialty products for textiles of Metrochem to increase its presence in India
2008	Flavours and fragrances	Oriental Aromatics (India)	Camphor (India)	Acquired a majority stake in the terpene chemicals and other specialty aroma chemicals manufacturer for USD 2.9 mn

Source: Merger market

**ANNEXURE III****Trading multiples of select listed Indian and global specialty chemical players**

COMPANY	COUNTRY	MARKET CAPITALIZATION (USD MN)	REVENUE (USD MN)	EBITDA MARGIN	PAT MARGIN	3YR GROWTH	EV/ REVENUE	EV/ EBITDA	P/E
<b>India - Agrochemicals</b>									
UPL Ltd	India	2,734	1,978	20%	9%	16%	1.6x	7.9x	14.6x
Bayer Cropsience Ltd	India	2,031	642	12%	9%	18%	3.0x	24.1x	34.3x
PI Industries Ltd	India	1,463	317	20%	13%	30%	4.7x	23.7x	36.4x
Monsanto India Ltd	India	643	91	21%	19%	14%	6.7x	32.0x	37.0x
Rallis India Ltd	India	493	298	15%	9%	13%	1.7x	11.1x	19.2x
Dhanuka Agritech Ltd	India	403	128	17%	14%	14%	3.1x	18.5x	23.2x
Sharda Cropchem Ltd	India	315	174	18%	12%	NA	1.7x	9.3x	15.7x
Excel Crop Care Ltd	India	191	163	11%	6%	13%	1.2x	11.5x	18.5x
Insecticides India Ltd	India	121	158	12%	6%	23%	1.1x	9.3x	13.5x
Astec Lifesciences Ltd	India	68	44	21%	6%	33%	1.9x	9.3x	28.3x
Punjab Chemicals & Crop Prot	India	32	65	11%	1%	NA	2.4x	21.6x	55.2x
Camson Bio Technologies Ltd	India	24	33	7%	1%	NA	1.0x	13.2x	NA
<b>India - Other Specialty Chemicals</b>									
Pidilite Industries Ltd	India	4,214	792	16%	11%	16%	5.3x	32.8x	50.3x
Atul Ltd	India	712	435	15%	9%	14%	1.7x	11.8x	18.1x
Aarti Industries Limited	India	645	476	16%	7%	20%	1.8x	10.9x	19.2x
Clariant Chemicals (I) Ltd	India	308	207	15%	32%	1%	1.5x	9.8x	NA
Sudarshan Chemical Inds Ltd	India	114	199	11%	4%	15%	0.9x	8.5x	12.8x
Vivimed Labs Ltd	India	113	226	16%	5%	27%	1.2x	7.8x	9.6x
Meghmani Organics Ltd	India	92	212	15%	3%	7%	0.9x	6.0x	12.8x
Plastiblends India Ltd	India	91	81	10%	6%	13%	1.2x	11.3x	18.5x
Ultramarine & Pigments Ltd	India	53	28	17%	11%	8%	1.8x	10.3x	17.2x
Chembond Chemicals Ltd	India	45	49	9%	4%	10%	0.9x	10.6x	22.0x
Kiri Industries Ltd	India	44	152	13%	20%	-39%	1.1x	8.8x	NA
Camphor & Allied Products	India	43	58	13%	5%	21%	1.1x	8.0x	13.6x
Poddar Pigments Ltd	India	30	52	7%	5%	13%	0.7x	9.3x	11.3x
Asahi Songwon Colors Ltd	India	30	39	15%	7%	2%	0.9x	6.0x	10.2x
Jayant Agro-Organics Ltd	India	30	259	4%	1%	-5%	0.3x	6.5x	17.6x

