

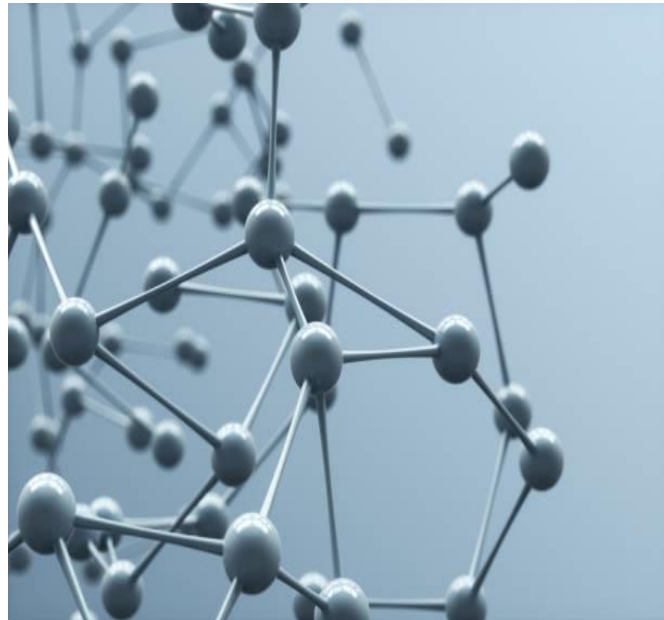


Chemicals



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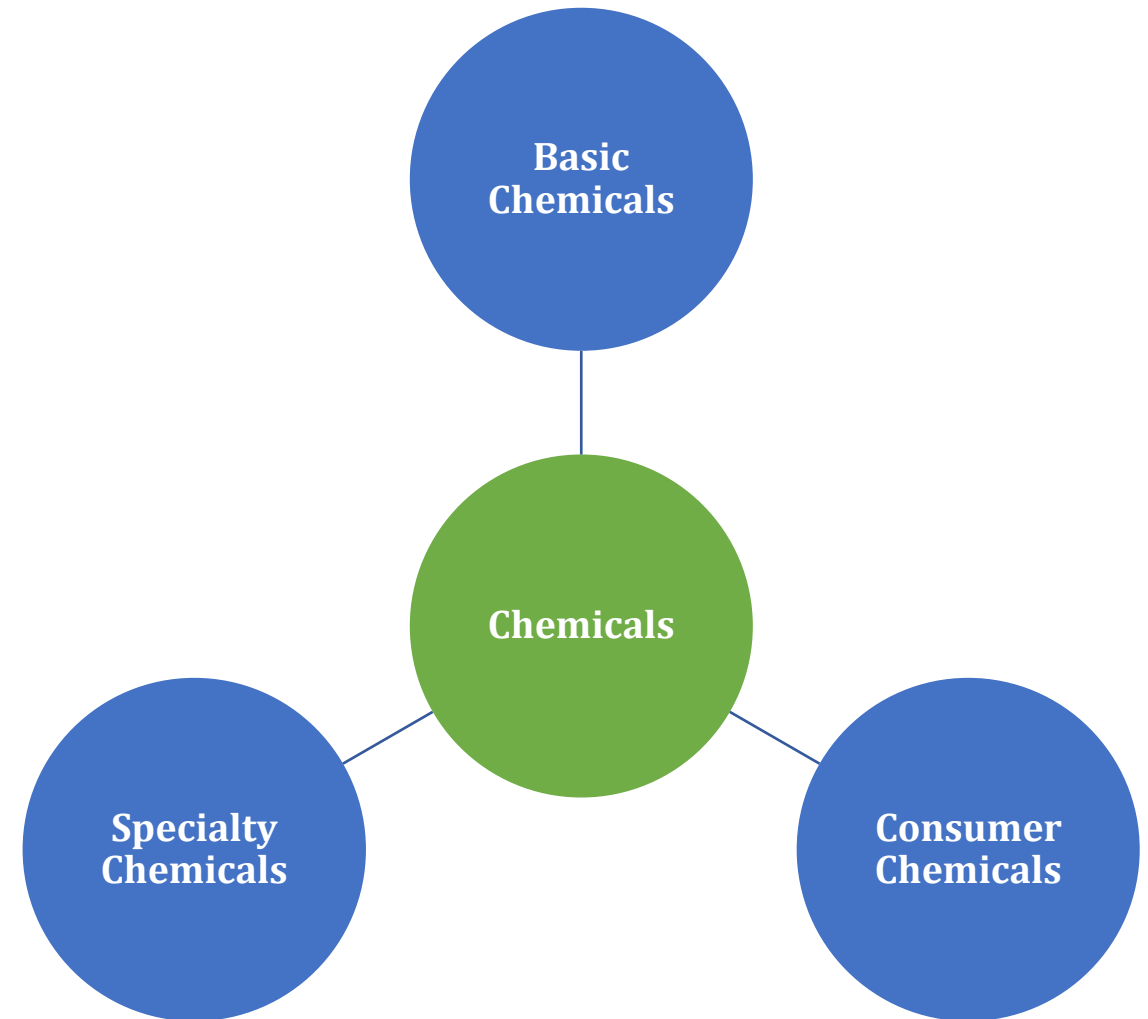
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Introduction

- The chemicals sector is an integral part of global economic landscape as it creates immense variety of products, which impinge virtually in every aspect of our lives.
- While various products included in the sector, such as detergents, soaps and perfumes, are purchased directly by the consumers, others are used as vital components in industrial manufacturing of various products and goods.
- The Chemicals' Sector product portfolio can be divided into three broad categories, which are as follows:
 - **Basic Chemicals** include petrochemicals, polymers and basic inorganics.
 - **Specialty Chemical** comprise a wide variety of chemicals for crop protection, paints and inks, colorants (dyes and pigments, pesticides, etc.).
 - **Consumer Chemicals** are sold directly to the public. These include detergents, soaps, other toiletries etc.



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Global | Overview

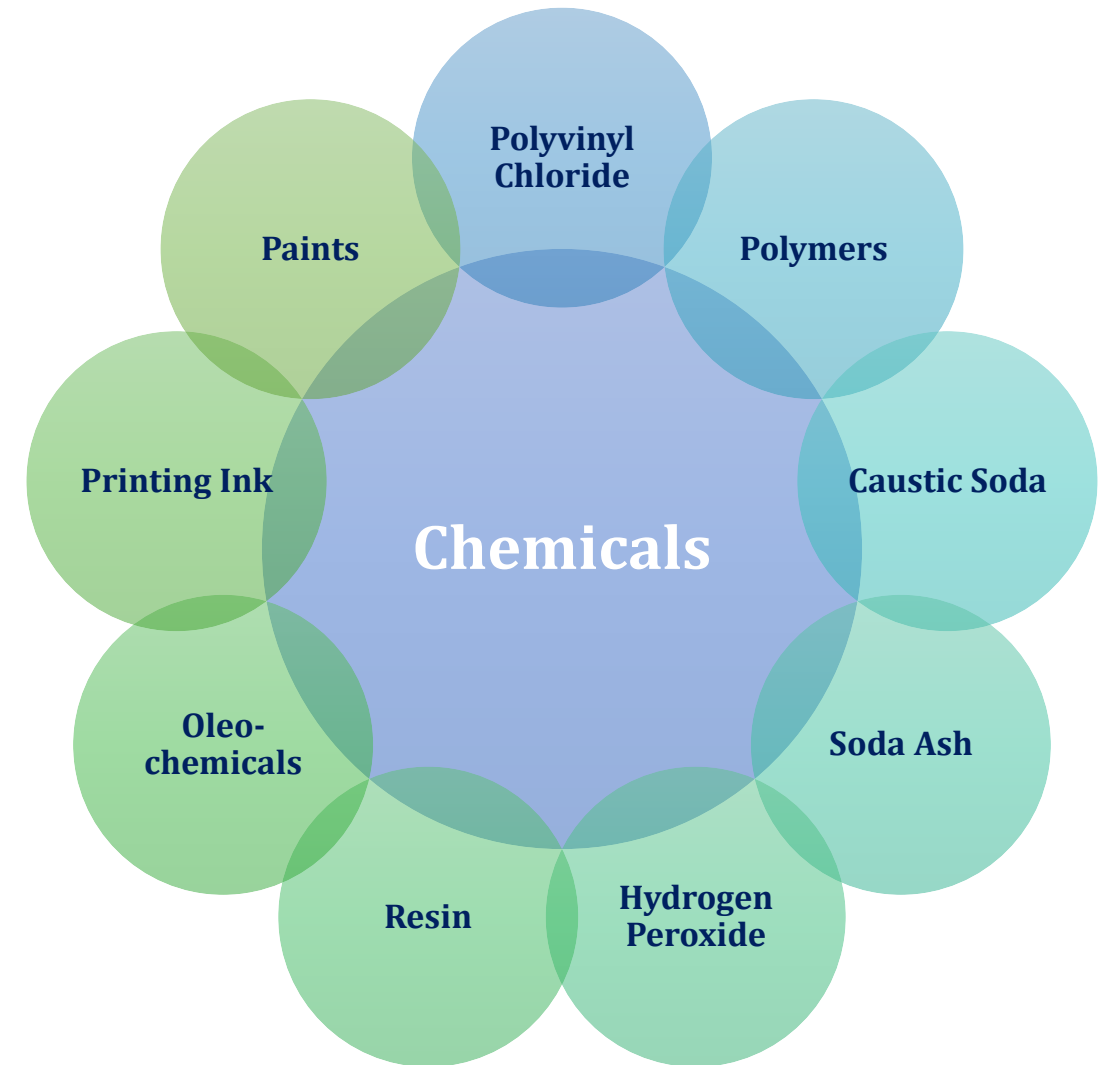
- In CY22, the global chemicals sector faced significant hurdles, owed to Russia-Ukraine war, which drove up energy prices during 1HCY22 and disrupted supplies of natural gas to Europe.
- Companies such as BASF (the world's largest chemical company in terms of revenue) had to shut down its plant in Ludwigshafen, Germany, while others (e.g. Formosa and LyondellBasell) dropped from previous rankings of 6th and 7th.
- Following the re-opening of economies post-pandemic, central banks around the globe raised interest rates to combat inflation, and slowing economic growth, ultimately impacting the chemicals sector. Moreover, China, traditionally being the powerhouse behind the sector's output, faced a challenging backlog owed to stringent COVID-19 lockdowns that curtailed economic activity.
- Despite these disruptions, total chemical sales of the world's 50 largest chemical companies were recorded at USD~1.2trn in CY23, up ~17.0% YoY. Revenue from chemical sales by BASF rose ~11.0% YoY and clocked in at USD~92.0bln, with operating profits experiencing only a slight ~2.0% YoY decline on the back of European energy crisis.
- Sinopec, the second-largest chemicals company earned USD~66.9bln revenue from chemical sales, followed by Dow Inc, Sabic and Exxon with revenues amounting to USD~56.9bln, USD~48.8bln and USD~47.5bln, respectively.

Sr.	Company	Country	Chemical Type	Revenue (USD bln) CY23
1	BASF	Germany	Specialty & Consumers	92.0
2	Sinopec	China	Basic	66.9
3	Dow Inc	USA	Basic & Specialty	56.9
4	Sabic	KSA	Speciality	48.8
5	ExxonMobil	USA	Basic	47.5
6	Ineos	UK	Basic & Specialty	41.2
7	Formosa Plastics	Taiwan	Basic	40.2
8	LG Chem	South Korea	Basic & Specialty	40.2
9	LyondellBasell Industries	USA	Basic & Specialty	39.5
10	Petro China	China	Basic	38.3
Total Sales Revenue				511.5

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Local | Introduction

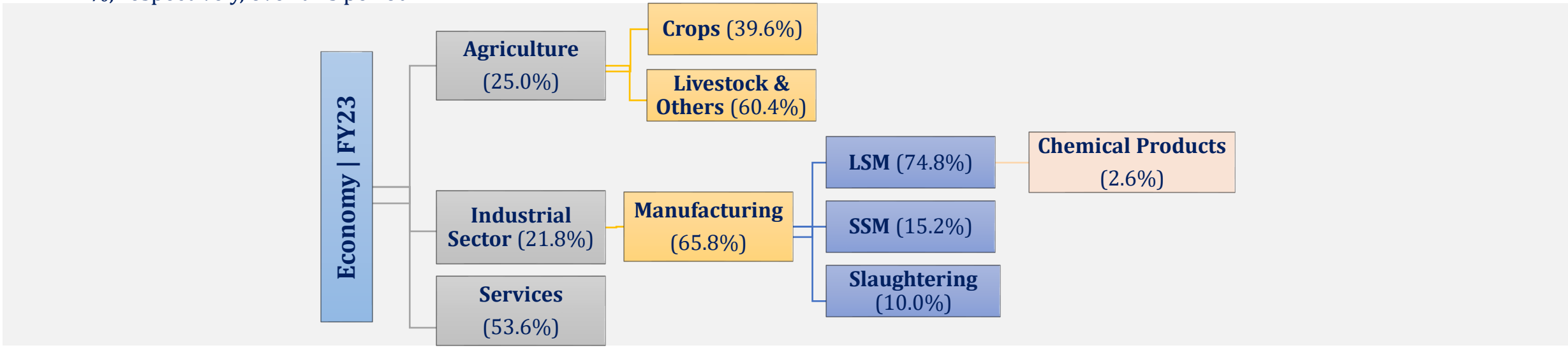
- Pakistan has a huge potential for growth in the Chemicals Sector as these form an integral component of numerous industrial processes, therefore, sector's growth is strongly correlated to industrial progress.
- Additionally, the use of chemicals is an essential part of our daily lives as well. Despite the substantial growth potential, the growth of Chemicals' Sector has historically remained sluggish and only a few conglomerates have invested their focus on the expansion of this sector.
- In terms of segments, the Chemicals Sector has made considerable progress over the years in basic inorganic chemicals like Polyvinyl Chloride, Caustic Soda, Soda Ash and Hydrogen Peroxide. This has not only provided support to local industries with the readily available basic chemicals, but has also contributed towards import substitution, preserving foreign exchange reserves.
- The Sector is diversified into different branches of industries based on their types and usage. Although a variety of chemicals are used in a multiple industries, for the purpose of ease and clarity, this Sector Study will divide the Chemicals sector into nine (09) main categories (refer diagram) and will be focused on the chemicals covered in these categories.



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Local | Economic Overview

- In FY23, Pakistan’s GDP (nominal) stood at PKR~83.9trn (FY22: PKR~66.7trn) and contracted, in real terms, by ~0.17% YoY (FY22: ~6.3% growth). However, the country’s nominal GDP during FY24 is estimated to clock in at PKR~106.0trn, with ~2.4% YoY growth in real terms, depicting improved economic activity. Moreover, the SBP estimates GDP growth at ~2-3% for FY24, while IMF’s forecast for the same period stands at ~2.0%. In 9MFY24, Pakistan’s GDP (nominal) stood at PKR~73.8trn, an uptick of ~2.04% YoY (real terms).
- Large Scale Manufacturing (LSM) in Pakistan is essential for the economic growth considering its linkages with other sectors, as it represented ~75.6% value of manufacturing activities in FY23. The country’s LSM activity as depicted by the QIM showed a contraction (~10.3%) during FY23 unlike FY22 that showed a robust, performance and increased by ~11.5%. However, 10MFY24 QIM increased marginally by ~0.5% YoY reflecting signs of recovery in industrial sector.
- Chemical products are classified under the Industrial Activities segment of the economy. In FY24, sector’s weight in the Quantum Index of Manufacturing (QIM) was recorded at ~2.6%. Moreover, sector’s performance in QIM experienced ~3.1% YoY negative growth during 10MFY24 mainly attributable to soaps and detergents, chlorine and Sulphuric acid segments, that experienced a YoY negative growth of ~22.4%, ~13.2% and ~7.4%, respectively, over this period.



Chemicals

Local | Snapshot

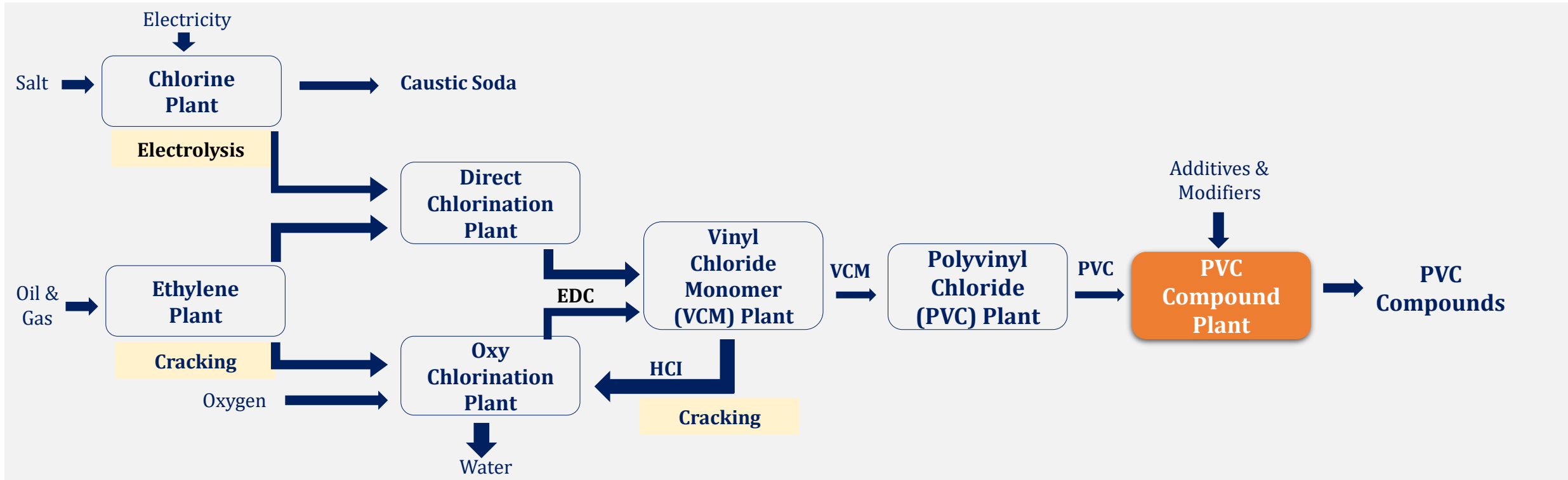
- The sector’s total production was recorded at ~3.1mlnMT during FY23, up ~9.4% YoY. During 9MFY24, this clocked in at 2,5mlnMT, registering a YoY increase of ~6.7%.
- The sector is dependent on imports for raw material procurement. Imports of chemical products during FY23 was recorded at PKR~1,106.3bln, up ~6.1% YoY. During the year, in USD terms, these comprised ~8.2% of country’s total imports (SPLY: ~7.3%). In 9MFY24, imports were up ~10.7% YoY, accounting for ~7.8% of the country’s total import bill during the period (SPLY: ~7.9%).
- Meanwhile, exports of the overall Chemicals Sector were recorded at PKR~194.4bln in FY23, a YoY growth of ~24.4%. In USD terms, these comprised ~2.9% of the country’s total exports (SPLY: ~2.7%). In 9MFY24, exports registered ~24.3% YoY increase, accounting for ~2.5% of the country’s total export receipts during the period (SPLY: ~3.0%).
- Considering its high linkages with other sectors of the economy, Chemicals is considered as one of the significant sectors of Pakistan. The sector is considered as a backbone in the development of forward-linked industries like textile, leather, footwear, furniture, automobile, food and beverages. Chemical products are also used in backward-linked industries such as surfactants, which are used by oil refineries and oil extracting companies.

Particulars	FY22	FY23	9MFY24
Production ('000' MT)	2,840	3,109	2,507
Production Growth (YoY)	9.6%	9.4%	6.7%
Contribution to GDP	0.3%	0.3%	0.2%
Imports (PKR bln)	1,042.1	1,106.3	892.7
Exports (PKR bln)	156.2	194.0	161.3
Association	Pakistan Chemicals Manufacturer Association		
Members	65	70	70
Structure	Oligopolistic		
No. of Listed Companies	23	25	

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Polyvinyl Chloride (PVC) | Production Process

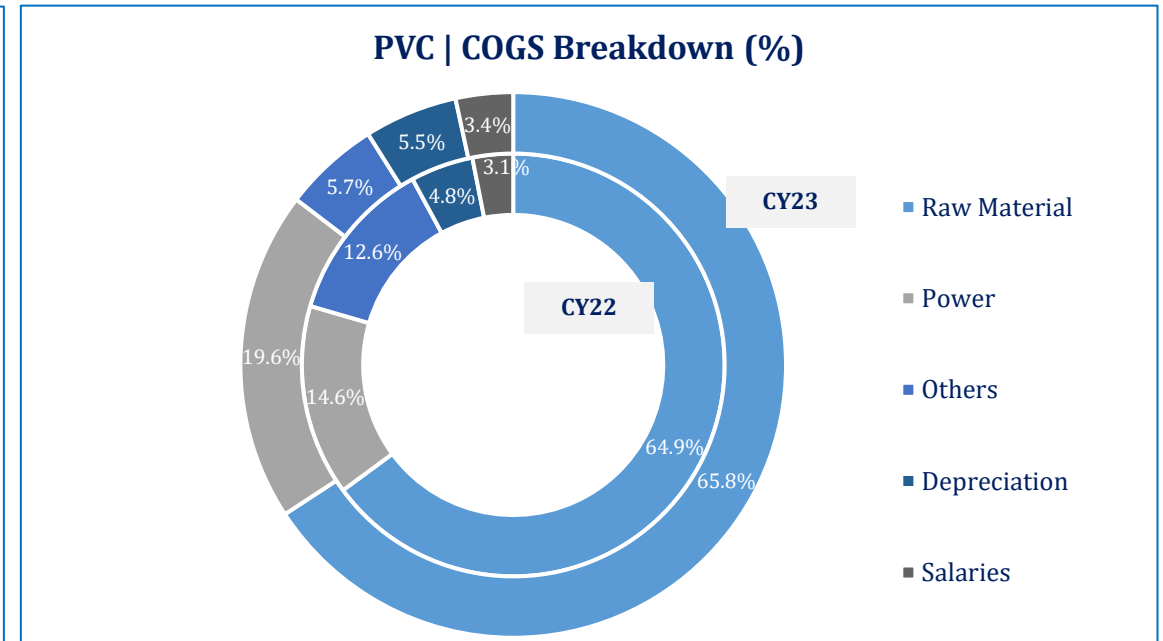
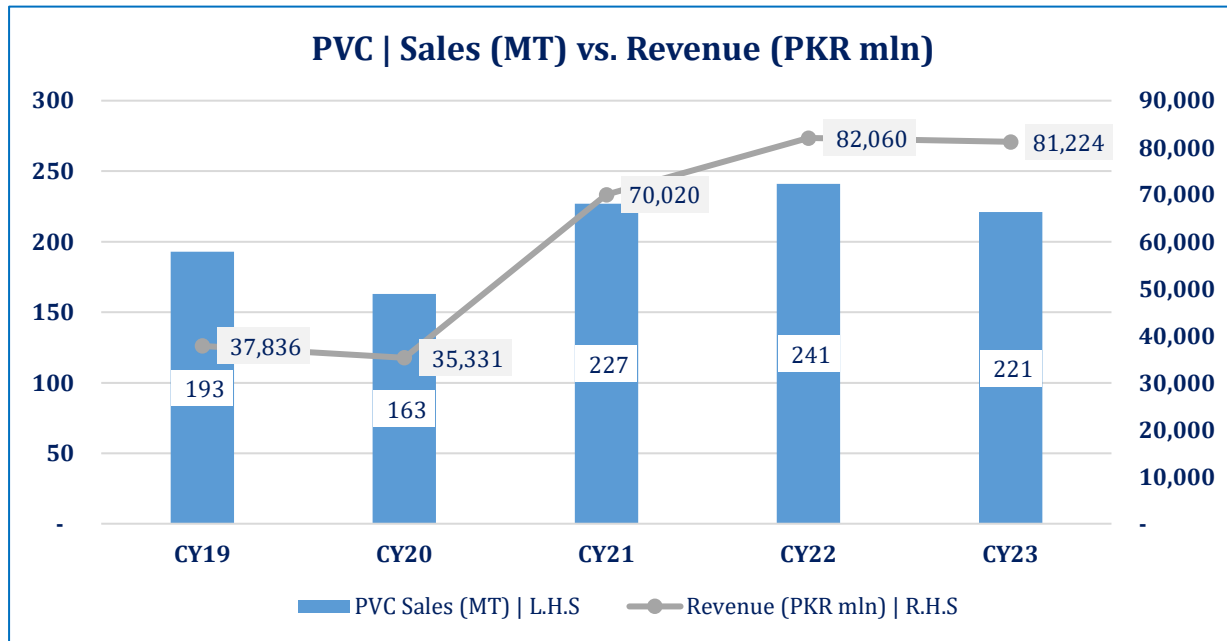
- Chlorine is extracted from sea salt via electrolysis while ethylene is derived from hydrocarbon raw materials. These are then reacted to produce ethylene dichloride. The ethylene dichloride is then decomposed by heating in a high temperature furnace or reactor.
- PVC is made using a process called Addition Polymerization. The reaction opens the double bonds in the vinyl chloride monomer (VCM) allowing neighboring molecules to join together creating long chain molecules.



