

India

Overweight (no change)

Highlighted Companies
Bayer Cropscience Ltd
ADD, TP Rs6621, Rs6092 close

We forecast EPS growth of 14.6% CAGR over FY21-24F, and EPS growth at 7.8% CAGR and gross margin expanding by 300bp over FY21F.

Heranba Industries Ltd
REDUCE, TP Rs457, Rs838 close

Lack of production capacity, a slow growing market, rising raw material prices and intense competition for global leaders are headwinds for Heranba.

Rallis India Ltd
ADD, TP Rs355, Rs294 close

We believe exports and CRAMS will grow at least double digits. We value Rallis in line with its historical trading average of 23.5x one-year forward EPS.

Summary Valuation Metrics

P/E (x)	Mar21-F	Mar22-F	Mar23-F
Bayer Cropscience Ltd	55.48	44.45	37.77
Heranba Industries Ltd	26.89	28.55	28.08
Rallis India Ltd	24.99	21.06	18.91

P/BV (x)	Mar21-F	Mar22-F	Mar23-F
Bayer Cropscience Ltd	10.73	7.42	6.18
Heranba Industries Ltd	6.74	5.5	4.64
Rallis India Ltd	3.59	3.17	2.83

Dividend Yield	Mar21-F	Mar22-F	Mar23-F
Bayer Cropscience Ltd	0%	0%	0%
Heranba Industries Ltd	0.15%	0.14%	0.14%
Rallis India Ltd	1.12%	1.33%	1.48%


Analyst(s)

Satish KUMAR

T (91) 9004603998

E satish.kumar@incredcapital.com

Shaily RUPARELIA

T (91) 22 4161 1556

E shaily.ruparelia@incredcapital.com

Chemicals - Overall

Mania at its peak. Slide in the offing?

- At 118X (recurring FY21 PAT, 25% tax rate assumption), pre-money valuation, Chemplast Sanmar's listing may prove to be the pinnacle of chemical sector valuations.
- To differentiate between specialty & commodity chemicals, we use variability of product margins as an indicator. 80% of our coverage universe falls in commodity category.
- Bayer, Rallis, and Camlin remain our sector top picks.

Chemplast listing is culmination of specialty chemicals mania

Like the bull market of 2004-08 when anything related to power used to trade at a premium valuation, in this bull market anything related to chemicals trades at an astronomical valuation. Like the search for next L&T and BHEL remained perennial, the search for next PI industries (ADD, TP Rs2,505, CMP Rs3,121), Vinati Organics (ADD, TP Rs1,603, CMP Rs1,922), Navin Fluorine (HOLD, TP Rs2,599, CMP Rs3,734) and SRF (ADD, TP Rs6,227, CMP Rs8,805) can also remain perennial. The listing of Chemplast Sanmar (a commodity grade PVC maker) reminds us of Reliance Power listing. The pre-money valuation will exceed 118X FY21 PAT (revised numbers based on RHP, barring exceptional income of Rs4.8bn, and assuming 25% tax on recurring profits), investors have given money to deleverage the company and have also given multiple on the same. We advise investors to remain clear of many new listings like India Pesticides (REDUCE, TP Rs286, CMP Rs328), Heranba (REDUCE, TP Rs457, CMP Rs845), Anupam Rasayan (REDUCE, TP Rs379, CMP Rs736) as well as old commodity names like Aarti Industries (REDUCE, TP Rs544, CMP Rs926), Atul Limited (REDUCE, TP Rs6,370, CMP Rs8,900), Laxmi Organics (REDUCE, TP Rs110, CMP Rs320) etc. We still like specialty chemical names like PI Industries and Navin Fluorine. Among agrochemicals and seeds, Rallis (ADD, TP Rs355, CMP Rs297) and Bayer (ADD, TP Rs6,621, CMP Rs5,874) remain our top picks.

Specialty chemicals – where product margins are not volatile

We define specialty chemicals as a group of chemicals where the entry barrier are high, margins are not volatile and customers partner with companies in product innovation. In this space, PI Industries, and chemical businesses of SRF and Navin Fluorine fit the bill. All the new listings are 2-3 product wonders: 1) Clean Sciences depends on MEHQ where it will face competition from Camlin (ADD, TP Rs225, CMP Rs184) and MEHQ market is extremely small. 2) Chemspec depends on 3 molecules, 3) India Pesticides is a prosulfocarb company, and 5) Ami Organics is an AI intermediary where it has no pricing power.

Stay with proven names, avoid new wonders having a few molecules

We advise investors to remain with proven names like PI Industries, and Vinati Organics (although they may face headwinds in near term). We also like Camlin, Bayer, and Rallis. We remain underweight on the sector.

Figure 1: Almost 90% of our chemical coverage falls in commodity and semi-commodity vertical

Commodity Makers	Semi-commodity	Agrochemicals/Seeds	CRAMS/ Specialty	API and cosmetic AI
Deepak Nitrite	Clean Sciences	UPL	PI Industries	Ami Organics
Chemplast Sanmar	Camlin	Dhanuka	Navin Fluorine	Chemspec Chemicals
Laxmi Organics	Gujarat Fluoro	India Insecticide		
Aarti Industries	SRF	India Pesticides		
Atul Limited	Vinati Organics	Heranba		
Meghmani Finechem	Anupam Rasayan	Astec Life Sciences		
Coromandel International		Kaveri		
		Bayer		

SOURCES: INCRED RESEARCH, COMPANY REPORTS

Is the future really positive?

Indian chemicals sector can be divided into 5 broad categories: 1) Agrochemicals, agrochemical intermediary manufacturers and agrochemical marketing companies, 2) Commodity chemicals (primarily crude oil derivatives), 3) Semi-commodity chemicals (sectors with low entry barriers);,4) contract research and manufacturing (CRAM) companies, and 5) Pharma API intermediary makers. While market is painting all companies with a single brush, structurally CRAM and pharma API intermediary makers look well placed. Some R&D-driven companies are in new sectors like battery chemicals and electrolytes and can also do well.

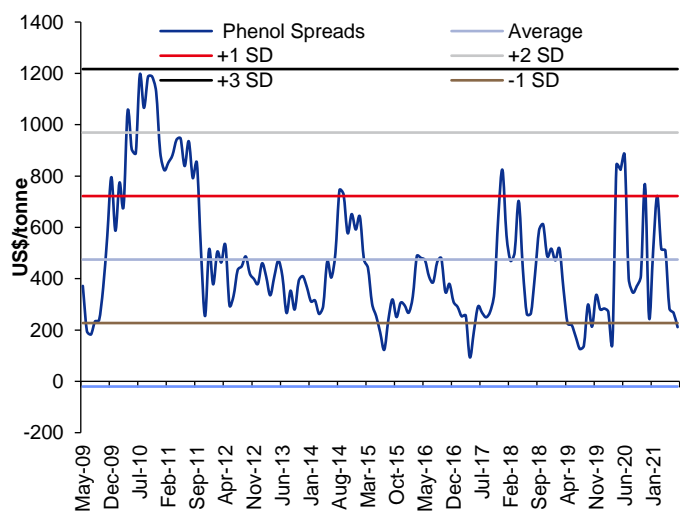
Commodity chemicals - Confusion persists between commodity and specialty chemicals

A new theme emerges in every bull market and current bull market has a specialty chemicals theme. All chemical companies are painted as specialty, whether they are phenol makers, MEHQ (hydroquinone monomethyl ether) makers or even PVC (poly vinyl Chloride) manufacturers. In this section, we will focus on commodity chemical makers. We define commodity chemical makers as companies which derive more than 2/3rd of their EBITDA from commodity chemicals. We cover following chemicals in this segment: - phenol, caustic soda, acetone, PVC, ethylene dichloride (EDC), benzene and aniline derivatives, and ECH (epichlorohydrin). Consequently, following companies come under the purview in this segment – Aarti Industries, Meghmani Finechem, Chemplast Sanmar, Deepak Nitrite, Laxmi Organics, Coromandel International, and Atul Limited. The key identification of a commodity: cyclicality in gross profits. i.e., inability to pass of the rise as well base raw material costs to consumers.

Phenol, a simple commodity -Deepak Nitrite is the lone phenol manufacturer in our coverage universe ➤

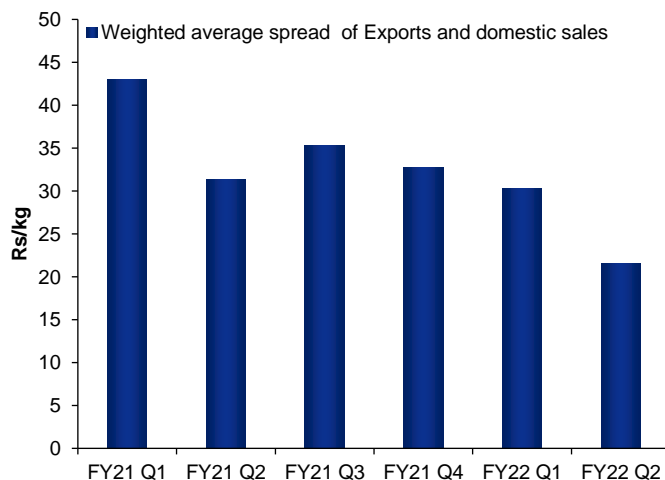
Phenol is manufactured from benzene plus propylene reaction. As a by-product of the reaction, one gets acetone and hence to calculate phenol spreads, one has to take acetone credit into account. Phenol and its derivatives are essential for production of polycarbonates, epoxies, bakelite, nylon, detergents, herbicides and multiple pharmaceutical drugs.

Figure 2: Global Phenol spreads are falling



SOURCES: INCRED RESEARCH, BLOOMBERG

Figure 3: Similarly, Deepak Nitrite's weighted average phenol spreads are declining

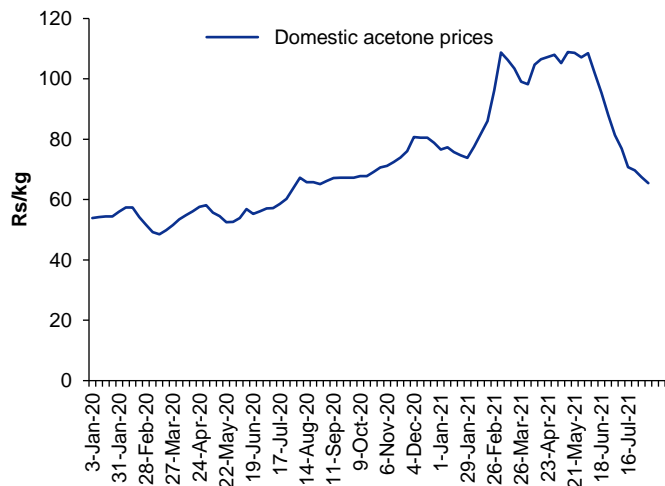


SOURCES: INCRED RESEARCH, CORPINESS GLOBAL PRIVATE LIMITED

Acetone is a by-product of phenol manufacturing for Deepak Nitrite, Covid-19 cases decline leadsto price fall ▶

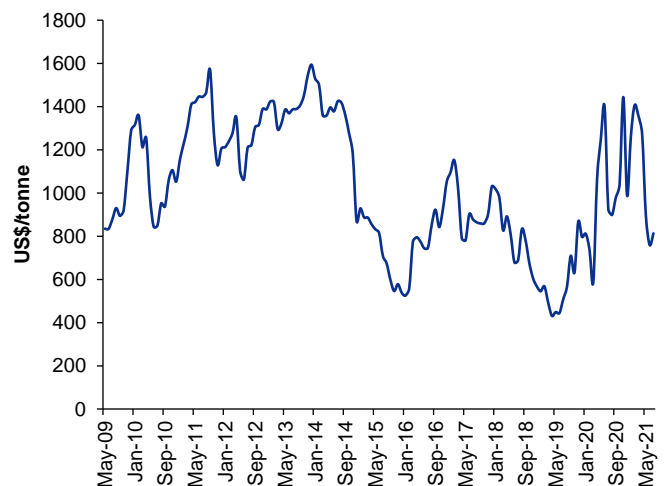
Making phenol from benzene and propylene leads to acetone production (acetone is used in making IPA which, in turn, is used to make sanitizers) whose usage has increased because of rising Covid-19 cases. With the fall in Covid-19 cases, prices of acetone and IPA are falling, leading to a decline in margins for integrated producers like Deepak Nitrite.

Figure 4: Domestic acetone prices have fallen by ~40% over the last few weeks



SOURCES: INCRED RESEARCH, BLOOMBERG

Figure 5: Similarly, international acetone prices have corrected by 44% from their November peak

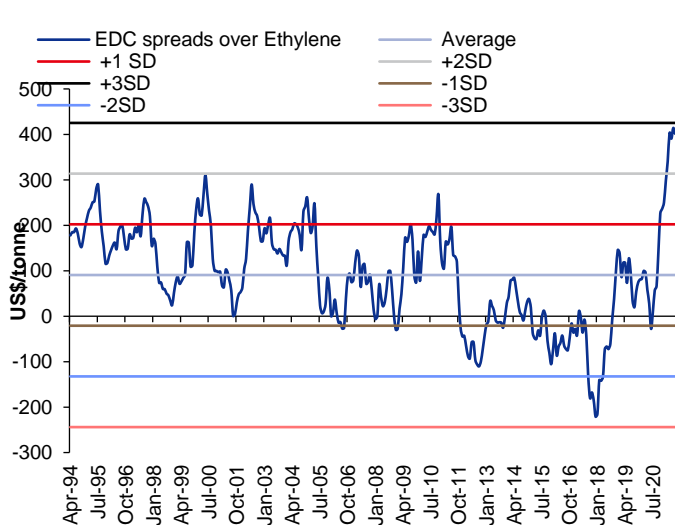


SOURCES: INCRED RESEARCH, BLOOMBERG

With Chemplast Sanmar IPO in pipeline, PVC has suddently come to the fore, which is one of the most basic commodities

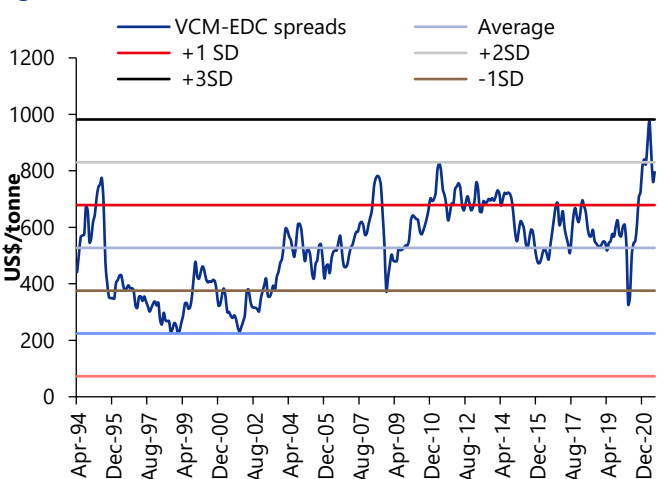
PVC in any form, either paste or suspension, is not a specialty chemical. Neither is CPVC (chlorinated poly vinyl chloride) a specialty product. All these chemical products have low entry barriers and are in oversupply.