COMPANY	COUNTRY	MARKET CAPITALIZATION (USD MN)	REVENUE (USD MN)	EBITDA MARGIN	PAT MARGIN	3YR GROWTH	EV/ REVENUE	EV/ EBITDA	P/E
<b>Global - Specialty Chemicals</b>									
Givaudan	Switzerland	16,223	4,665	24%	14%	3%	3.6x	15.2x	25.6x
Akzo Nobel	Netherlands	15,961	17,022	13%	5%	-2%	1.1x	8.0x	17.7x
Evonik Industries AG	Germany	14,778	15,550	17%	7%	-5%	0.9x	5.5x	12.7x
Solvay SA	Belgium	9,884	12,714	16%	5%	10%	0.9x	5.5x	15.4x
Intl Flavors & Fragrances	USA	9,496	3,064	22%	14%	3%	3.3x	14.6x	22.1x
Symrise AG	Germany	8,312	2,949	22%	9%	9%	3.3x	15.3x	32.4x
Johnson Matthey Plc	Britain	7,129	17,018	7%	5%	-5%	0.5x	6.9x	8.6x
WR Grace & Co	USA	6,513	3,097	18%	5%	0%	2.6x	14.0x	46.7x
Ashland Inc	USA	6,289	5,388	15%	6%	-13%	1.6x	11.0x	20.4x
Clariant AG	Switzerland	5,643	6,139	14%	5%	2%	1.1x	8.0x	19.1x
Croda International Plc	Britain	5,636	1,692	27%	16%	2%	3.5x	13.0x	20.4x
Arkema	France	4,607	8,449	12%	4%	-1%	0.6x	4.5x	15.5x
Lanxess AG	Germany	3,761	9,191	9%	1%	-5%	0.6x	6.2x	39.9x
Frutarom	Israel	3,009	849	19%	11%	16%	3.7x	20.1x	32.9x
Huntsman Corp	USA	2,201	10,918	8%	0%	1%	0.6x	7.6x	43.2x
Stepan Co	USA	1,030	1,811	10%	4%	1%	0.7x	7.0x	14.9x

Source : Bloomberg, Avendus Analysis. Market data as on 13th Jan 2016

## ABOUT AVENDUS

The Avendus Group (Avendus) is a leading provider of financial services with an emphasis on customized solutions in the areas of financial advisory, capital markets, wealth management and alternative asset management. Avendus relies on its extensive experience, in-depth domain understanding and knowledge of the regulatory environment, to offer customized solutions that enable clients to meet their strategic aspirations. Avendus has been consistently ranked among the leading financial advisors by overall number of deals. In CY2015, the firm was amongst the top three financial advisors by overall number of deals in India (as per Mergermarket). It has a strong track record of cross-border transactions and has helped multiple clients benefit from opportunities across geographies. Avendus's wide range of clients is testimony to its ability to serve its corporate clients throughout their life cycle – from growth stage funding to complex, large sized transactions later in the cycle.

Avendus Wealth Management Pvt. Ltd. caters to investment advisory and portfolio management needs of Family offices, Large Corporates and Ultra High Networth Individuals spanning all asset classes. Avendus Capital Inc and Avendus Capital (UK) Pvt. Ltd. located in New York and London respectively are wholly owned subsidiaries offering M&A and Private Equity syndication services to clients in the respective regions. For more information, please visit [www.avendus.com](http://www.avendus.com)

### CONTACT

**Preet Singh**

Email : [preet.singh@avendus.com](mailto:preet.singh@avendus.com)

**Koushik Bhattacharyya**

Email : [koushik.b@avendus.com](mailto:koushik.b@avendus.com)

**Jagriti Gupta**

**Vinayak Goyal**

Email : [vinayak.goyal@avendus.com](mailto:vinayak.goyal@avendus.com)

**Disclaimer:**

This report is not an advice/offer/solicitation for an offer to buy and/or sell any securities in any jurisdiction. We are not soliciting any action based on this material. Recipients of this report should conduct their own investigation and analysis including that of the information provided. This report is intended to provide general information on a particular subject or subjects and is not an exhaustive treatment of such subject(s). This report has been prepared on the basis of information obtained from publicly available, accessible resources. Company has not independently verified all the information given in this report. Accordingly, no representation or warranty, express, implied or statutory, is made as to accuracy, completeness or fairness of the information and opinion contained in this report. The information given in this report is as of the date of this report and there can be no assurance that future results or events will be consistent with this information. Any decision or action taken by the recipient based on this report shall be solely and entirely at the risk of the recipient. The distribution of this report in some jurisdictions may be restricted and/or prohibited by law, and persons into whose possession this report comes should inform themselves about such restriction and/or prohibition, and observe any such restrictions and/or prohibition. Company will not treat recipient/user as customer by virtue of their receiving/using this report. Neither Company nor its affiliates, directors, employees, agents or representatives, shall be responsible or liable in any manner, directly or indirectly, for the contents or any errors or discrepancies herein or for any decisions or actions taken in reliance on the report.

