

Chemicals Monthly - February 2023

Demand visibility maintained, revival on the cards

Our chemical channel checks suggest that pickup of Indian demand of dyes & pigments is underway with most factories operating at 60% utilization up from 35% and it will take further steam because supply channel inventory is minimum & demand is expected to improve. Majority of commodity chemical prices are witnessing a rebound from the bottom on anticipation of strong demand in the coming months. Despite global headwinds, India remains on a strong footing in chemicals led by increasing interest of global companies to source from India to derisk their supply chain, increasing share of speciality chemicals in overall product mix and robust capex aligned by chemical companies to capture future growth. For Indian chemical companies, the quarter gone by i.e Q3FY23 witnessed pain in numbers owing to weaker demand from domestic, exports and inventory losses, the same is expected to soften or slightly improve in the coming quarter. The full recovery in demand should be visible from Q1FY24. Pharma segment is witnessing rebound in demand & correction of major API prices seems to be over. Agrochemicals demand is steady owing to higher crop prices, though high channel inventory could impact sales in the near term. Even shipping rates and container availability have improved over time. Currently, crude oil prices are trading in a narrow band which will provide stability in downstream chemical prices of basic chemicals which will aid margins in the coming quarters. Valuations of most chemical companies seems reasonable factoring in largely the pain gone by & seems ripe for bottom fishing opportunities for those investors who wish to play on the recovery cycle going ahead. The cautious approach in chemicals is the impact of the global slowdown amid lingering recession worries which remains a watchful factor.

Chemicals price movement and impact of listed chemical players

Benzene prices increased by ~3.3% MoM – Companies like Aarti Industries, Deepak Nitrite, Hindustan Organic Chemical etc use it as a raw material and RIL, IOCL, BPCL are the manufacturers.

Aniline prices increased by ~2% MoM basis – Companies like NOCIL use Aniline as the major raw material. Also, Aarti use aniline as raw material.

Toluene prices increased by ~2.3% MoM & TDI prices also increased by 7% MoM – GNFC is the largest manufacturer of TDI and it is produced from Toluene via nitration to Dinitrotoluene. Also, companies like Aarti uses Toluene and Conc. Nitric acid to make Nitro-Toluene.

Styrene Monomer (SM) declined by ~3% MoM – Supreme Petrochem uses SM which is the major raw material of the company to make PS, EPS & XPS.

Phthalic Anhydride (PAN) prices increased by ~10% MoM whereas Ortho-Xylene prices increased ~1.4% MoM. IG Petro & Thirumalai both manufactures PAN and consumes Ox as the raw material. The spreads are almost flattish on MoM basis.

Mono Ethylene Glycol (MEG) declined by ~1.7% MoM basis – Companies like India Glycols manufactures MEG.

Phenol prices has increased by ~0.6% MoM. **Acetone** prices increased by ~13.4% MoM. Deepak Nitrite is the largest manufacturer of Phenol & Acetone in India. **Iso Propyl Alcohol (IPA)** prices has increased by ~1.5% MoM. IPA is majorly used to manufacture sanitizers. Companies like Deepak Nitrite and Deepak Fertilizers manufactures IPA.

Acetonitrile prices has increased by ~3.6% MoM. Companies like Alkyl Amines are into manufacturing of acetonitrile.

Acetic acid prices have increased by ~5.7% MoM. Companies like Laxmi Organics & Jubilant Ingrevia uses acetic acid as raw material and manufactures Ethyl Acetate.

Caustic soda prices declined by ~6% MoM basis. Companies like DCM Shriram, Gujarat Alkalies, Meghmani Finechem, DCW, TGV SRAAC are the manufacturers.

Among our coverage companies, we have BUY rating on Aarti Industries, Phillips Carbon Black & IG Petrochemicals. Bodal Chemicals & IG Petrochemicals given ACCUMULATE rating & Apcotex Industries SELL rating. The ratings are subject to change post Q4FY23 results of above companies.



| Price performance (%)*

	1M	3M	12M	36M
NIFTY 50	-1.7	-7.4	4.3	55.6
NIFTY 500	-1.7	-8.6	2.7	58.9
Aarti Industries	2.0	-19.9	-40.3	11.2
SRF	2.4	-5.9	-4.0	188.8
Navin Fluorine	4.3	-5.8	8.1	202.2
Rossari Biotech	-11.3	-25.0	-36.3	0.0
NOCIL	6.5	-5.4	5.0	150.7
IGPL	-8.0	-20.1	-35.1	174.5
Oriental Carbon	-7.9	-13.5	-15.8	-21.6
Bodal Chemical	-10.5	-22.5	-39.6	-4.3
Valiant Organic	-6.0	-39.6	-54.8	0.0
Deepak Fert.	-2.4	-20.3	7.4	665.6
Deepak Nitrite	-1.1	-17.3	-5.9	261.7
Thirumalai Chem.	4.2	-11.1	-12.3	202.6
GNFC	3.6	-8.8	-6.5	239.9
India Glycol	-12.2	-26.8	-24.9	70.8
DCM Shriram	-3.4	-5.5	-18.8	153.7
Supreme Petroche	-2.5	-4.4	12.5	388.5

*as on 2nd Mar 2023; Source: AceEquity, SMIFS Research

Inside the report:

- ✓ Price trend of various chemicals
- ✓ Key raw material & finished product details of major Indian chemical companies
- ✓ List of companies with key chemistries or competencies
- ✓ Chemical companies Q3FY23 results call highlights
- ✓ Industry Overview: Polystyrene, Expandable Polystyrene & ABS

Aditya Khetan

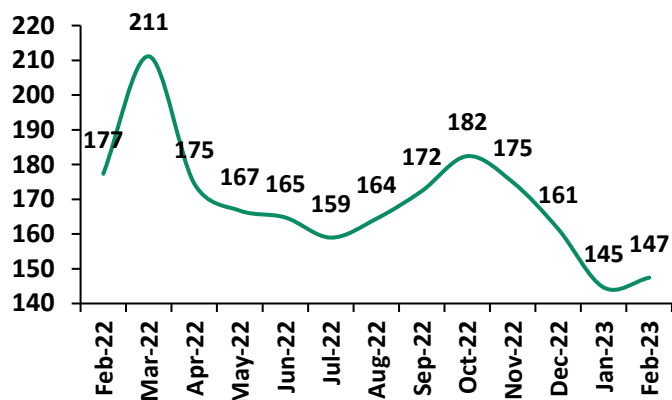
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Fig 1: Indian Aniline prices

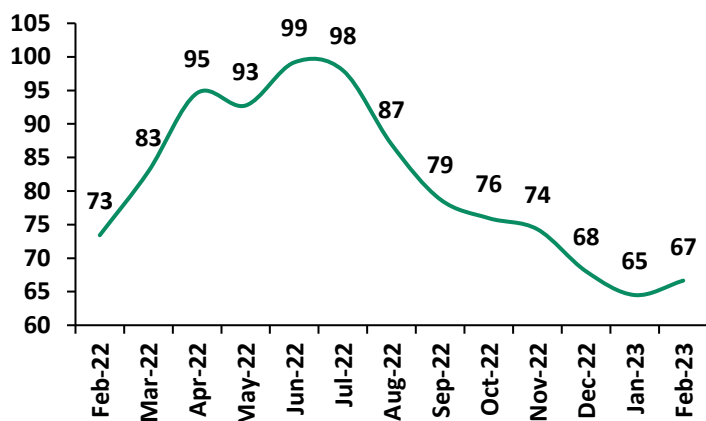
(Rs per kg)