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Polyvinyl Chloride (PVC) | Demand and Supply

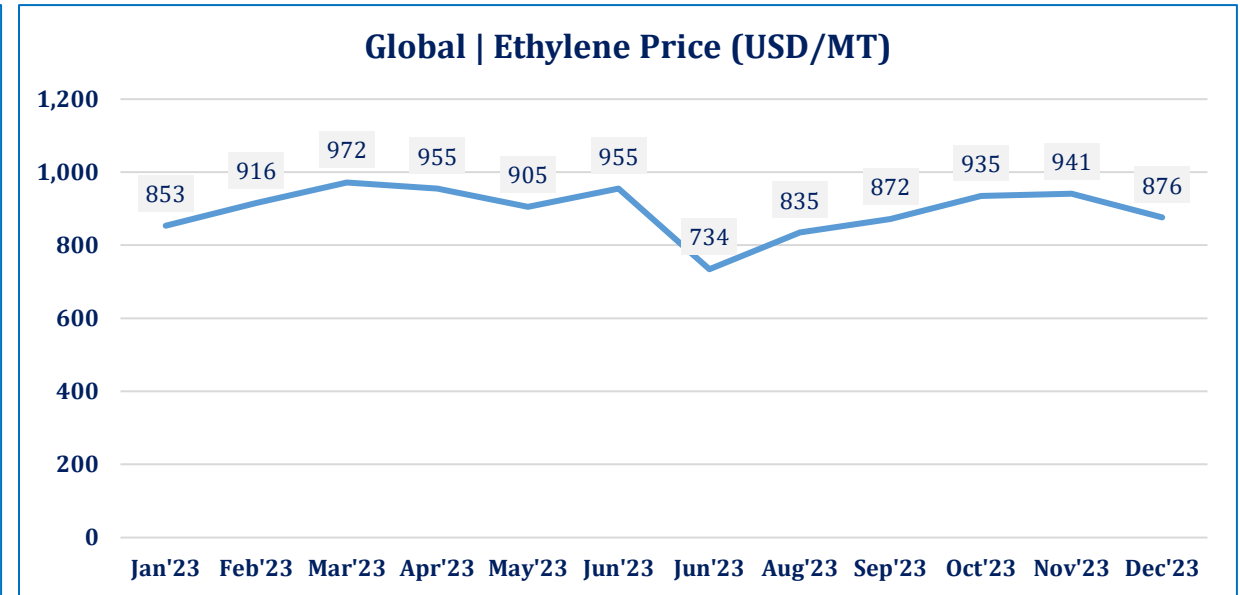
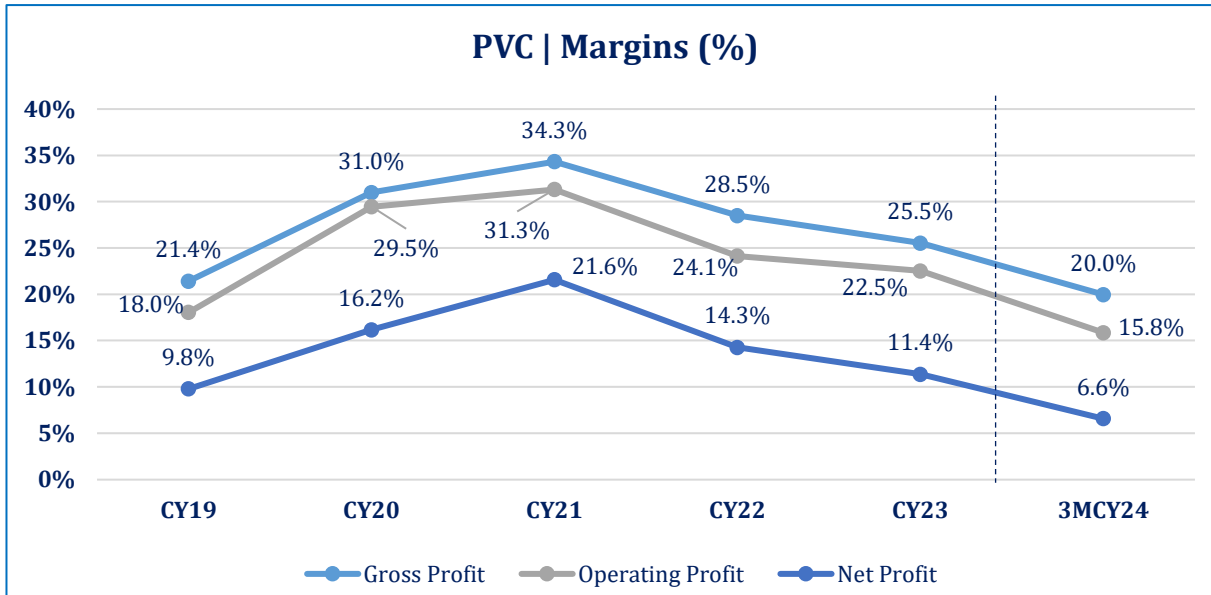
- Engro Polymer & Chemicals Limited (EPCL), a subsidiary of Engro Corporation, is the only producer of PVC in Pakistan. The plant had an annual production capacity of ~295,000MT in CY23, same as last year. During the year, capacity utilization recorded at ~77.9% (SPLY: ~81.0%).
- The supply of two critical raw materials, Ethylene and EDC (Ethyl Dimethylaminopropyl Carbodiimide) is met through imports, therefore, the segment is exposed to exchange rate and international price fluctuations. Raw material accounted for ~65.8% of the total cost of production in CY23 (CY22: ~64.9%). PVC manufacturing is an energy-intensive process therefore power accounted for ~19.6% of the segment's total cost in CY23 (CY22: ~14.6%).
- During CY23, soaring inflation and rising interest rates (~29.7% and ~665bps YoY increase, respectively) posed challenges to the segment and reflected in ~8.2% YoY lower PVC sales (SPLY: ~6.1% YoY growth), which were recorded at ~221,000MT. Accordingly, the segment's revenue was recorded at PKR~81,224mln, registering ~1.0% YoY decline.



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PVC | Margins

- During CY23, gross margins for the segment declined to ~25.5%, in line with ~1.0% YoY lower PVC sales revenue and ~3.2% YoY higher cost of goods sold. Despite global ethylene prices cooling down in 2HCY23, average exchange rate remained ~28.5% higher YoY. Meanwhile, operating margin also dropped to ~22.5% on the back of overall high inflationary levels in the country (National CPI averaged ~29.7% compared with ~24.5% during SPLY).
- The segment's net profit was down ~21.1% YoY (CY22: ~-22.4%), owing to a prohibitive interest rate environment in the country which resulted in ~36.1% YoY higher finance costs for the segment. This led to net profit margin declining to ~11.4% during the year. In 3MCY24, profit margins continued to decline owing to ~7.8% YoY lower sales revenue and ~1.0% YoY higher average global ethylene prices (raw material constituted ~65.8% of total costs in CY23).
- Global Ethylene prices fluctuated in CY23, averaging at USD~895.8/MT, down ~8.3% YoY, reflecting volatility in global oil and gas markets. Supply constraints and spiking crude pushed up ethylene prices in March'23. Owing to lower demand, prices dipped in Jun'23, however, rose gradually during 2HCY23 due to changes in global oil markets.

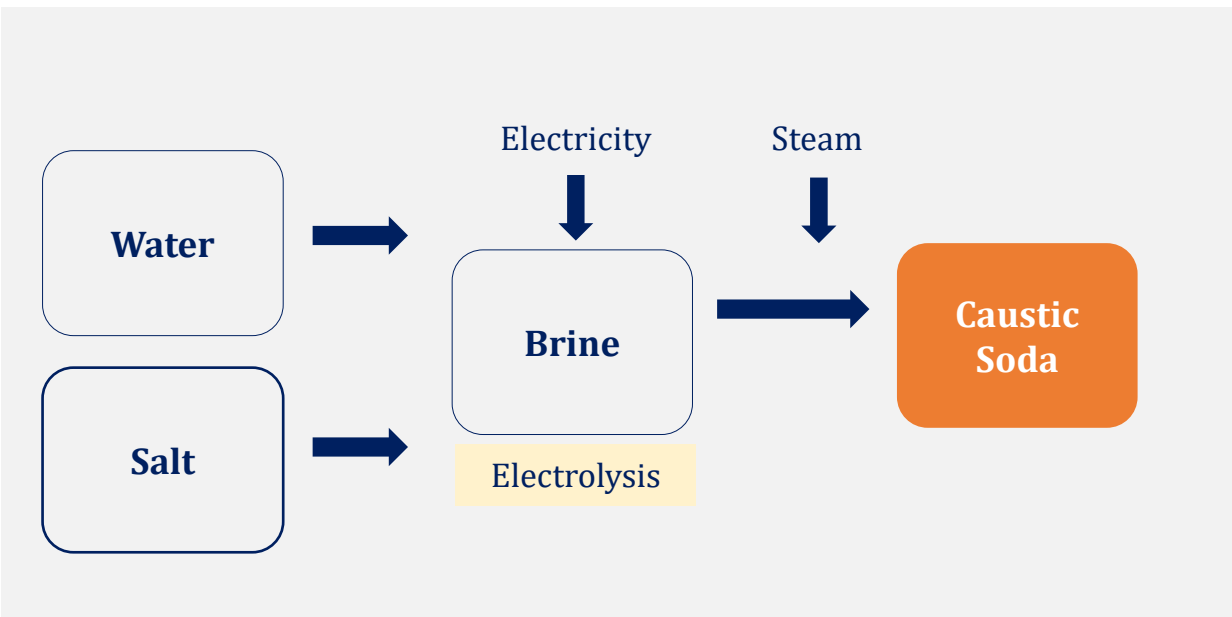


Note: Data is based on 1 PACRA-rated/listed sector player.

Chemicals

Caustic Soda | Production Process

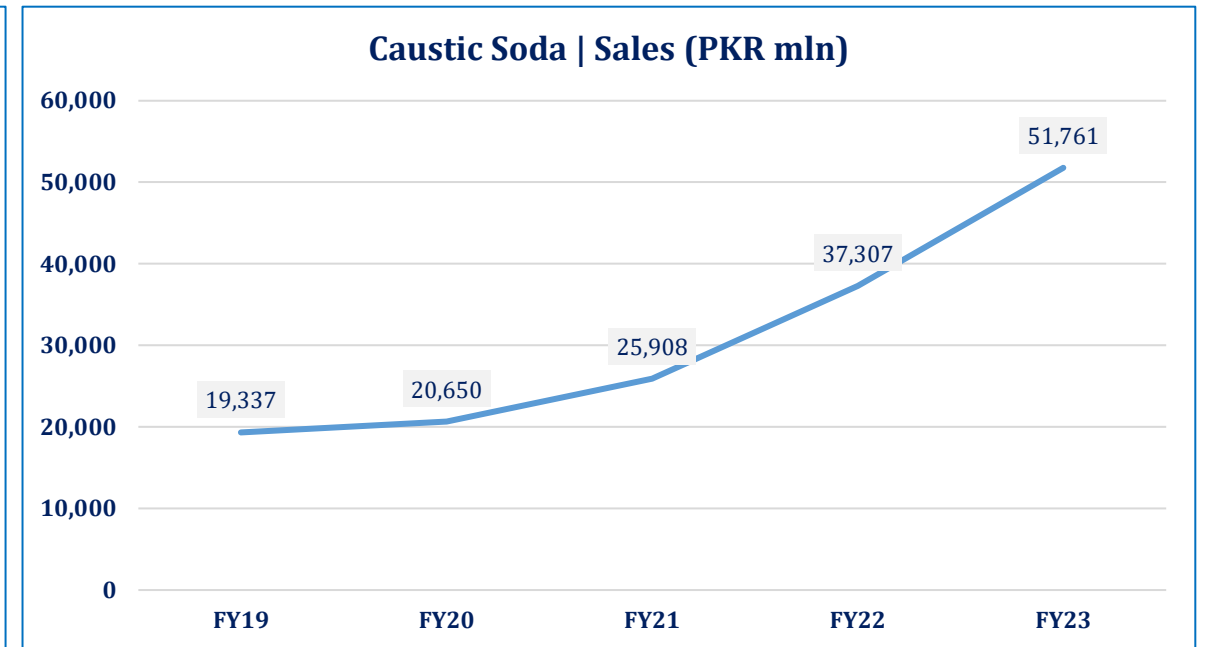
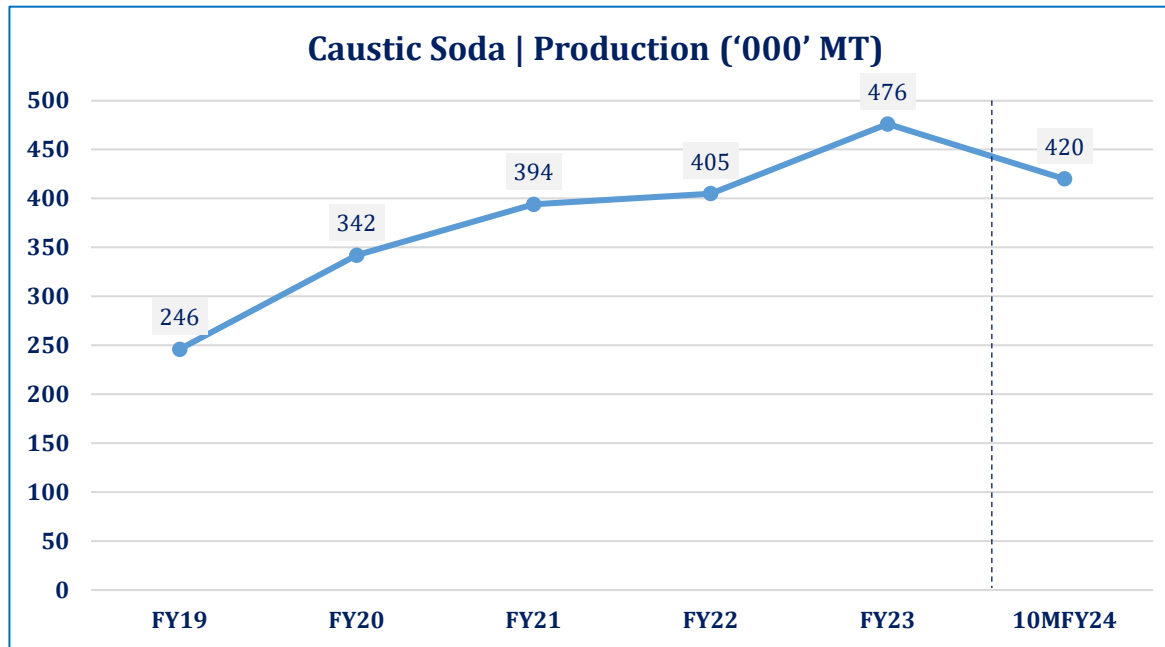
- Nearly all caustic soda (Sodium Hydroxide, or NaOH) is produced through electrolysis of sodium chloride solution using one of the three cell types: mercury, diaphragm and membrane cells. The electrolysis process produces ~1.128MT of ~100.0% caustic soda with each MT of chlorine. The primary raw material is common salt, usually in the form of underground deposits which are brought to the surface as a solution in a pumped high pressure water supply. The sodium chloride solution is often called Brine.
- Electrolysis is carried out by the mercury amalgam, diaphragm cell processes or membrane cell. Diaphragm cells need plenty of thermal energy to concentrate the caustic solutions but can be cheaper than mercury cells when steam costs are low and have relatively cheap construction costs. Use of membrane cells is growing due to lower capital and energy costs and an absence of environmental problems.



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Caustic Soda | Demand and Supply

- The main raw material used in caustic soda production is sodium chloride. Pakistan’s domestic production capacity of Caustic Soda was recorded at ~475,668MT in FY23 (SPLY: ~405,123MT). Overall production capacity utilization during FY23 recorded at ~62.3% (FY22: ~68.0%)
- Caustic Soda production recorded a ~17.2% YoY increase in FY23 (SPLY: up ~2.7% YoY). Meanwhile, imports of Caustic Soda accounted for ~10.5% of the total supply during FY23 (SPLY: ~16.3%), recording at ~53,389MT and registering ~33.4% YoY decline.
- Caustic Soda sales (*PACRA-rated/Listed*) during FY23 increased to PKR~51,761mln, a YoY increase of ~38.7% (FY22: PKR~37,307mln). This resulted from higher volumetric sales as well as prices during the year.

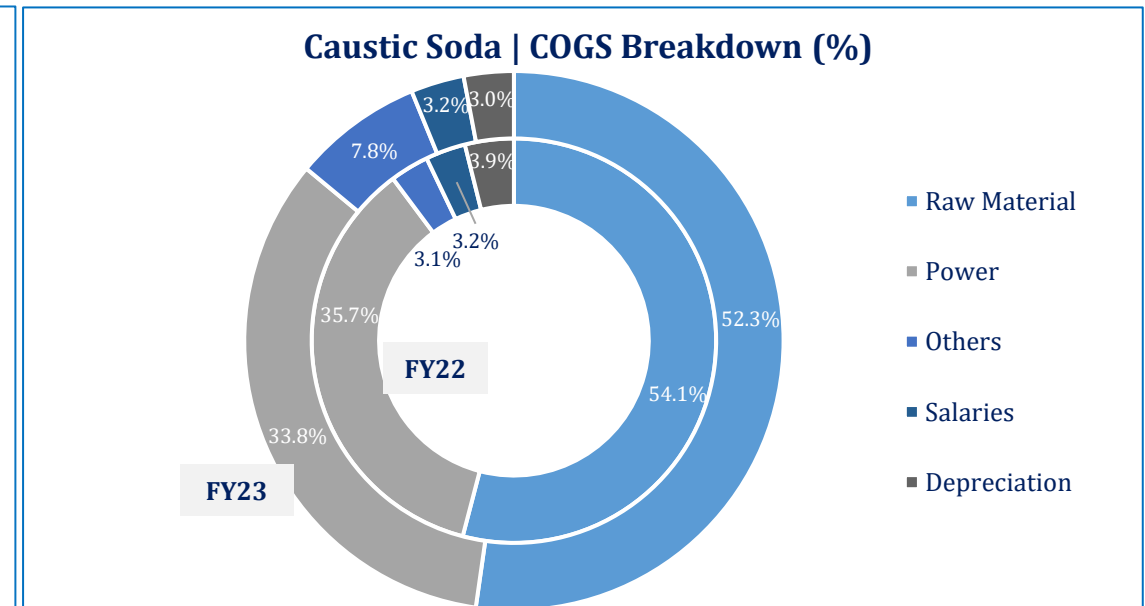
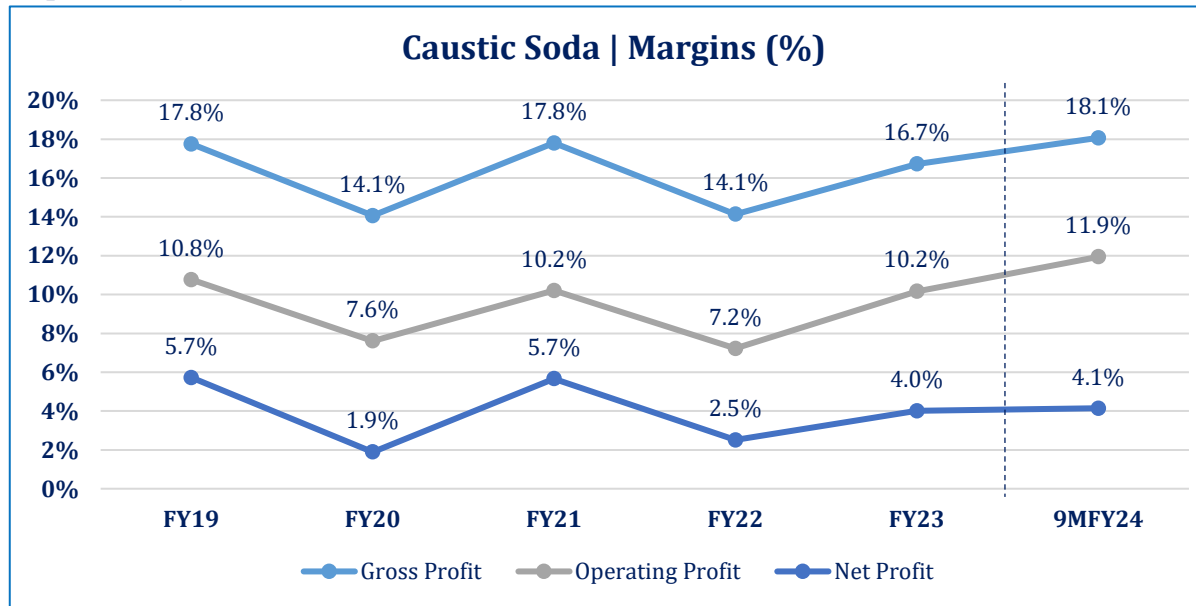


Note: Data is based on 3 PACRA-rated/ listed sector players. Imports reflect data for HS Code 2815.1100. Caustic Soda Production figures pertain to PBS QIM data classified under “Manufacturing of Chemicals”.

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Caustic Soda | Margins

- During FY23, average gross margins for the segment increased to ~16.7%, in line with ~38.7% YoY higher sales revenue. Meanwhile, operating margin also increased to ~10.2%.
- The segment's net profit increased by ~26.0% YoY in FY23 (FY22: up ~54.6% YoY), despite ~3.4% YoY increase in finance costs for the segment. This led to net profit margin increasing to ~4.0% during the year. In 9MFY24, average profit margins continued to improve owing to ~6.9% YoY higher sales revenue, however, net margins remained in check, when compared with FY23, owing to increased reliance on borrowings.
- Caustic Soda is widely used in several sectors, particularly, textiles, detergents and soaps. The largest cost component for caustic soda comprises raw materials which made up ~52.3% of the segment's total cost in FY23 (FY22: ~54.1%). This was followed by power which accounted for ~33.8% in total costs (SPLY: ~35.7%). On average, raw material and power costs registered ~13.5% and ~22.7% YoY increase, respectively.

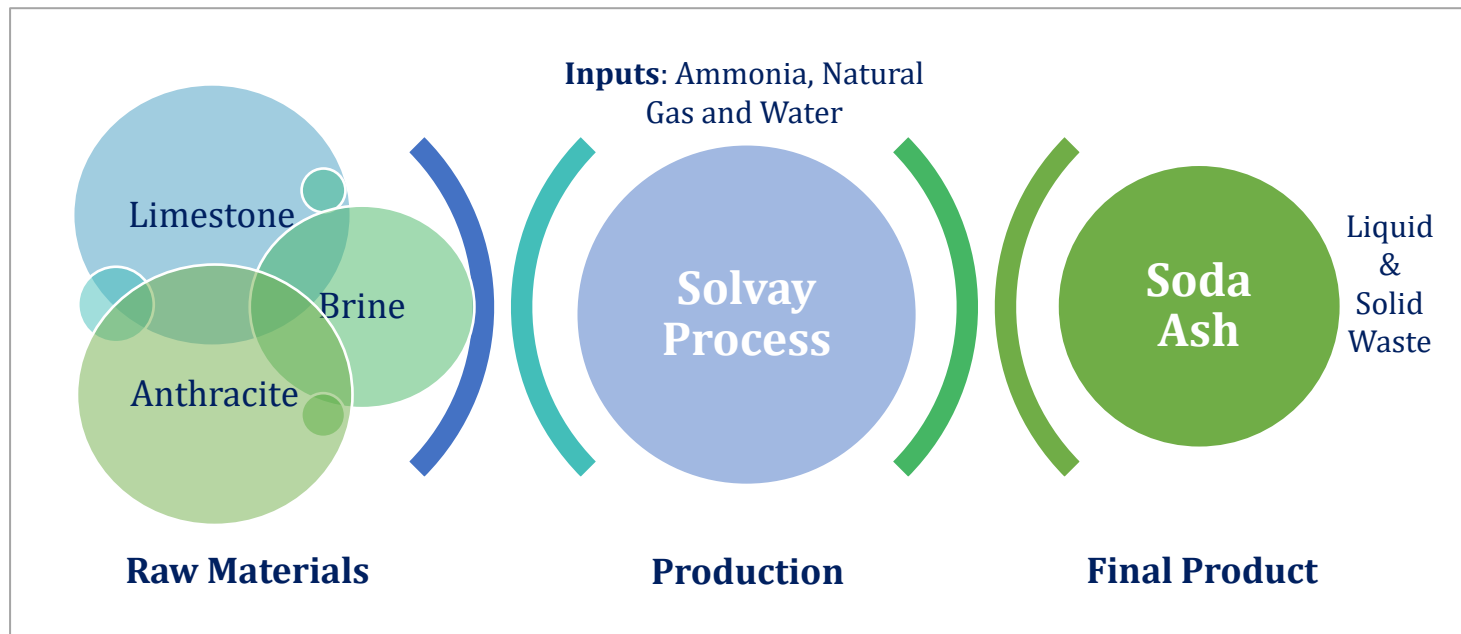


Note: Data is based on 3 PACRA-rated/ listed sector players.