Figure 6: EDC spreads over ethylene are at 27-year high



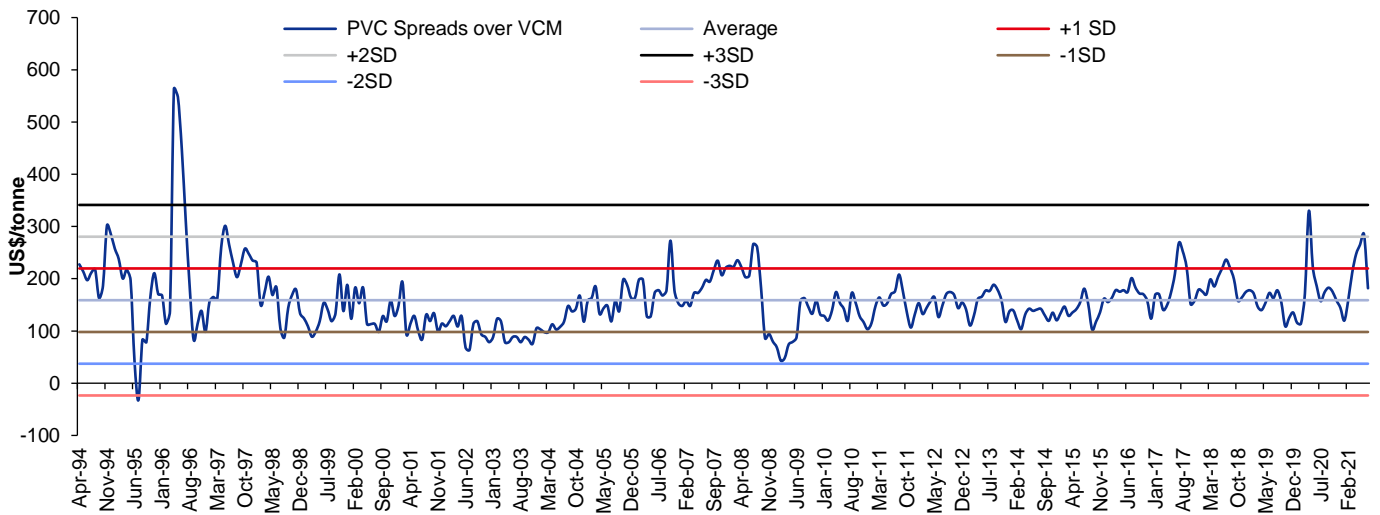
SOURCES: INCRED RESEARCH, COMPANY REPORTS

Figure 7: Similarly, VCM spreads over EDC is also at 27-year high



SOURCES: INCRED RESEARCH, COMPANY REPORTS

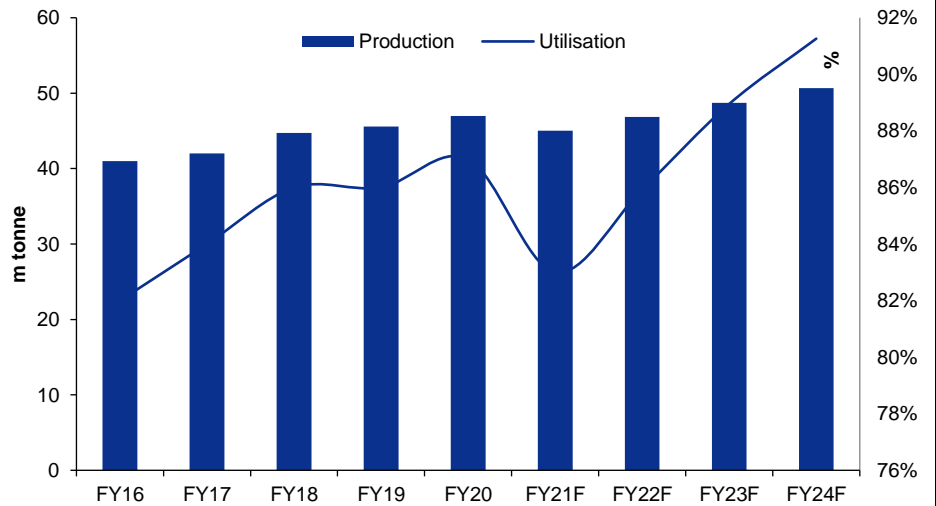
Figure 8: PVC spreads over VCM has remained around the average for best of the bull market for PVC



SOURCES: COMPANY REPORTS, INCRED RESEARCH

Globally, PVC is in oversupply and will remain so for next 2-3 years, even with bullish growth assumptions ➤

Figure 9: Historical growth rate of PVC production has been 3%, and even if there is 4% CAGR over FY21-24F then also utilization to touch only ~90%



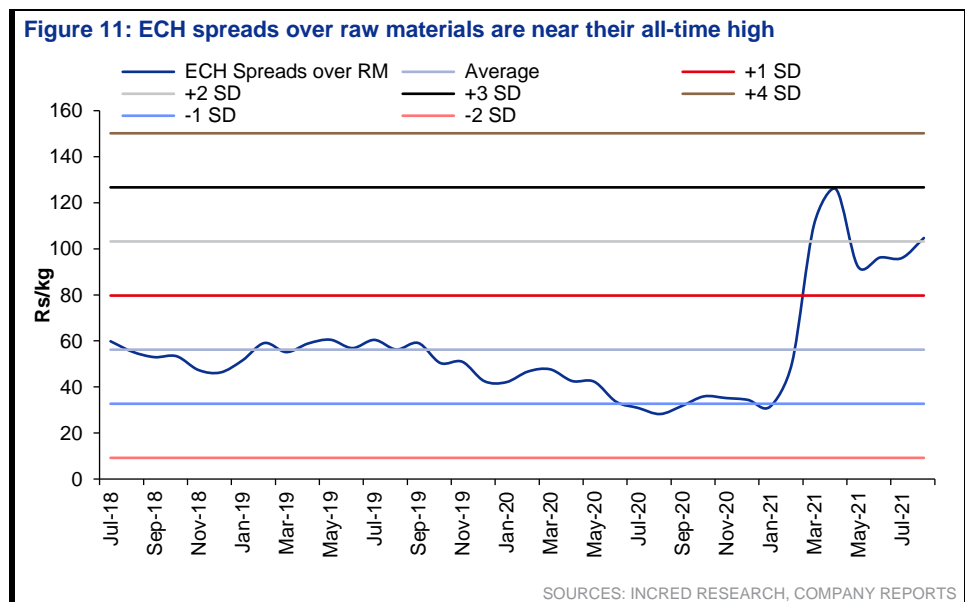
SOURCES: INCRED RESEARCH, COMPANY REPORTS

Like any other commodity bull market (if any) in PVC will result in integrated players making big money ➤



India doesn't have any epichlorohydrin (ECH) maker as of now, but if margins stand elevated Meghmani Finechem stands to benefit from FY23F ➤

Meghmani Finechem will make ECH using glycerine, calcium hydroxide, and hydrochloric acid. ECH spreads over basic raw material are near their all-time high.



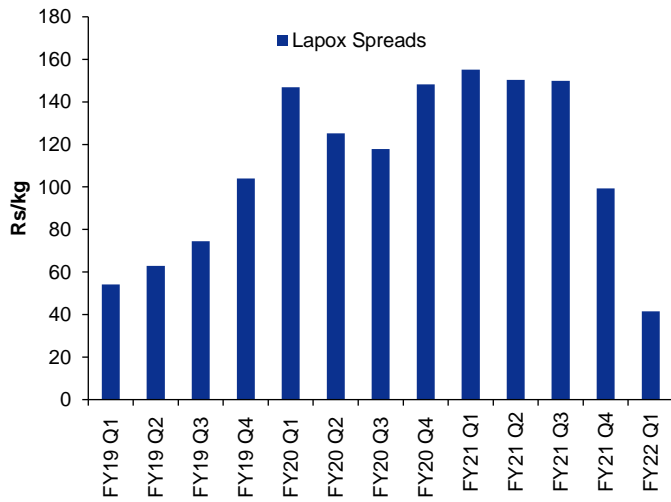
Lapox (adhesives), cresols, dyes and pigments, and resorcinol are other set of commodities manufactured by Atul ➤

- Lapox is a two-component modified, viscous epoxy adhesive system. The product creates strong adhesion with similar and dissimilar substrates such as natural stones, glass, metals, wood, laminates, and textiles. It is resistant to water and most chemicals.
- Cresols are also used in paints and textiles. Mixtures of cresols are used as solvents in synthetic resin coatings such as wire enamels, metal degreasers, cutting oils, and agents to remove carbon deposits from combustion engines. Other uses of cresol mixtures include ore floatation and fibre treatment.

- Dyes like VAT and Novatic are used in textile industries. These dyes are manufactured by multiple players in India as well as in China. Technology for manufacturing these products is freely available.
- Resorcinol is a 1,3-isomer (or meta-isomer) of benzenediol with the formula $C_6H_4(OH)_2$. It is used as an antiseptic and disinfectant in topical pharmaceutical products meant for treating skin disorders and infections. It exerts a keratolytic activity. Sumitomo Chemicals is the major manufacturer of resorcinol.

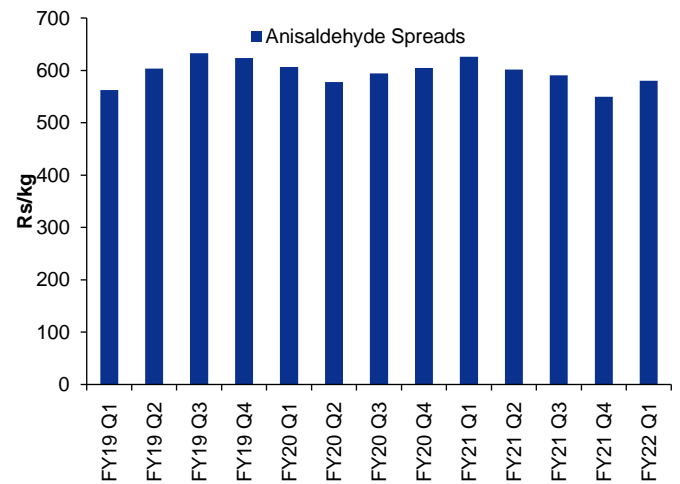
Gross profit products show classic signs of cyclicality ➤

Figure 12: Lapox (adhesives product) spreads over RM have been volatile



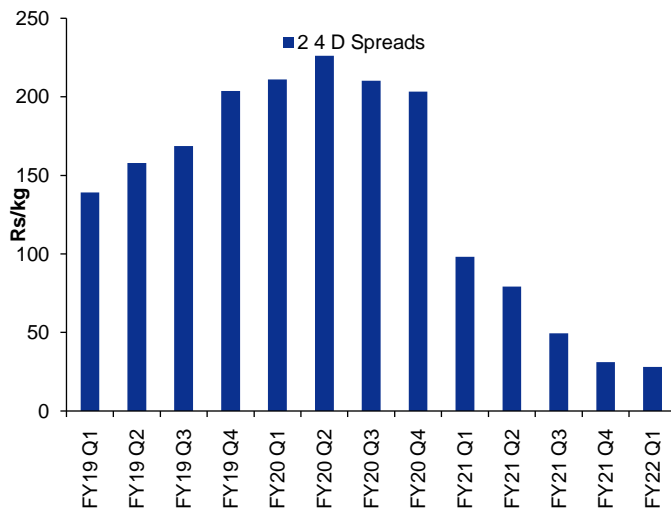
SOURCES: COMPANY REPORTS, INCRED RESEARCH

Figure 13: Anisaldehyde spreads are relatively stable



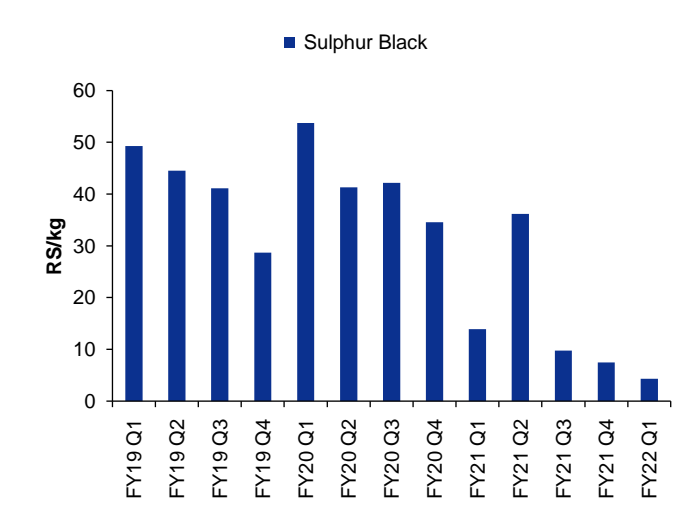
SOURCES: COMPANY REPORTS, INCRED RESEARCH