Source: Industry, SMIFS Research

Fig 2: Indian Benzene prices

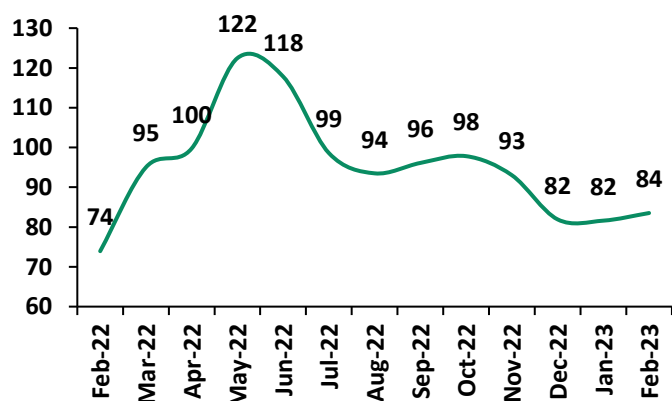
(Rs per kg)



Source: Industry, SMIFS Research

Fig 3: Indian Toluene prices

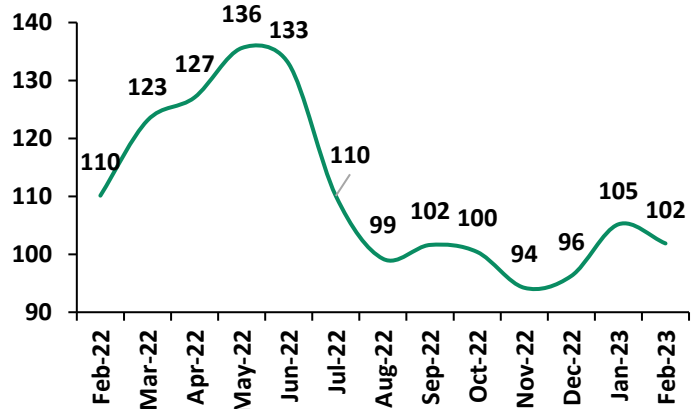
(Rs per kg)



Source: Industry, SMIFS Research

Fig 4: Indian Styrene Monomer prices

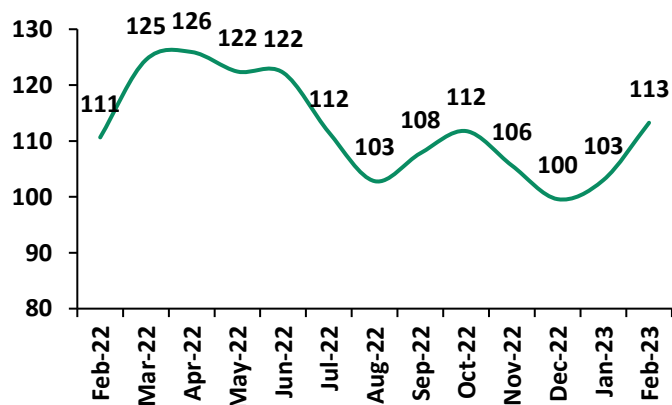
(Rs per kg)



Source: Industry, SMIFS Research

Fig 5: Indian Phthalic Anhydride prices

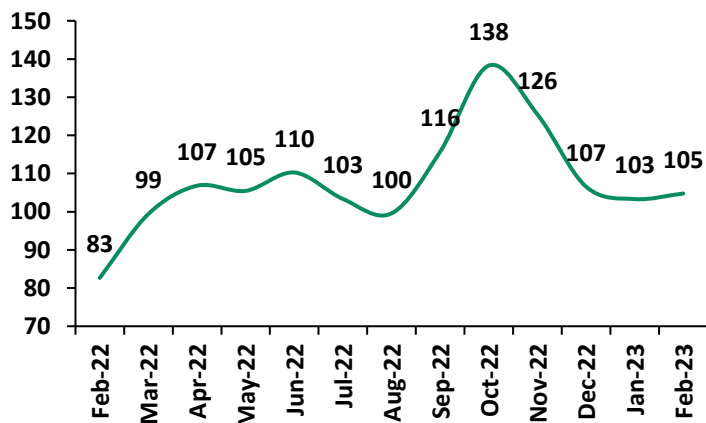
(Rs per kg)



Source: Industry, SMIFS Research

Fig 6: Indian Orthoxylene prices

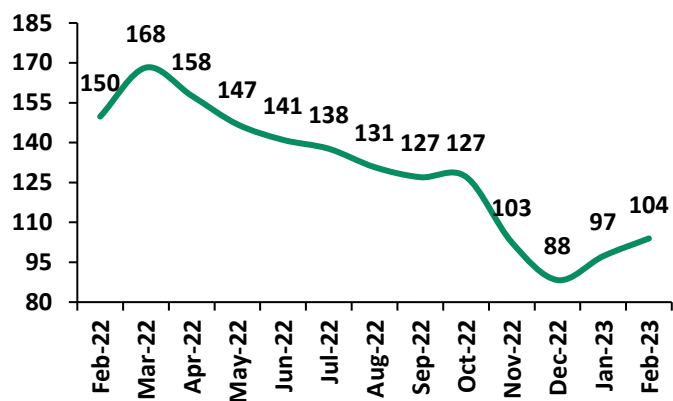
(Rs per kg)



Source: Industry, SMIFS Research

Fig 7: Indian Maleic Anhydride prices

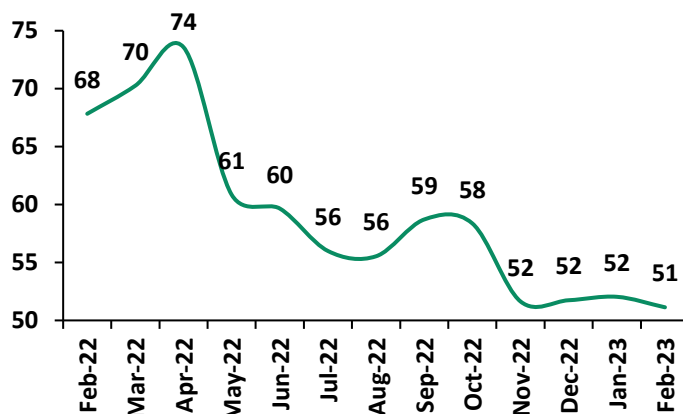
(Rs per kg)



Source: Industry, SMIFS Research

Fig 8: Indian Mono Ethylene Glycol prices

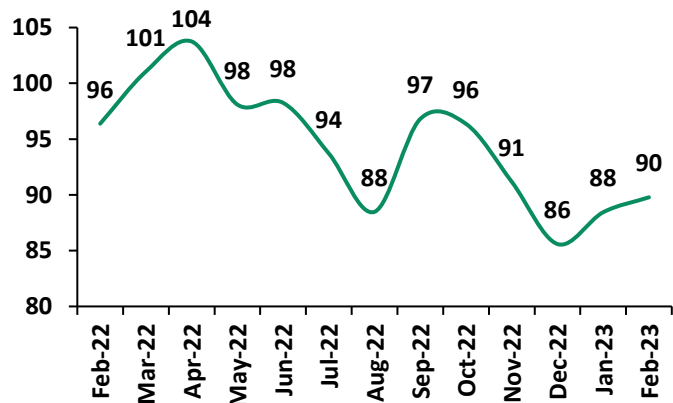
(Rs per kg)