Chemicals

Soda Ash | Production Process

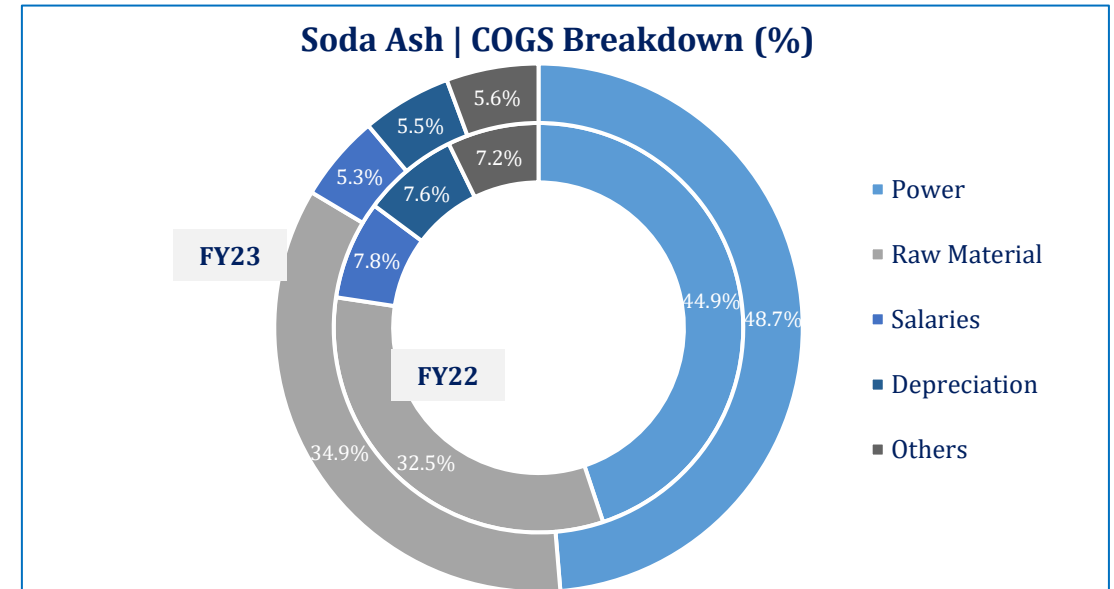
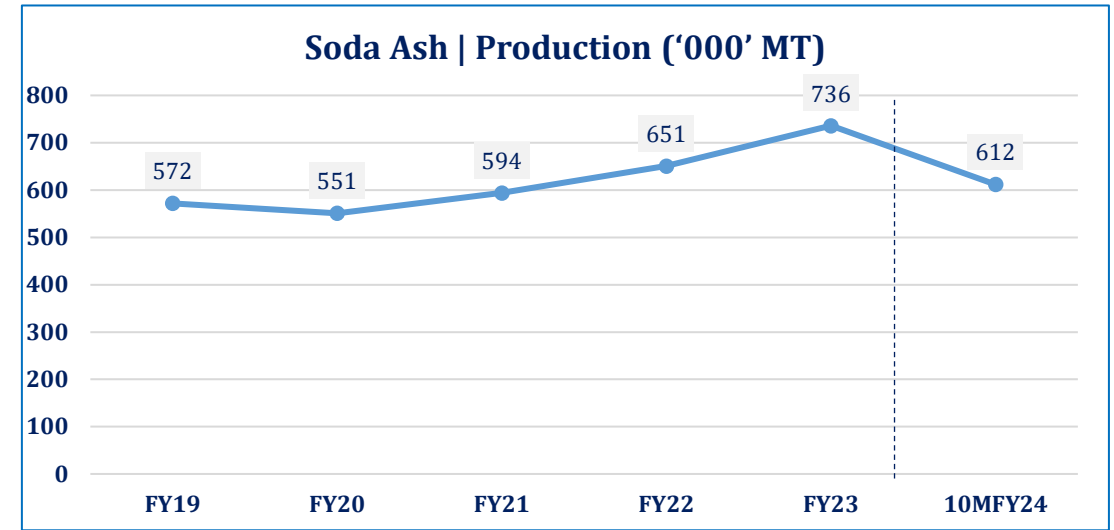
- Soda Ash (Na_2CO_3) is an anhydrous white powder or granular material that is available in two grades, light and dense. Dense soda ash is an anhydrous substance mostly used in the manufacturing of industrial chemicals. Light soda ash is used as a pH regulator in various industrial processes.
- In the ammonia-soda process, common salt, sodium chloride, is treated with ammonia and then carbon dioxide, under carefully controlled conditions, to form sodium bicarbonate and ammonium chloride. When heated, the bicarbonate yields sodium carbonate (soda ash), the desired product; the ammonium chloride is treated with lime to produce ammonia for reuse and calcium chloride.
- The ammonia-soda process encountered stiff competition from the older Leblanc process, but it ultimately prevailed because it produced soda ash more cheaply.



Chemicals

Soda Ash | Demand and Supply

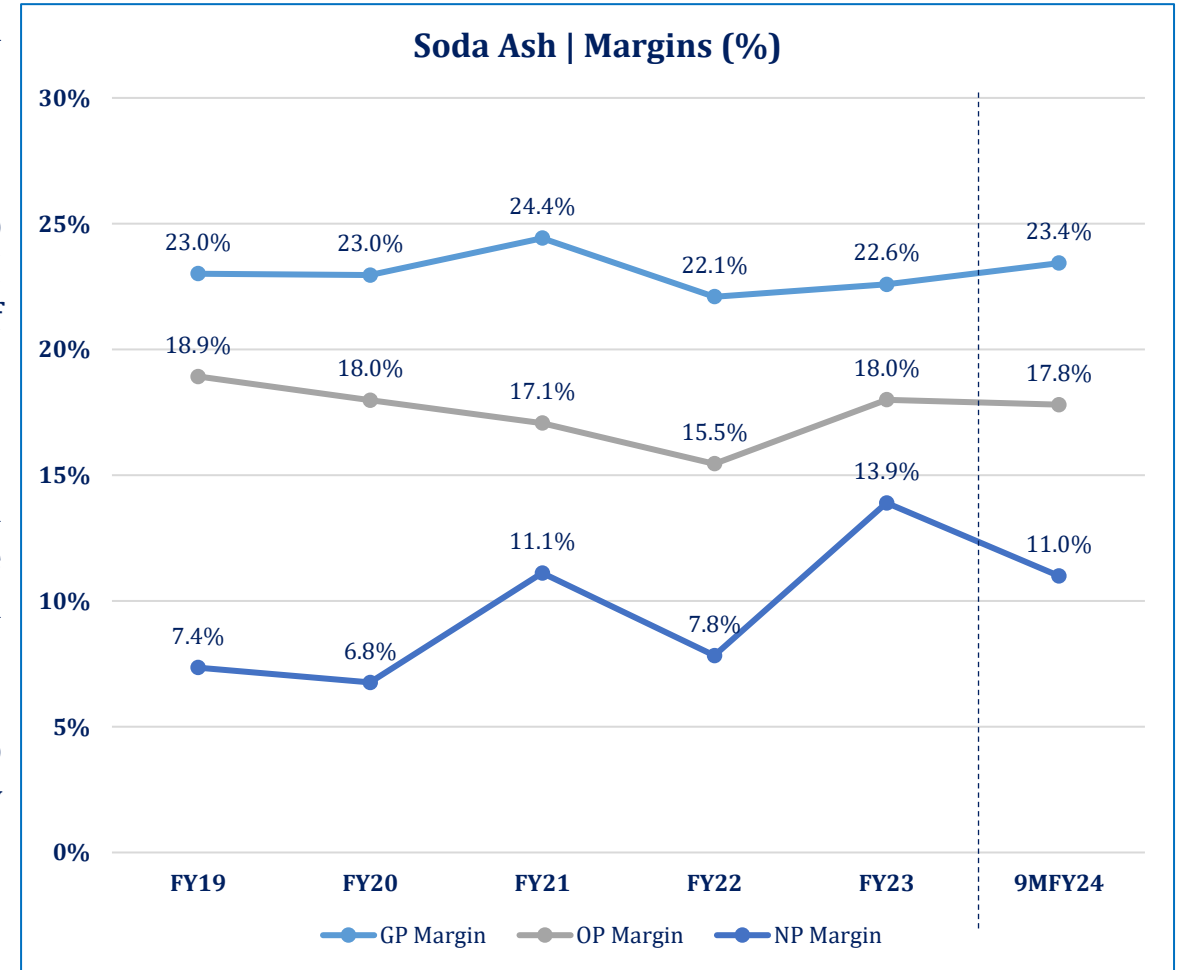
- Currently, two major segment players include LCI (Lucky Core Industries) and Olympia chemicals. The overall local production of Soda Ash stood at ~736,658MT during FY23 (SPLY: ~651,289MT), a YoY increase of ~13.1%. During 10MFY24, it showed an increase of ~4.1% YoY (~637,144MT).
- Major raw materials required for soda ash production include sodium chloride (salt), limestone, coal and ammonia. Soda Ash holds ~0.1% weightage in the chemicals segment on LSM.
- Power is the largest component of the segment's total costs, comprising ~48.7% in FY23 (FY22: ~45.0%), followed by raw material at ~34.9% (SPLY: ~32.0%). Limestone, brine and ammonia are the major raw materials used in Solvay process which are locally available without any hindrances.
- The demand outlook for the segment remains mixed as certain segments like paper look for import substitution of soda ash, while others like glass are likely to drive the growth.



Chemicals

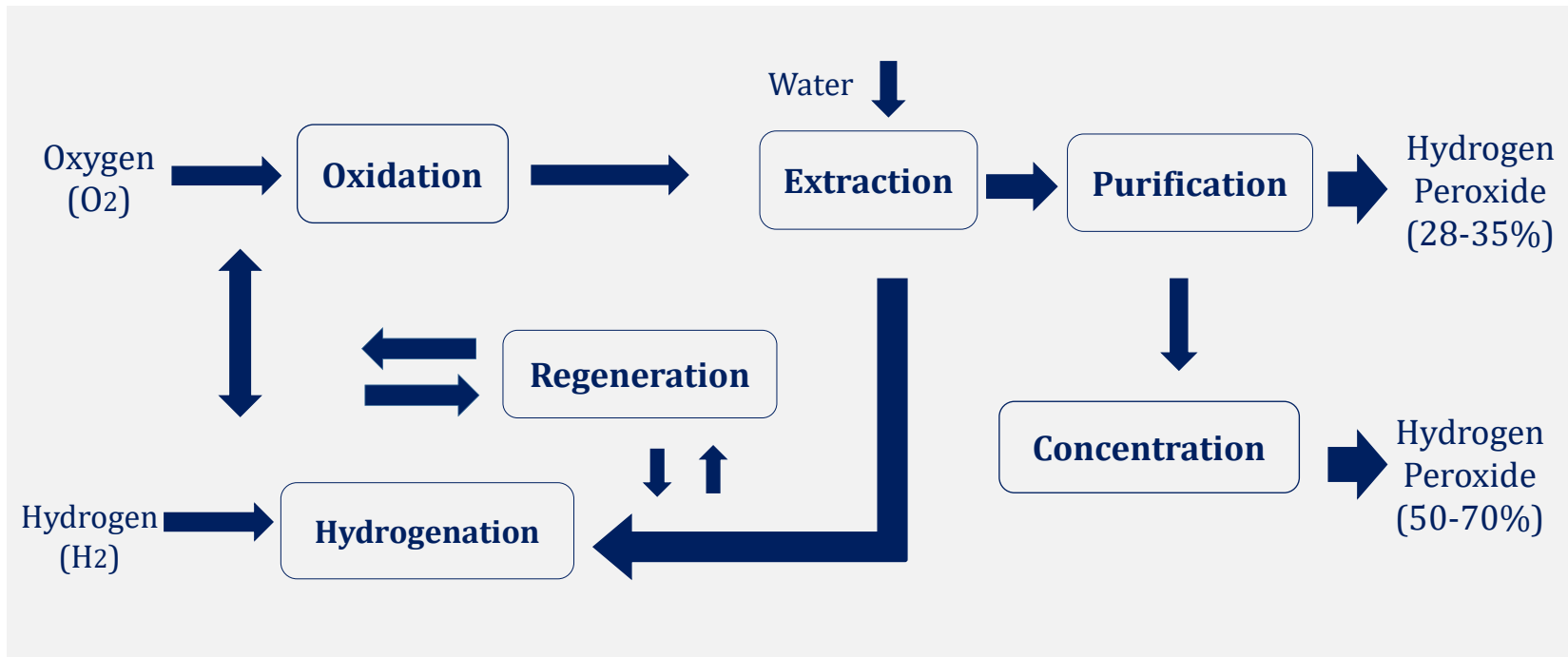
Soda Ash | Margins

- During FY23, the average gross margins for the segment improved slightly to ~22.6%, in line with ~62.1% YoY higher Soda Ash sales revenue.
- Meanwhile, average operating margins also improved to ~18.0% despite overall high inflationary levels in the country (National CPI averaged ~30.9% compared with ~19.7% during SPLY) on the back of higher sales.
- Segment's net profit increased by ~65.4% YoY (FY22: up ~8.0%) despite prohibitive interest rate environment in the country and ~19.7% YoY higher finance costs for the segment while other income increased by ~ 450.0% YoY. This led to average net profit margin increasing to ~13.9% during the year.
- In 9MFY24, average gross profit margins stood at ~23.4% owing to ~21.4% YoY higher sales revenue. However, finance cost increased by ~47.3%YoY reducing net profit margins to ~11.0%.



Hydrogen Peroxide | Production Process

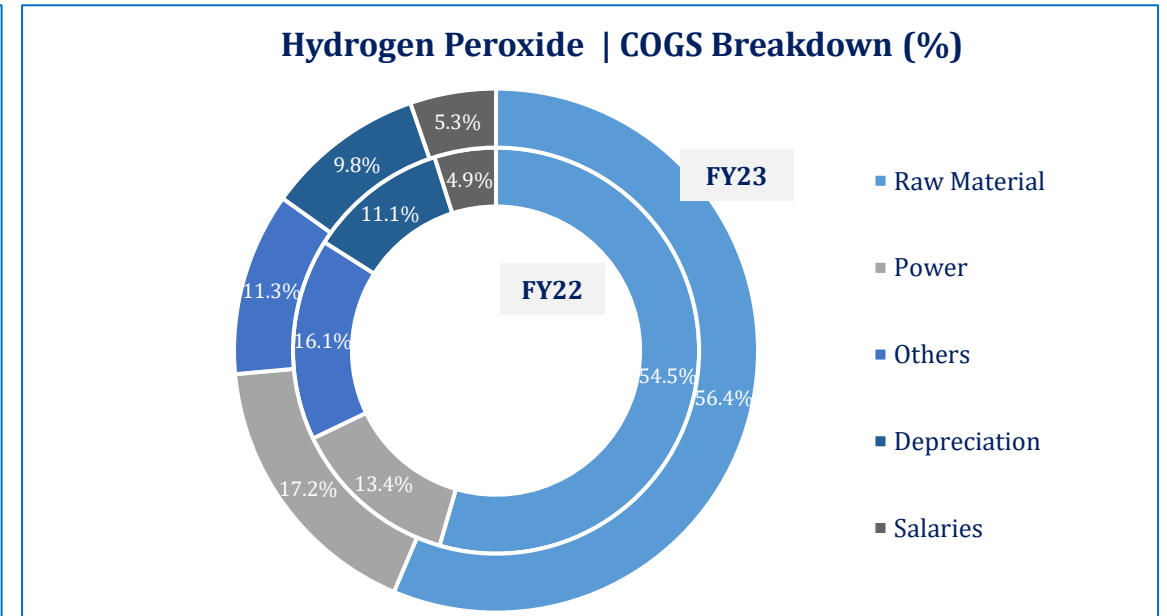
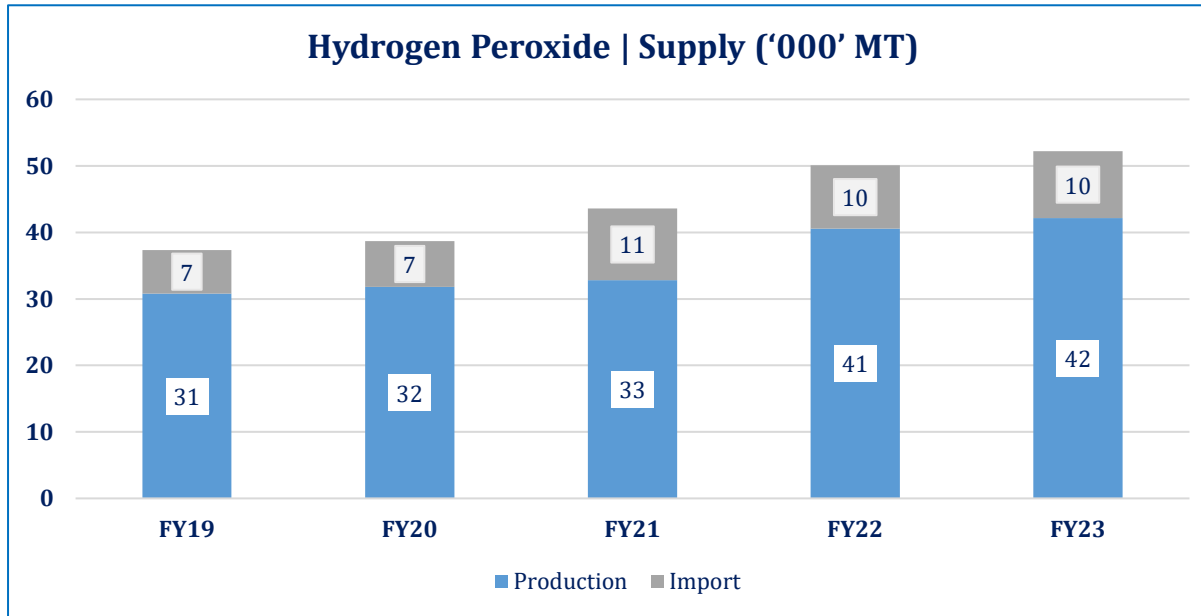
- Hydrogen Peroxide (H_2O_2) is a colorless viscous unstable liquid with strong oxidizing properties. It can, however, act as a reducing agent for strong oxidants. Upon decomposition, it forms water and releases oxygen which makes it an environment-friendly product.
- It is an important chemical with demand driven from the industrial sectors where it is used as an oxidizing, bleaching and sterilizing agent. It is used in a variety of industries including textile, paper/pulp, food packaging and healthcare sectors.
- Palladium catalyzes the reaction between Hydrogen and Anthraquinone to create Anthrahydroquinone. The palladium catalyst is filtered out of the solution. The solution is then oxidized by blowing air through the solution, forming the H_2O_2 (Hydrogen Peroxide). The hydrogen peroxide is removed in a liquid-liquid extraction column and concentrated by vacuum distillation.



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Hydrogen Peroxide | Demand and Supply

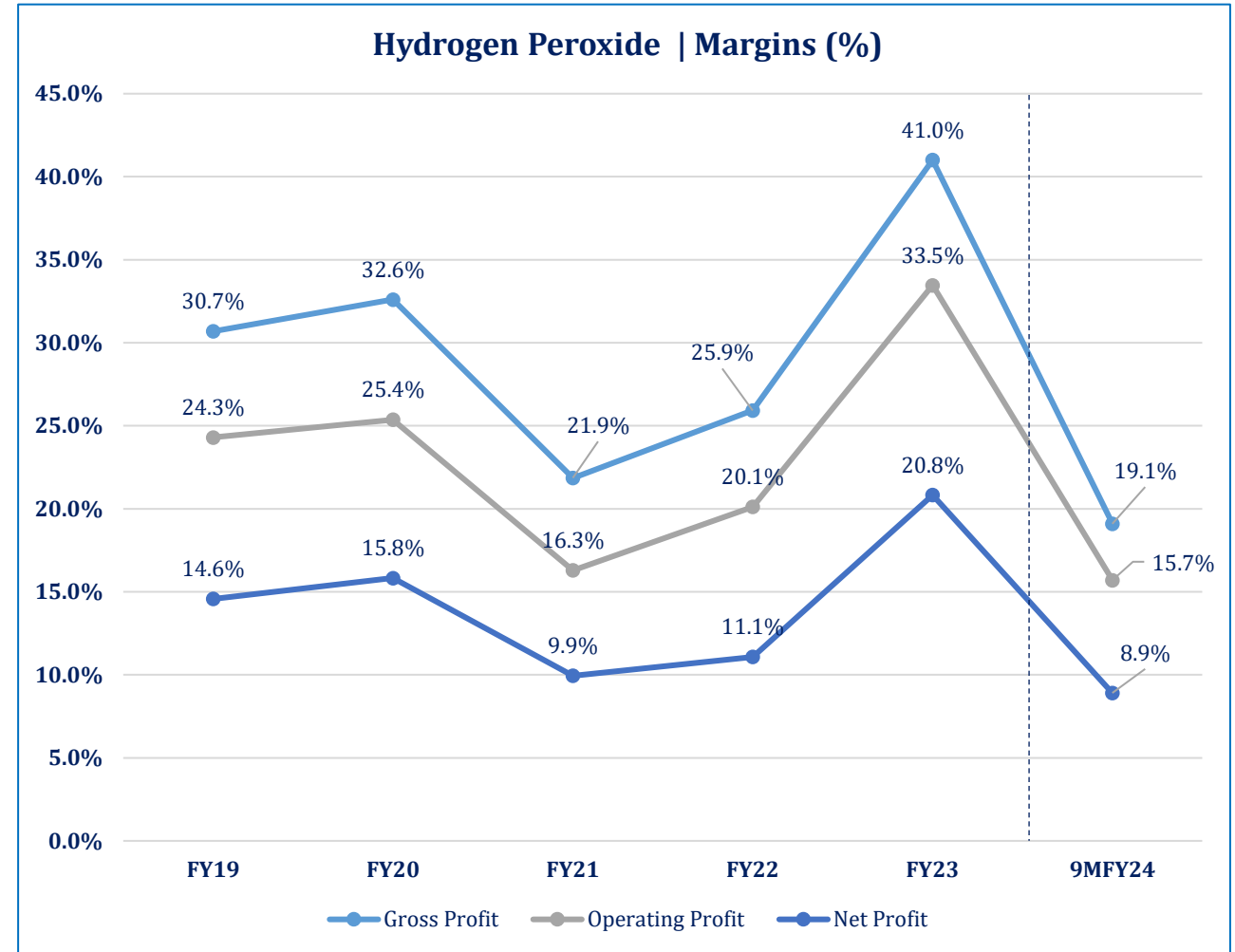
- Local supply for the segment comprises local production and imports, with ~80.0% and ~20.0% average shares during FY19-23, respectively. During FY23, these registered ~3.7% and ~5.3% YoY increase, respectively, while total supply increased to ~52,100MT, up ~4.0% YoY. As of Jun'23, the segment's production capacity clocked in at ~42,131MT (SPLY: ~40,550MT), while capacity utilization stood at ~100.3% (SPLY: ~96.5%).
- The segment's cost of goods is dominated by raw material and power expenses, among others. The two basic raw materials required in hydrogen peroxide production are hydrogen and oxygen, where these can be attained using multiple sources and chemicals. In FY23, raw materials accounted for ~56.4% of the total cost while power made up ~17.2% (SPLY: ~13.4%). With respect to the latter, electricity rate hikes during the year led to greater share in overall cost of production for the segment.



Chemicals

Hydrogen Peroxide | Margins

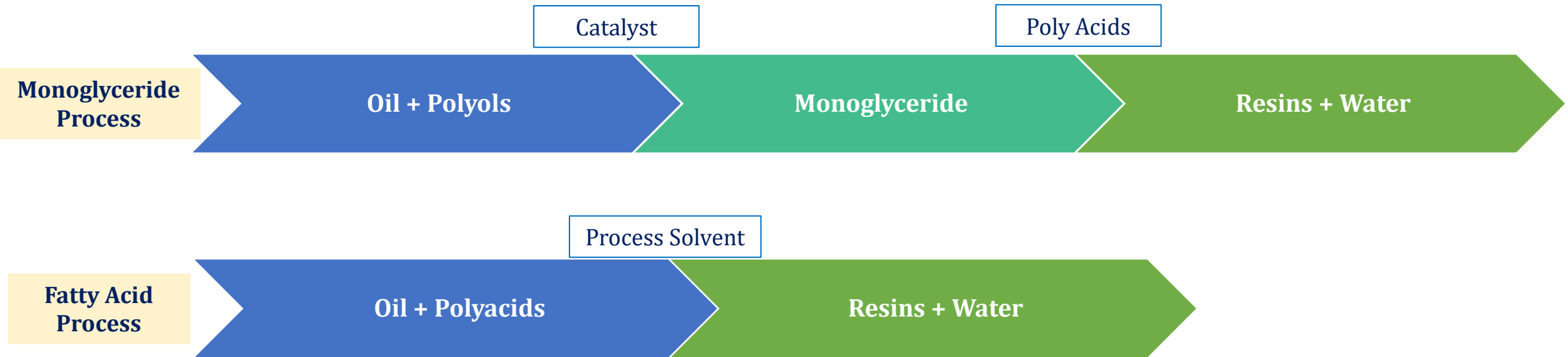
- During FY23, gross margins for the segment increased to ~41.0%, in line with ~58.1% YoY higher Hydrogen Peroxide sales revenue. Meanwhile, operating margin also increased to ~33.5%.
- The segment's net profit increased by ~197.2% YoY in FY23 (FY22: up ~68.8% YoY). Meanwhile, finance cost was down ~52.8% YoY, owing to efficient working capital management and long-term debt prepayment in previous years, in line with segment player's strategy to hedge against interest rate hike. This led to net profit margin increasing to ~20.8% during the year.
- In 9MFY24, gross profit margins reduced to ~19.1%, owing to ~62.9% YoY lower sales revenue and ~19.2% increase in cost of sales.