Figure 14: 2,4 D is a commodity, consequently, its spreads vary a lot



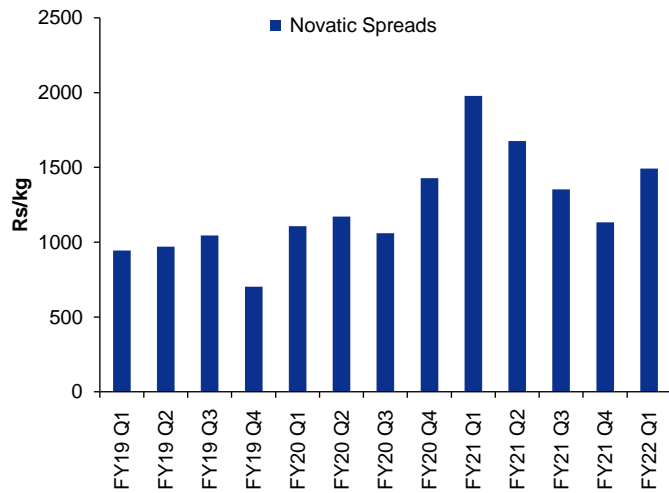
SOURCES: INCRED RESEARCH, COMPANY REPORTS

Figure 15: Like 2,4D Sulphur black spreads have also been volatile



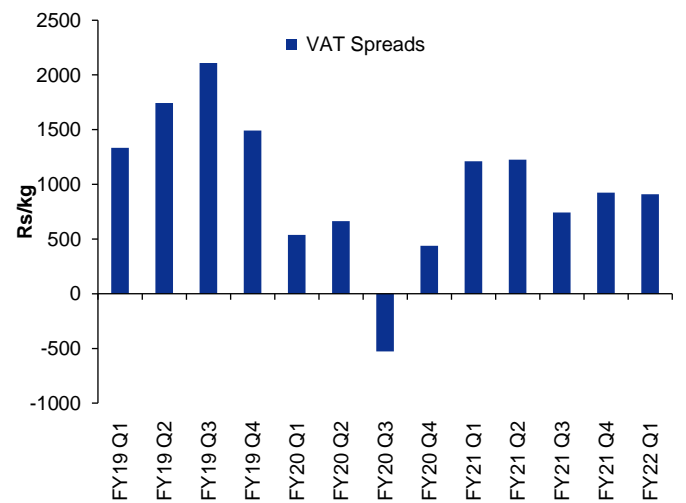
SOURCES: INCRED RESEARCH, COMPANY REPORTS

Figure 16: Novatic is dye and like any other commodity its spreads over RM is highly variable



SOURCES: INCRED RESEARCH, COMPANY REPORTS

Figure 17: Like Novatic, VAT spreads also vary a lot



SOURCES: INCRED RESEARCH, COMPANY REPORTS

Aarti Industries' principal products are also commodity in nature ➤

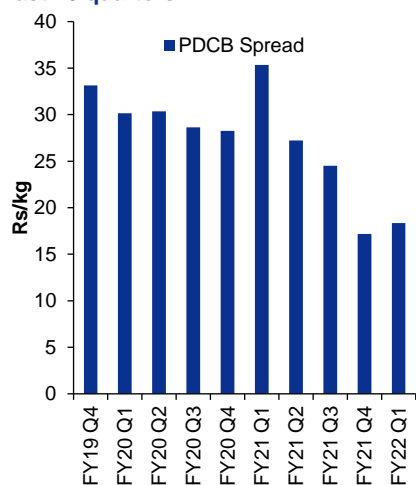
Like Atul Limited, gross margins of all products of Aarti industries show high variability- a classic sign of commodities.

Figure 18:

Name	Symbol	% Sales contribution	Usage
Para Di Chloro Benzene	PDCB	11.0%	Para di chloro benzene is an organic compound which is used as a disinfectant, pesticide, and deodorant. It is also used to make mothballs as a less flammable substitute of naphthalene.
Mono methyl Aniline	MMA	7.0%	It is used as a latent and coupling solvent and is also used as an intermediate for manufacturing dyes, agrochemicals and other organic products.
Caffeine	Caffeine	10.0%	Caffeine is used to restore mental alertness or wakefulness during fatigue or drowsiness. Caffeine is also found in some headache and migraine medications, in certain dietary supplements used for weight loss, and in many popular energy drinks.
Ortho Nitro Aniline	ONA	3.0%	Ortho Nitro Aniline is rubber antioxidant MB, pesticides carbendazim, light stabilizer UV-P intermediate.
Di methyl Sulphate	DMS	4.5%	It is corrosive to metals and tissue. It is a potent methylating agent. Dimethyl sulphate is the dimethyl ester of sulfuric acid. It has a role as an alkylating agent and an immunosuppressive agent.
Di methyl Phthalate	DMP	4.0%	Used in manufacturing a variety of products including plastics, insect repellents, safety glass, and lacquer coatings. Dimethyl phthalate is a phthalate ester, a diester and a methyl ester. Dimethyl phthalate has many uses, including in solid rocket propellants, plastics, and insect repellents.
3,5 Di Chloro Aniline	3,5DCA	3.5%	A Derivative needed in the manufacture of dyes, pesticides and industrial compounds, it has been reported to induce renal damage.
3,4 Di Chloro Aniline	3,4DCA	3.5%	3,4-DCA is exclusively used as an intermediate in chemical industry for the synthesis of 3,4-dichlorophenylisocyanate, the herbicide propanil and as an azo dye for polyester fabrics.
2,5 Di Chloro Aniline	2,5DCA	1.0%	It is a precursor to dyes and pigments.
Meta Phenylene diamine	MPDA	7.0%	Used in aramid fibre manufacture, as a polymer additive, in dye manufacturing, as a laboratory reagent, and also in photography.
2,4 Di fluoro nitro Benzene	2,4DFB	2.0%	The most common end use is in Basic pharmaceuticals, and agro chemicals.

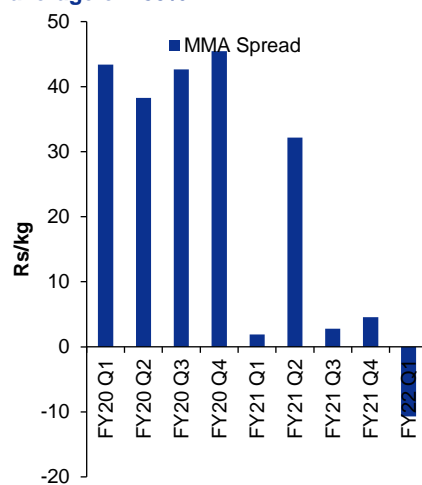
SOURCES: CORPINESS GLOBAL PRIVATE LIMITED, INCRED RESEARCH

Figure 19: Variability in PDCB spreads over RM has been ~25% of average over last 10 quarters



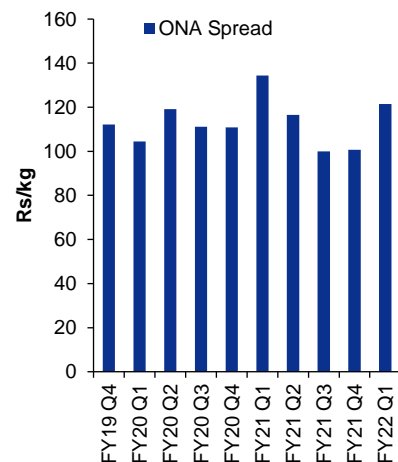
SOURCES: INCRED RESEARCH, COMPANY REPORTS

Figure 20: MMA spreads have been highly volatile with spread Stdev/ average of 180%



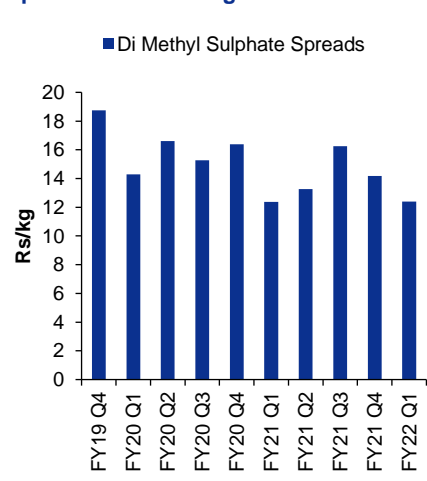
SOURCES: INCRED RESEARCH, COMPANY REPORTS

Figure 21: A relatively stable molecule with spread Stdev/ average of 10%



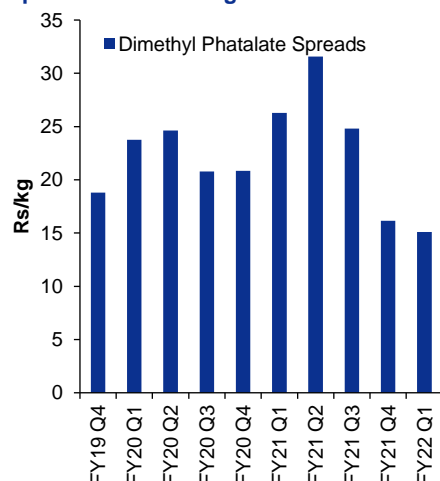
SOURCES: INCRED RESEARCH, COMPANY REPORTS

Figure 22: DMS is relatively stable with spread Stdev/ average of 14%



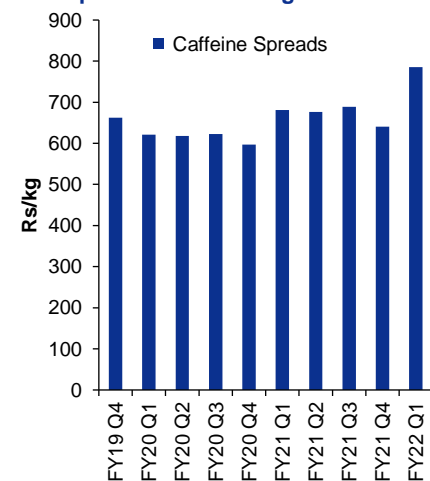
SOURCES: INCRED RESEARCH, COMPANY REPORTS

Figure 23: DMP again is volatile with spread Stdev/ average of 31%



SOURCES: INCRED RESEARCH, COMPANY REPORTS

Figure 24: Caffeine has been very stable with spread Stdev/ average of 10.5%



SOURCES: INCRED RESEARCH, COMPANY REPORTS

Thankfully, there is no debate on fertilisers being commodity or specialty chemicals- all agree that they are commodity chemicals ➤

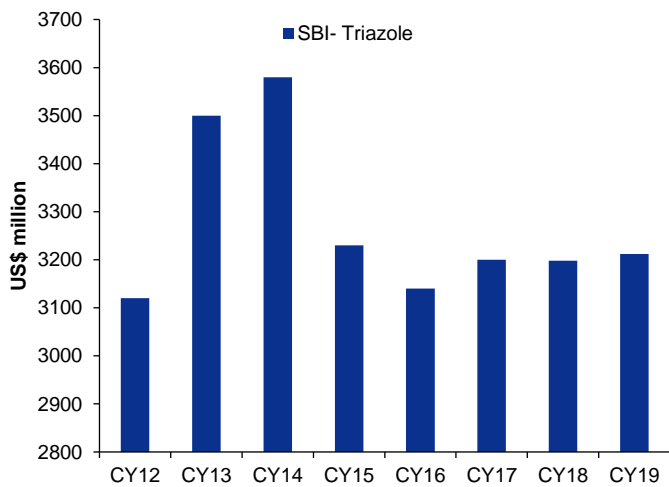
Coromandel International is a fertiliser manufacturer and makes Malathion insecticide. The consensus among investors is that it is a commodity maker.

Agroc hemical makers- Bayer and Rallis are top picks

This group has multiple companies. Some companies are diversified, while others are very small (to the extent that their sales collapse if even one molecule doesn't do well). There are marketing companies like Dhanuka Agritech who survive only on marketing margins. In this category, we have companies like Astec Life Sciences, India Pesticides, Dhanuka Agritech, Bayer CropScience, Heranba, UPL Limited, Rallis, and seed company Kaveri.