Source: Industry, SMIFS Research

Fig 9: Indian Iso Propyl Alcohol (IPA) prices

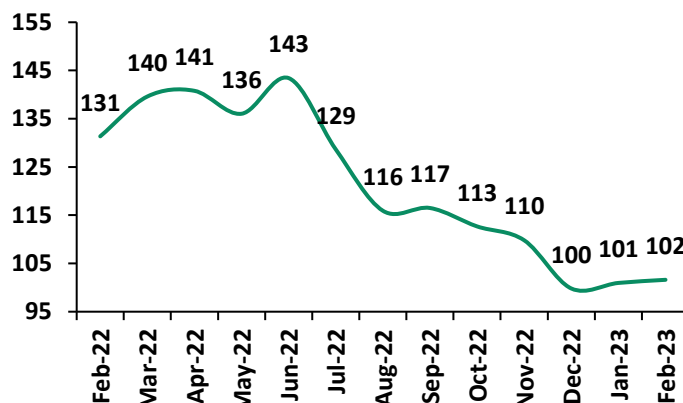
(Rs per kg)



Source: Industry, SMIFS Research

Fig 10: Indian Phenol prices

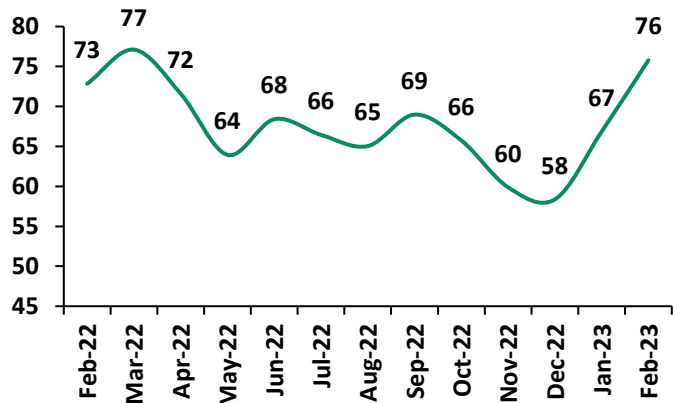
(Rs per kg)



Source: Industry, SMIFS Research

Fig 11: Indian Acetone prices

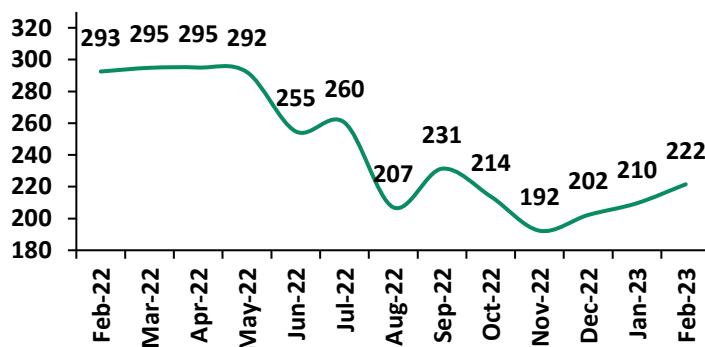
(Rs per kg)



Source: Industry, SMIFS Research

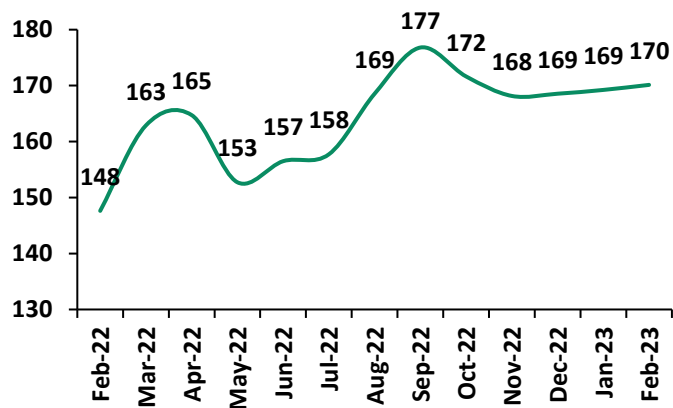
Fig 12: Indian Acetonitrile prices

(Rs per kg)



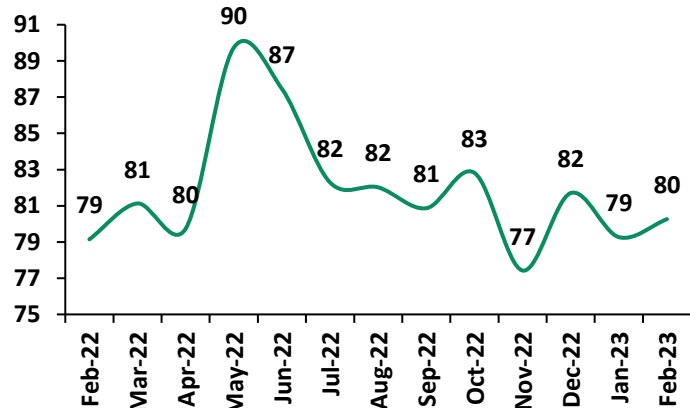
Source: Industry, SMIFS Research

Fig 13: Indian Linear Alkyl Benzene (LAB) prices (Rs per kg)



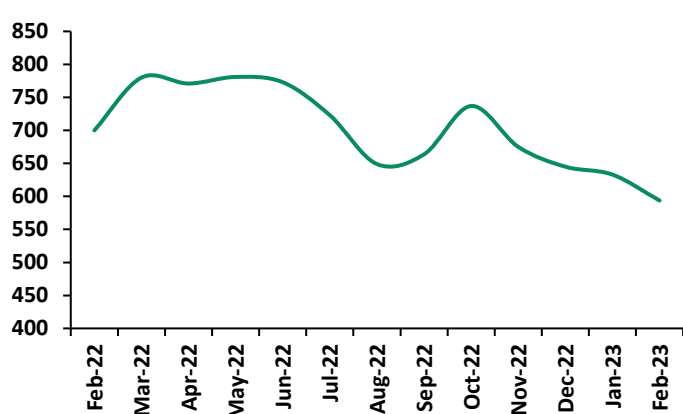
Source: Industry, SMIFS Research

Fig 14: Indian Mono Chloro Benzene (MCB) prices (Rs per kg)



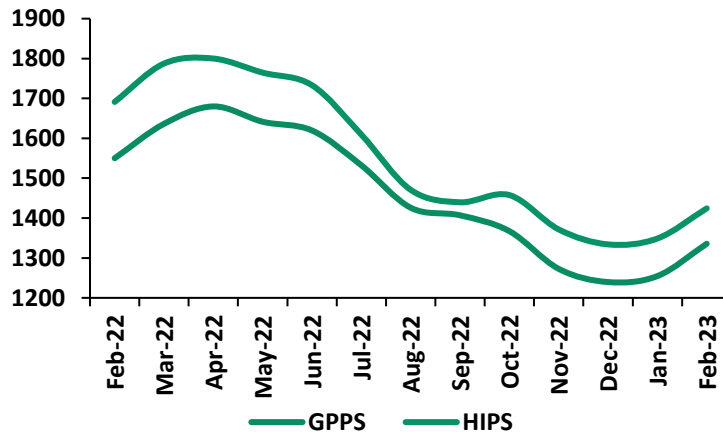
Source: Industry, SMIFS Research

Fig 15: SE Asia Caustic Soda in USD Per ton (USD per MT)