Chemicals

Resins | Production Process

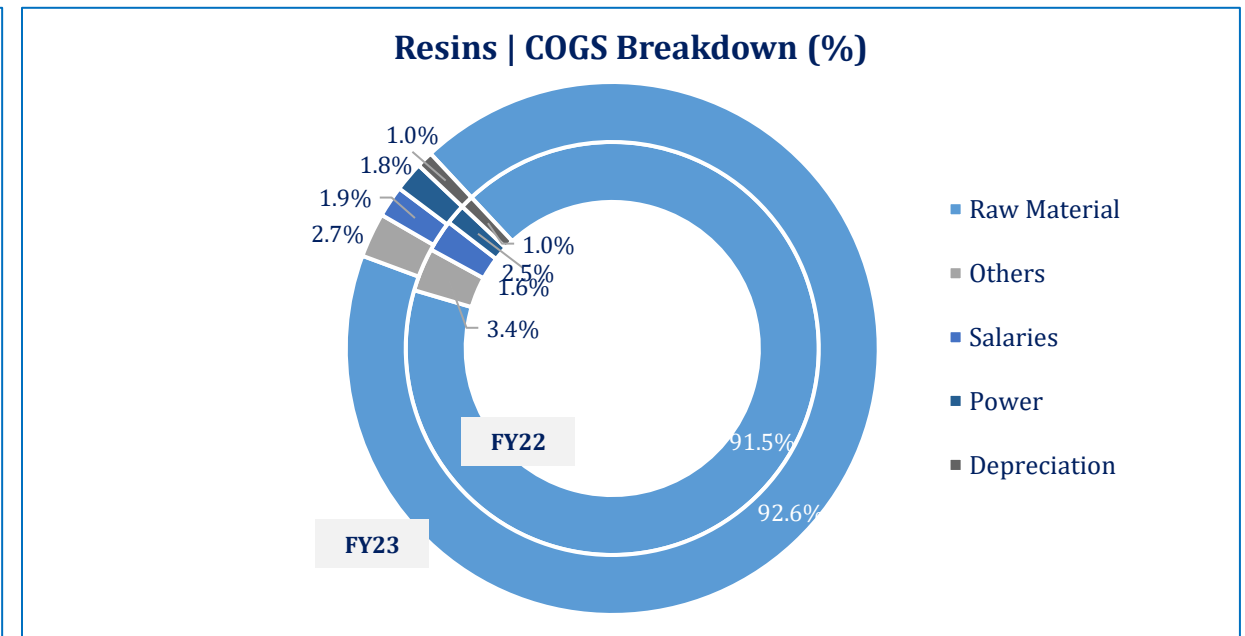
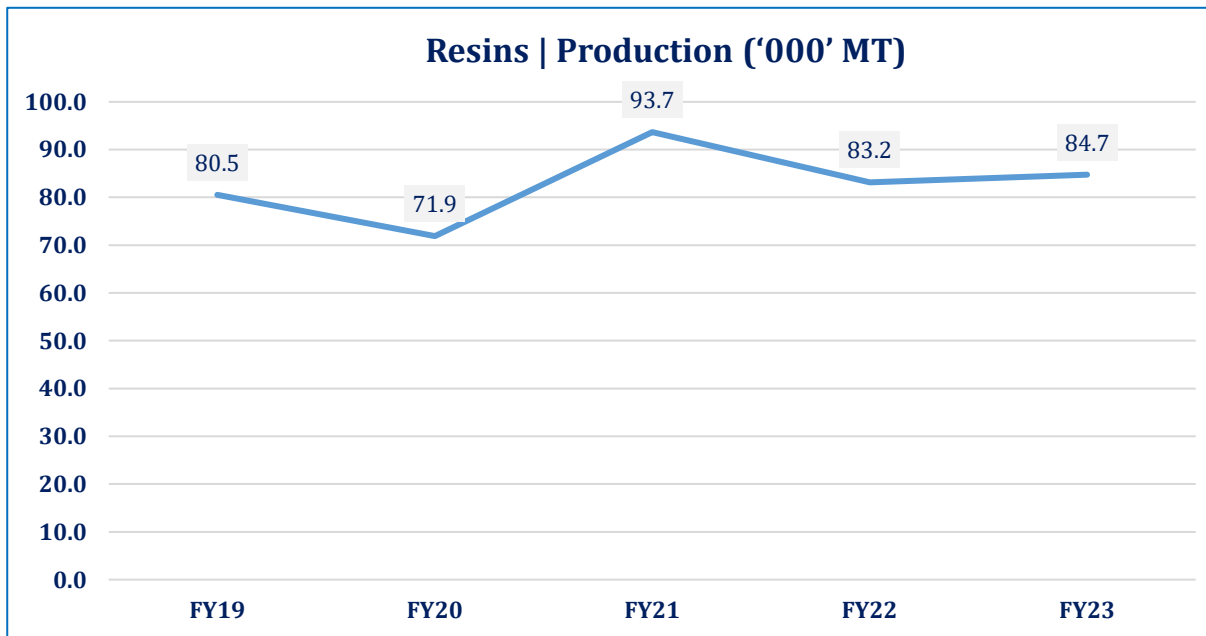
- Product Portfolio:** Resins include Alkyd Resins & Modified Alkyds Resins for Decorative, Refinish & OEM Paints, Amino Resins, Rosin Modified Resins, Acrylic, Styrene Acrylic & PVA Emulsion binders, Wetting Agent, Antifoam and drier (classified broadly as coatings and emulsions), Specialty chemicals for pre-treatment and finishing for textile as well as paper & pulp chemicals.
- Production Process:** There are predominantly two processes used to produce resins: the monoglyceride process and the fatty acid process. The monoglyceride process first heats oil with polyols and catalysts, this makes the oil polar. In the second step, the monoglyceride formed is reacted with poly acids to form resin and water (a by-product).
- The fatty acid process completes the production in one step, which reduces the production cycle time. Oil is directly heated with poly acids and a process solvent which results in production of resins.



Chemicals

Resins | Demand and Supply

- Local production of resins increased by ~1.8% YoY in FY23, amounting to ~84,719MT, after registering a decline of ~22.1% YoY in SPLY. The growth in resins segment is dependent upon the overall economic growth with major contribution coming from coatings and paints. The production capacity of the segment was ~113,000MT in FY23 (SPLY: ~107,111MT). Meanwhile, utilization levels clocked in at ~74.1% during the year (SPLY: ~77.6%).
- Raw material holds the biggest portion in the cost of production, accounting for ~92.6% of the cost breakup in FY23 (FY22: ~91.5%). Resins are made up of different grades and quality depending on the specific use for the relevant sector. Raw materials for resins production include lignin, polyol, solvent, catalyst, acid anhydride, and multi-epoxy compounds. These are mainly oil derivatives with strong linkage to international oil prices.

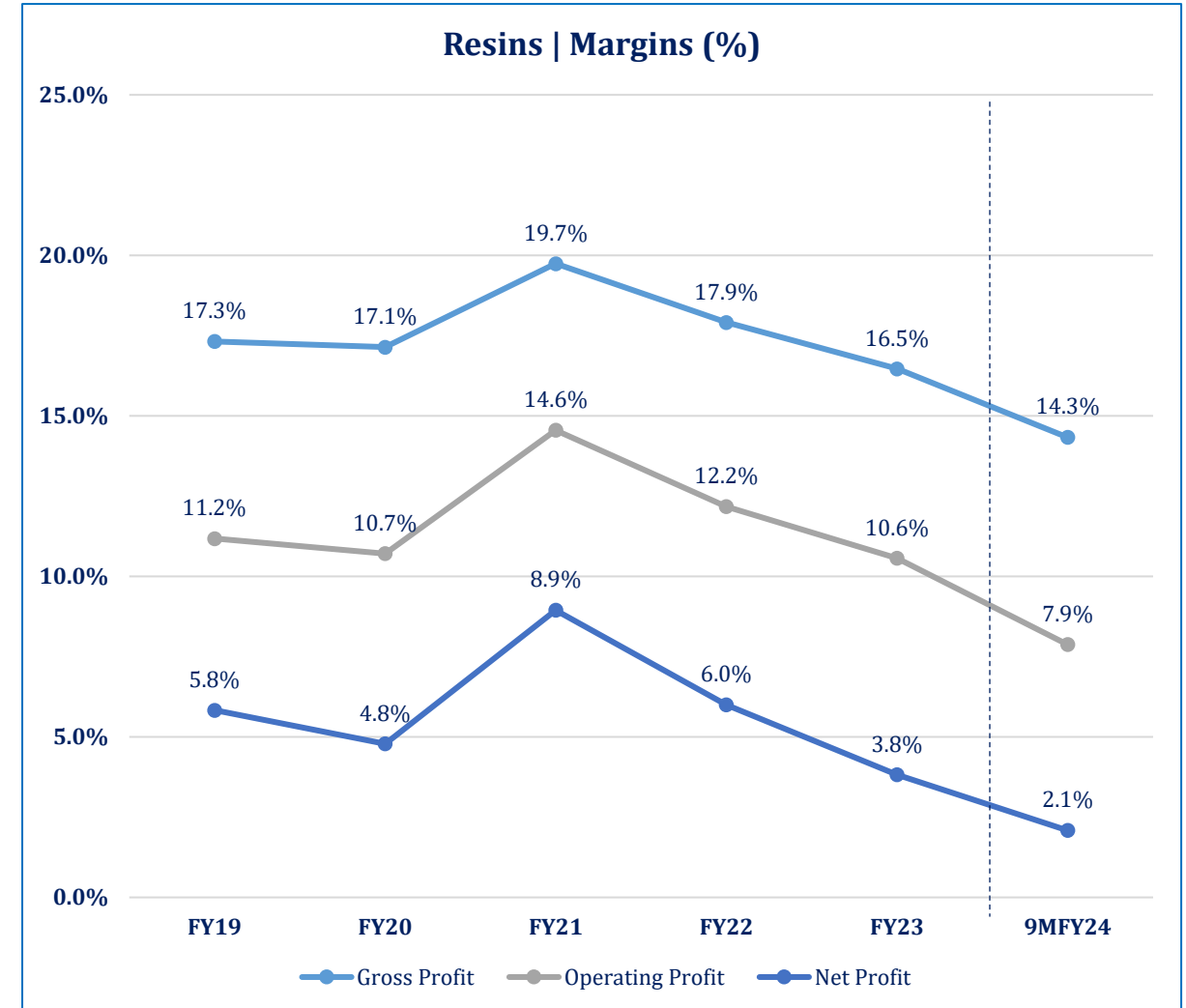


Note: Data is based on 3 PACRA-rated/ listed sector players.

Chemicals

Resins | Margins

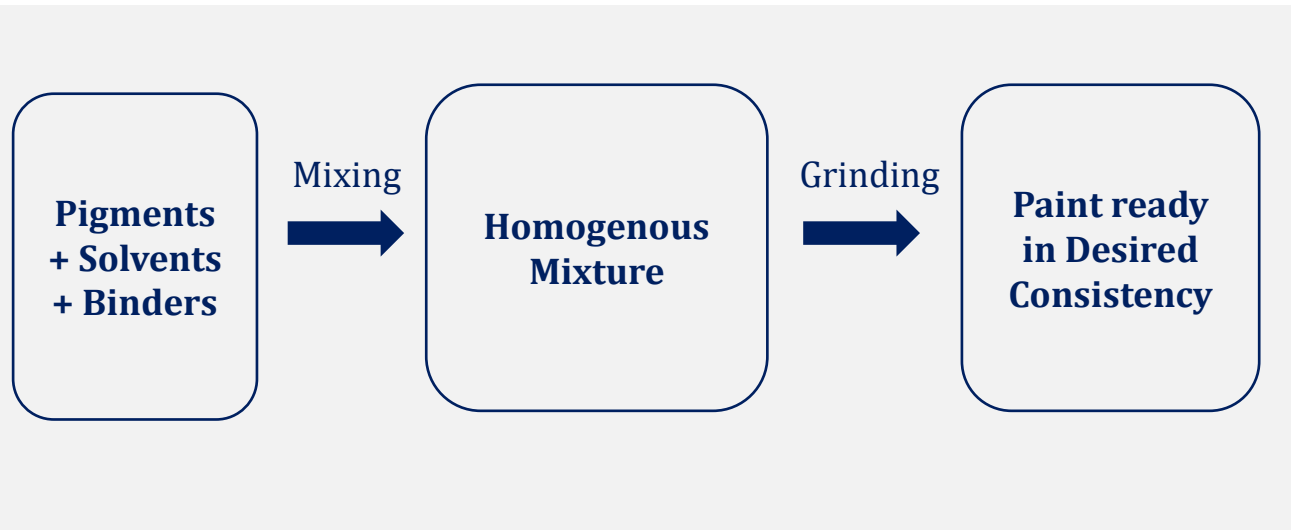
- The resins manufacturing segment operates in a highly competitive market owing to un-segmented and unorganized small producers who pose threat to large-scale manufacturers. Because of simplicity in the production process, the segment remains competitive while margins reported are relatively on the lower side.
- During FY23, average gross margins for the segment declined to ~16.5%, due to ~18.2% YoY higher cost of goods sold. Meanwhile, operating margins also declined to ~10.6% owing to overall high inflationary levels in the country (National CPI averaged ~30.9% compared with ~19.7% during SPLY).
- The segment's net profit margins declined to ~3.8% (FY22: ~6.0%), owing to a prohibitive interest rate environment in the country which resulted in ~80.9% YoY higher finance costs for the segment. This led to average net profit margin declining to ~3.8% during the year. In 9MFY24, average net profit margins recorded at ~2.1%.



Chemicals

Paints | Production Process

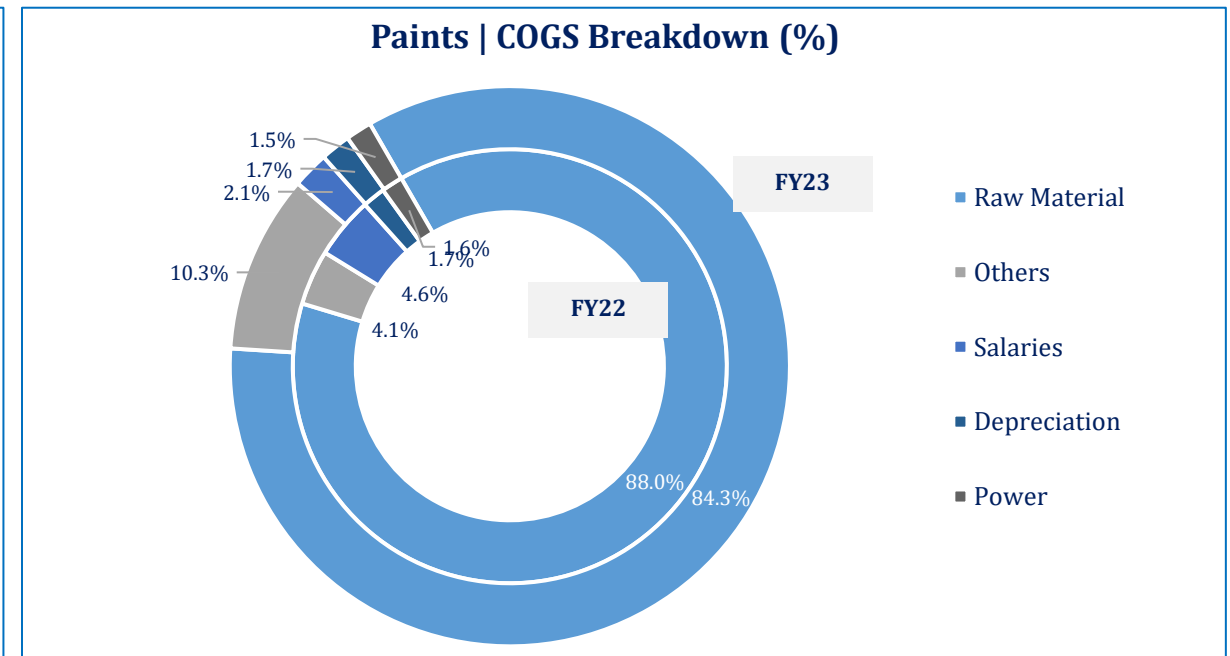
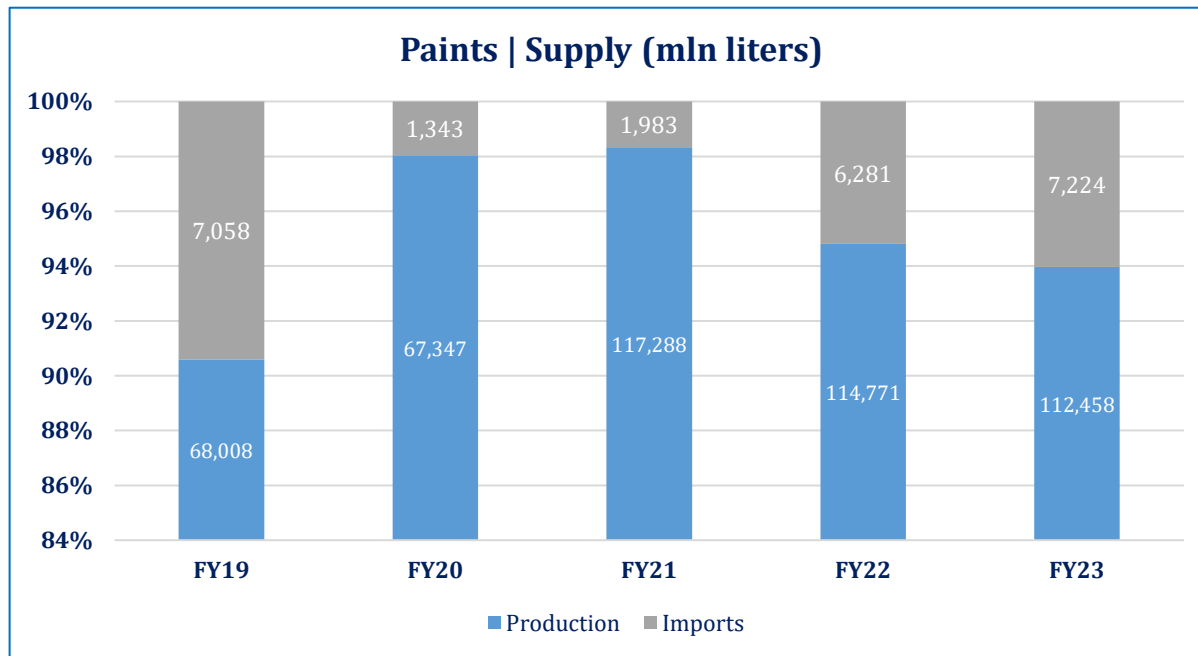
- **Segment Size:** was estimated at USD~400mln in CY23 and is expected to grow by ~3.5-4% annually over the next 4-5 years.
- **Segment Structure:** The segment comprises ~60.0% unorganized and ~40% organized players. The latter includes both multinational brands, such as AkzoNobel, Berger, Nippon and Kansai, as well as local players like Master Paints, Brighto Paints and Diamond Paints. The segment is represented by Pakistan Coating Association (PCA).
- **Product Portfolio:** The segment includes a variety of products falling under broad categories of Decorative (Primer, First Coat, Flat Paint, Gloss & Satin Finishing and Varnishes etc.) and Industrial (Solvent-based, Aquatic, Powder Coats and Anti-Fouling etc.) paints. Therefore, the segment is linked with industries such as construction, electronics, automobiles and various others.
- **Raw Materials:** These include pigments, solvent and binders, which are mixed together in the first step, with quantities determining the type of paint being produced. Once these have been mixed, a homogenous mixture is produced. After the homogenous mixture is ready, it is grinded using a mill to bring it to the desired consistency which also varies by the type of paint being produced. This completes the production process for paints.



Chemicals

Paints | Demand and Supply

- Overall supply of paints, comprising both local production and imports, clocked in at ~119,682mln liters in FY23, down ~1.1% YoY.
- While imports rose by ~15.0% YoY in FY23, amounting to ~7,224mln liters, local production declined ~2.0% YoY, recording at ~112,458mln liters (FY22: ~114,771mln liters). The share of imports in total supply rose ~4.9% during FY21-23. In 10MFY24, paints production recorded at ~110,150mln liters, up ~8.8% YoY. In value terms, imports declined ~10.7% YoY during this period.
- Raw materials held the largest share of the cost breakdown at ~84.3% in FY23 (FY22: ~88.0%). These comprise mainly ethylene glycol, epoxide resin and emulsion grade, among others. The decline in raw material share in segment's total COGS during FY23 came likely on the back of ~23.8% YoY lower raw material imports. The second-largest contributor to costs were salaries which made up ~4.6% of total cost of production in FY23 (FY22: ~2.1%).

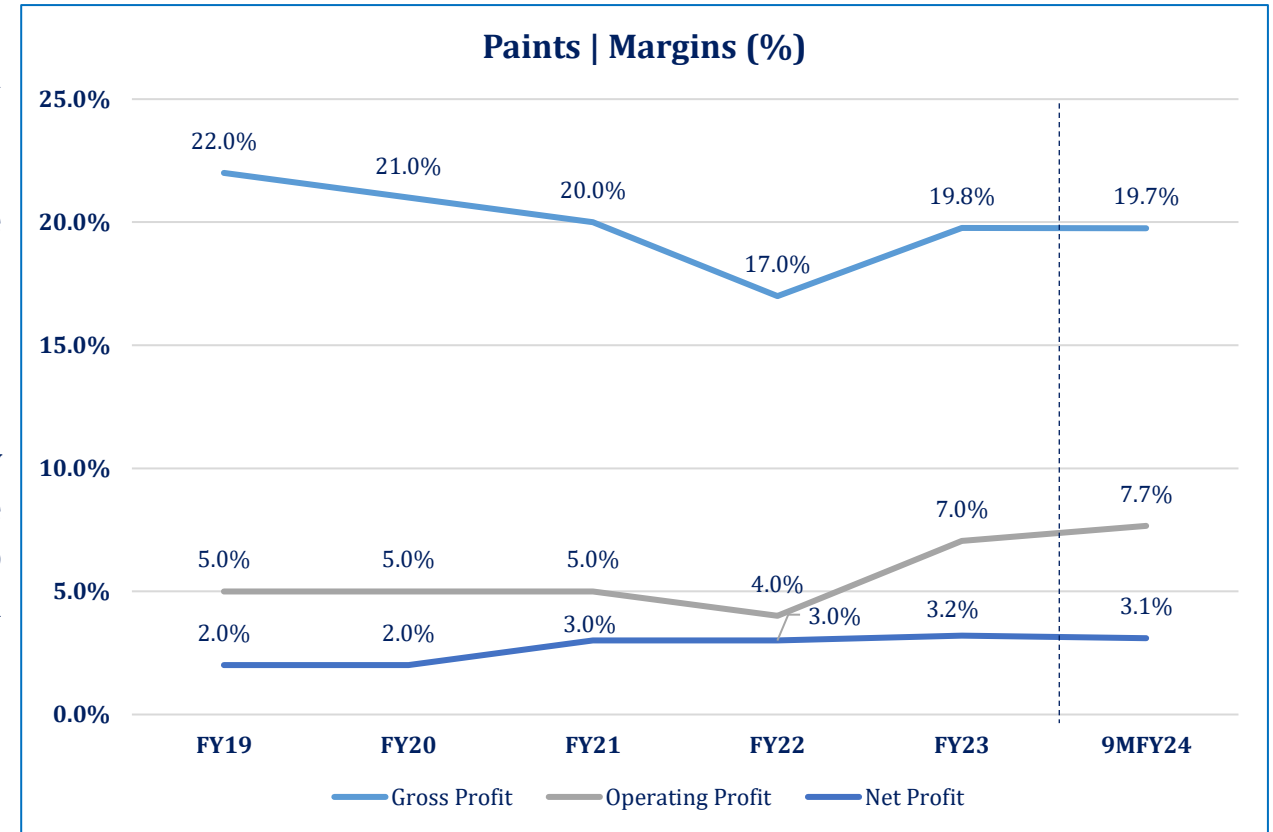


Note: Total supply reflects PBS data. Conversion factor used 1KG= ~0.769 Liters. COGS is based on 1 PACRA-rated/ listed sector players. HS code pertaining to imports includes 3208.9090, 1090, 2090. For RM imports, 3904.101, 3907.3, 2905.3, among others. Berger's market share is based on company and QIM data.

Chemicals

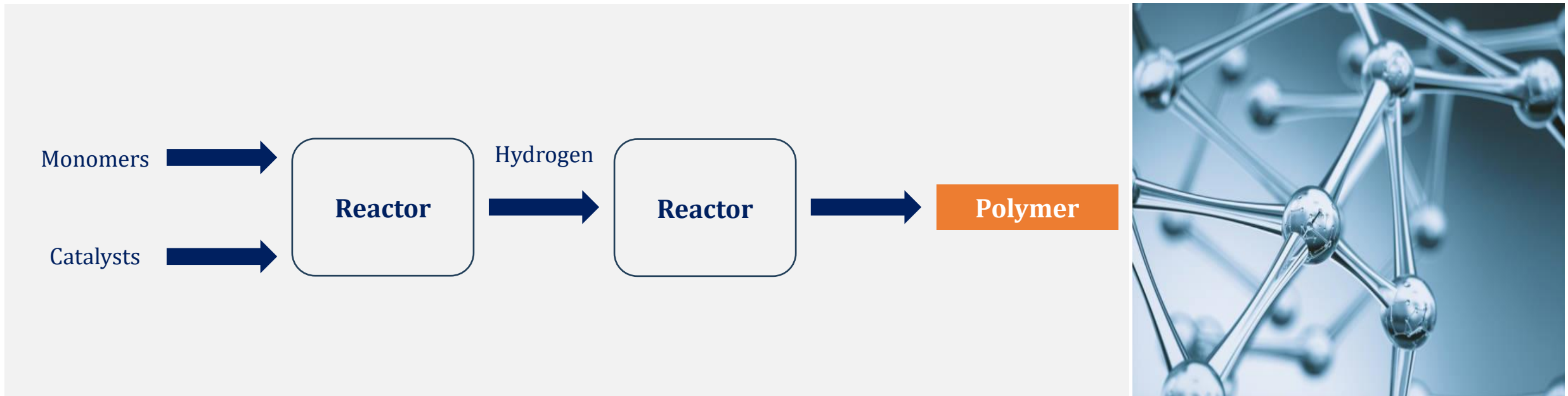
Paints | Margins

- During FY23, average gross margins for the segment increased to ~19.8%, in line with ~3.7% YoY higher paints sales revenue and ~2.4% YoY higher cost of goods sold.
- Meanwhile, operating margin also improved to ~7.0% despite overall high inflationary levels in the country (National CPI averaged ~30.9% compared with ~19.7% during SPLY).
- Segment's net profit increased by ~19.4% YoY (FY22: ~3.0%), owing to a prohibitive interest rate environment in the country which resulted in ~73.6% YoY higher finance costs for the segment. This led to net profit margin improving slightly to ~3.2% during the year. In 9MFY24, net profit margins recorded at ~3.1%.