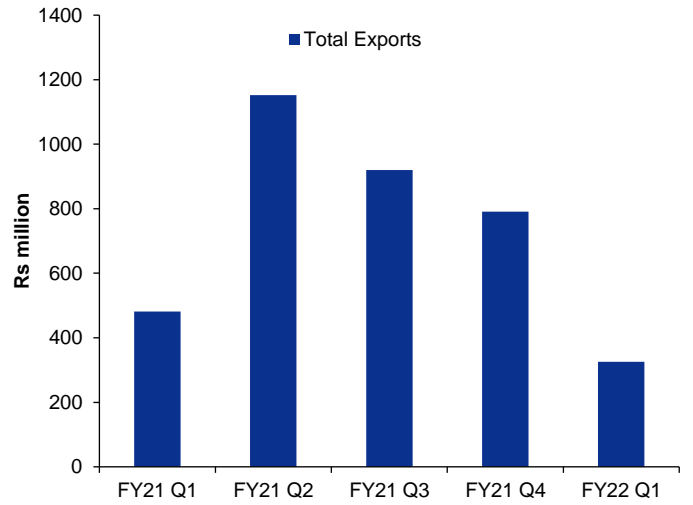
Astec Lifesciences is in fungicides, and it primarily makes SBI triazoles which are losing sheen in global markets ➤

Figure 25: SBI Triazole group of fungicides are not doing well in global market



SOURCES: COMPANY REPORTS, INCRED RESEARCH

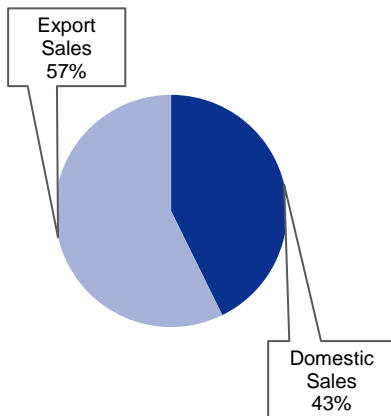
Figure 26: The same is visible in falling exports of Astec Life Sciences



SOURCES: COMPANY REPORTS, INCRED RESEARCH

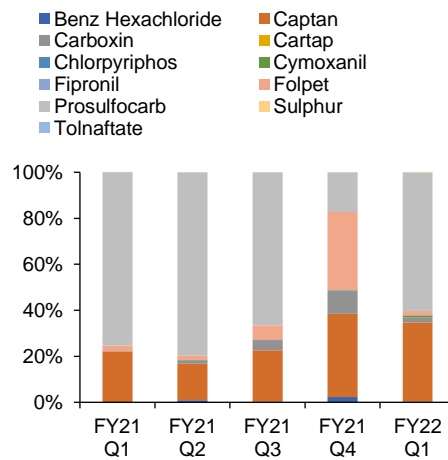
India Pesticides is a one-product wonder - prosulfocarb sales have stagnated in global markets ➤

Figure 27: Export forms 57% of overall sales for India Pesticide



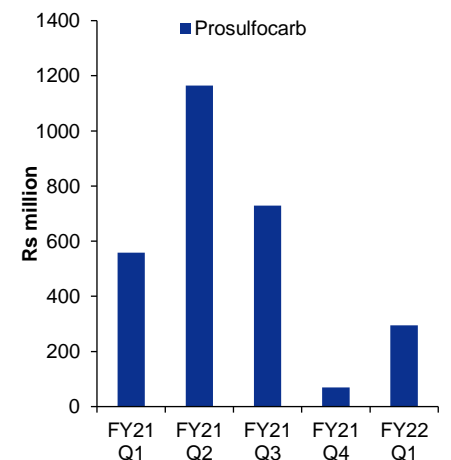
SOURCES: INCRED RESEARCH, COMPANY REPORTS

Figure 28: Prosulfocarb forms almost 70% of exports



SOURCES: INCRED RESEARCH, COMPANY REPORTS

Figure 29: Exports of Prosulfocarb are on the decline



SOURCES: INCRED RESEARCH, COMPANY REPORTS

Figure 30: Global sales of Prosulfocarb is declining over the last 3 years

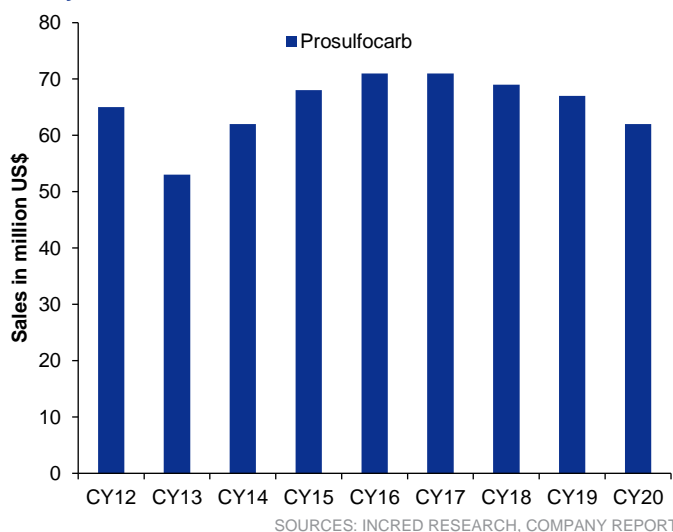
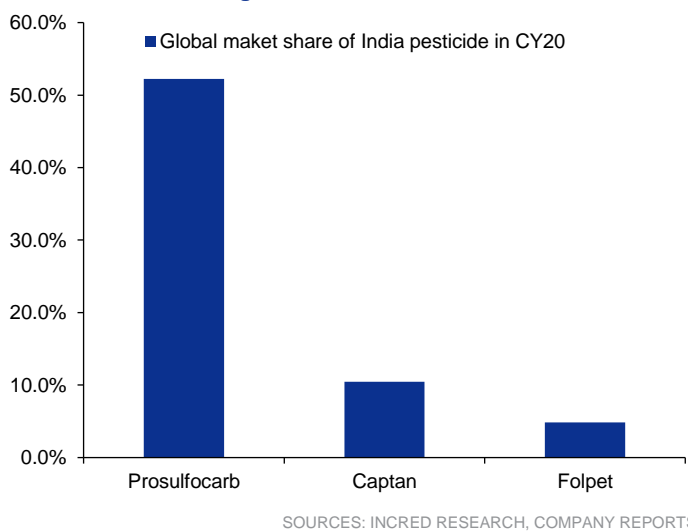


Figure 31: India Pesticides' market share is at its peak and it has a little chance to grab incremental market share



Heranba - Pyrotheriod is a declining market, China-led gains to fade in coming quarters (exports form 50% of sales) ➤

The export data analysis (Source: Corpiness Global Private Limited, an export data provider) reveals that bulk of the rise in revenue will be driven by increased exports to China. Chinese farmers had a bad experience with armyworm attack last year and, hence, as a natural tendency, they are stocking up material before the current rainy season. The link to the news is given here (<https://www.reuters.com/article/us-crops-armyworm-china-idUSKBN25H14F>). After the stocking is over, prices of pyrethroids, particularly deltamethrin, will trend downwards. Cost increase appears to be resilient and given the global hesitancy in using pyrethroids, Heranba can face revenue headwinds as well in coming quarters.

Figure 32: Globally Pyrethroids is a stagnant to declining market

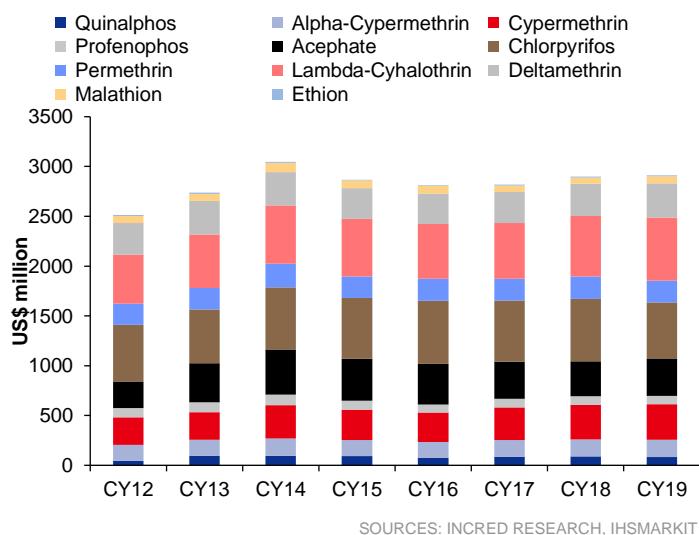
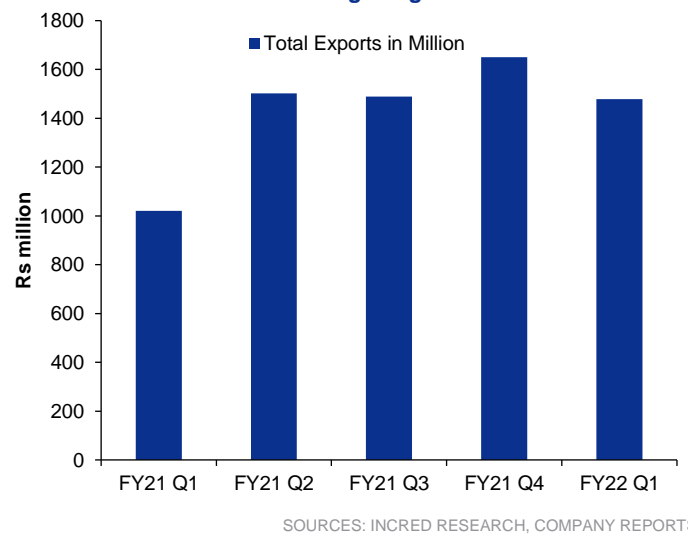
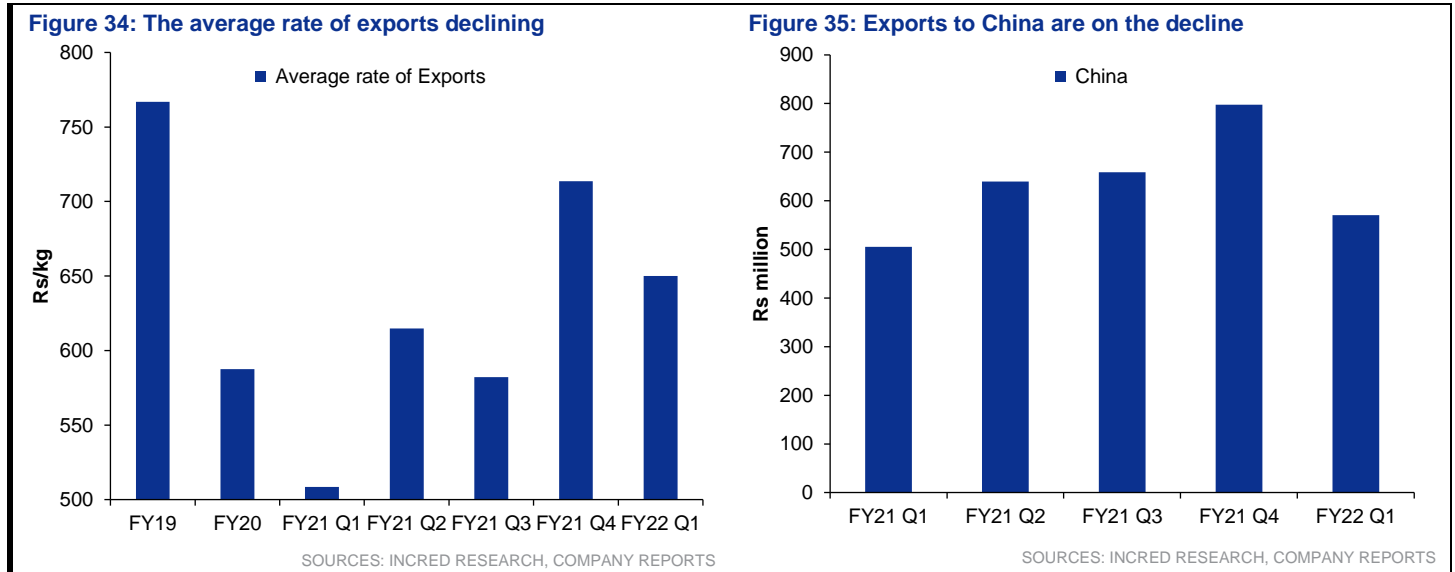


Figure 33: Heranba's export run-rate is also stagnant. Lower base in Q1 FY21 led to the mirage of growth in Q1 FY22





Dhanuka Agritech’s performance last year was led by the success of Godiwa Super, but unlikely to be repeated again ➤

The key brands of Dhanuka ‘Ozone’, ‘Godiwa’, ‘Caldan’ and ‘Targa-super’ are likely to face headwinds, in terms of either margin pressure or growth slowdown. The sudden success of ‘Ozone’ (base agrochemical Paraquat) is driven by a new weed-‘Emex australis Steinh’ on wheat crop in North India ([please see link here](#)). This weed is now widespread, and so Ozone usage is also widespread, thus limiting its growth potential. Import prices of raw material for “Godiwa” is rising, thereby raising margin pressure. ‘Caldan’ raw material is Cartap, whose import costs are rising (44% in FY20 and 4.7% in FY21) and at the same time, its usage appears to be stagnating. ‘Targa Super’ base agrochemical (i.e. Quizalofop) prices are rising and sales volume appears to be stagnating.

Bayer has tailwinds from seed business and sustained growth of agrochemicals portfolio ➤

After merging Monsanto with itself, Bayer has become the leader in maize seeds, but the biggest opportunity is in vegetable seeds. India imports ~US\$115m worth of vegetable seeds (FY19, Source: Agricultural Statistics 2019). Almost all vegetables seeds are present in Bayer portfolio and it has a wide reach through Monsanto India’s dealer network as well as through its mobile App (Dr. DeKalb). With agrochemicals, we don’t expect any growth in glyphosate (US\$30mn sales in FY21F), but other chemicals should post 8% growth CAGR (in value terms over FY21F-24F). Bayer’s Penflufen, Thiacloprid, Fluopyram and Spirotetramat are in patent period, but growing at a fast pace globally. These molecules can become drivers of growth.

What’s key is successful launch and proper use of its already established distribution channel.

Tailwinds in seeds to help Bayer as well Kaveri Seeds as OPV seed users are migrating to hybrid seeds ➤

"Open pollinated" generally refers to seeds that will "breed true" i.e. they are identical to parent. When the plants of an open-pollinated variety self-pollinate, or are pollinated by another representative of the same variety, the resulting seeds will produce plants roughly identical to their parents. On the other hand, hybrid seeds produced by plants that are the result of a recent cross, are likely to show a wide variety of differing characteristics.