Source: Industry, SMIFS Research

Fig 16: SE Asia Polystyrene (PS) prices (USD per MT)



Source: Industry, SMIFS Research

Fig 17: Key raw material details of major Indian chemical companies

Sr no	Companies	Key Raw Material	Finished Product
1	Navin Fluorine	Fluorspar, Chloromethanes, Sulphur & Boric acid	HCHC22, HCFC 22PTEF grade, HFC 134a, HFC 404a and HFC 410a, Anhydrous Hydrofluoric Acid (AIF)
2	Clean Science	Methanol, Phenol & Methanol	MEHQ, Gluaicol, BHA, 4-MAP, DCC, Ascorbyl Palmitate, Anisole
3	Rossari Biotech	Acrylic acid, Silicone oil, acetic acid	Textile chemicals, Personal Care & Animla Health
4	NOCIL	Aniline, MIBK, carbon disulphide, hydrohgen peroxide	Accelerator & Anti-oxidants
5	Aarti industries	Benzene, Toluene, Phthalic Anhydride, Sulphur, Nitric acid, Aniline	Nitrochlorobenzene (NCB), Phenylene Diamine (PDA), Dichlorobenzene (DCB), Nitro-toluene(NT), Ethylation, Calcium Chloride
6	SRF	Fluorspar, Chlorine, Hydrofluoric acid (HF), chloroform etc	R-22, PTFE, Nylon tyre cord, BOPP-BOPET
7	IG Petrochemicals	Orthoxylene	Phthalic Anhydride (PAN). Maleic Anhydride (MAN), Advanced plasticizers
8	Phillips Carbon Black	Carbon Black Feedstock (CBFS)	Carbon Black, Speciality carbon black
9	Deepak Nitrite	Benzene, propylene, toluene, caustic soda	Sodium Nitrite, Sodium nitrate, Xylidines, Cumidines, DASDA, Phenol, Acetoone, Iso-Propyl Alcohol (IPA)
10	Valiant Organics	Phenol, PNCB, chlorine, sulphuric acid	Chlorophenol, Para Nitro Aniline (PNA), Para Amino Phneol (PAP),
11	Camlin Fine Sciences	Phenol & Methanol	Hydroquinone (HQ), Catechol (CT), MEHQ & HQ
12	Vinati Organics	Benzene, propylene, toluene, acrylonitrile, MTBE	ATBS, Iso Butyl Benzene (IBB)
13	Alkyl Amines	Methanol, ethanol, acetic acid & ammonia	Methylamines, Ehtylemaines, Triethylamines, Acetonitrile
14	Supreme Petrochem	Styrene Monomer	Polystyrene, Expanded Polystyrene (EPS), Extruded Polystyrene (XPS)
15	Apcotex Industries	Acrylonitrile, Butadiene, Styrene	Nitrile Butadiene Rubber (NBR), SBR latex, Nitrile rubber, High Styrene Rubber
16	Oriental Carbon & Chemicals	Sulphur & Sulphuric acid	Insoluble Sulphur

Source: Industry, SMIFS Research

Fig 18: List of companies with key chemistries or competencies

Sr no	Key Chemistry	List of companies
1	Fluorine Chemistry	Gujarat Fluorochemicals
		Navin Fluorine
		SRF
2	Benzene Chemistry	Aarti Industries
3	Diversified	Atul
		DCM Shriram
		Deepak Nitrite
4	Amines	Alkyl Amines
		Balaji Amines
5	Food additives	Camlin Fine
		Clean Science and Technology
		Fine Organic
8	PVC	Chemplast Sanmar
9	Surfactants	Galaxy Surfactants
		Aarti Surfactants
		Rossari Biotech
10	Acetyls & Intermediates	Jubilant Ingrevia
		Laxmi Organic Industries
11	Rubber Chemicals or Tyre chemicals	NOCIL
		Oriental Carbon & Chemicals
		PCBL (Phillips Carbon Black Ltd)
		Himadri Speciality Chemicals
12	Pigments	Meghmani Organics
		Sudarshan Chemicals
13	Textile Chemicals	Rossari Biotech
		Fineotex Chemical
14	Soda Ash	GHCL
		Tata Chemicals
15	Caustic Soda	Gujarat Alkalies
		DCM Shriram
		Meghmani Finechem

Source: Industry, SMIFS Research

PCBL (Phillips Carbon Black Ltd) (Rating : BUY, Target Price: 163, Upside: 36%)

Q3FY23 Results Call Highlights:

- **Demand outlook:** The company's major end user industries in the domestic market like tyres, plastics, printing inks, tones, paper etc are witnessing good demand. However, exports market was particularly weak led by inventory destocking which also impacted PCBL with its export volumes declining by 27% YoY & 19% QoQ. The same is expected to improve in the coming quarters. Domestic demand is still strong despite global headwinds and management foresee this to continue going ahead.
- **Newly commissioned chennai plant:** The company has almost completed commissioning of 1.47 lakh tonnes capacity of Chennai plant dividing into 3 units out of which 1st unit which contributes 40% of overall chennai plant is completed and remaining 2 units will start once customer approvals are finalized. Full commercialization of volumes will start to witness in Q1FY24. Management expects chennai plant to fully utilize in about 2 years timeframe.
- **Remaining expansion plans timeline:** The phase 1 speciality carbon black capacity of 20,000 tonnes is expected to commission by Q4FY23 and remaining phase 2 capacity of 20,000 tonnes is expected to be commissioned by Q4FY24. On power business, incremetal capacity addition of 7MW in Kochi is completed alongwith 24MW in Chennai will be added by the end of FY23E.
- Incremental capacity of 0.5 million tonnes is being added by PCBL & its competitors in domestic market which can probably increase the competitive intensity in the exports & domestic market.
- **Production volume:** The company reported volume decline of 13% YoY & 11% QoQ to 1,01,492 tonnes in Q3FY23. The domestic volumes stood at 72,394 tonnes & exports volumes stood at 29,098 tonnes. The speciality volumes declined by 9% YoY & 10% QoQ to 8998 tonnes.
- In speciality carbon black, exports constituted 70-75% of the sales volume.
- The company's export mix is 75-80% in SE Asia, 15-16% in Europe, 3-4% in North America & remaining in RoW.
- Export freight rates have corrected by nearly 40-50% from the highs and this has benefitted the company in Q3FY23 with other expenses witnessed declining by ~18% QoQ.
- **Dividend:** The company has declared interim dividend of Rs 5.5 per share (4.6% dividend yield)

NOCIL (Rating : ACCUMULATE, Target Price: 223, Upside: 5%)

Q3FY23 Results Call Highlights

- **Demand outlook:** The demand of rubber chemical in the exports market is weak considering the recent headwinds like inflationary pressure, geopolitical tensions & volatile oil prices. Also, domestic demand has started to weaken led by slowing replacement segment & higher inventory with tyre counterparts. Demand of rubber chemicals is expected to increase in the long term with subsequent pick up in auto, tyre sector and other allied sector which consumes rubber.
- **Sales volume:** The company reported volume decline of ~20.7% YoY & 7.5% QoQ in Q3FY23.
- **Realization commentary:** During the quarter realizations has declined by 9.3% QoQ. Decline in rubber chemical prices seems to be a pass on effect since raw material prices are also declining.
- Earlier, the management guided the expanded capacity would reach optimum utilization by September 2023, however citing the uncertain global environment management has dropped its guidance.
- **Tyre sector outlook:** The domestic OEM auto and tyre sector has witnessed robust performance and the long-term growth outlook is intact. Replacement demand which constitutes 60-70% of tyre sector has faced headwinds led by weak pickup in demand. Tyre players globally have lined up Rs550bn-600bn in creating additional capacities which bodes well for companies like NOCIL and other rubber chemical companies.
- **Strategy going ahead:** Management has clearly stated that they are focussing on improving market share on the back of increased volumes from the expanded capacity going ahead.
- Debottlenecking of capacities will be done in Dahej plant only for some product range which portray strong growth momentum. This capacity would be sufficient for another 1-1.5 years time frame to sustain volume growth momentum.