Polymers | Production Process

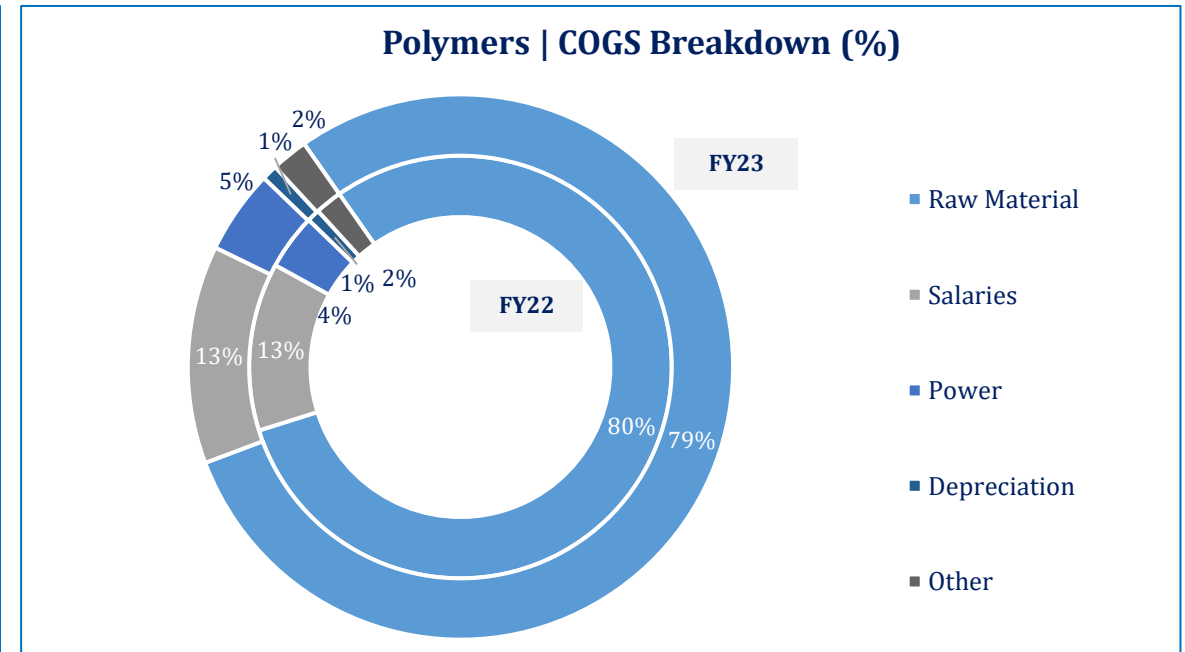
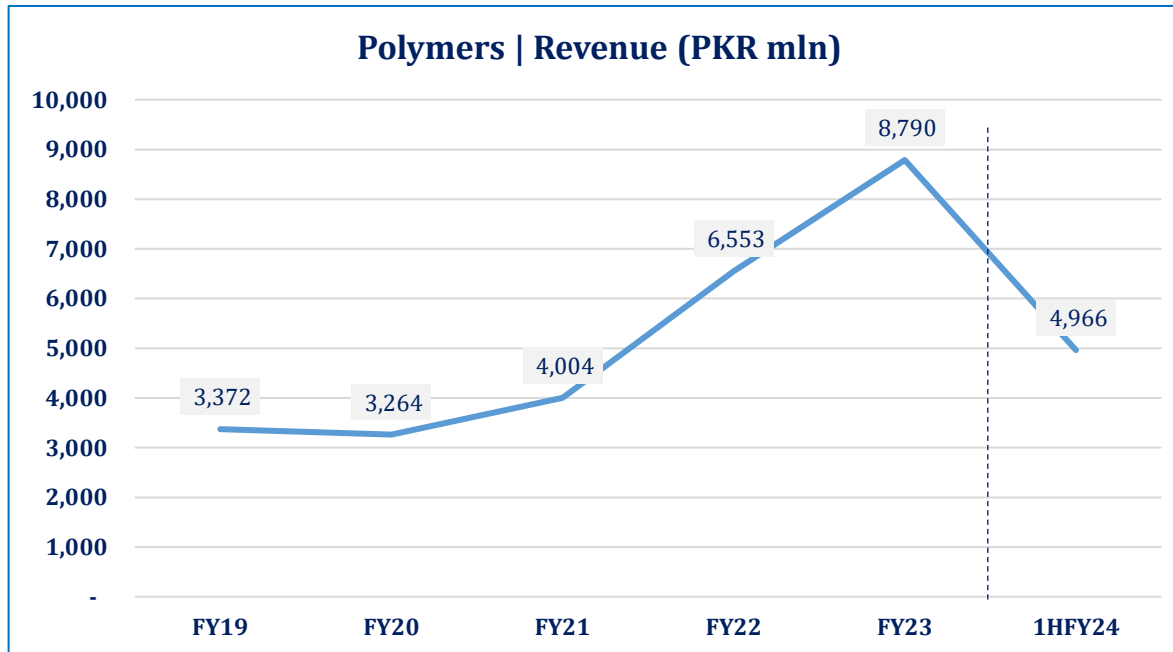
- Outlined below is the production process of polymers. Its primary inputs are monomers and catalysts. Production of polymers is a two-step process, where the materials go through two different reactors.
- The first step is to put the monomers and catalyst through a reactor, their reaction produces comonomer hydrogen which is then once again put through a reactor and its reaction produces polymers.



Chemicals

Polymers | Demand and Supply

- Polymers are used in the manufacturing of a diverse range of products, ranging from plastic bags and packaging to textiles, medical instruments and even cooking appliances. As a result, the demand for polymers comes from a set of diverse sectors. Polymers are also used in football manufacturing, of which Pakistan held ~70.0% global market share in CY22. In 10MFY24, football production registered ~6.3% YoY increase, whereas in FY23, this was up ~20.6% YoY.
- Polymer sales revenue exhibited CAGR of ~21.1% during FY19-23, recording ~34.1% YoY increase in FY23. During the year, segment's total revenue clocked in at ~8,790mln. Meanwhile, in 1HFY24, revenue recorded ~28.4% increase YoY.
- Raw materials accounted for ~79.1% of segment's total costs in FY23 (FY22: ~79.9%). The second largest contributor to cost were salaries which made up ~12.9% of total costs in FY23.

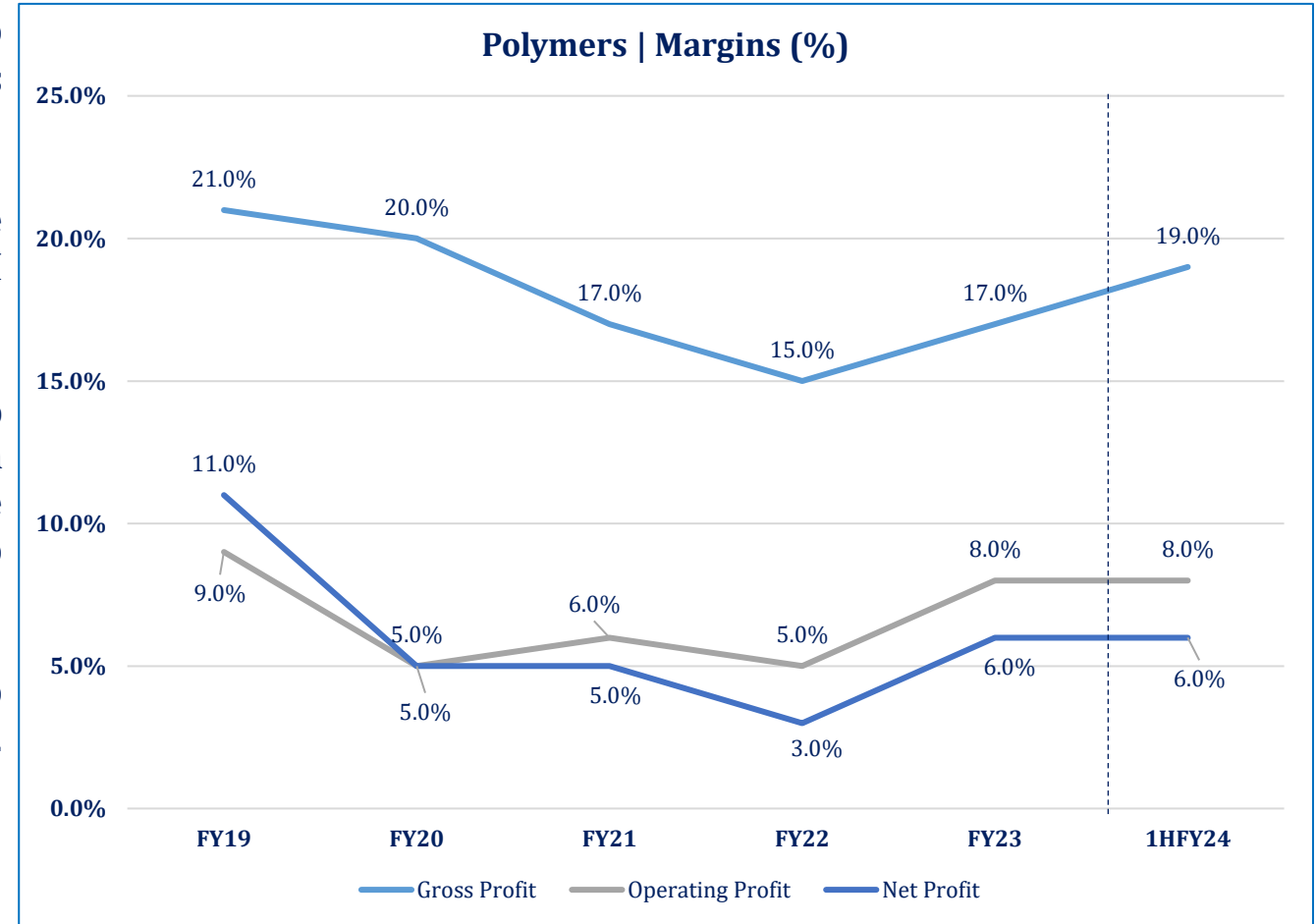


Note: Data is based on 1 PACRA-rated players.

Chemicals

Polymers | Margins

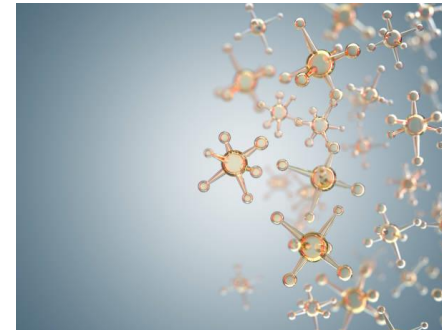
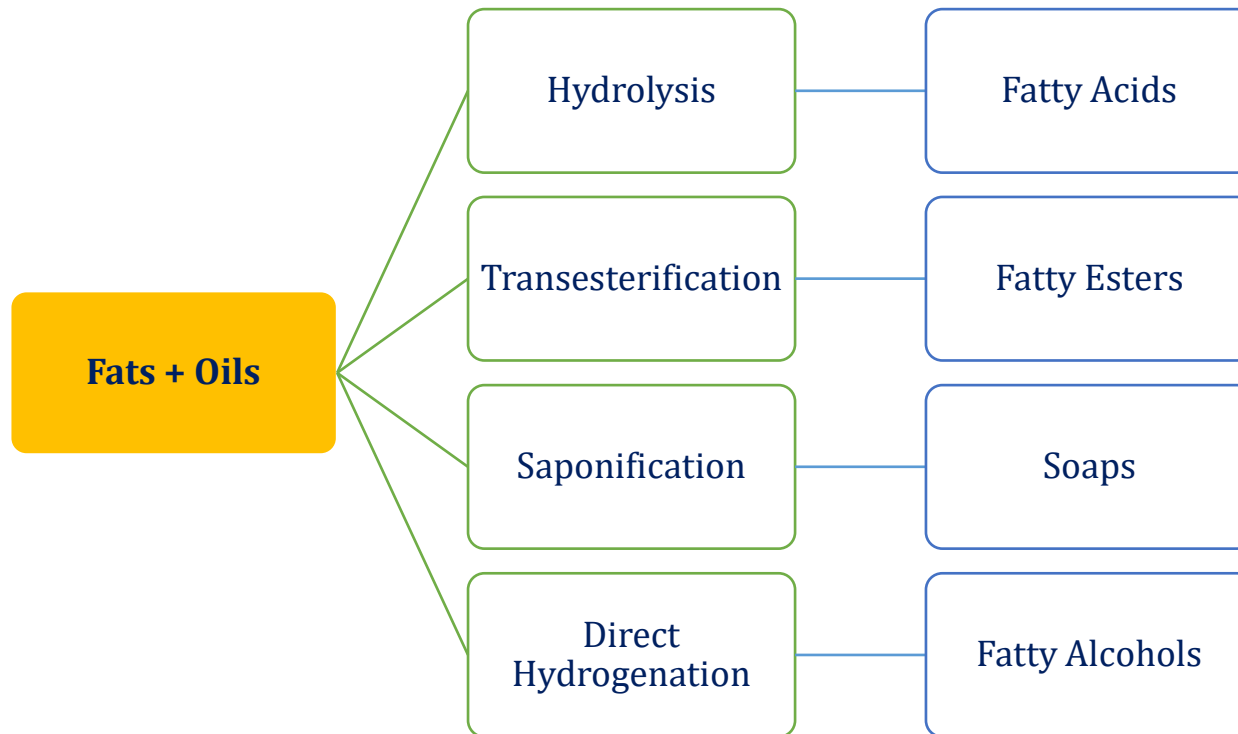
- During FY23, gross margins for the segment increased to ~17.0%, in line with ~34.1% YoY higher polymer sales revenue..
- Meanwhile, operating margin also increased to ~8.0% despite overall high inflationary levels in the country (National CPI averaged ~30.9% compared with ~19.7% during SPLY).
- Segment’s net profit increased by ~156.0% YoY (FY22: ~2.1% YoY growth), despite prohibitive interest rate environment in the country which resulted in ~104.9% YoY higher finance costs for the segment. Therefore, net profit margin increase to ~6.0% during the year.
- In 1HFY24, gross margins for the segment increased to ~19.0%, in line with ~28.4% YoY higher sales revenue. Meanwhile, net margins clocked in at ~6.0%.



Chemicals

Oleochemicals | Production Process

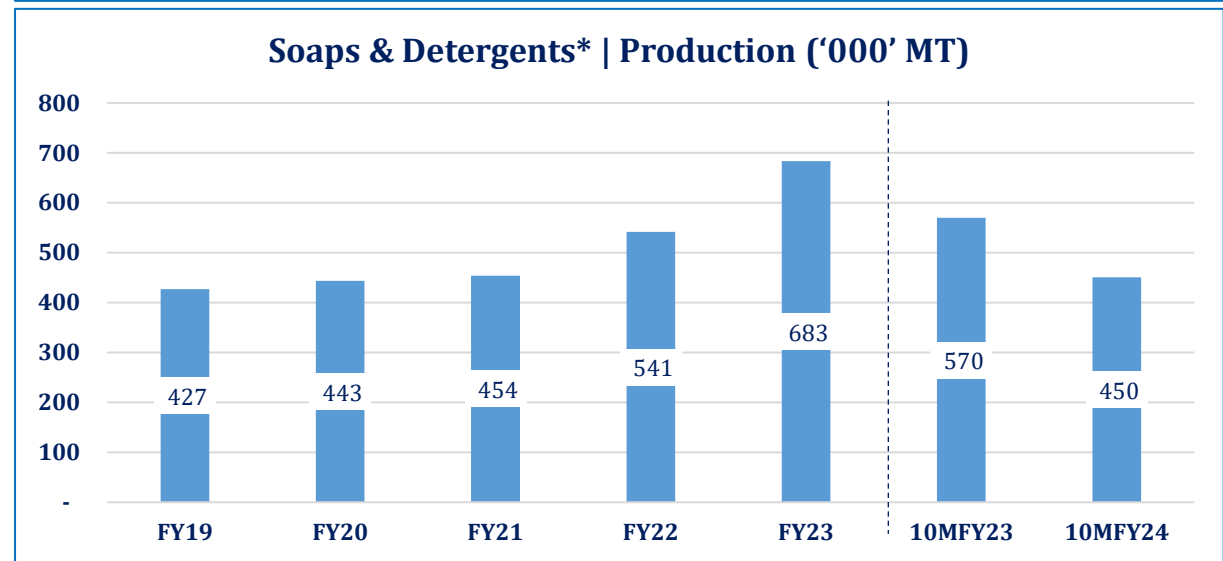
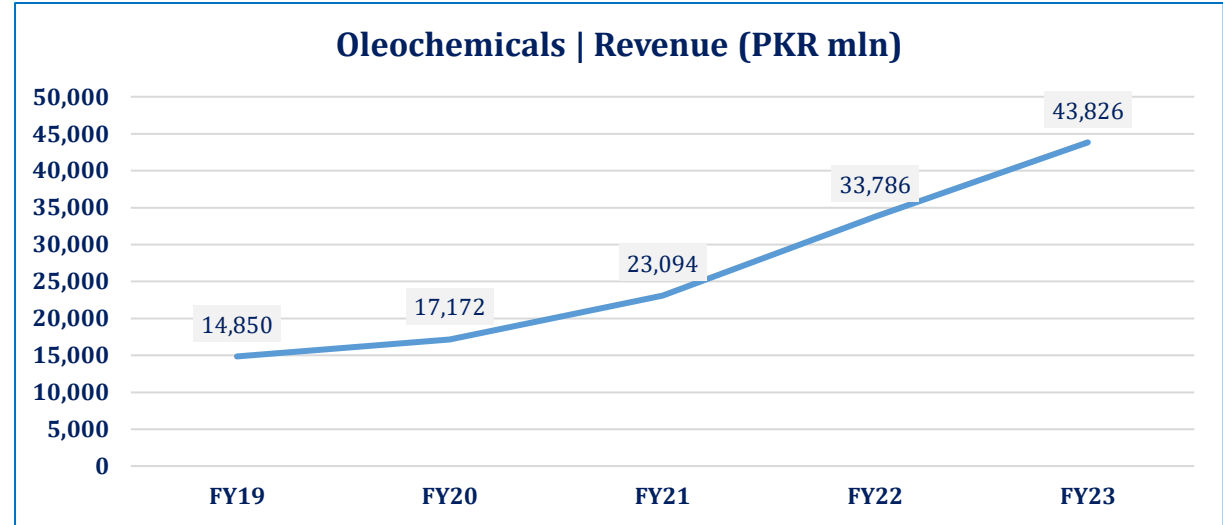
- Oleochemicals have four different processes, each of which gives a different by-product for different product manufacturing. These processes are: hydrolysis, transesterification, saponification and direct hydrogenation.
- The primary inputs for the manufacturing of oleochemicals are fats and oils. These depend on which type of process is used and by-product is needed.



Chemicals

Oleochemicals | Demand and Supply

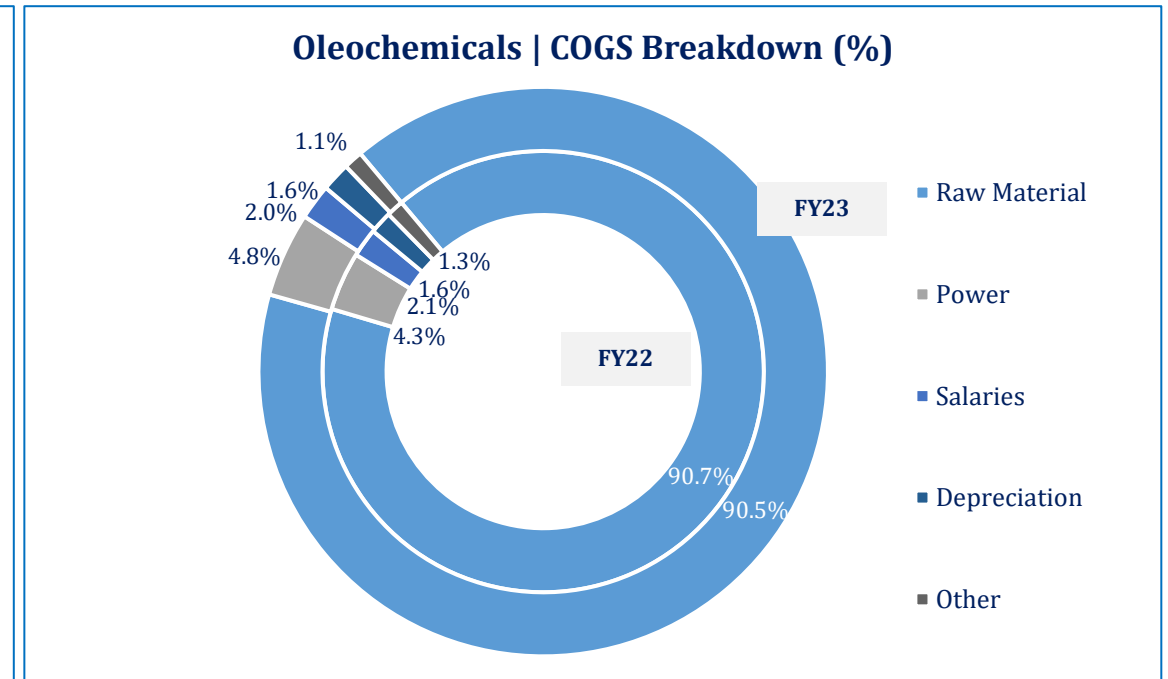
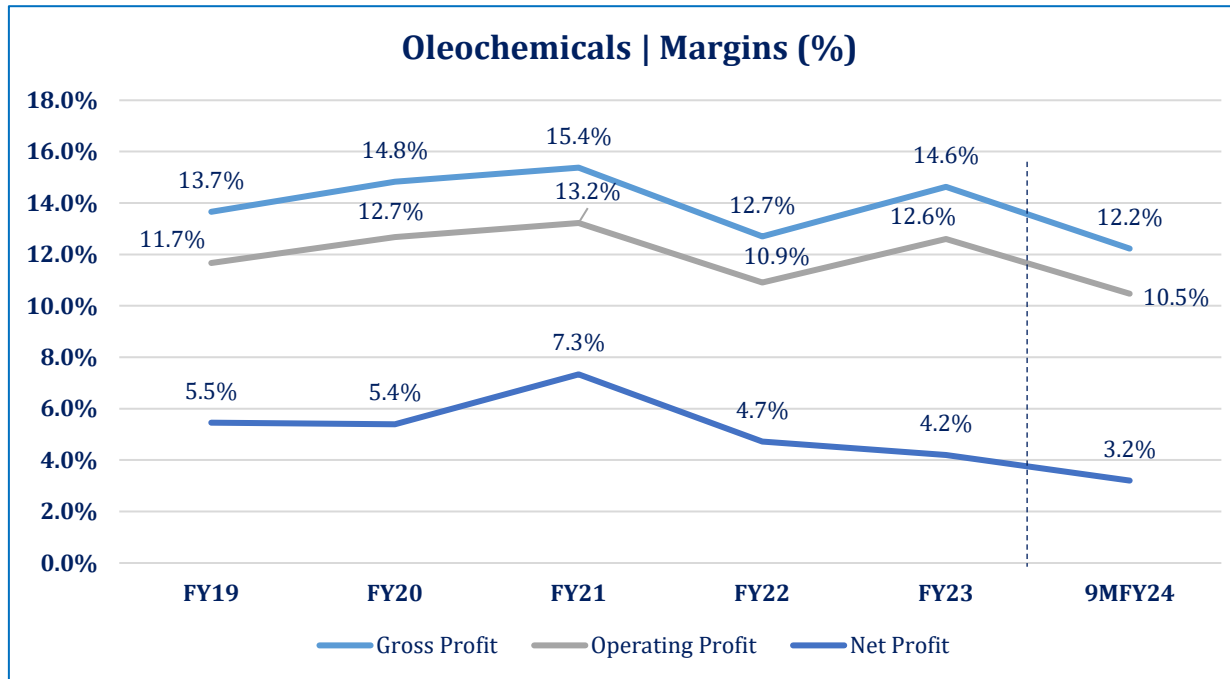
- Oleochemicals are used in a wide range of products and therefore, is an important input for the lubricants, plastics, paper, soaps and lotions industries.
- The total installed capacity of the segment was recorded at ~140,000MT p.a. in FY23 (SPLY: ~140,000MT p.a.). Nimir Chemicals holds majority market share in the oleochemicals segment.
- Segment’s revenue has exhibited CAGR of ~24.2% during FY19-23, while registering ~29.7% increase YoY in FY23 to record at PKR~43,826mln (FY22: PKR~33,786mln).
- Total production of soaps and detergents (including toilet soaps) in the country recorded ~26.2% YoY increase in FY23, with these forming ~38.8% share in chemicals sector, as recorded in QIM. However, in 10MFY24, soaps and detergents recorded ~21.1% YoY decline in production levels and amounted to ~450,457MT.