Figure 36: Size of Indian seed Industry is Rs 280bn (FY19) or ~US\$4bn

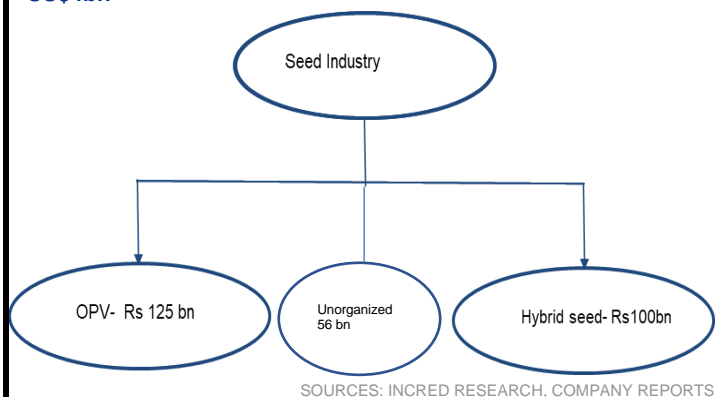
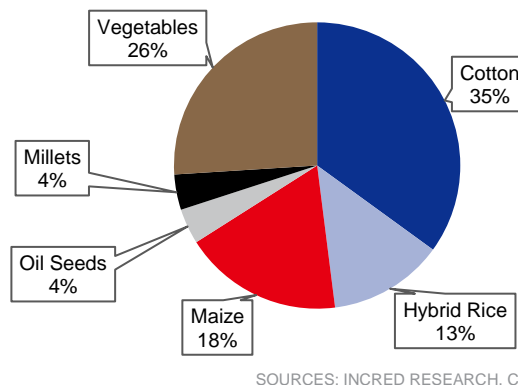


Figure 37: Indian hybrid seed market is dominated by cotton and hybrid rice



Indian seed market is growing at 26% CAGR over CY16-19 and growth can extend in coming years ➤

Normally, hybrid seeds are 2-3X costly compared to OPV seeds. However, higher prices don't deter their usage because hybrid seeds have higher yields and disease-fighting ability.

UPL- multiple risks by way of product demand, lack of innovation and foreign exchange variations ➤

Figure 38: Only 12% of sales come from India.

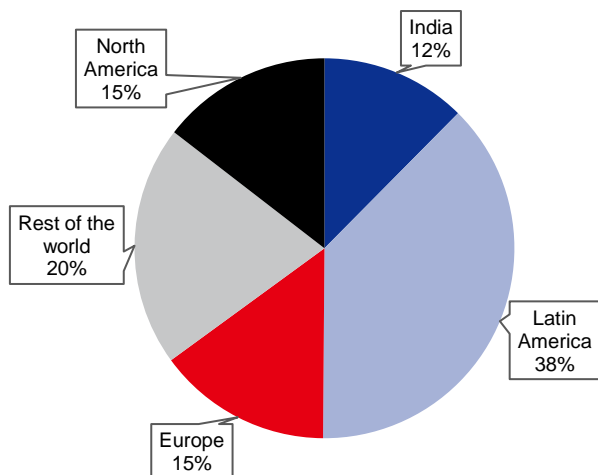
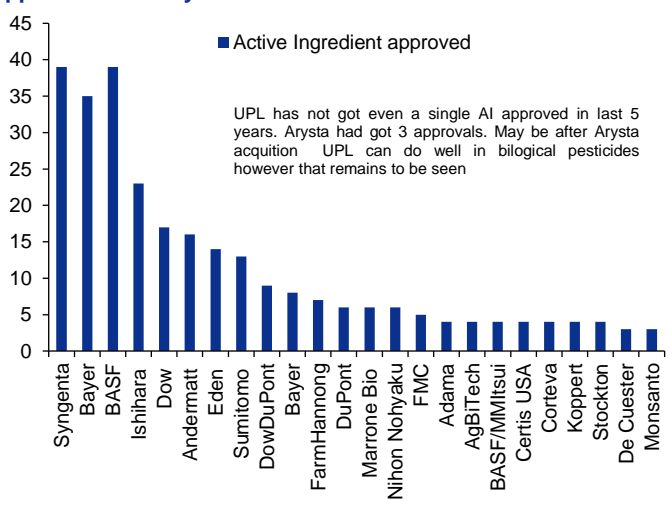


Figure 39: UPL is not a product innovator, it hasn't got any AI approval in last 5 years



Rallis - Growth to come from seed as well as base agrochemical businesses ➤

Rallis has CRAMS (contract research and manufacturing) contract with Solvay and Kureha Chemicals. At the same time, agrochemical supply agreements with Syngenta, BASF and Spanish company Industrias Quimicas Del Valles S.A. bodes well for future growth.. Seed business in India appears to have significant tailwinds. Our analysis indicates that India is unlikely to ban acephate (principal insecticide for Rallis in domestic market) for use on rice and cotton (91% usage on these two crops) which negates domestic side risk. Exports and CRAMS will at least register double-digit growth.

Indian seed industry faces tailwinds incrops like paddy. For most Indian crops, the SRR (seed replacement ratio) is lower than the desired level. What is needed for a company like Rallis is to educate farmers and a ground presence. Rallis has 1,500 dealers and 40,000 retailers. Added to it is a team of 225 field officers and 1,000 crop advisors to help farmers. There is a structural push to use better seeds and increase SRR, which will result in better productivity and thereby increase

farm income. Consequently, over last 3 years, seed sales are growing at 26% CAGR. We believe that with a better distribution network and brand recall, Rallis is best positioned to reap the benefits of this structural change.

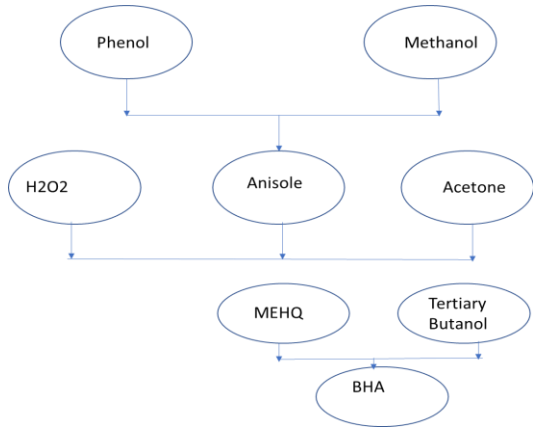
Semi-commodity chemicals- Camlin looks better placed

This segment is again falsely perceived as specialty chemicals. MEHQ (hydroquinone monomethyl ether), BHA (butylated hydroxy Anisole), AP (ascorbic palmitate), TBHQ (tert-butylhydroquinone), anisole, guaiacol and vanillin are some of the products in this category. Methyl/ halo pyridine, picoline vitamin B3 and B4 makers and polymers like PTFE (polytetrafluoroethylene) will also fall in this category.

MEHQ is most hyped commodity in this bull market >

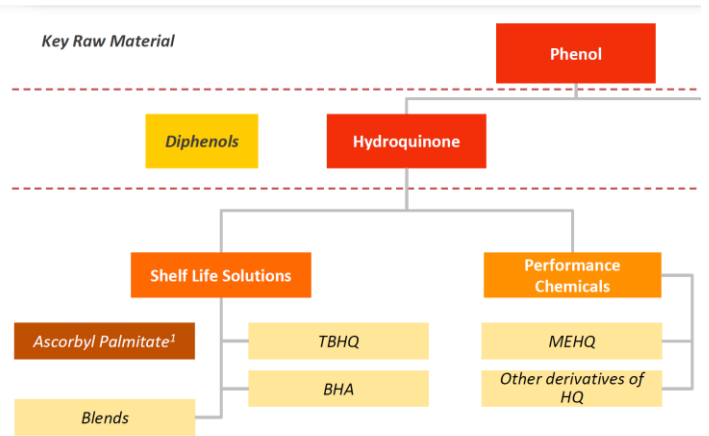
MEHQ can be manufactured by two different methods. One is used by Clean Sciences and Technology and the other by Camlin Fine Sciences. Camlin Fine Sciences uses phenol and hydroquinone route to manufacture MEHQ, while Clean Sciences uses phenol and anisole route to manufacture this chemical

Figure 40: Clean science makes MEHQ through Anisole route



SOURCES: INCRED RESEARCH, COMPANY REPORTS

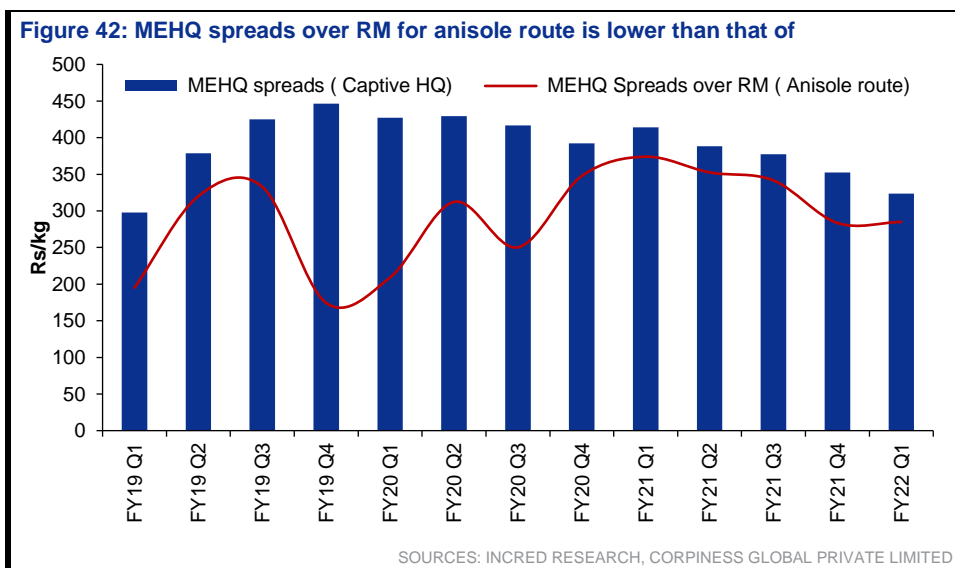
Figure 41: Camlin uses hydroquinone route to make MEHQ



SOURCES: INCRED RESEARCH, COMPANY REPORTS

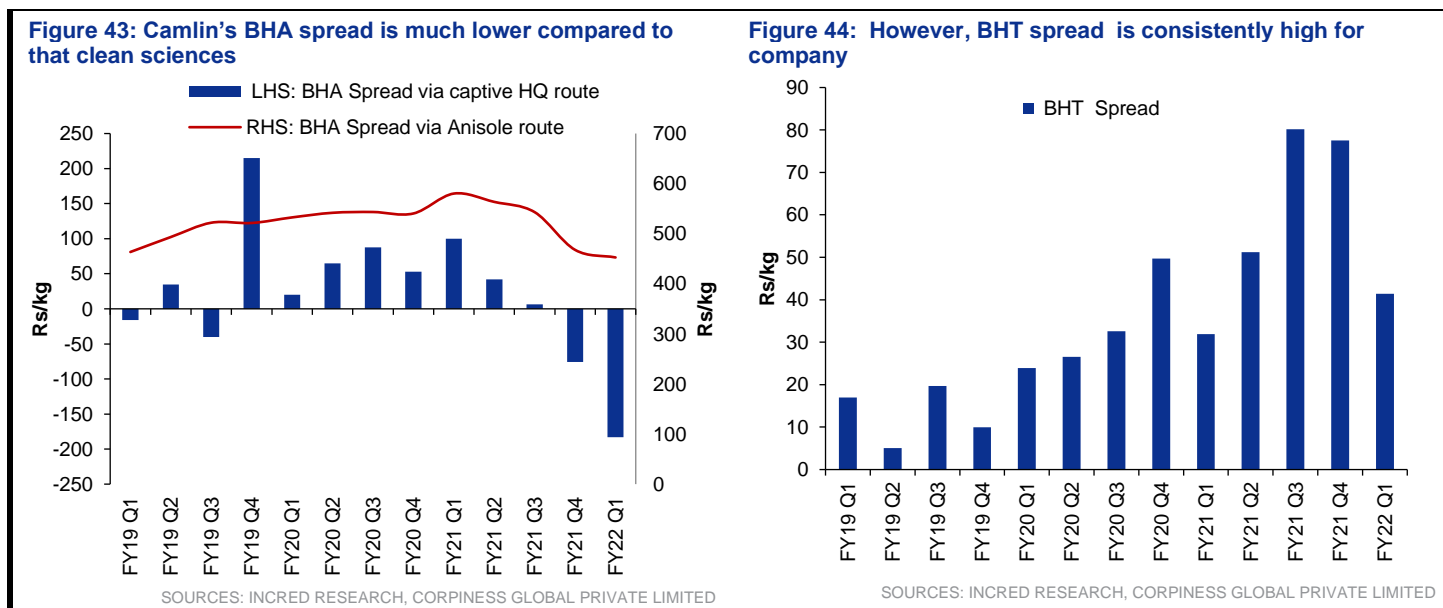
Investors rewarded alternate method of making MEHQ by assigning more than 50X PE on FY22F PAT estimates to Clean Sciences, while Camlin doesn't trade at even half of that PE.

Interestingly, with captive hydroquinone (HQ), Camlin's cost of MEHQ is lower than that of Clean Sciences ➤



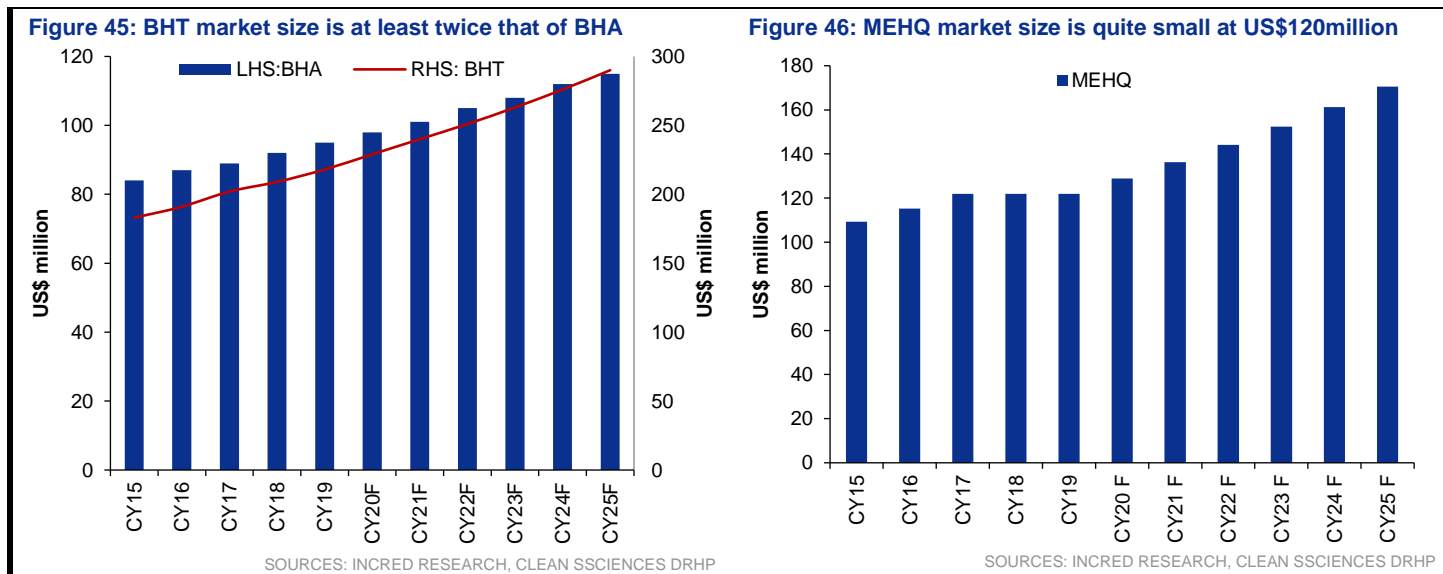
BHA product spreads through anisole route are still higher than through HQ route ➤

BHA product spreads over RM are still much higher for Clean Sciences compared to Camlin Finechem.