Apcotex Industries (Rating : SELL, Target Price: 357, Downside: 17.3%)

Q3FY23 Results Call Highlights

- **Demand outlook:** The company's major end user industries are automotive, footwear, tyres, paper & paper board, carpet, gloves, tyre cord, construction etc. Majority of the segments have started to witness demand weakness. Exports markets is also feeling pain with higher inventory being stocked up which has now started to normalize gradually. The demand uptick is still few quarters away.
- **Visible pain in numbers:** Uncertainty in supply chain & decline in raw material prices impacted the margins in the quarter and is expected to continue in the next couple of quarters. Untill demand bounce back sharply, recovery in sight is very dismal atleast for the next six months.
- **Capex plans:** The company's both new projects (i.e nitrile latex and SBR latex) is expected to commission by Q1FY23. The total capex incurred on both the projects would be around Rs1.8-1.9bn for 60,000 tonnes capacity. Expected turnover at peak utilization levels would be Rs4.5-5bn.
- **Sales mix for Q3FY23:** Synthetic latex 55% & Synthetic rubber 45%
- **Production volume:** The company reported volume growth of ~1% YoY in Q3FY23 and flattish on sequential basis.
- **Future bottlenecks in existing capacity to provide room for growth:** The recent expansion of nitrile latex plant with capacity of 50,000 tonnes can be expanded to 80,000 tonnes with minimal capex investment.
- **Nitrile Latex:** Despite demand slump, management seems confident about nitrile latex business as the market size is quite large and the company's current expansion is very small which should not pose a big challenge.
- **The company continues to focus on market share gains and designing quality products which would strengthen its position in the domestic market. In nearly 40-45% of its product segments there is no competition which is a clear competitive edge and very difficult to replicate by its competitors. Also, the company is focussing on increasing or diversifying its customer base which can give higher margins & better business prospects.**

IG Petrochemicals (Rating : BUY, Target Price: 579, Upside: 32%)

Q3FY23 Results Call Highlights

- **Demand outlook:** The demand has witnessed hiccups led by decline in pigments & UPR business at the global level. US imposed an ADD on UPR imports of 400% which led to higher inventory at global level & China imposed ADD on CPC & pigments which impacted PAN demand. However, US has subsequently removed its ADD on December 22 foreseeing global impact and since china is re-opening the demand is set to improve which might mitigate the impact of its ADD imposition. The demand in domestic market is ~4.5-5 lakh tonnes and is expected to grow around 6-8% in the coming years.
- **Advance plasticizers (DEP) business update:** The advanced plasticizer capacity of 8,400 TPA has reached around 80-85% utilization for the quarter. This business generated revenues of Rs150mn during the quarter.
- **PAN-Ox Spread:** The spreads of PAN-Ox took a beating in Q3FY23 owing to global demand challenges & inventory destocking. The spreads witnessed were \$100/ton in Q3FY23. Thereafter, spreads rebounded factoring in improvement in global demand and increased offtake of volumes in China after re-opening from covid restrictions. The company continues to make much higher-than-normal spreads because of cost efficiencies and extra operating efficiency benefit of conversion from Ox to PAN. Due to volatile nature, management hasn't provided any guidance on the future PAN-Ox spreads, however they assume sustainable spreads to be around \$150-250/ton.
- **New brownfield PAN capacity expansion:** The company is commissioning a new brownfield expansion of Phthalic Anhydride capacity by 53,000 TPA which would be named as PA5 unit. The total project cost is Rs3.5bn of which 50% of construction work is complete to the tune of Rs1.5bn and is expected to be completed by March 2024 assuming no delay. The rationale for capacity expansion is to be the leading producer of PAN and with this expansion the company could then plan to further expand into downstream chemistries which would use in-house PAN as a raw material.
- **Non-Phthalic business revenue to inch up:** The company from the non phthalic business contributed Rs350-400mn for Q3FY23 (7% of revenues in Q3FY23) & Rs1.3bn in 9MFY23 (7.5% of revenues in 9MFY23). In Q3FY23, value added contribution was lower because of lower MAN contribution because of lower volumes & realizations.
- **Focus on downstream business is a positive sign:** The company has approved Rs1-1.5bn capex in downstream chemistries, however, they are yet to apply for environmental clearances. Management would like to comment further once the company gets complete clearances from the authorities.

Aarti industries (Rating : BUY, Target Price: 681, Upside: 24%)

Q3FY23 Results Call Highlights:

- **Demand outlook:** The demand of speciality chemicals has witnessed headwinds in the quarter and company has been able to mitigate the volatility with better product mix. A set of end user industries like textiles, FMCG, dyes & pigments are witnessing slack of demand and expected pickup by Q1FY24. Value added segments contribution for the quarter has been 81% during the quarter which was roughly 65-70% over the last few quarters. Management expects current volatility in demand across end user industries will become more stable and grow sustainably in 2025.
- **Capex plans:** The overall capex from FY22-24 is assumed to be around Rs22-25bn. The major capex is in the downstream chemistries of benzene & NCB business, chlorotoluene value chain, Acid division in the speciality chemical segment.
- **Signed long term agreement of nitric acid with DPFCL:** The company has signed a long-term binding contract with Aarti Industries for offtake and supply of Nitric Acid, valued at over Rs80bn. The deal is for 20 year period with specific volume commitments.
- **Strong EBITDA guidance for FY25E:** Management guidance for EBITDA CAGR is around 25% for the next 2 years backed by commercialization of large deals and new projects which are getting commissioned over the coming years.
- **Volume numbers for Q3FY23:** NCB – 18199 tonnes, Nitro-toluene – 7528 TPM, Hydrogenation – 2995 TPM.
- **Commercialization of 3rd long term contract has been done. All 3 long term contracts are operational now.**
- **Foray in newer business:** The company is looking for opportunities in Chlorotoluene and other chemistries going ahead to diversify itself further into the value chain, expanding ethylation capacity at a capex of Rs2bn.