Chemicals

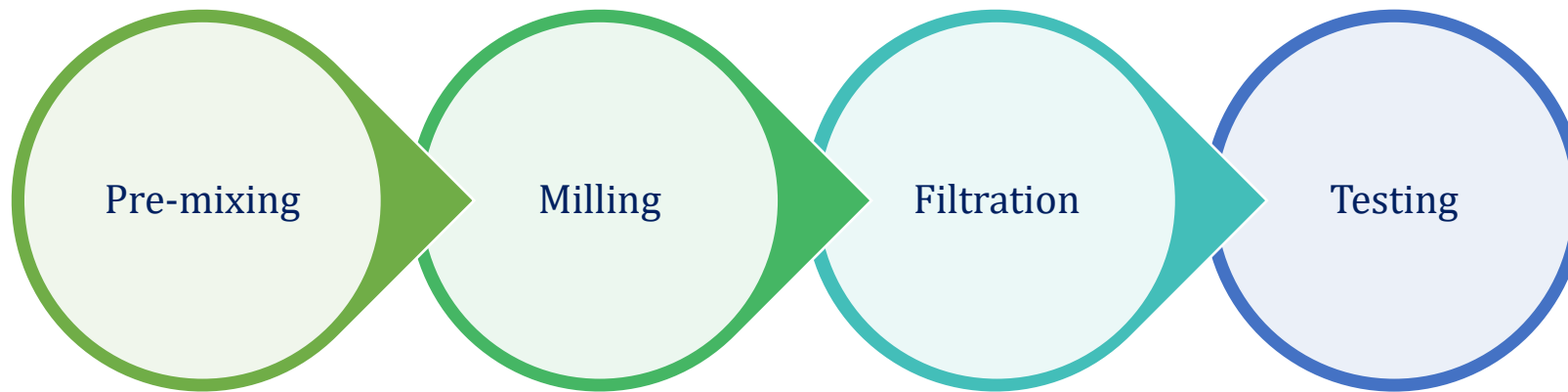
Oleochemicals | Margins

- The oleochemicals segment has largely been characterized by increasing finance cost during FY21-23 which has resulted in net profit margin declining from ~7.3% in FY21 to ~4.2% in FY23. Gross profit margins clocked in at ~14.6% in FY23 owing to ~29.7% YoY higher sales revenue. However, net margins declined to ~4.2% during the year, owing to ~139.4% YoY higher finance costs.
- In 9MFY24, gross margins declined to ~12.2% while operating profit margins were recorded at ~10.5%. Net profit margins clocked in at ~3.2% during the period.
- Raw materials held the largest share of overall costs at ~90.5% in FY23 (FY22: ~90.7%), comprising mainly fats and oils. Next to Raw materials was the Power component, which made up ~4.8% of overall costs in FY23 (FY22: ~4.8%).



Printing Ink | Production Process

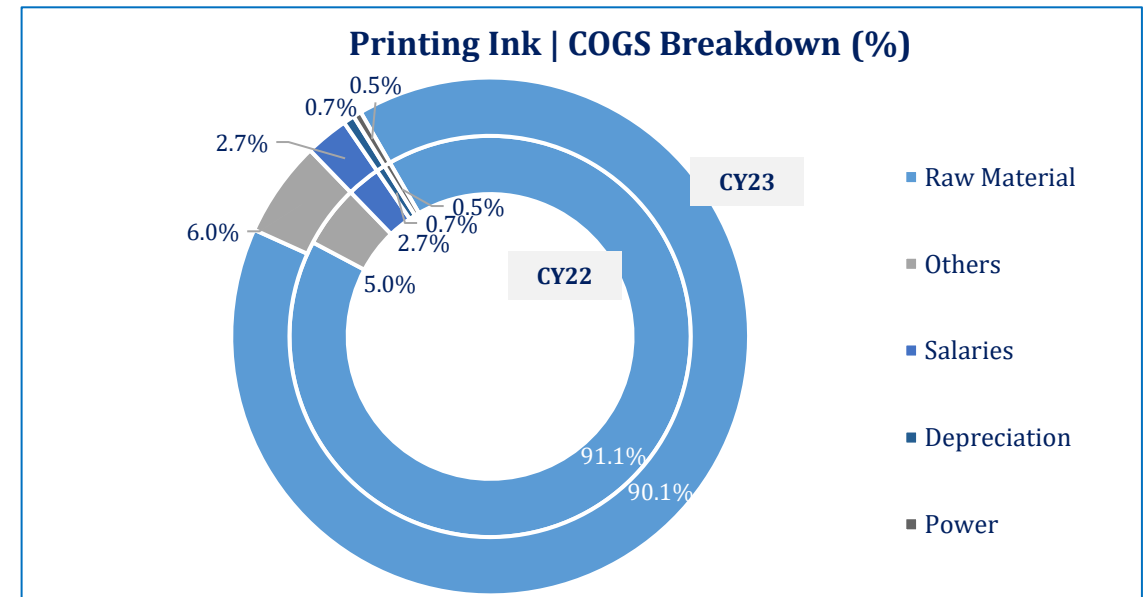
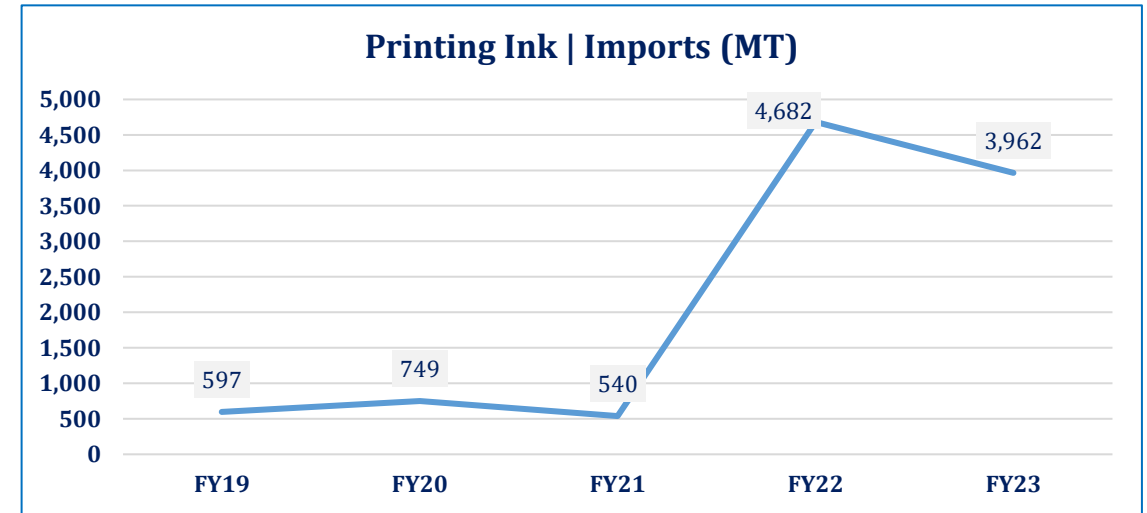
- **Premixing:** The addition of ingredients like pigments, waxes and driers is done at this stage.
- **Milling:** The ink is forced into the chamber and the rotating disks move the metal pellets through the ink, breaking the pigment down.
- **Filtration:** After milling, ink may be put through a series of filtration steps to remove any oversized particles.
- **Testing:** The finished ink can be tested for a wide variety of properties. Those particularly, tack, fineness of grind (pigment particle size), and water pickup (emulsification rate).



Chemicals

Printing Ink | Demand and Supply

- Printing Ink is used by both direct consumers for personal printers as well as commercial users for packaging and branding purposes. Therefore, the use of printing ink is spread across a diverse range of sectors.
- The total revenue of segment recorded at PKR~88,600mln in CY23 (SPLY: PKR~78,041mln), a YoY increase of ~13.5%.
- Printing Ink imports declined by ~15.3% YoY during FY23 and stood at ~3,962MT (SPLY: ~4,682MT). However, this was not a result of SBP-imposed restrictions of May and Jul'22.
- Raw materials held the largest share of segment's overall costs at ~90.1% in CY23 (CY22: ~91.1%). The second largest contributor to cost were salaries which made up ~2.7% in CY23, same as SPLY.

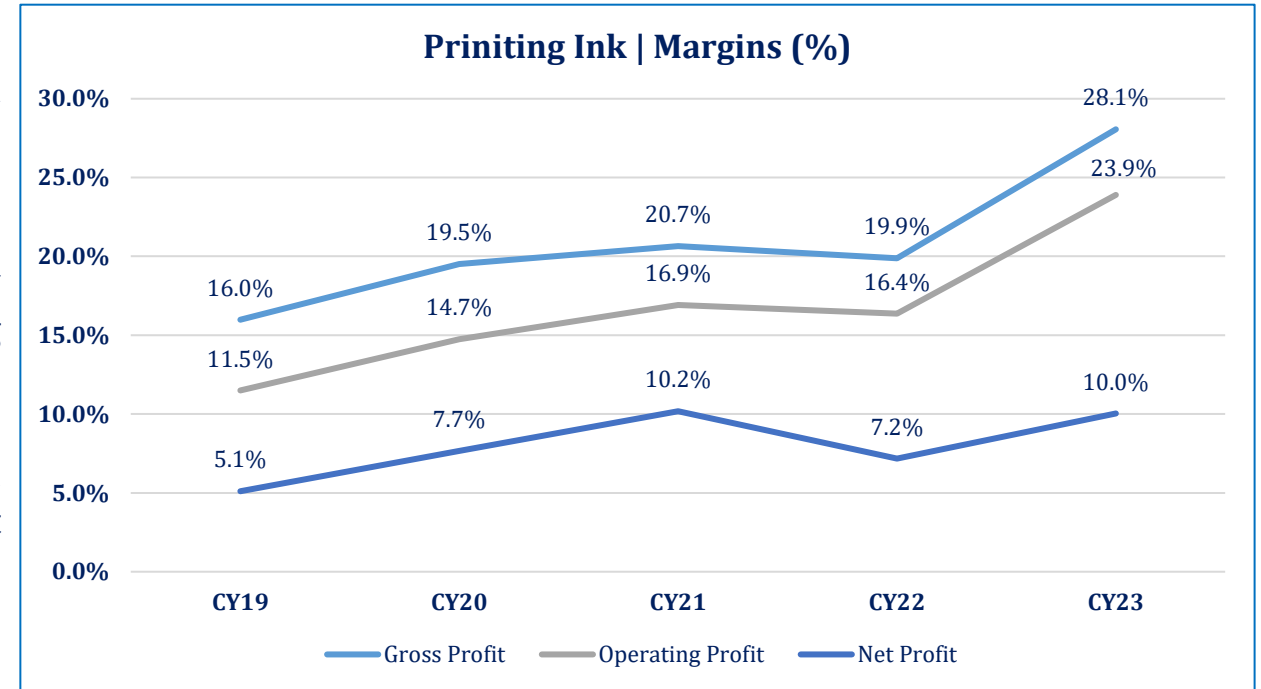


Note: Data is based on 1 PACRA-rated segment player. HS Codex for imports: 3215.1190, 3215.1990. Revenue figure is estimated based on a prominent segment player's market share.

Chemicals

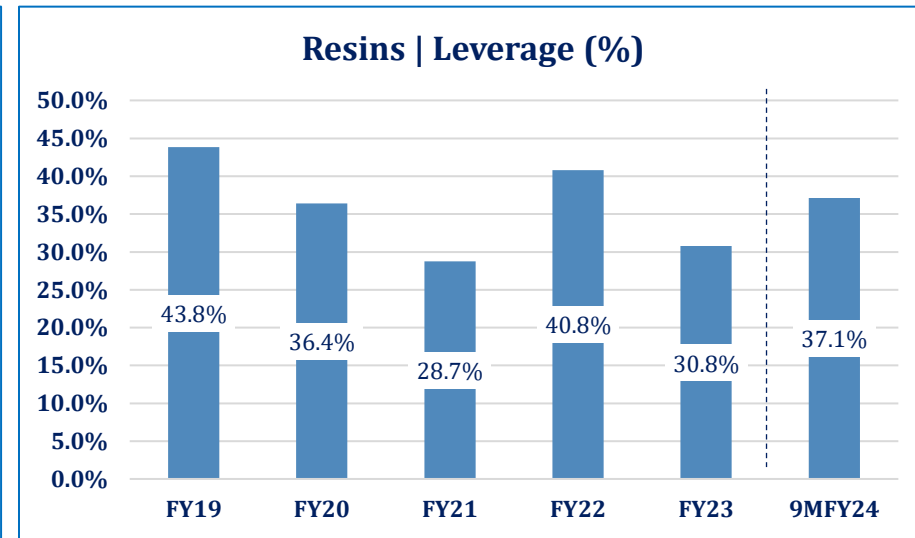
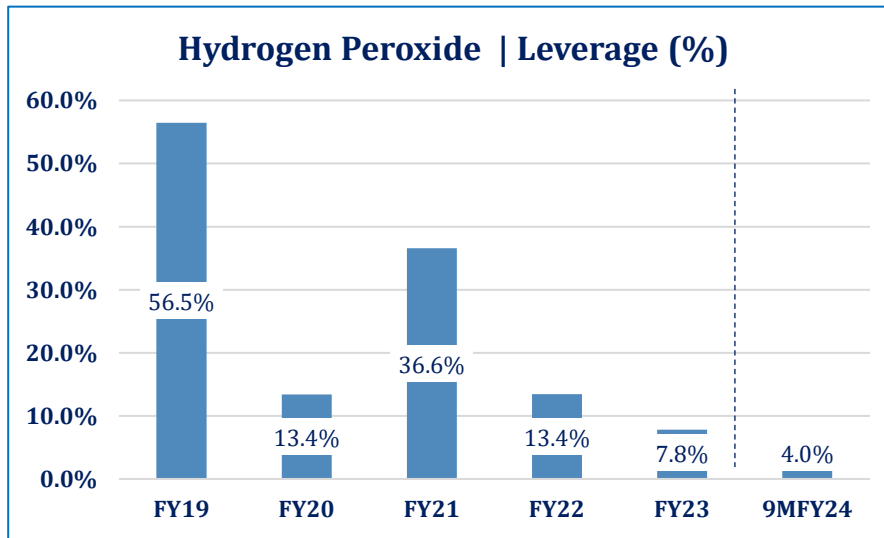
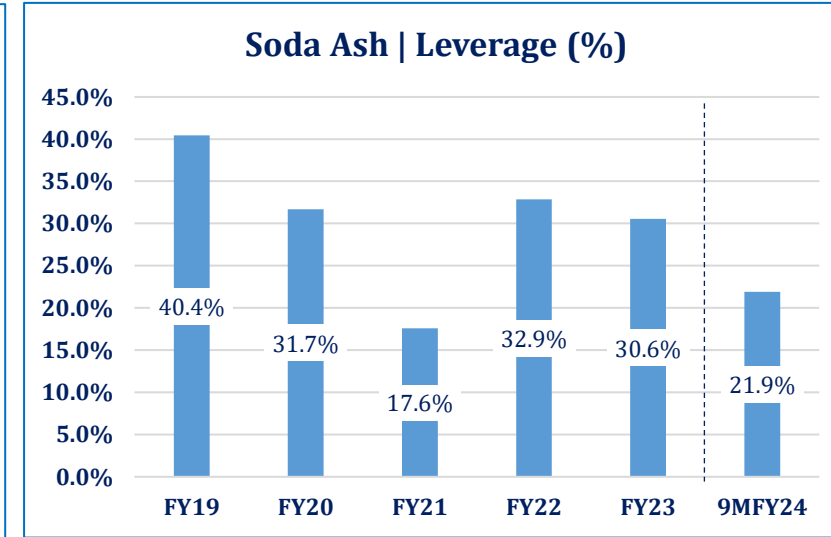
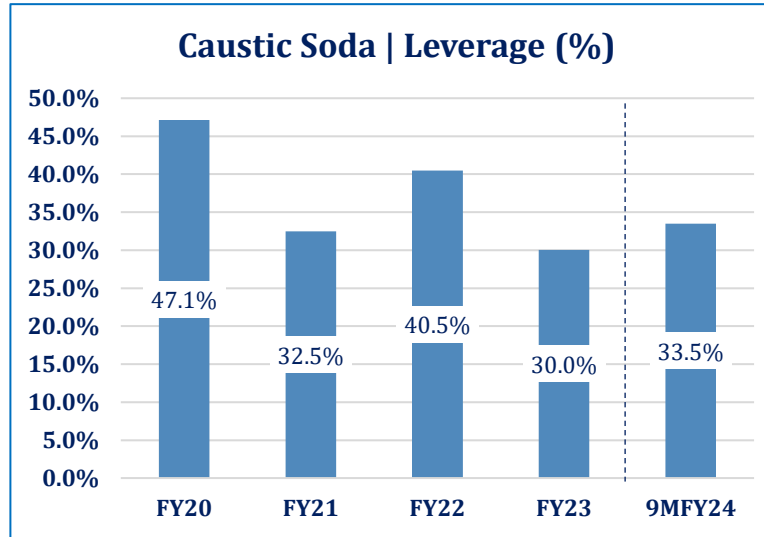
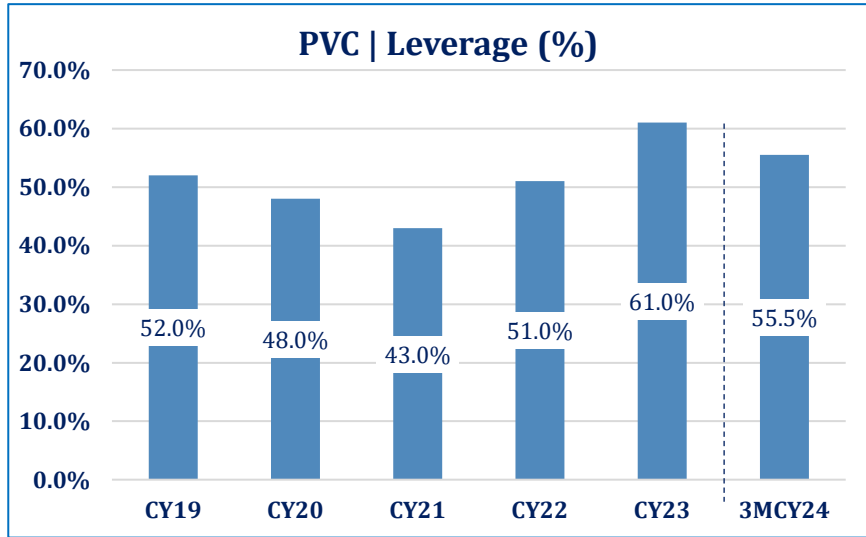
Printing Ink | Margins

- During CY23, gross margins for the segment increased to ~28.1%, in line with ~13.5% YoY higher printing ink sales revenue and only ~1.9% YoY higher cost of goods sold.
- Meanwhile, operating margin increased to ~23.9% during CY23, despite high overall high inflationary levels in the country (National CPI averaged ~29.7% compared with ~24.5% during SPLY).
- Segment's net profit margin also increased to ~10.0%, in line with finance cost declining by ~11.2% YoY despite prohibitive interest rate environment in the country.



Chemicals

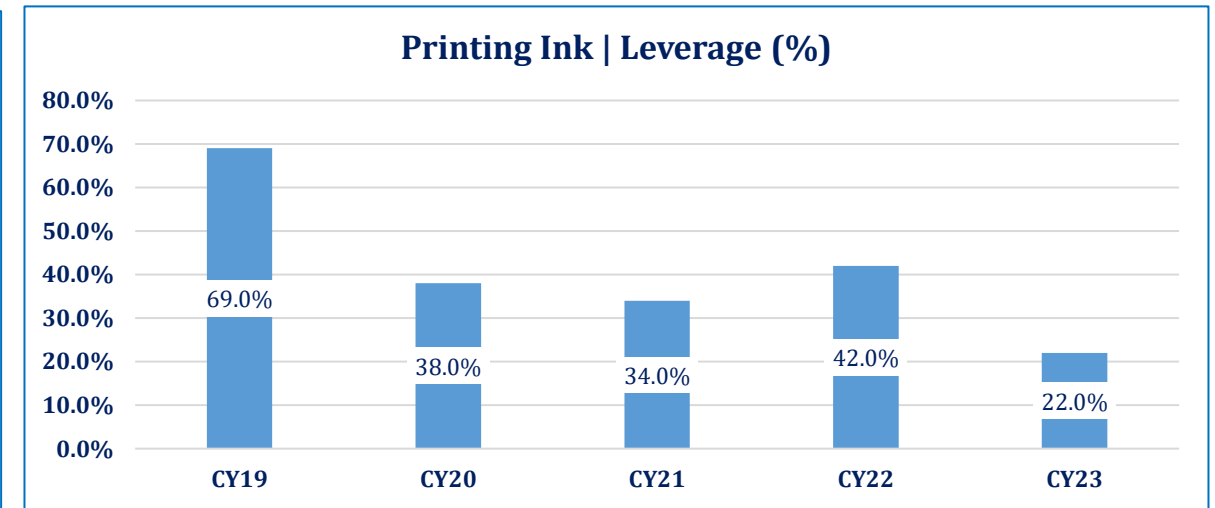
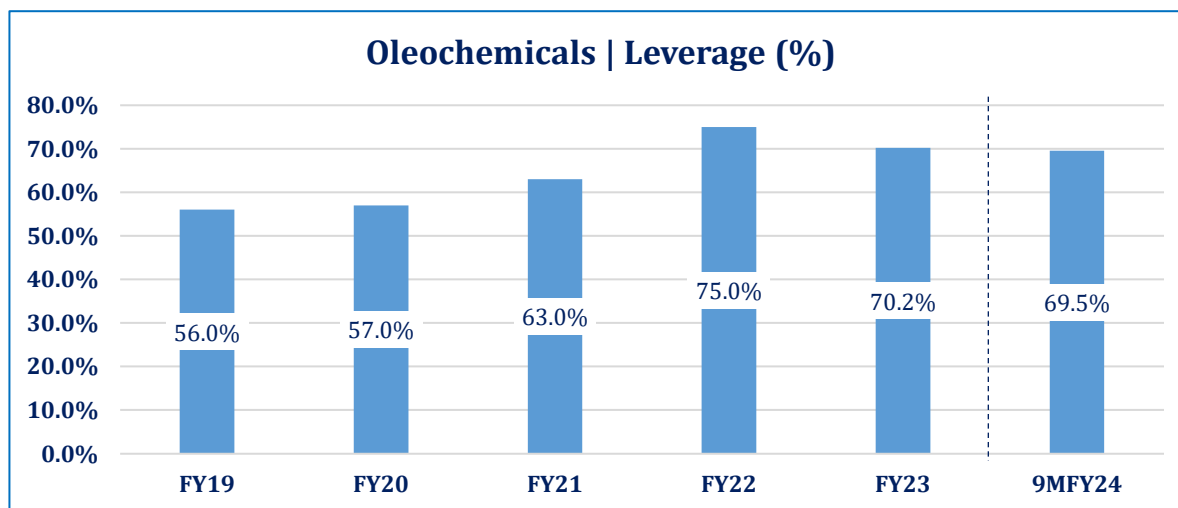
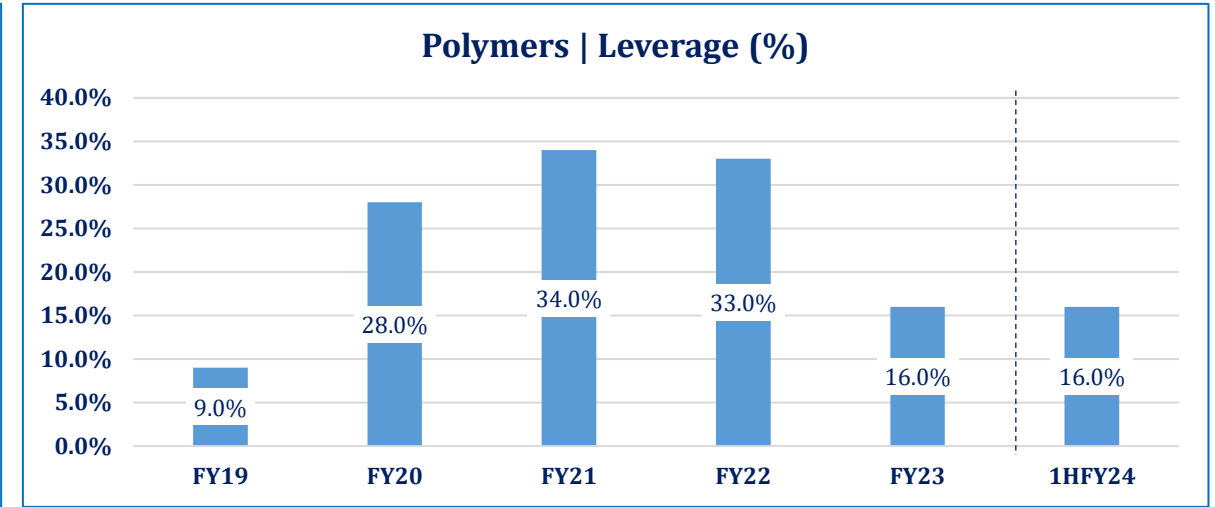
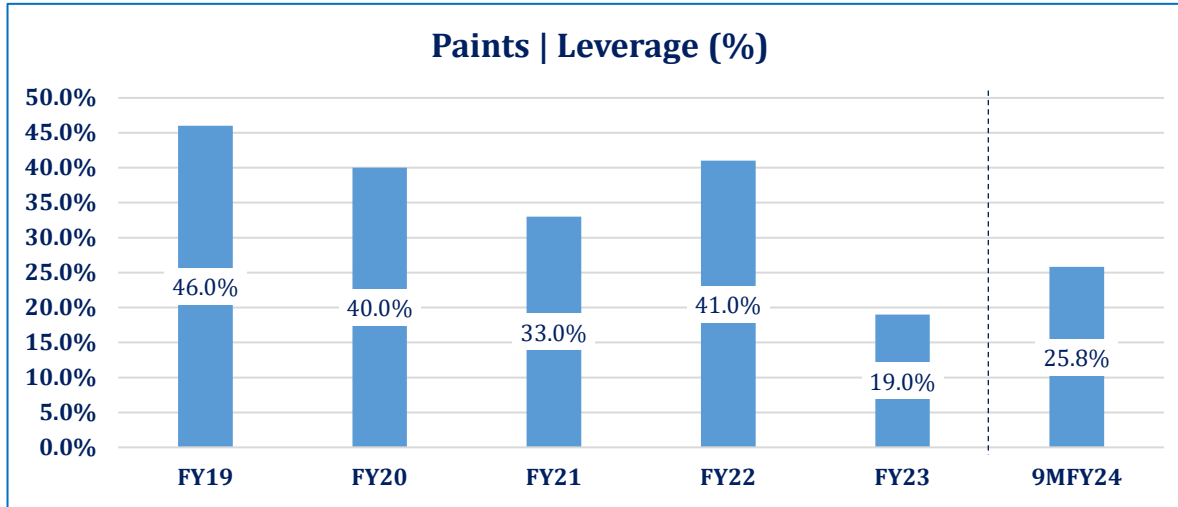
Financial Risk | Leverage



Note: Data is based on 14 PACRA-rated/ listed sector player.