MEHQ has a small concentrated market, while BHT has a comparatively much bigger market ➤

While Camlin finds it difficult to make money in BHA sales, BHT is a much more profitable product for it. Market size of BHT is almost double that of BHA. BHT is normally used in animal feed as well as an antioxidant.



Price competition cannot be ruled out in MEHQ market as Camlin is ramping up capacity >

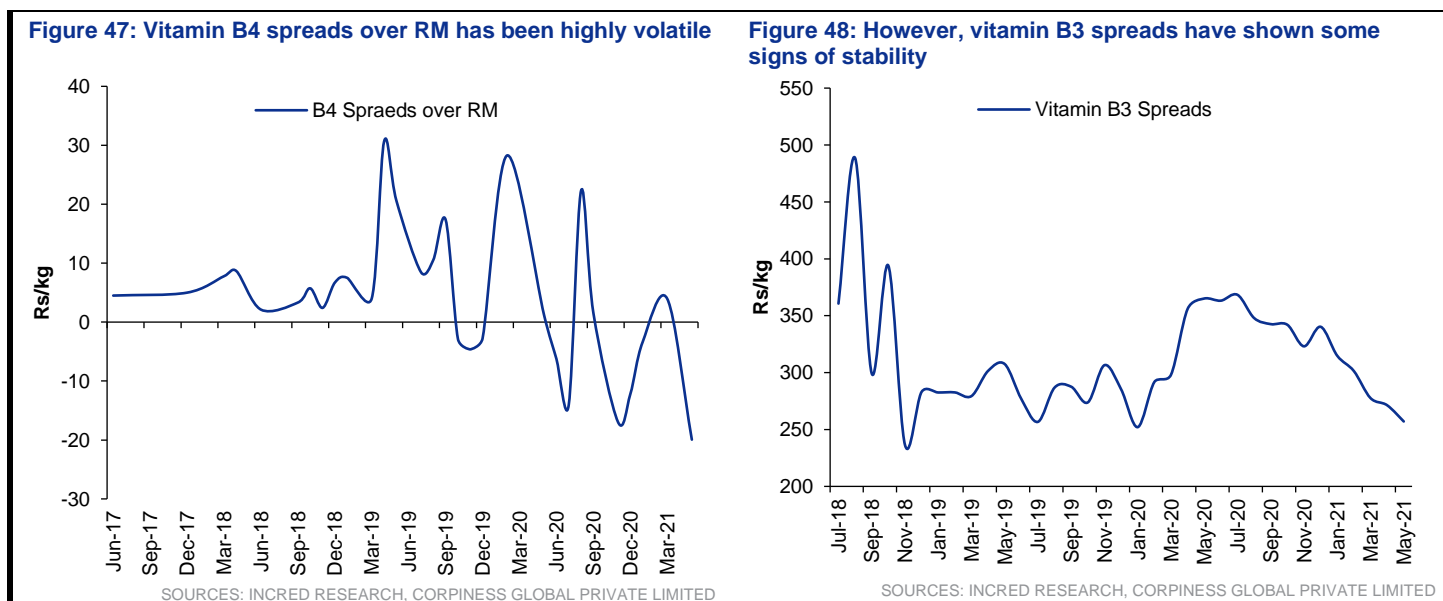
Overall MEHQ market is of 12,500 tonnes. Clean Sciences has more than 55% share in this market. Market growth rate is in low single-digit, and, in this market, Camlin is ramping up capacity by 8%. At the same time, cost of MEHQ production for Camlin has declined (because of captive HQ) and, hence, price competition in this market is likely.

Clean Sciences' extraordinary high margins are at risk >

Clean Sciences posted 78% gross margin in Q4 FY21, which fell to 71% in Q1 FY22. We expect this margin to fall further as price competition intensifies.

Pyridines, picolines and niacenamides are also semi-commodity products >

Another company in our coverage universe- Jubilant Ingrevia - makes pyridines, picolines and niacinamides (vitamin B3) as well as vitamin B4. Pyridines and picolines have some entry barriers because not all manufacturers can have simultaneous in-house usage of pyridines and picolines. Having said that, this is not an insurmountable advantage. Pyridines are used to manufacture pharmaceutical products.

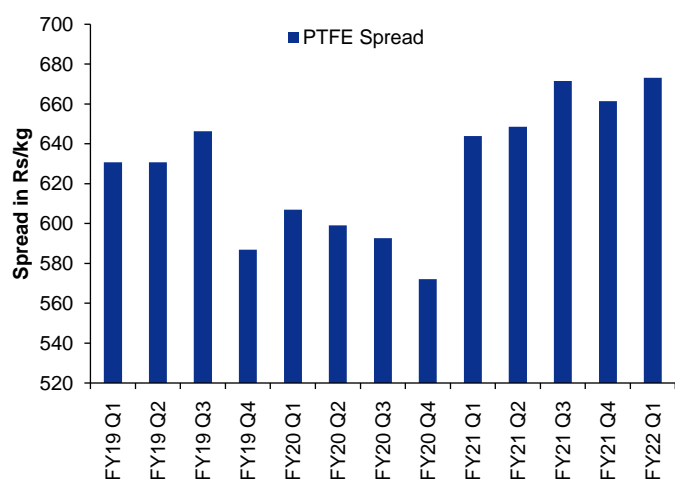


PTFE and perfluoro alkoxy alkanes (PFA) also show signs of commodity chemicals ➤

PFA is preferred when extended service is required in hostile environments involving chemical, thermal, and mechanical stress. PFA offers high melt strength, stability at high processing temperature, excellent crack and stress resistance, and a low coefficient of friction.

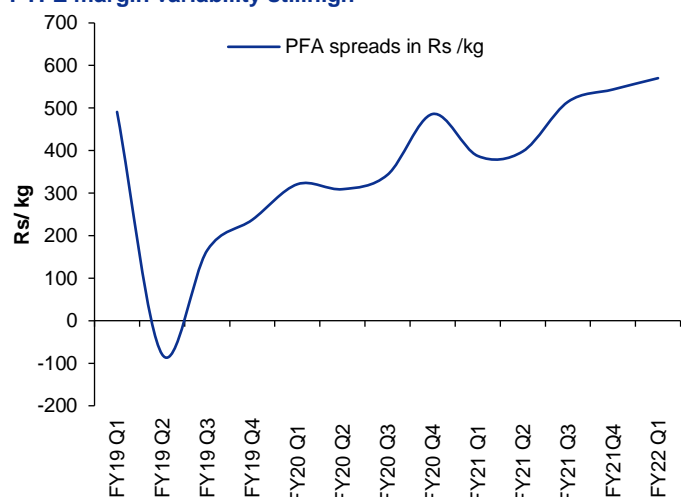
PTFE or poly tetrafluoro ethylene $[-CF_2=CF_2]_n$ is one of versatile polymers ever developed. Its usage is wide, ranging from coating on cooking utensils to medical purposes. In Covid-19 period, its usage has increased as it is also being sprayed on face masks for effective protection against coronavirus.

Figure 49: Like any other commodity PTFE or Teflon shows cyclical margin trends



SOURCES: INCRED RESEARCH, CORPINESS GLOBAL PRIVATE LIMITED

Figure 50: PFA is a niche chemical and is now widely used as PTFE margin variability stillhigh



SOURCES: INCRED RESEARCH, CORPINESS GLOBAL PRIVATE LIMITED

Chloromethanes manufactured by multiple players like Chemplast Sanmar and also Gujarat Fluoro ➤

Methylene dichloride, chloroform and carbon tetrachloride form chloromethanes. One of the principal usages of chloroform is to manufacture PTFE. It is used as a feedstock for other chemicals as well. Despite having 121K tonne capacity, Gujarat Fluoro still imports ~28K tonne chloroform (FY20, Source: Corpiness Global private limited)

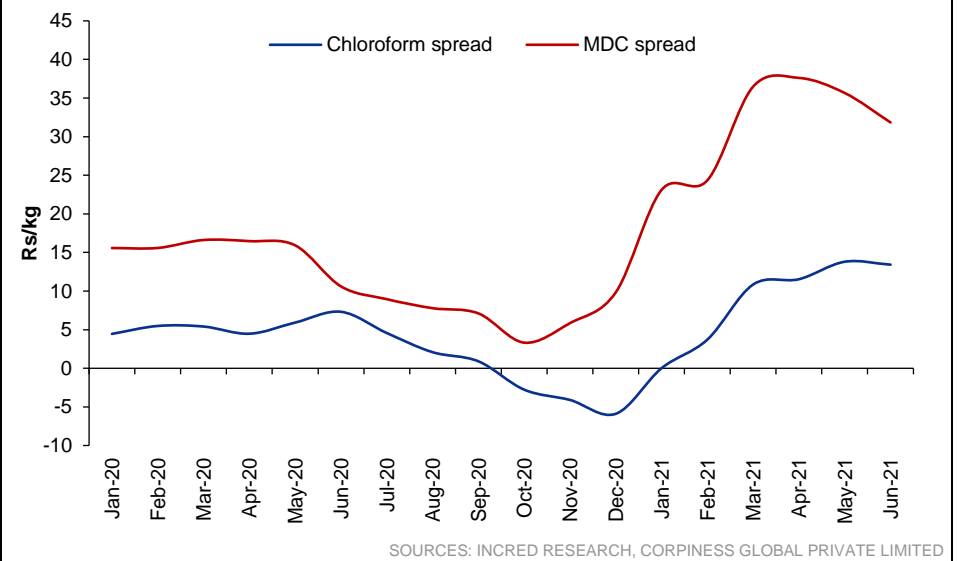
Methylene dichloride, a principal chloromethane, has multiple usage -primary being an industrial solvent ➤

It is also known as dichloromethane, freon 30, methylene chloride, chlorocarbon, methylene bichloride, methane dichloride, DCM.

There are various uses of methylene dichloride:

- Used as a paint stripper and degreaser.
- Used to manufacture film coatings.
- Used in pharmaceuticals industry.
- Used to remove heat-sealed labels in textile industry.
- Used to prepare flavorings for food and beverage industry.
- Used as a post-harvest fumigant for grains and fruits.
- Used as an aerosol spray propellant.

Figure 51: Domestic spreads of Chloroform and MDC have been quite volatile over last 18 months



Contract research & manufacturing (CRAMS): a specialty chemical universe

Indian contract research and manufacturing is the real specialty chemical universe. Companies like Navin Fluorine, SRF and PI are doing differentiated work for clients. The entry barriers in this industry are high and are key for a successful business is becoming a partner of clients, and have successful clients' IPR (intellectual property rights) protection framework. These companies become partners with clients in their process improvement and R&D processes.

PI product pipeline remains strong and it is partnering with clients in R&D process ➤

Currently, pyroxasulfone, flubendiamide, tefuryltrione, fenoxasulfone and rynaxypyr are some principal molecules of PI Industries. Combined global sales of these molecules are US\$2.4bn. Our analysis indicates there are at least 10 molecules in the pipeline which includes, pyridachlometyl, cyclopyranil, benzobicyclon, picoxystrobin, metominostrobin, melampyrin, bensulfuron, pretilachalor, oxathiapiprolin and pyrazusulfuron. While two of these are research molecules that are likely to be launched by CY22, the other 8 molecules' current global sales stand at c.US\$900mn. We expect these molecules to keep driving growth beyond FY23F as well. ➤

Navin Fluorine also partners with clients in innovation process and many a times refines their production process ➤

Navin Fluorine has a presence in fluorocarbons, fluorine intermediaries and inorganics i.e., it caters to ~83% of global market. In value terms, Navin can cater to approximately US\$18.7bn market. Navin's dependence on R-22 and BF3 has come down over the years, but still form a major portion of its export basket (from 66% in FY14 to 28% in FY20). The success of (1r)-1-(2-(trifluoromethyl) pyrimidin-5-yl) ethanamide HCL, 3-(3 3 3-trifluoro -2 2-dimethylpropoxy) -1h-pyrazole-4-carboxylic acid and 2-fluoro 6-trifluoro methyl pyridine is a testament of deepening relations with clients. On the back of this success, it has got the contract to manufacture HPP, which is a pharmaceutical intermediary.

Part of SRF's business is specialty chemicals where it has high client interaction and goodwill ➤

SRF does not supply end products to its customers, but rather supplies intermediate chemicals. Consequently, its addressable market is only 15-20% of overall sales value of chemicals. SRF must develop alternate capabilities fast or it should do inorganic acquisitions to acquire these capabilities.