Bodal Chemicals (Rating : ACCUMULATE, Target Price: 69, Upside: 5.4%)

Q3FY23 Results Call Highlights:

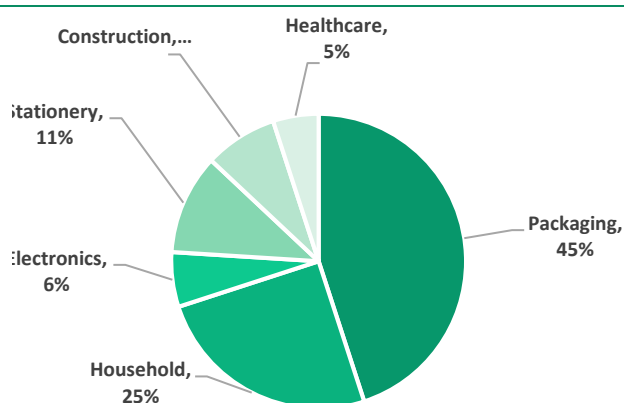
- **Demand outlook:** Demand during the quarter was very weak because of de-stocking of inventories & re-opening of China leading to higher imports thereby impacting local manufacturers. Major end user industries of the company like textiles, dyes, pigments etc demand has slowed down considerably, however we still feel there is more pain in demand pickup because of weak global cues. The recent issue of earthquake in Turkey has caused damage to the infrastructure and logistics network in the port of Iskenderun in Turkey wherein majority of Indian merchandise, textile dyes used to be exported. We feel this will slow the recovery in textile dyes if any which was visible in the coming quarters.
- **Dyestuff business update:** The Dyestuff business has shown weak performance declining by 22% QoQ. Dyestuff is majorly used in textiles, pigments, leather etc and since exports markets like US, Europe & China were weak, Bodal reported weak volumes declining by 20% QoQ. Dyestuff is also exported to countries like US, Europe, China etc.
- **Diversification in benzene derivatives:** The company is undergoing a greenfield expansion into benzene downstream products having capacity of 63,000 TPA and expansion of sulphuric acid & derivatives having capacity of 3,40,000 TPA at Saykha GIDC, Bharuch, Gujarat. Management believes these products will open new growth areas for the company. The company expects to complete the project by Q4FY24. Trial runs to start by Q2FY24. Total cost of the project including one-time infrastructure cost will be around Rs4bn. In the business, the company would be producing PNCB & ONCB. The major end users of these products are primarily in pharmaceuticals and agrochemicals. As a part of the project review, further downstream derivatives of PNCB & ONCB like MPDSA, PNA, 2,4 DNCB is currently kept on hold.
- **Chlor Alkali business update:** The chlor alkali business reported weak revenue performance owing to normalization of realization, with decline of 22.5% to Rs627mn in Q3FY23. The company has completed the upgradation of the plant replacing old electrolyzers, infrastructure & have increased the chlor alkali complex capacity by another 16,500 TPA and this will support volume growth going ahead. Production was halted for 3 to 4 weeks due to the implementation of technology upgradation. Going ahead, management is confident that the business will pick up very fast as caustic soda has multiple end user industries which will support growth going ahead.
- **Raw Material:** In the overall raw materials mix, the company procures 4-5% from China. Thus, company is immune to any disruption in supply chain from China and will not have impact on the company raw material sourcing. Major raw material required by the company is Naphthalene, Aniline, J-Acid, Tobias Acid, Cyanuric Acid etc.

Industry Overview

What is Polystyrene: A snapshot

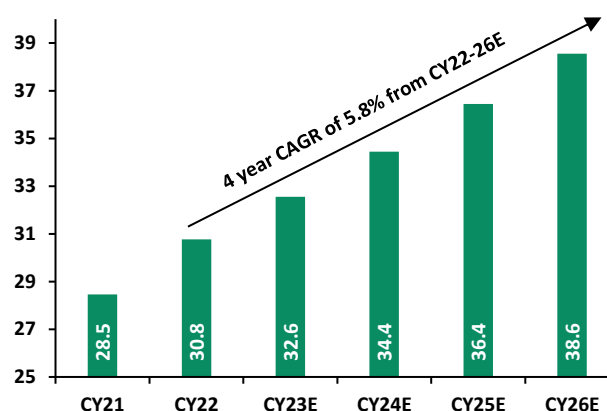
- Polystyrene (PS) is one of the most widely used kinds of plastic. It is a polymer made from the monomer styrene (derived from benzene and ethylene), a hydrocarbon compound. It is a thermoplastic polymer i.e melts if heated and becomes solid again when cooled, known for its versatility in high heat resistance, solid chemical strength, and notable rigidity that can be moulded into objects or made into a foam and used as thermal insulation. More than one-third of PS is used as a packaging material, so the heat resistance characteristic of PS is essential for hot-filled methods of food packaging.
- The global polystyrene market size is expected to grow 8.1% from \$28.5 billion in 2021 to \$30.8 billion in 2022. Over the longer term, the global polystyrene market size is expected to grow to \$38.6 billion in 2026 at a CAGR of 5.8%.

Fig 1: Global end user industries of PS



Source: Industry, SMIFS Research, Note: In global end users of PS, packaging forms 45% whereas in domestic packaging is mere 10-15%

Fig 2: Global PS market to grow ~6% from CY22-26E (In \$bn)



Source: www.expertmarketresearch.com, SMIFS Research

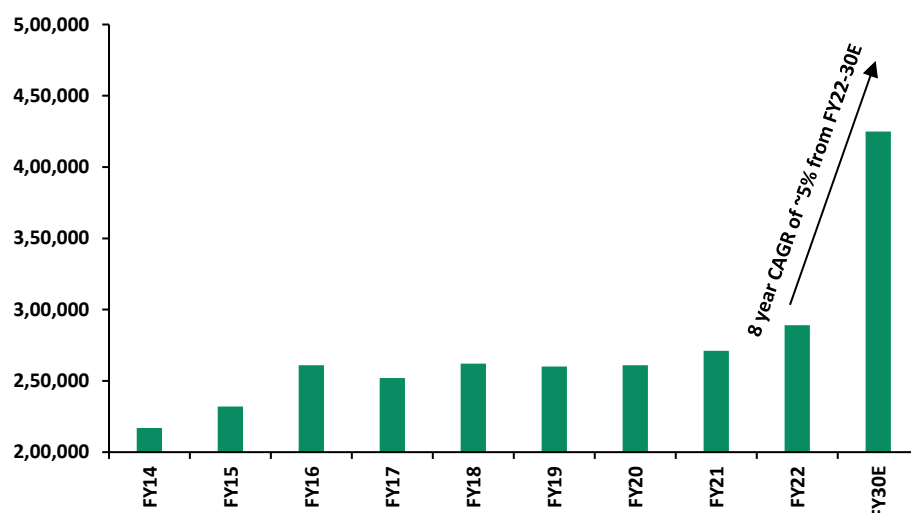
- The global PS market has undeniably suffered from an oversupply of capacity and weakening demand growth over the last decade. To survive, many PS producers responded by consolidating their capacity in many regions over the last few years through many mergers and acquisitions.
- Almost 40% of capacity has been removed over the years to improve operating rates and, thereby, given support to better margins. Also, developing markets for polystyrene such as the Middle East, Africa and China are focusing on increasing market share in which China has been steadily expanding its PS capacity and now accounts for more than 25% of the global total in 2021. (Source: spglobal)
- Northeast Asia is the largest player in the global polystyrene market. This region accounted for 45-50% of global polystyrene capacity and consumption. China dominates the polystyrene market in Northeast Asia.