Chemicals

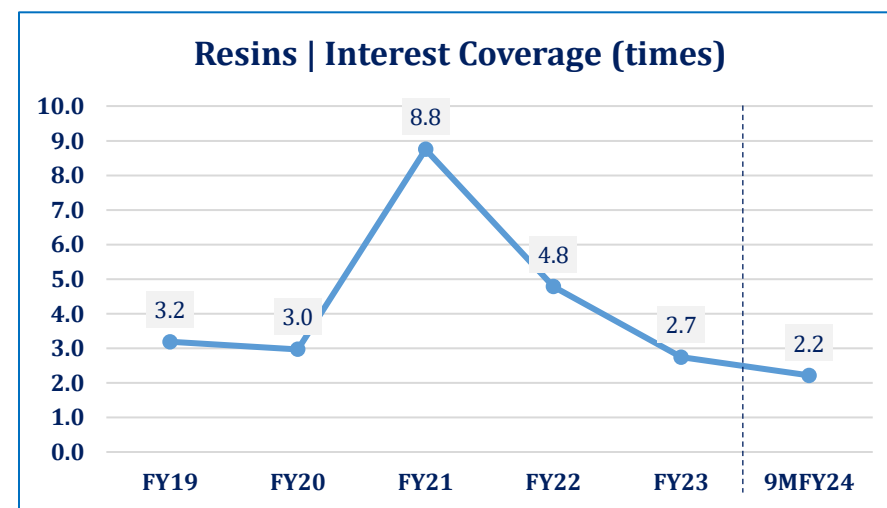
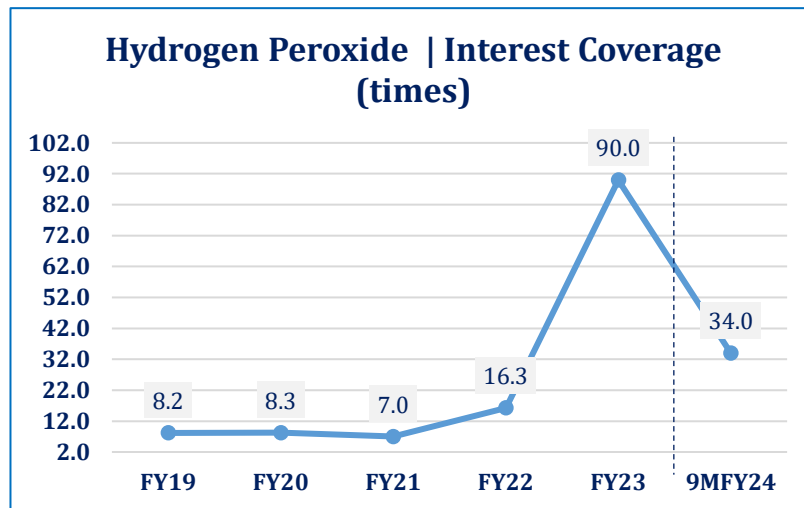
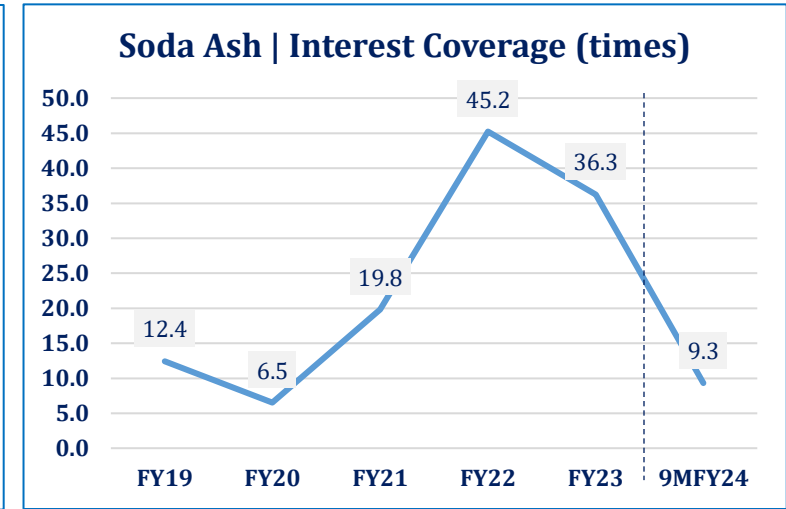
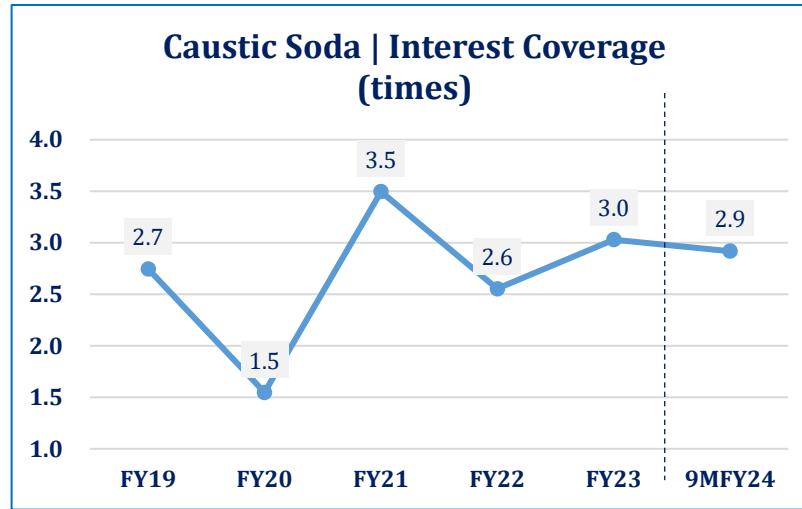
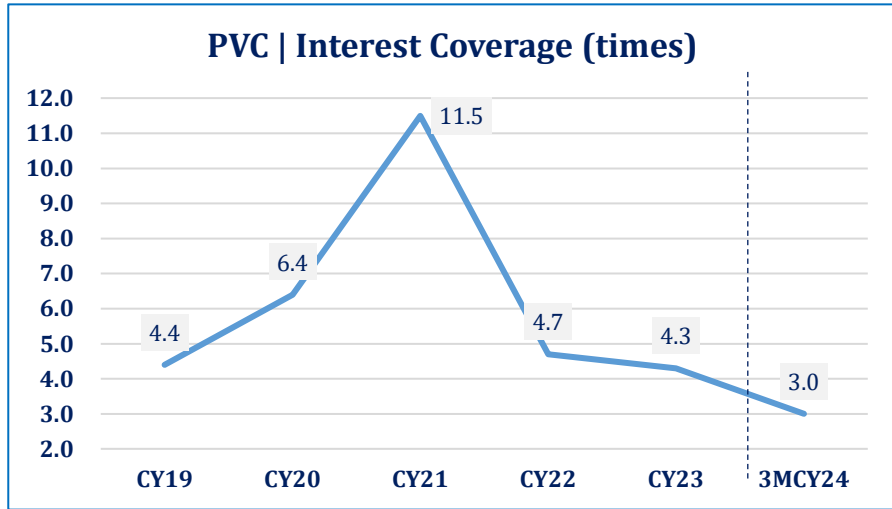
Financial Risk | Leverage



Note: Data is based on 14 PACRA-rated/ listed sector players.

Chemicals

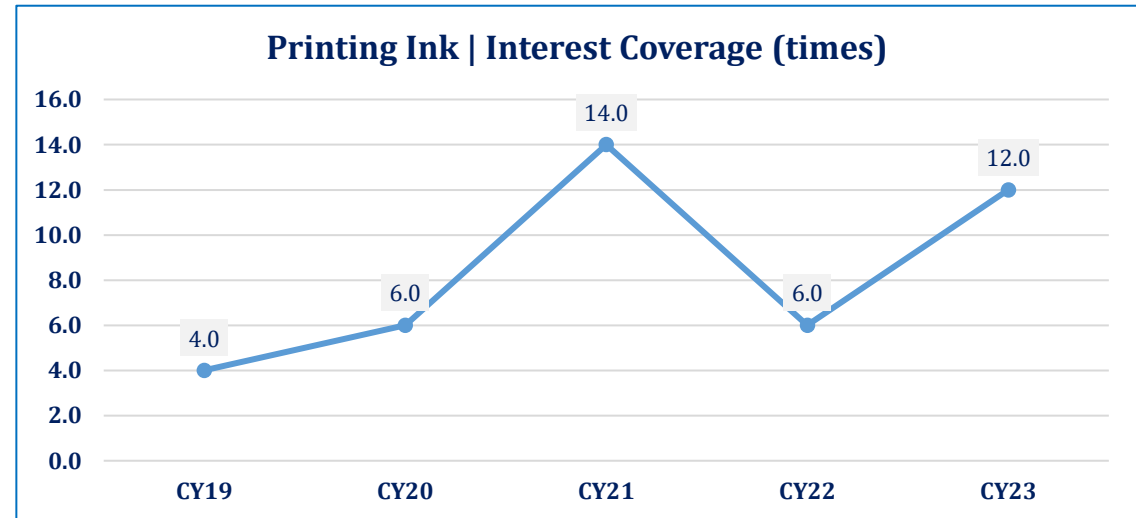
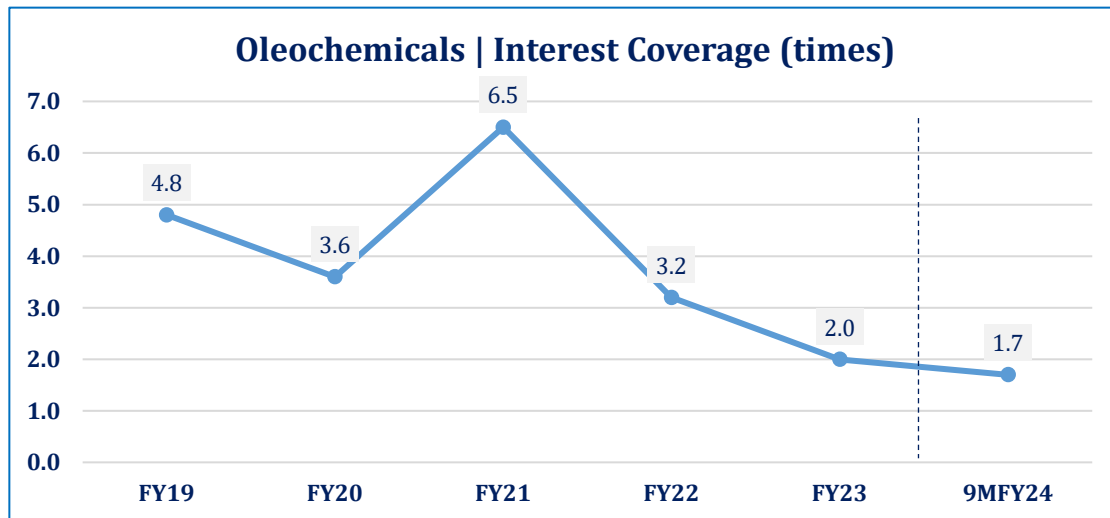
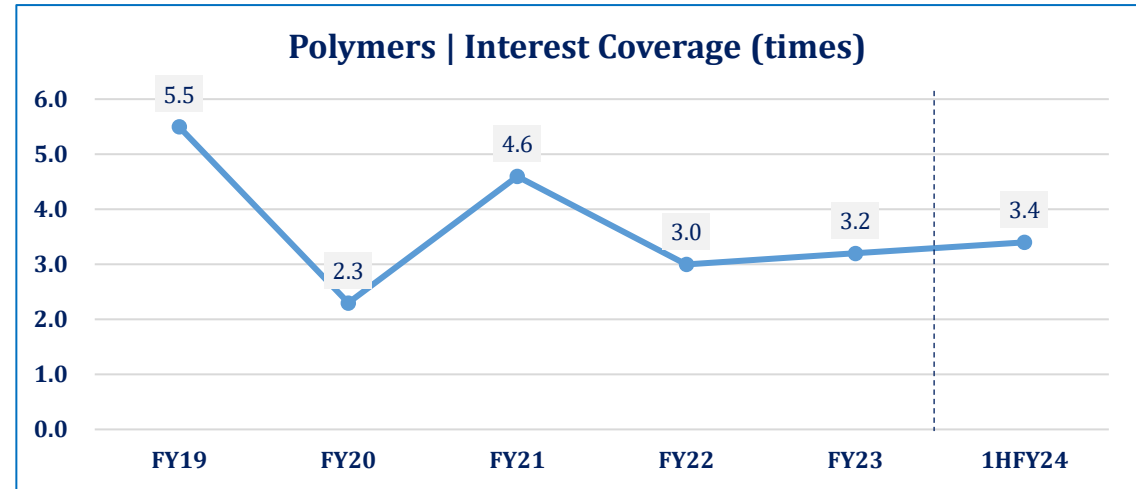
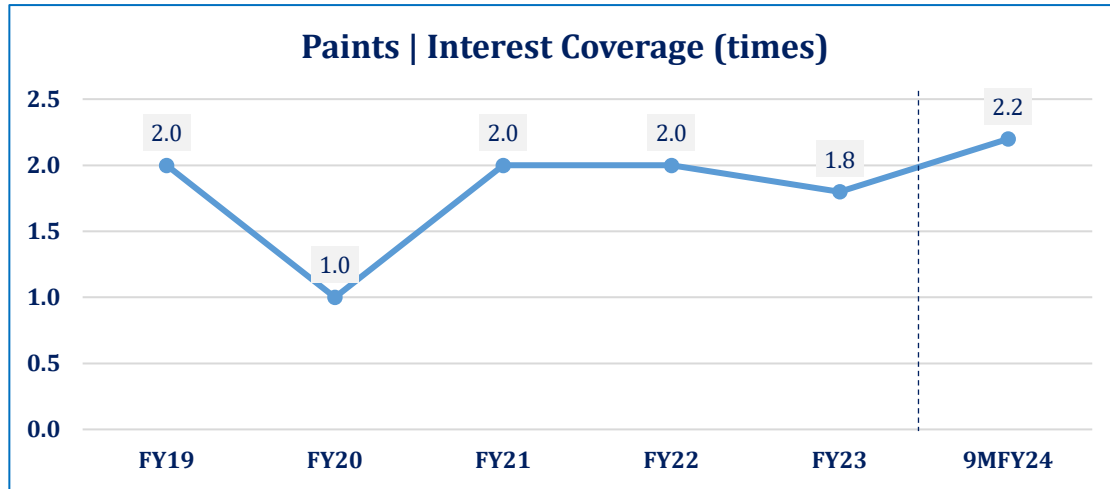
Financial Risk | Coverages



Note: Data is based on 14 PACRA-rated/ listed sector player.

Chemicals

Financial Risk | Coverages

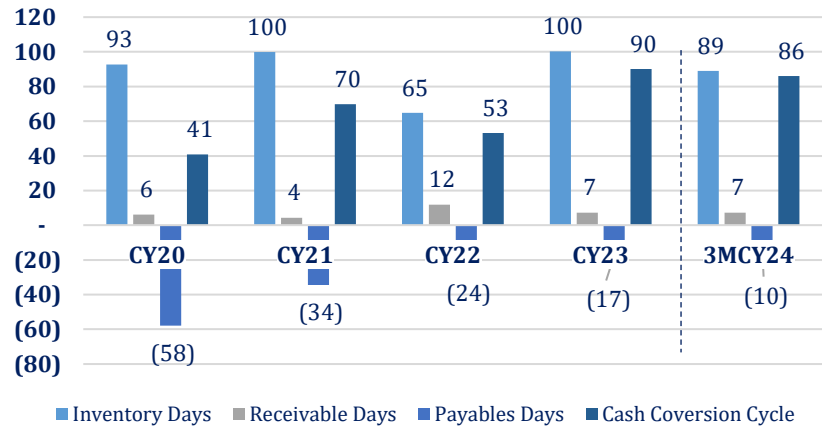


Note: Data is based on 14 PACRA-rated/ listed sector players.

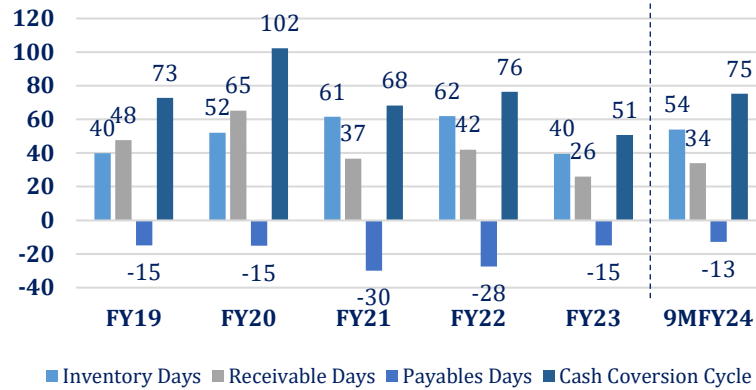
Chemicals

Financial Risk | Working Capital Management

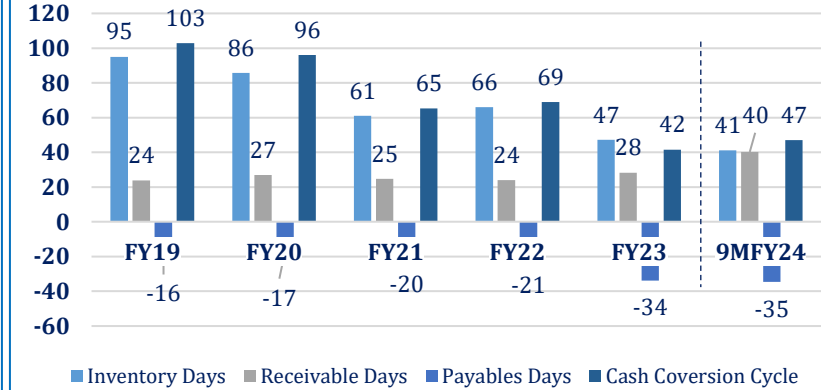
PVC | Working Capital Management (Days)



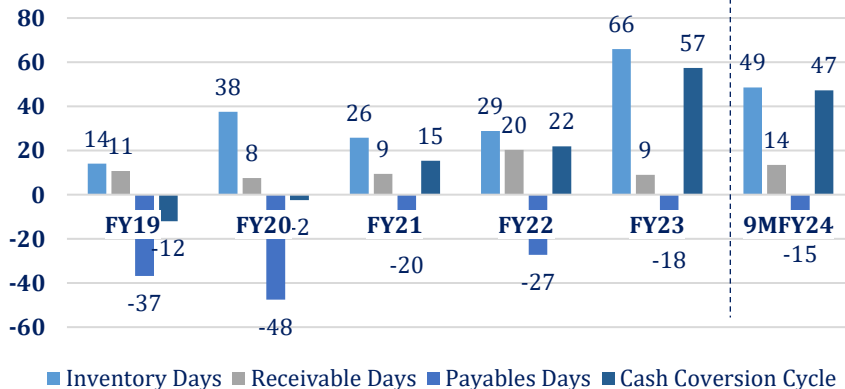
Caustic Soda | Working Capital Management (Days)



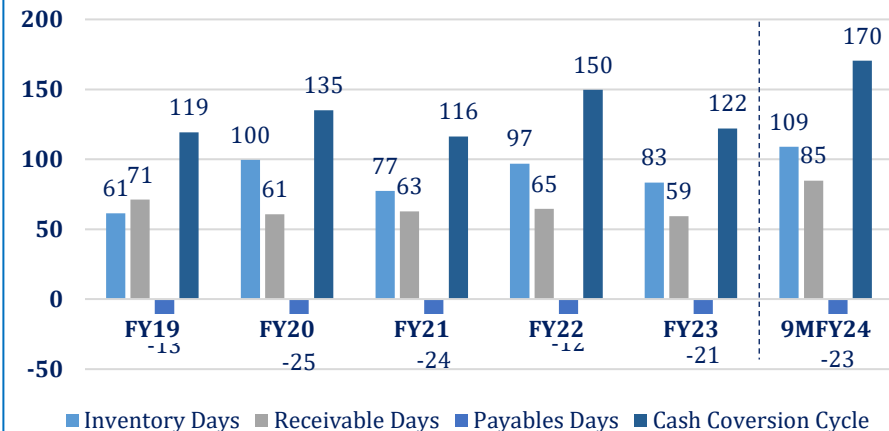
Soda Ash | Working Capital Management (Days)



Hydrogen Peroxide | Working Capital Management (Days)



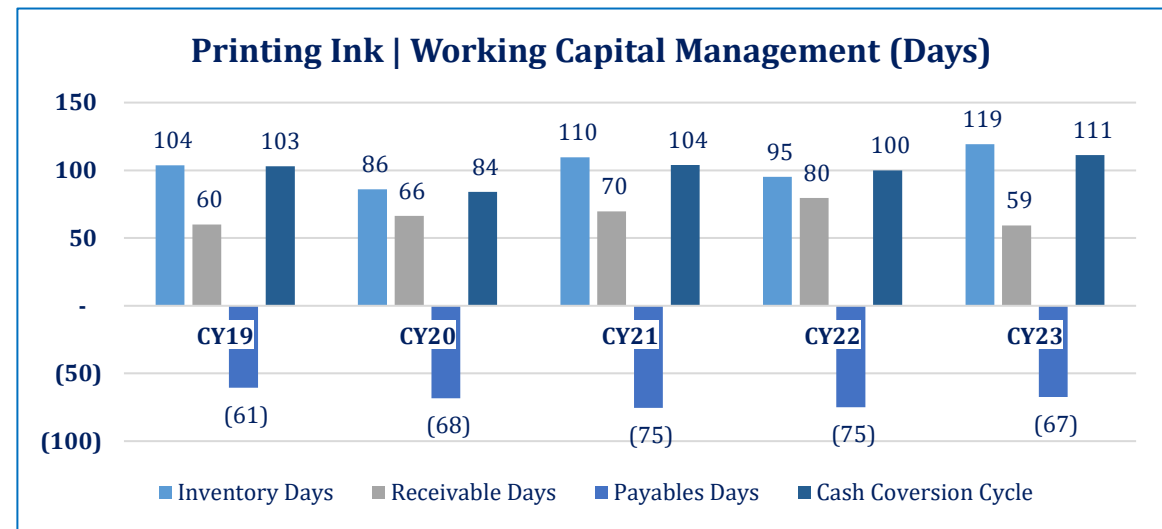
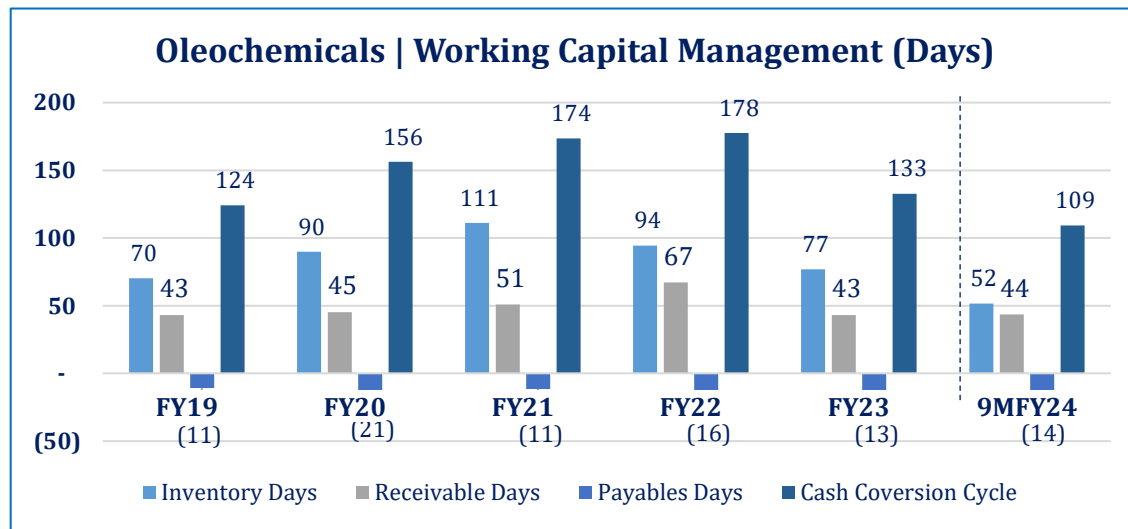
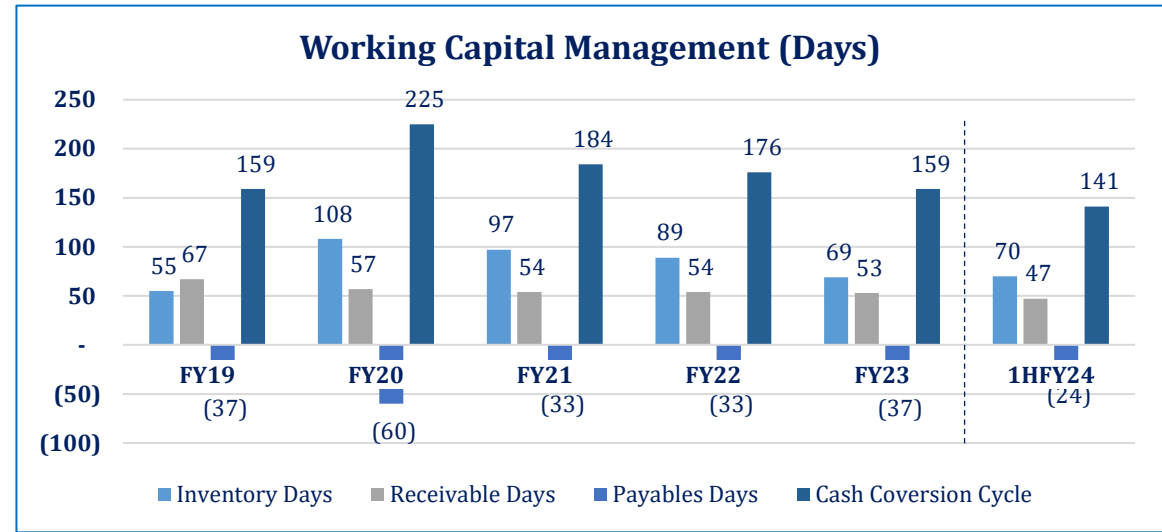
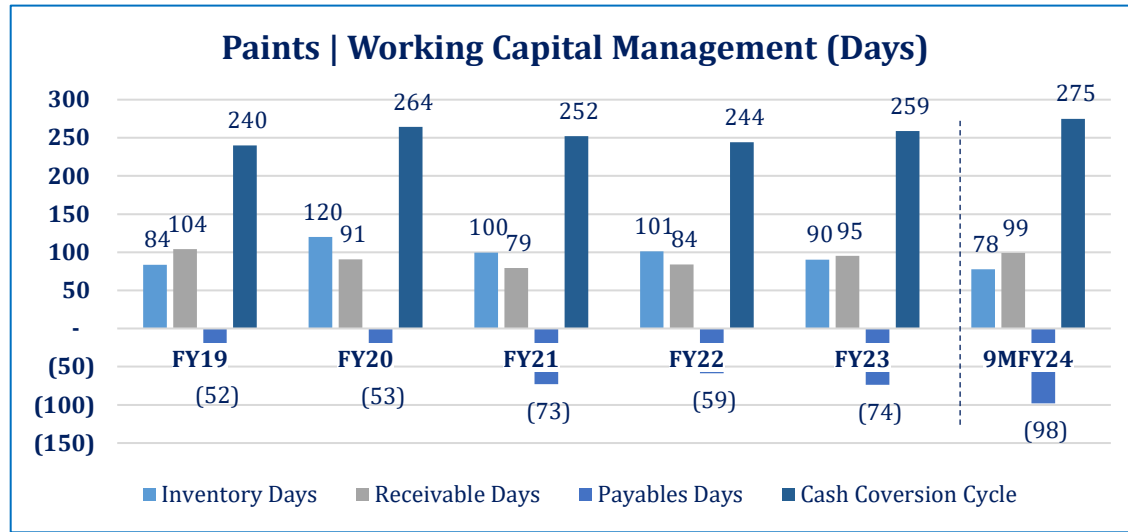
Resin | Working Capital Management (Days)



Note: Data is based on 14 PACRA-rated/ listed sector player.