Figure 52: Apart from supplying new molecules like Isoflucypram, SRF supplies multiple other specialised molecules

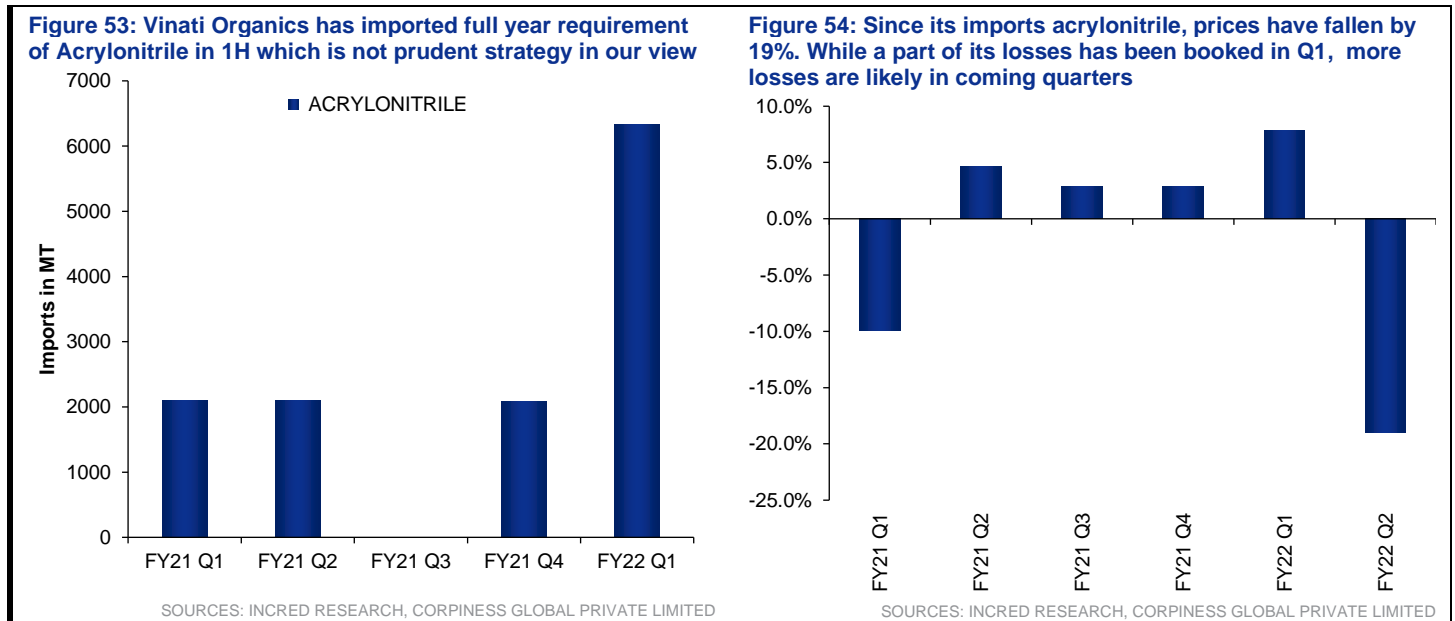
Intermediate/ final product	Trade name	SRF sales in Million US\$
3-difluoromethyl 1-methyl-1h-pyrazole-4- carboxylic acid	Fluxapyroxad	53.22
Topramezone	Topramezone	18.70
3-pyridinecarboxylic acid 2- [(2methoxy ethoxy) methyl] -6- (trifluoromethyl) - ethyl ester	Metolachlor	16.06
Tesa-1-(3-chloropyridin-2yl)-3-(5-(trifluoro methyl)-2h tetrazol-2yl) methyl]-1h-p yrazole-5-carboxylic acid	Tetraniliprole	5.37
1-(5-acetyl - [1 4 5] oxadiazepan-4-yl)- Ethenone	Pinoxaden	5.20
5-fluoro-3-(difluoro methyl)-1-methyl-1h- pyrazole-4- carbonyl fluoride	Isoflucypram	3.95

SOURCES: INCRED RESEARCH, CORPINESS GLOBAL PRIVATE LIMITED

Vinati Organics, though not exactly a specialty chemicals company, makes highly niche chemicals ➤

Vinati Organics (VOL) is market leader in ATBS (2-Acrylamido 2 Methylpropane Sulfonic Acid), HP- MTBE (High Purity- Methyl Tertiary Butyl Ether), IBB (Isobutyl benzene), and IB (Isobutylene). VOL has commissioned its new 14KT ATBS and 39KT butyl phenol capacity. It has merged 100% promoter entity Veeral Additives Pvt Ltd (at Rs1.25bn totally paid by shares of VOL) with itself to venture into phenolic antioxidants (AO) market. AO uses butyl phenol as an input material and, hence, provides a market for its newly commissioned butyl phenol capacity. ATBS demand is reviving and IBB is also doing well (because of demand from Ibuprofen API).

While Vinati business is good, accumulating high-cost acrylonitrile inventory will hurt in FY22F ➤



Active pharma ingredient (API) and cosmetics intermediary manufacturers: Niche space but semi-commodity in nature

API and cosmetic intermediary space is becoming relevant in India with proposed new listings of Ami Organics and Chemspec Chemicals. Both these companies are in semi-commodity space.

Ami Organics is a niche API intermediary and specialty chemicals company ➤

Ami Organics is an active pharma ingredient (API) intermediary and key starting material (KSM) manufacturer. On 31 March 2021, it acquired two plants of Gujarat Organics (GOL) on a slump-sale basis. The newly acquired plants give Ami Organics a foothold in specialty chemicals as well. Exports form almost 60% of its overall revenue. The company’s operations are divided into; 1) API intermediaries and KSM, and 2) specialty chemicals. Within API intermediaries, it is a leader in anticoagulant, anti-psychotic/anti-depressant and anti-retroviral API intermediaries. With the acquisition of Gujarat Organics’ plants (Source: Ami Organics DRHP) it has acquired capabilities in salicylic acid and parabens markets. Potentially, this acquisition could add US\$5m-5.5mn revenue to Ami Organics’ topline from FY22F.

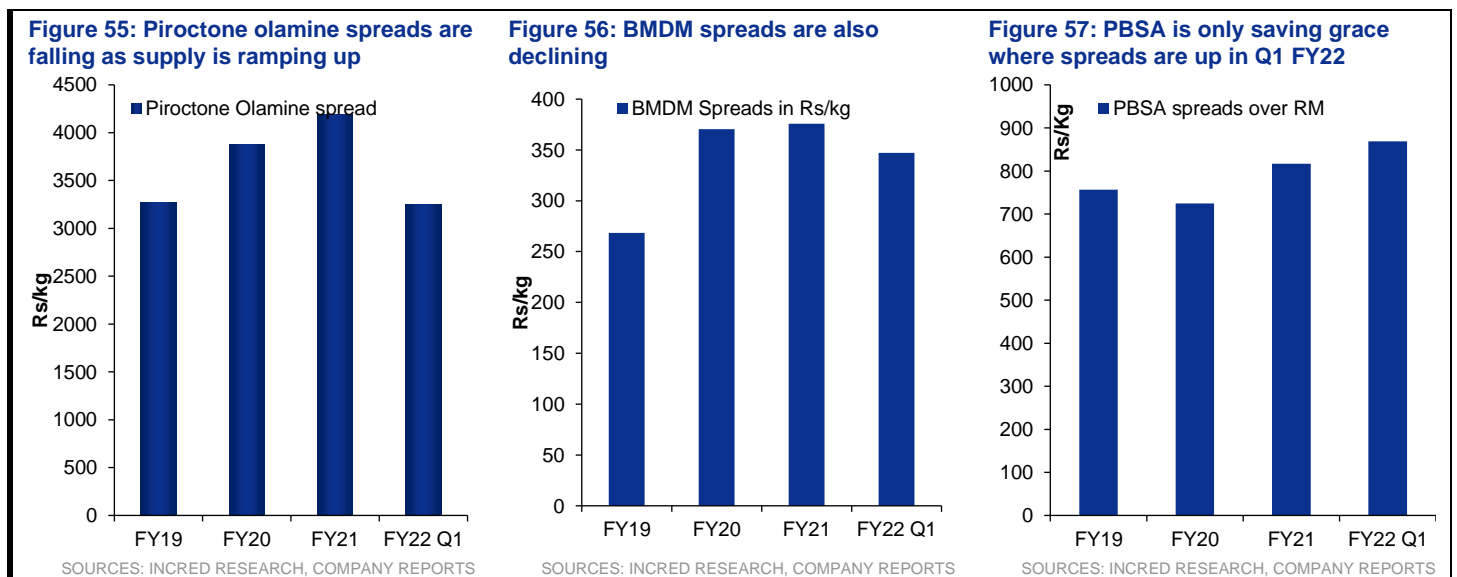
Dolutegravir, trazodone and anticoagulants remain key growth drivers for Ami Organics ➤

Dolutegravir is an anti-retroviral drug for HIV treatment. Ami makes the intermediary for this API. Sales of dolutegravir rose considerably in last five years and it is expected to become the main second line treatment for HIV. Trazodone is principal anti-depressant, whose intermediary is sold by Ami Organics. As of now, intermediaries contribute ~20% to sales and we estimate that going forward they will contribute ~17% to overall sales. We estimate robust growth in anticoagulant intermediaries. As of now, they contribute only 2.5% to overall sales, which we expect will rise to 5% by FY24F.

Chemspec Chemicals is essentially a three-molecule company ➤

Chemspec Chemicals business is divided into two broad segments - FMCG and pharmaceuticals. FMCG chemicals contribute more than 80% to overall sales. Almost 80% of its revenue comes from three molecules: - 2-phenyl-1H-benzimidazole-5-sulphonic acid (PBSA), butyl methoxy dibenzoyl methane (BMDM) and piroctone olamine (PO). PO is a major chemical for Chemspec as it contributes ~50% to overall exports (Source: Corpiness Global Private Limited, an export data provider). PO is used in anti-dandruff shampoos while BMDM and PBSA are ultraviolet filters and are used in sunscreen skin care products. The rise in product spreads (price- raw material cost) of PO, BMDM and PBSA led to gross margin expansion in FY20 and FY21. However, unfortunately for Chemspec Chemicals, the gross spreads of PO, BMDM and PBSA have declined in Q1 FY22 and we believe gross margin in FY22F will decline at least by 170bps in FY22F over FY21. Bulk of the growth in PO has been driven by European Commission's decision on ZPT (zinc pyrithione), which says that more than 1% ZPT content in hair care shampoos is dangerous for human beings. Bulk of the growth driven by this development appears to be behind us.

Piroctone olamine, PBSA and BMDM spreads are falling ➤



DISCLAIMER

This report (including the views and opinions expressed therein, and the information comprised therein) has been prepared for and is distributed by CGS-CIMB, Incred Research Services Private Limited (formerly known as by Earnest Innovation Partners Private Limited (hereinafter referred to as "IRSPL") pursuant to an arrangement between IRSPL and CGS-CIMB. IRSPL is not an affiliate of CGS-CIMB. IRSPL is held 76% by InCred Capital Wealth Portfolio Managers Private Limited and 24% by EIP Holdings Private Limited. IRSPL is registered with SEBI as a Research Analyst vide Registration No. INH000007793. Pursuant to a trademark agreement, IRSPL has adopted "InCred Equities" as its trademark for use in this report.

The term "IRSPL" shall, unless the context otherwise requires, mean IRSPL and its affiliates, subsidiaries and related companies. The term "CGS-CIMB" shall denote, where appropriate, the relevant entity distributing or disseminating the report in the particular jurisdiction referenced below, or, in every other case except as otherwise stated herein, CGS-CIMB Securities International Pte. Ltd. and its affiliates, subsidiaries and related corporations. This report is not directed to, or intended for distribution to or use by, any person or entity who is a citizen or resident of or located in any locality, state, country or other jurisdiction where such distribution, publication, availability or use would be contrary to law or regulation and remains subject to the "Restrictions on Distribution" set out below. If your status has changed or the distribution restrictions set out below impact your ability to receive this report please contact your usual CGS-CIMB representative.

By accepting this report, the recipient hereof represents and warrants that he is entitled to receive such report in accordance with the restrictions set forth below and agrees to be bound by the limitations contained herein (including the "Restrictions on Distributions" set out below). Any failure to comply with these limitations may constitute a violation of law and limit our ability to provide reports to you.

This report is being supplied to you strictly on the basis that it will remain confidential. No part of this report may be (i) copied, photocopied, duplicated, stored or reproduced in any form by any means; or (ii) redistributed or passed on, directly or indirectly, to any other person in whole or in part, for any purpose without the prior written consent of IRSPL or CGS-CIMB.

The information contained in this report is prepared from data believed to be correct and reliable at the time of issue of this report.

Under the terms of the agreement between IRSPL and CGS-CIMB, IRSPL is not required to issue regular reports on the subject matter of this report at any frequency and it may cease to do so or change the periodicity of reports at any time. Neither IRSPL nor CGS-CIMB is under any obligation to update this report in the event of a material change to the information contained in this report. Neither IRSPL nor CGS-CIMB has any and will accept any, obligation to (i) check or ensure that the contents of this report remain current, reliable or relevant; (ii) ensure that the content of this report constitutes all the information a prospective investor may require; (iii) ensure the adequacy, accuracy, completeness, reliability or fairness of any views, opinions and information, and accordingly, IRSPL and its affiliates/group companies and/or CGS-CIMB, its affiliates and related persons including China Galaxy International Financial Holdings Limited ("CGIFHL") and CIMB Group Sdn. Bhd. ("CIMBG") and their respective related corporations (and their respective directors, associates, connected persons and/or employees) shall not be liable in any manner whatsoever for any consequences (including but not limited to any direct, indirect or consequential losses, loss of profits and damages) of any reliance thereon or usage thereof. In particular, CGS-CIMB disclaims all responsibility and liability for the views and opinions set out in this report.