Indian Polystyrene Market: A Snapshot

- India Polystyrene market demand stood at 2.9 lakh tonnes in FY21 and is expected to reach 4.25 lakh tonnes by FY30, thereby, growing at a healthy CAGR of ~5%. The growth in domestic manufacturing of advanced refrigerators backed by robust growth in demand for FDA compliant polymers for manufacturing disposable plastic cutleries and other kitchenware will drive the Polystyrene market in the forecast period.

Fig 3: Indian Polystyrene demand growth

(In Metric tonnes)



Source: Industry, SMIFS Research

- On basis of type, India's Polystyrene Market can be categorized into General-Purpose Polystyrene (GPPS) and High-Impact Polystyrene (HIPS). While both GPPS and HIPS are considered low-cost, GPPS is the more cost-effective of the two.
- Being FDA complaint, GPPS finds major applications in food packaging, disposable utensils, cutleries, and various other consumer durables. Because of its glass-like clarity and easy moulding, GPPS is predominantly used for manufacturing opaque and transparent food storage containers or jewel cases.
- High impact PS or HIPS is known to possess high impact resistance and is predominantly used in consumer electronics and toys. Several grades of HIPS are formulated to develop exceptional characteristics for specific end-use, such as in refrigerator inner liner products and food trays that require high environmental stress crack resistance. The government Make in India scheme and its focus towards expanding the country's Appliances and Consumer Electronics industry is likely to impart great momentum to the Polystyrene demand going ahead.

Fig 4: Indian Polystyrene demand supply dynamics

(In Metric Tonnes)

	CY17	CY18	CY19	CY20	CY21	CY22E
Capacity	471000	471000	471000	471000	381000	381000
Production	311350	301580	292860	291720	217450	235000
Utilization	66%	64%	62%	62%	57%	62%
Imports	24197	33852	30708	36117	41573	53311
Exports	60285	59951	44750	28549	32210	20984
Demand	262000	260000	261000	271000	289000	303450

Source: Industry, SMIFS Research

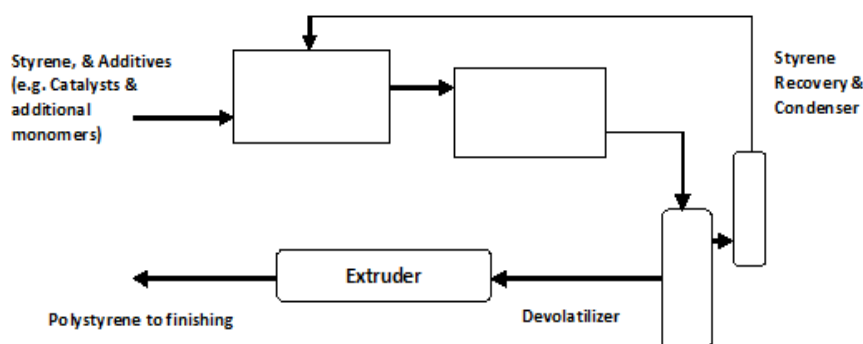
- As seen in table above, Indian polystyrene capacity declined from 4.71 lakh tonnes in CY20 to 3.81 lakh tonnes in CY21 owing to closure of LG Polymers polystyrene capacities.
- Closure of LG Polymer capacities was a game changer for Supreme Petrochem as its own capacity reached peak utilization levels in 2 years timeframe & also there was a need to import more PS as existing industry capacities were operating at peak utilization levels.

- As imports increased post closure of LG in CY20, exports also increased in CY21 but thereafter witnessing a sharp decline of ~35% in CY22 as existing companies focussed more on domestic market which means import substitution in play.

Production Process of Polystyrene

- Solution (bulk) polymerization is commonly referred to as mass polymerization in the industry. The vast majority of all polystyrene produced today is produced via this technology. The common solvents used in this process are the styrene monomer and ethyl benzene. The two types of mass polymerization are batch and continuous, of which continuous mass is by far the most popular.
- Batch mass polymerization consists of a polymerization section containing agitated vessels polymerizing up to 80% conversion in a batch method. The polymerized solution is then pumped to a batch finishing section for either devolatilisation or plate and frame final polymerization and grinding. The most widely used process for polymerization of polystyrene today is the continuous mass process. This solution is continuously prepared in a holding vessel and will then be injected into the reactor system.

Fig 5: General process flow diagram for Continuous Polystyrene Process



Source: CPMA, SMIFS Research

Stringent regulations a major hindrance to Polystyrene market

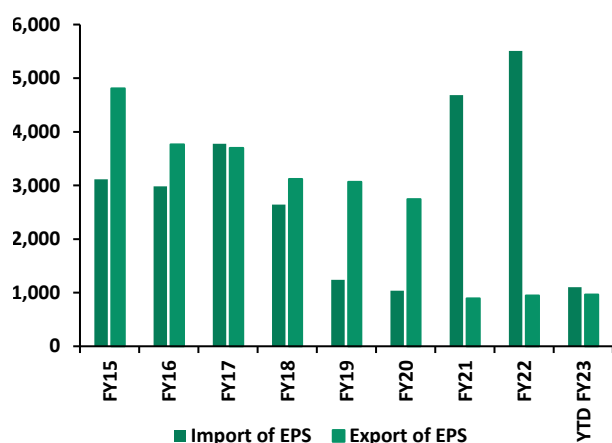
- Stringent regulations on plastic materials were a major restraint on the expansion of the polystyrene market.
- Government agencies and regulators are strictly assessing and managing the risks involved in the production and use of polystyrene & recently India has banned single use plastic which has an impact of 15,000-20,000 TPA on overall end user industries demand.
- Many cities in the USA have decided to ban polystyrene products from schools and other civic buildings. For instance, In June 2022, the executive department of the US federal government announced that it will ban the sale of single-use plastic on public lands, national parks by 2032.
- In addition, the Integrated Waste Management Authority passed an ordinance to ban polystyrene in the entire San Luis Obispo County. Polystyrene manufacturers are instructed to be compliant with complex regulations that govern labelling, handling, manufacturing and shipping and storage of the product leading to an increase in compliance costs for the manufacturers.

What is Expandable Polystyrene (EPS)?

- Expanded Polystyrene (EPS) is a rigid, closed cell, thermoplastic foam material produced from solid beads of polystyrene, which is polymerised from styrene monomer and contains an expansion gas (pentane) dissolved within the polystyrene bead.
- EPS is very lightweight with very low thermal conductivity, low moisture absorption and excellent cushioning properties.
- As EPS is made of 98% air, it is one of the lightest packaging materials in existence and therefore it adds very little weight to packaging, which means transport costs and fuel emissions are kept to a minimum.
- The global Expanded Polystyrene (EPS) market size stood at USD 18.2 bn in 2021 and is expected to register a revenue CAGR of 5.5% by 2027. The growth is primarily driven by growth in the construction industry. EPS is one of the building materials that can improve a building's design and construction integrity. EPS is majorly used in packaging & is increasingly used in numerous building constructions due to its long-term benefits and improvements in terms of energy efficiency, durability, and interior environmental quality.