Chemicals

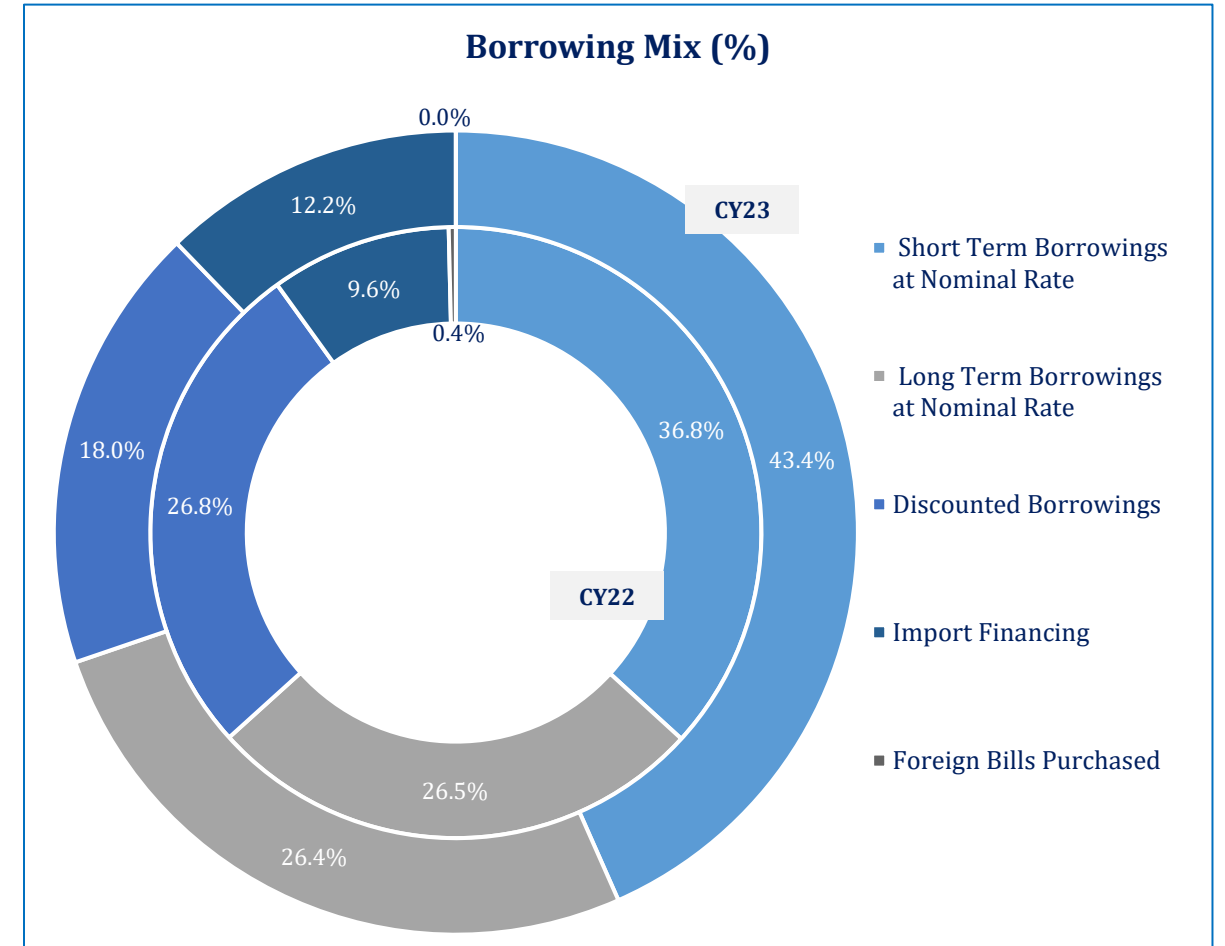
Financial Risk | Working Capital Management



Note: Data is based on 14 PACRA-rated/ listed sector players.

Financial Risk | Borrowing Mix

- As of End-May'24, the sector's overall borrowings stood at PKR~155.8bln, up ~17.1% YoY (End-May'23: ~132.3bln).
- Short-term borrowings (STBs) at nominal rate stood at PKR~67.9bln, up ~38.8% YoY, and held the largest share in the sector's borrowing mix at ~43.4% (SPLY: ~36.8%).
- Long-term borrowings (LTBs) at nominal rate stood at PKR~41.1bln, up~17.2% YoY and held a share of ~26.4% in overall borrowings (End-May'23: ~26.5%).
- Discounted borrowing (LTFF & EFS) stood at PKR~28.0bln (End-May'23: ~35.3bln), down ~20.6% YoY and held a share of ~18.0% in the overall borrowing mix.
- Meanwhile, import financing stood at PKR~19.0bln (End-May'23: PKR~12.6bln), up ~50.3% YoY as of End-May'24, and held ~12.2% share in the total borrowing mix during the period.



Chemicals

Duty Structure

HS Code	Description	Custom Duty		Additional Customs Duty		Income Tax		Sales Tax		Regulatory Duty	
		FY23	FY24	FY23	FY24	FY23	FY24	FY23	FY24	FY23	FY24
3904.22, 109, 21	Polyvinyl Chloride	11-20%	11-20%	2-6%	2-6%	12%	12%	18%	18%	0%	0%
2815.1100	Caustic Soda Solid	20%	20%	6%	6%	12%	12%	18%	18%	0%	0%
2847	Hydrogen Peroxide Solidified with Urea	11%	11%	2%	2%	12%	12%	18%	18%	5%	5%
3903.9090	Polymer Others	11%	11%	2%	2%	12%	12%	18%	18%	0%	0%
3208.9090, 1090, 2090	Paints	20%	20%	6%	6%	12%	12%	18%	18%	5-10%	5-10%
3215.1920	Digital Printing Ink	20%	20%	6%	6%	12%	12%	18%	18%	0%	0%
3215.1930, 1990, 1190	Other Processed Printing Ink	20%	20%	6%	6%	12%	12%	18%	18%	0%	0%

Chemicals

SWOT Analysis

- Steadily increasing demand.
- Local availability of raw materials.
- Ability to pass on increased cost of production.

Strengths

Weaknesses

- Reliance on imported power source such as Oil, gas, coal.
- Exposure to exchange rate volatility.
- Shortage of locally available materials PVC, Polymer.

- Highly competitive.
- Exchange rate exposure.
- New entry of players.
- Rising energy cost.

Threats

Opportunities

- Low per capita consumption
- Export market to neighboring countries
- Room for research and development

Chemicals

Porter's 5 Forces



Potential New Entry

Purchasing Power

Substitutes

Supplier Power

Competitive Rivalry

- **PVC** | Low | Capital Intensive
- **Caustic Soda** | Medium | Abundant Raw material, Technical Process
- **Soda Ash** | Low | Capital Intensive, Technical Process
- **HPO** | Medium | Abundant raw material, Technical Process
- **Resin** | High | Local Availability of raw material, Simplicity of production process
- **Paint** | Medium | Big players
- **Oleochemical** | Low | Monopoly
- **Polymer** | High
- **Printing Ink** | Low

- **PVC** | Low | Single Player
- **Caustic Soda** | High | Capacity greater than demand
- **Soda Ash** | Low
- **HPO** | Low | Two Players
- **Resin** | High | Numerous small Players
- **Paint** | High | Variety
- **Oleochemical** | Low
- **Polymer** | High
- **Printing Ink** | Low

- **PVC** | Low
- **Caustic Soda** | High | Multiple other products
- **Soda Ash** | Medium | Availability of other products
- **HPO** | Medium
- **Resin** | High
- **Paint** | Low | Expensive substitutes
- **Oleochemical** | High | Multiple products
- **Polymer** | High | Multiple products
- **Printing Ink** | Low

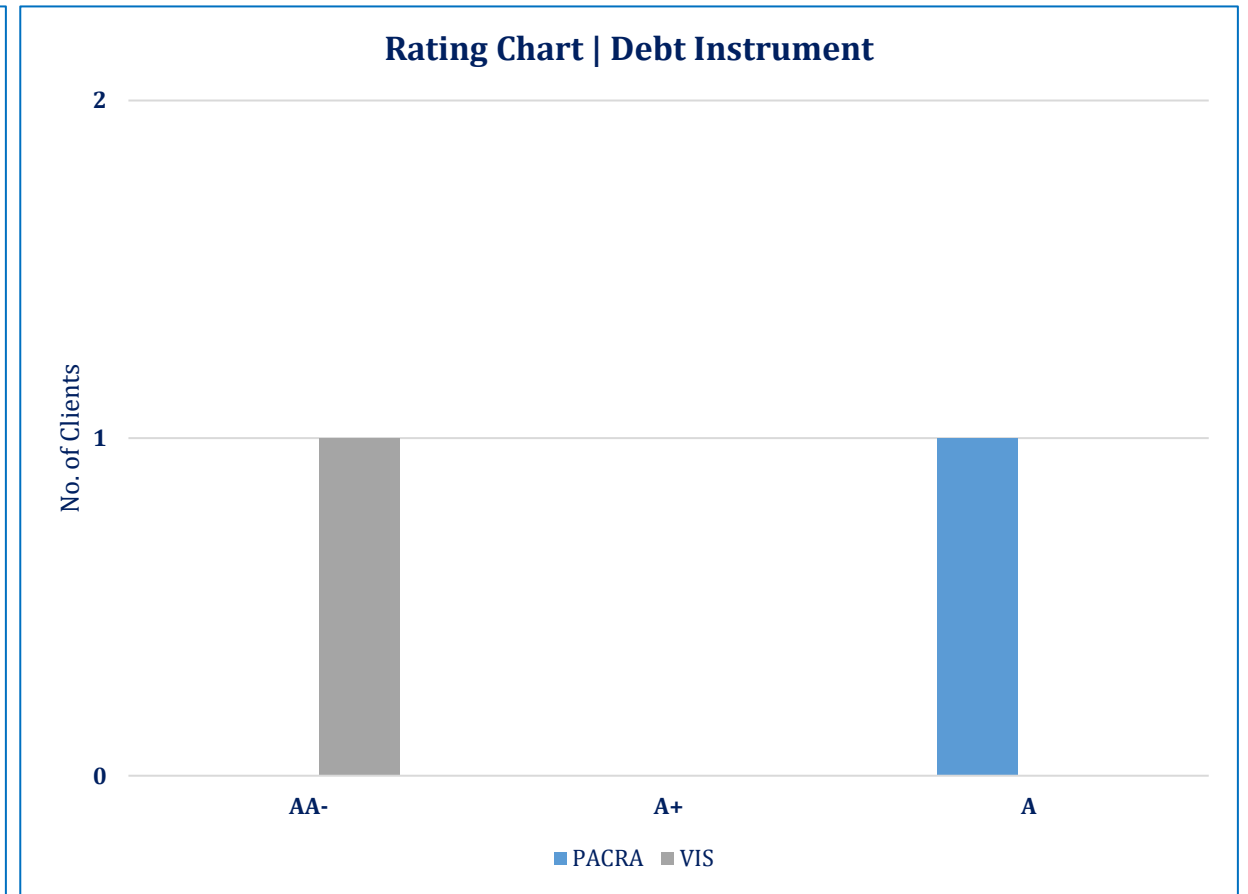
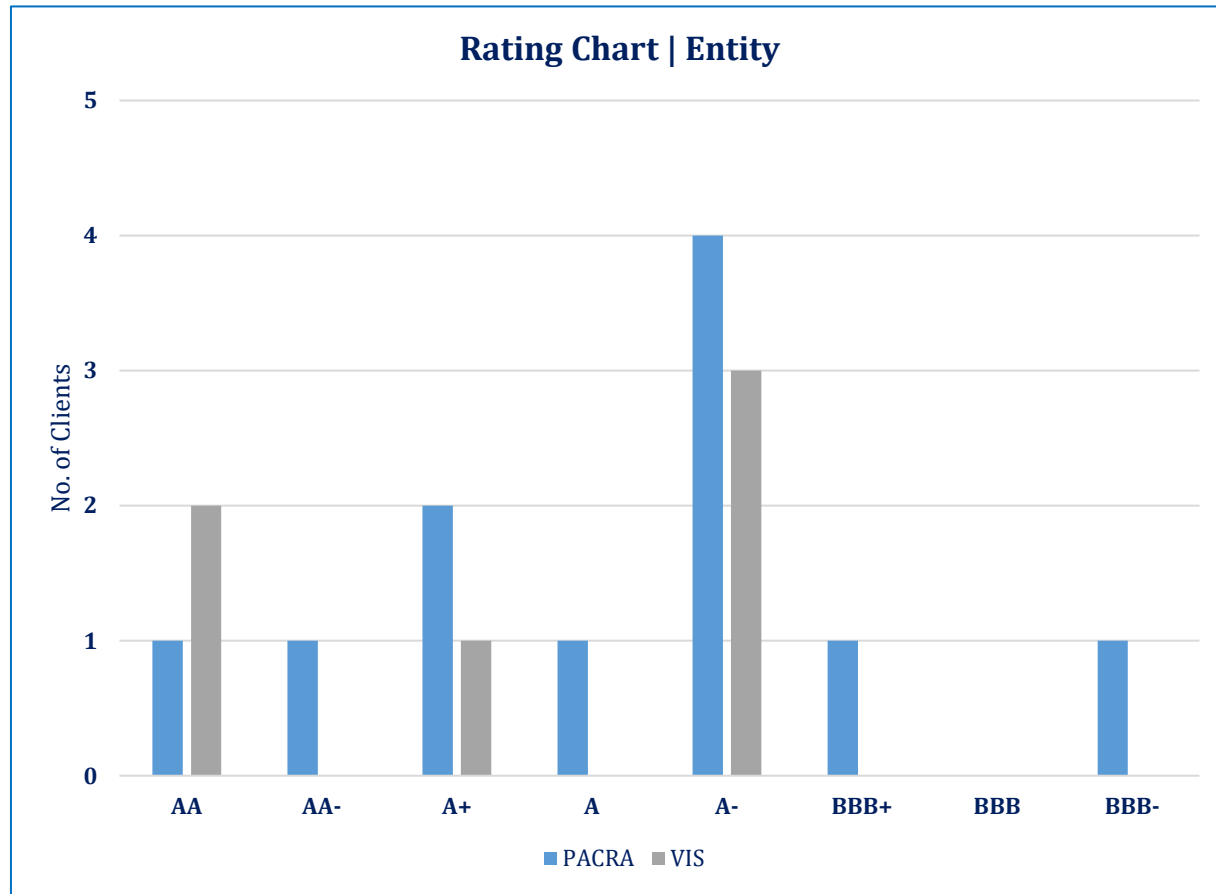
- **PVC** | High | Imported raw material
- **Caustic Soda** | Low | Local availability of raw materials
- **Soda Ash** | Low | Local availability of raw materials
- **HPO** | Low | Local availability of raw materials
- **Resin** | Low | Easily available
- **Paint** | Low
- **Oleochemical** | High
- **Polymer** | Low
- **Printing Ink** | High

- **PVC** | Low | Single Producer
- **Caustic Soda** | High | Multiple Producers
- **Soda Ash** | Low | Two Players
- **HPO** | Low | Two Players
- **Resin** | High | Multiple producers
- **Paint** | High
- **Oleochemical** | Low | One producer
- **Polymer** | High
- **Printing Ink** | Low | Three major players

Chemicals

Rating Curve

- PACRA rates 11 entities of chemical sector. Rating bandwidth is from AA to BBB-. PACRA also rates 1 debt instrument.



Segment-wise Outlook

PVC: Stable

- The segment recorded an annual production capacity of ~295,000MT in CY23, while production was down ~3.7% YoY.
- During CY23, gross margins for the segment declined to ~25.5%, in line with ~1.0% YoY lower PVC sales revenue and ~3.2% YoY higher cost of goods sold. Meanwhile, operating margin also dropped to ~22.5% on the back of overall high inflationary levels in the country (National CPI averaged ~29.7% compared with ~24.5% during SPLY).
- In CY23, leverage increased to ~61.0%, recording a 5-year high, on the back of ~27.8% YoY higher borrowing that clocked in at PKR~31.5mln. Meanwhile, interest coverage deteriorated to ~4.3x in CY23 owing to high interest rates (SPLY: ~4.7x).
- Going forward, with inflation and interest rates easing down (during 6MCY24, national CPI averaged ~12.6%, while MPR was reduced to 20.5% in Jun'24), profit margins are expected to improve, however, energy rate hikes, currency fluctuations and global ethylene prices might keep these in check.

Caustic Soda: Positive

- Segment's capacity utilization during FY23 recorded at ~62.3% (FY22: ~68.0%), while production was up ~17.2% YoY. Meanwhile, imports of Caustic Soda accounted for ~10.5% of the total supply during FY23.
- During FY23, average gross margins increased to ~16.7%, owing to ~38.7% YoY higher sales revenue. Meanwhile, average operating margin also increased to ~10.2%. Net profit was up ~26.0% YoY in FY23.
- In FY23, average leverage dropped to ~30.0% (FY22: ~40.5%), while overall borrowings were down ~12.2% YoY. Meanwhile, interest coverage improved during FY23 to ~3.0x (SPLY: ~2.6x).
- In FY24, national CPI averaged ~30.9% (SPLY: ~19.7%), while the MPR was revised downwards as of Jun'24. These are likely to impact the segment positively, given especially lower import dependency. However, soaps and detergents production was down ~21.1% YoY in 10MFY24, against ~26.2% YoY growth in FY23.

Soda Ash: Stable

- Local production stood at ~736,658MT during FY23, a YoY increase of ~13.1%. During 10MFY24, it showed an increase of ~4.1% YoY (~637,144MT).
- During FY23, average gross margins improved slightly to ~22.6%, in line with ~62.1% YoY higher Soda Ash sales revenue.
- During the year, segment's leverage declined to ~30.6% (FY22: ~32.9%) on the back of ~51.9% YoY increase in shareholder equity.
- Average interest coverage had improved significantly during FY19-22. However, it dropped to ~36.3x in FY23 owing to high interest rates (MPR rose ~825bps YoY, recording at 22% as at End-Jun'23).
- Despite increase of ~80.1% YoY higher operating profits, the finance cost increased by 257.0% resulting in decline of interest coverage
- Segment's performance is likely to stay rangebound, on the back of sluggish demand from sectors such as soaps, detergents and paper.

Chemicals

Segment-wise Outlook

Hydrogen Peroxide: Positive

- Overall supply comprises local production and imports, with ~80.0% and ~20.0% average shares during FY19-23, respectively.
- During FY23, these registered ~3.7% and ~5.3% YoY increase, respectively, while total supply increased to ~52,100MT, up ~4.0% YoY.
- During FY23, gross margins increased to ~41.0%, in line with ~58.1% YoY higher sales revenue.
- Meanwhile, operating margin also increased to ~33.5%. Segment's net profit increased by ~197.2% YoY in FY23 (FY22: up ~68.8% YoY).
- In FY23, segment's leverage lowered to ~7.8% (FY22: ~13.4%) owing to ~27.7% YoY lower borrowings, while interest coverage improved significantly to ~90.0x.
- The aforementioned improved economic outlook (inflation, interest rates), along with stable demand across various sectors, are likely to keep the margins in check.

Resins: Stable

- Local production of resins increased by ~1.8% YoY in FY23, amounting to ~84,719MT, after registering a decline of ~22.1% YoY in SPLY. The production capacity of the segment was ~113,000MT in FY23 (SPLY: ~107,111MT).
- During FY23, average gross margins for the segment declined to ~16.5%, due to ~18.2% YoY higher cost of goods sold. Meanwhile, operating margins also declined to ~10.6% owing to overall high inflationary levels in the country (National CPI averaged ~30.9% compared with ~19.7% during SPLY).
- In FY23, average leverage declined to ~30.8% (FY22: ~40.8%) on the back of ~7.6% YoY higher borrowings that increased interest rate exposure
- Average interest coverage dropped during FY23 to ~2.7x in FY23.
- Going forward, lower international oil prices and stable currency are likely to improve segment's performance, however, this might be offset by demand-side factors

Paints: Stable

- Overall supply of paints, comprising both local production and imports, clocked in at ~119,682mln liters in FY23, down ~1.1% YoY.
- While imports rose by ~15.0% YoY in FY23, amounting to ~7,224mln liters, local production declined ~2.0% YoY, recording at ~112,458mln liters.
- During FY23, average gross margins for the segment increase to ~19.8%, in line with ~3.7% YoY higher paints sales revenue. Meanwhile, operating margin also improved to ~7.0% despite overall high inflationary levels in the country (National CPI averaged ~30.9% compared with ~19.7% during SPLY).
- In FY23, segment's leverage declined to ~19.0% (FY22: ~41.0%), while interest coverage dropped to ~1.8x.
- Segment's performance depends on lower international prices and stable currency as it is highly depended on the imported raw material. In FY24, currency parity (against USD) recorded at USD~283/PKR, depreciating ~14.3% YoY.

Chemicals

Segment-wise Outlook

Polymers: Positive

- Sales revenues recorded ~34.1% YoY increase in FY23, clocking in at PKR~8,790mln.
- During the year, gross margins for the segment increased to ~17.0%, in line with ~34.1% YoY higher sales revenue
- Meanwhile, operating margin also increased to ~8.0% despite overall high inflationary levels in the country (National CPI averaged ~30.9% compared with ~19.7% during SPLY).
- In FY23, segment's leverage declined to ~16.0% (FY22: ~33.0%), owing to ~36.0% YoY lower borrowings.
- The segment's interest coverage improved during FY23 to ~3.2x (SPLY: ~3.0x)
- The aforementioned improved economic outlook (inflation, interest rates), along with stable demand across various sectors, are likely to keep the margins in check.

Oleochemicals: Stable

- Segment's revenue registered ~29.7% increase YoY in FY23 to record at PKR~43,826mln.
- Gross profit margins clocked in at ~14.6% in FY23 owing to ~29.7% YoY higher sales revenue.
- However, net margins declined to ~4.2% during the year, owing to ~139.4% YoY higher finance costs.
- In FY23, segment's leverage declined to ~70.2% (FY22: ~75.0%) resulting from ~2.2% YoY lower borrowings. Meanwhile, interest coverage declined to ~2.0x in FY23 (SPLY: ~3.2x).
- In FY24, national CPI averaged ~30.9% (SPLY: ~19.7%), while the MPR was revised downwards as of Jun'24.
- These are likely to impact the segment positively. However, soaps and detergents production was down ~21.1% YoY in 10MFY24, against ~26.2% YoY growth in FY23.
- Going forward, stable demand and lower import dependency are likely to keep margins rangebound.

Printing Ink: Stable

- Printing Ink imports decreased by ~15.3% YoY during FY23 and stood at ~396,000MT (SPLY: ~468,000MT).
- During FY23, gross margins for the segment increased to ~28.1%, in line with ~13.5% YoY higher printing ink sales revenue and ~1.9% YoY higher cost of goods sold.
- Meanwhile, operating margin increased to ~23.9% during CY23. despite high overall high inflationary levels in the country (National CPI averaged ~29.7% compared with ~24.5% during SPLY).
- In CY23, owing to ~12.6% YoY lower borrowings that clocked in at PKR~1.4bln. segment's leverage declined to ~22.0% (CY22: ~42.0%). Meanwhile, interest coverage, increased during CY23, to ~12.0x.
- Segment's performance depends on lower international prices and stable currency as currently there are limited number of players and segment is import depended to meet local demand.

Bibliography

- PACRA Database
- Pakistan Chemicals Members Association
- Pakistan Bureau of Statistics
- State Bank of Pakistan
- Pakistan Economic Survey 2023-24
- Federal Board of Revenue
- Trade Development Authority of Pakistan
- Pakistan Stock Exchange
- International Council of Chemical Associations
- American Chemical Society

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