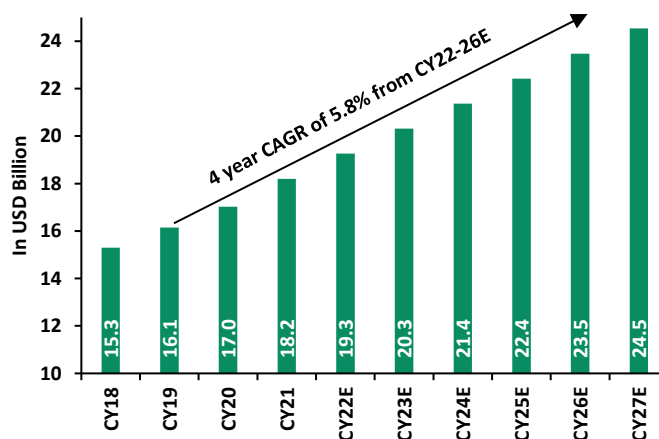
Fig 6: Import Export of EPS in India

(In Metric Tonnes)



Source: Industry, SMIFS Research

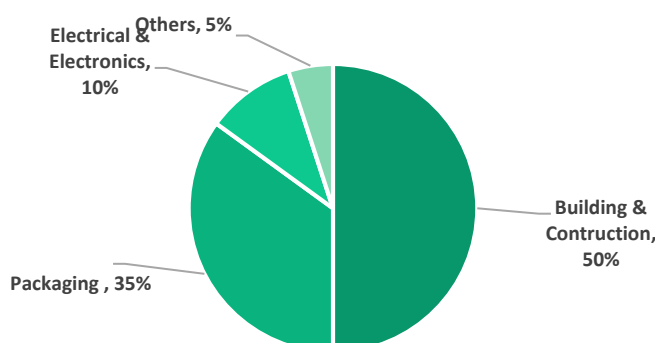
Fig 7: Global EPS market to grow 5.5% from CY22-27E



Source: Globalmarketinsights, SMIFS Research

- Already EPS capacity is installed with handful of players in India led by Supreme Petrochem & LG Polymers as the major producers before FY21, however, with the closure of LG Polymer only Supreme Petrochem is the leading & largest player of EPS in India.
- EPS is manufactured using 2 major raw materials i.e Styrene Monomer (SM) & pentane.
- Some of the key global producers of EPS are BASF, NOVA Chemicals, SABIC, DowDupont, Synthos Group etc.

Fig 8: Global end user industries of EPS



Source: Industry, SMIFS Research

Uses of Expandable Polystyrene (EPS)

Construction

- In recent years, there has been an explosive growth of interest in the application of expanded polystyrene (EPS) for construction industry.
- The foam in EPS is a lightweight cellular plastic consisting of small spherical-shaped particles containing about 98% air. This microcellular closed cell construction provides EPS with its excellent insulating and shock absorbing characteristics.
- A structural insulated panel (SIP) is a form of sandwich panel used in the construction industry which has outer layer made of EPS.

Packaging

- Industrial packaging frequently utilizes EPS packaging. Due to its shock absorption ability, EPS offers industrial items the perfect material for comprehensive protection and safety from risk during transit and handling. The hard, lightweight foam can be molded into any shape to protect and insulate delicate things during storage and transportation, such as fragile medical equipment, electronic components, electrical consumer goods, toys, and horticultural products.
- EPS is the perfect material for packing a variety of fish and food products. These products requires temperature control can be packaged in expanded polystyrene as their multiple cells act as independent air chambers insulating it thermally. According to Statista, the global seafood market reached a value of USD 253 billion in 2021, and it is projected to reach USD 336 billion by 2025. As a result, the demand for EPS products used for seafood packaging is anticipated to grow along the forecast period.
- In addition, EPS can incorporate additives to avoid excessive electrostatic load by favouring its use in the electronics industry.

Fig 9: Wide applications of Expandable Polystyrene (EPS)



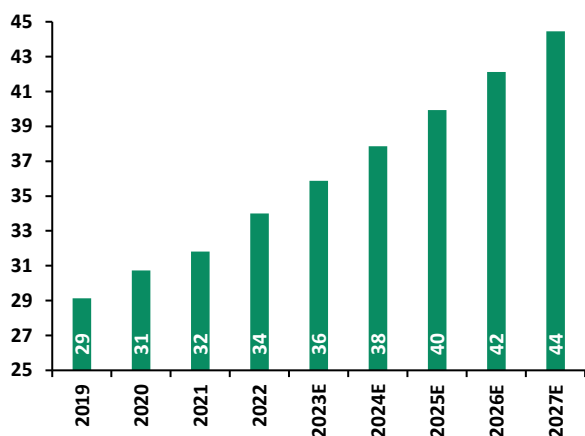
Source: Industry, SMIFS Research

What is Acrylonitrile Butadiene Styrene (ABS)?

- ABS is a terpolymer made by polymerizing styrene and acrylonitrile in the presence of polybutadiene rubber.
- ABS has excellent mechanical properties such as it is hard and tough in nature and thus, delivers good impact strength. It offers a high degree of surface quality and exhibits good chemical resistance properties.
- ABS is the preferred engineering plastic when it comes to dealing with automotive applications. Being a great substitute to metals, ABS has been extensively used in manufacturing automotive parts.

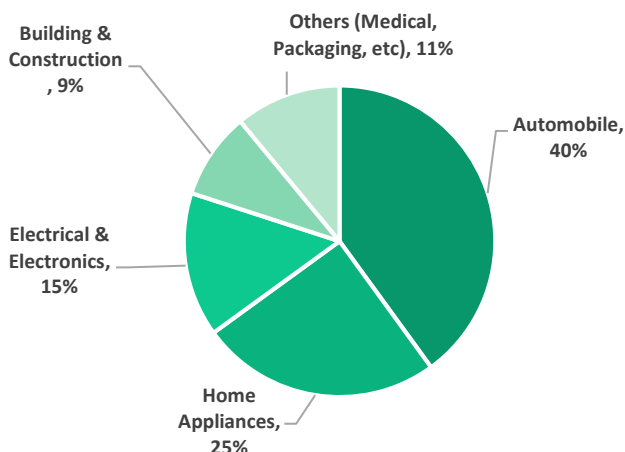
Fig 10: Global ABS market size

(In \$ bn)



Source: Marketintelligence, SMIFS Research

Fig 11: Breakup of end user industries of ABS (%)



Source: Company, SMIFS Research

Why is the ABS Market Growing Rapidly?

- The rising applications of ABS in 3D printing along with the demand for 3D printers will support the overall ABS industry.
- The global ABS market is also growing due to rising demand from the automobile industry. The demand for fuel-efficient and lightweight vehicles, which help to mitigate fuel consumption, is the primary factor for driving the market ahead.
- Moreover, increased construction activity, growing demand for electronic applications, and expanding industrialization will contribute towards the growth of the market. The increased popularity of fuel economy and upcoming government regulatory frameworks could also boost the market.
- The emerging applications of ABS in 3D printing coupled with the rising demand for desktop 3D printers will support the overall ABS industry. 3D FDM/FFF printers and ABS plastics are a very popular combination for numerous applications.
- The Asia Pacific region is expected to dominate the global ABS market. It could account for 75% of the volume share by 2027. It could also have a CAGR of 5.1% due to the growing product adoption in the automotive industry, appliances, and consumer goods. Moreover, the rising construction activities in countries like India and China will propel the ABS market sale to all-time highs. ABS is used for manufacturing corrugated plastic structures and plastic tubing in the construction industry.
- The North American regions will be second to lead the ABS global market owing to the rising ABS applications. Furthermore, the growing demand for consumer goods along with the rising population could drive the consumption of ABS in the production of consumer goods,

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