Unless otherwise specified, this report is based upon reasonable sources. Such sources will, unless otherwise specified, for market data, be market data and prices available from the main stock exchange or market where the relevant security is listed, or, where appropriate, any other market. Information on the accounts and business of company(ies) will generally be based on published statements of the company(ies), information disseminated by regulatory information services, other publicly available information and information resulting from our research. Whilst every effort is made to ensure that statements of facts made in this report are accurate, all estimates, projections, forecasts, expressions of opinion and other subjective judgments contained in this report are based on assumptions considered to be reasonable as of the date of the document in which they are contained and must not be construed as a representation that the matters referred to therein will occur. Past performance is not a reliable indicator of future performance. The value of investments may go down as well as up and those investing may, depending on the investments in question, lose more than the initial investment. No report shall constitute an offer or an invitation by or on behalf of IRSPL and its affiliates/group companies and/or CGS-CIMB or their respective affiliates (including CGIFHL, CIMBG and their respective related corporations) or IRSPL and its affiliates/group companies, to any person to buy or sell any investments.

By IRSPL producing this report for CGS-CIMB, IRSPL has confirmed to CGS-CIMB that the opinions expressed are based on information it believes to be accurate and complete and obtained through reliable public or other non-confidential sources at the time made. (Information barriers and other arrangements may be established where necessary to prevent conflicts of interests arising. However, the analyst(s) may receive compensation that is based on his/their coverage of company(ies) in the performance of his/their duties or the performance of his/their recommendations. In reviewing this report, an investor should be aware that any or all of the foregoing, among other things, may give rise to real or potential conflicts of interest. Additional information is, subject to the duties of confidentiality, available on request.

The report is not a "prospectus" as defined under Indian Law, including the Companies Act, 2013, and is not, and shall not be, approved by, or filed or registered with, any Indian regulator, including any Registrar of Companies in India, SEBI, any Indian stock exchange, or the Reserve Bank of India. No offer, or invitation to offer, or solicitation of subscription with respect to any such securities listed or proposed to be listed in India is being made, or intended to be made, to the public, or to any member or section of the public in India, through or pursuant to this report.

The research analysts, strategists or economists principally responsible for the preparation of this research report are segregated from the other activities of IRSPL. Information barriers and other arrangements have been established, as required, to prevent any conflicts of interests.

IRSPL may have issued other reports (based on technical analysis, event specific, short term views etc.) that are inconsistent with and reach different conclusion from the information presented in this report.

Holding of Analysts/Relatives of Analysts, IRSPL and Associates of IRSPL in the covered securities, as on the date of publishing of this report

	Analyst/ Relative	Entity/ Associates
any financial interests in the company covered in this report (subject company) and nature of such financial interest	NO	NO
actual/beneficial ownership of 1% or more in securities of the subject company at the end of the month immediately preceding the date of publication of the research report or date of the public appearance;	NO	NO
any other material conflict of interest at the time of publication of the research report or at the time of public appearance	NO	NO
received any compensation from the subject company in the past twelve months for investment banking or merchant banking or brokerage services or investment advisory or depository or distribution from the subject company in the last twelve months for products/services other than investment banking or merchant banking or broker- age services or investment advisory or depository or distribution from the subject company in the last twelve months	NO	NO
managed or co-managed public offering of securities for the subject company in the last twelve months	NO	NO
received any compensation or other benefits from the subject company or third party in connection with the research report	NO	NO
served as an officer, director or employee of the subject company	NO	NO
been engaged in market making activity for the subject company	NO	NO

Analyst declaration

- The analyst responsible for the production of this report hereby certifies that the views expressed herein accurately and exclusively reflect his or her personal views and opinions about any and all of the issuers or securities analysed in this report and were prepared independently and autonomously in an unbiased manner.
- No part of the compensation of the analyst(s) was, is, or will be directly or indirectly related to the inclusion of specific recommendations(s) or view(s) in this report or based any specific investment banking transaction.
- The analyst(s) has(have) not had any serious disciplinary action taken against him/her(them).
- The analyst, strategist, or economist does not have any material conflict of interest at the time of publication of this report.
- The analyst(s) has(have) received compensation based upon various factors, including quality, accuracy and value of research, overall firm performance, client feedback and competitive factors.

CGS-CIMB DISCLOSURES

Country	CGS-CIMB Entity	Regulated by
Hong Kong	CGS-CIMB Securities (Hong Kong) Limited	Securities and Futures Commission Hong Kong
India	CGS-CIMB Securities (India) Private Limited	Securities and Exchange Board of India (SEBI)
Indonesia	PT CGS-CIMB Sekuritas Indonesia	Financial Services Authority of Indonesia
Malaysia	CGS-CIMB Securities Sdn. Bhd.	Securities Commission Malaysia
Singapore	CGS-CIMB Securities (Singapore) Pte. Ltd.	Monetary Authority of Singapore
South Korea	CGS-CIMB Securities (Hong Kong) Limited, Korea Branch	Financial Services Commission and Financial Supervisory Service
Thailand	CGS-CIMB Securities (Thailand) Co. Ltd.	Securities and Exchange Commission Thailand

Other Significant Financial Interests:

As of the end of 31st July 2021 immediately preceding the date of this report CGS-CIMB does not:

- have a proprietary position in the securities (which may include but not be limited to shares, warrants, call warrants and/or any other derivatives) in the company(ies) covered in this report except for the following:
 - Nil
- act as market maker or have assumed an underwriting commitment in securities of the company(ies) covered in this report except for the following:
 - Nil
- perform or seek to perform significant investment banking, advisory, underwriting or placement services for or relating to the company(ies) covered in this report and/or solicit such investment, advisory or other services from the company(ies) covered in this report except for the following:
 - Nil

CGS-CIMB, its affiliates, related corporations (including CGIFHL, CIMBG and their respective related corporations) and/or their respective directors, associates, connected parties and/or employees and/or IRSPL and/or its affiliates and/or its Directors/employees may own or have positions in securities of the company(ies) covered in this report or any securities related thereto and may from time to time add to or dispose of, or may be materially interested in, any such securities.

CGS-CIMB, its affiliates and related corporations (including CGIFHL, CIMBG and their respective related corporations) and/or IRSPL and/or its affiliates and/or its Directors/employees may do and seek to do business with the company(ies) covered in this research report and may from time to time (a) buy/sell the securities covered in this report, from time to time and/or (b) act as market maker or have assumed an underwriting commitment in securities of such company(ies), and/or (c) may sell them to or buy them from customers on a principal basis and/or (d) may also perform or seek to perform significant investment banking, advisory, underwriting or placement services for or relating to such company(ies) and/or (e) solicit such investment, advisory or other services from any entity mentioned in this report and/or (f) act as a lender/borrower to such company and may earn brokerage or other compensation. However, Analysts are forbidden to acquire, on their own account or hold securities (physical or uncertificated, including derivatives) of companies in respect of which they are compiling and producing financial recommendations or in the result of which they play a key part

This report does not purport to contain all the information that a prospective investor may require. Neither CGS-CIMB nor any of its affiliates (including CGIFHL, CIMBG and their related corporations) make any guarantee, representation or warranty, express or implied, as to the adequacy, accuracy, completeness, reliability or fairness of any such information and opinion contained in this report. Neither CGS-CIMB nor any of its affiliates nor their related persons (including CGIFHL, CIMBG and their related corporations) shall be liable in any manner whatsoever for any consequences (including but not limited to any direct, indirect or consequential losses, loss of profits and damages) of any reliance thereon or usage thereof.

This report is general in nature and has been prepared for information purposes only. It is intended for circulation amongst CGS-CIMB's and its affiliates' (including CGIFHL's, CIMBG's and their respective related corporations') clients generally and does not have regard to the specific investment objectives, financial situation and the particular needs of any specific person who may receive this report. The information and opinions in this report are not and should not be construed or considered as an offer, recommendation or solicitation to buy or sell the subject securities, related investments or other financial instruments or any derivative instrument, or any rights pertaining thereto.

Investors are advised to make their own independent evaluation of the information contained in this report, consider their own individual investment objectives, financial situation and particular needs and consult their own professional and financial advisers as to the legal, business, financial, tax and other aspects before participating in any transaction in respect of the securities of company(ies) covered in this report. The securities of such company(ies) may not be eligible for sale in all jurisdictions or to all categories of investors.

The report is not a "prospectus" as defined under Indian Law, including the Companies Act, 2013, and is not, and shall not be, approved by, or filed or registered with, any Indian regulator, including any Registrar of Companies in India, SEBI, any Indian stock exchange, or the Reserve Bank of India. No offer, or invitation to offer, or solicitation of subscription with respect to any such securities listed or proposed to be listed in India is being made, or intended to be made, to the public, or to any member or section of the public in India, through or pursuant to this report

Restrictions on Distributions

Australia: Despite anything in this report to the contrary, this research is prepared for and provided in Australia by CGS-CIMB Securities (Singapore) Pte. Ltd. and CGS-CIMB Securities (Hong Kong) Limited. This research is only available in Australia to persons who are "wholesale clients" (within the meaning of the Corporations Act 2001 (Cth) and is supplied solely for the use of such wholesale clients and shall not be distributed or passed on to any other person. You represent and warrant that if you are in Australia, you are a "wholesale client". This research is of a general nature only and has been prepared without taking into account the objectives, financial situation or needs of the individual recipient. CGS-CIMB Securities (Singapore) Pte. Ltd. and CGS-CIMB Securities (Hong Kong) Limited do not hold, and are not required to hold an Australian financial services license. CGS-CIMB Securities (Singapore) Pte. Ltd. and CGS-CIMB Securities (Hong Kong) Limited rely on "passporting" exemptions for entities appropriately licensed by the Monetary Authority of Singapore (under ASIC Class Order 03/1102) and the Securities and Futures Commission in Hong Kong (under ASIC Class Order 03/1103).

Canada: This report has not been prepared in accordance with the disclosure requirements of Dealer Member Rule 3400 – Research Restrictions and Disclosure Requirements of the Investment Industry Regulatory Organization of Canada. For any research report distributed by CIBC, further disclosures related to CIBC conflicts of interest can be found at <https://researchcentral.cibcwm.com>.

China: For the purpose of this report, the People's Republic of China ("PRC") does not include the Hong Kong Special Administrative Region, the Macau Special Administrative Region or Taiwan. The distributor of this report has not been approved or licensed by the China Securities Regulatory Commission or any other relevant regulatory authority or governmental agency in the PRC. This report contains only marketing information. The distribution of this report is not an offer to buy or sell to any person within or outside PRC or a solicitation to any person within or outside of PRC to buy or sell any instruments described herein. This report is being issued outside the PRC to a limited number of institutional investors and may not be provided to any person other than the original recipient and may not be reproduced or used for any other purpose.

France: Only qualified investors within the meaning of French law shall have access to this report. This report shall not be considered as an offer to subscribe to, or used in connection with, any offer for subscription or sale or marketing or direct or indirect distribution of financial instruments and it is not intended as a solicitation for the purchase of any financial instrument.

Germany: This report is only directed at persons who are professional investors as defined in sec 31a(2) of the German Securities Trading Act (WpHG). This publication constitutes research of a non-binding nature on the market situation and the investment instruments cited here at the time of the publication of the information.

The current prices/yields in this issue are based upon closing prices from Bloomberg as of the day preceding publication. Please note that neither the German Federal Financial Supervisory Agency (BaFin), nor any other supervisory authority exercises any control over the content of this report.

Hong Kong: This report is prepared for and distributed in Hong Kong by CGS-CIMB Securities (Hong Kong) Limited ("CHK") which is licensed in Hong Kong by the Securities and Futures Commission for Type 1 (dealing in securities) and Type 4 (advising on securities) activities. Any investors wishing to purchase or otherwise deal in the securities covered in this report should contact the Head of Sales at CHK. The views and opinions in this report are our own as of the date hereof and are subject to change. If the Financial Services and Markets Act of the United Kingdom or the rules of the Financial Conduct Authority apply to a recipient, our obligations owed to such recipient therein are unaffected. CHK has no obligation to update its

opinion or the information in this report.

This publication is strictly confidential and is for private circulation only to clients of CHK.

India: This report is prepared by IRSPL for and distributed in India by IRSPL or CGS-CIMB Securities (India) Private Limited ("CGS-CIMB India"), as the case may be. CGS-CIMB India is a subsidiary of CGS-CIMB Securities International Pte. Ltd. which is in turn is a 50:50 joint venture company of CGIFHL and CIMBG. The details of the members of the group of companies of CGS-CIMB can be found at www.cgs-cimb.com, CGIFHL at www.chinastock.com.hk/en/ACG/ContactUs/index.aspx and CIMBG at www.cimb.com/en/who-we-are.html. CGS-CIMB India is registered with the National Stock Exchange of India Limited and BSE Limited as a trading and clearing member (under the Securities and Exchange Board of India (Stock Brokers and Sub-Brokers) Regulations, 1992). CGS-CIMB India is registered with SEBI (SEBI Registration Number: INZ000209135) as a Research Analyst (INH000000669) pursuant to the SEBI (Research Analysts) Regulations, 2014 ("Regulations").

By IRSPL producing this report for CGS-CIMB, IRSPL has confirmed to CGS-CIMB that the research analysts, strategists or economists principally responsible for the preparation of this report are segregated from the other activities of IRSPL and they have received compensation based upon various factors, including quality, accuracy and value of research, firm profitability or revenues, client feedback and competitive factors. Research analysts', strategists' or economists' compensation is not linked to investment banking or capital markets transactions performed or proposed to be performed by IRSPL, CGS-CIMB India or its affiliates.

This report does not take into account the particular investment objectives, financial situations, or needs of the recipients. It is not intended for and does not deal with prohibitions on investment due to law/jurisdiction issues etc. which may exist for certain persons/entities. Recipients should rely on their own investigations and take their own professional advice before investment.

CGS-CIMB India does not have actual / beneficial ownership of 1% or more securities of the subject company in this report, at the end of the month immediately preceding the date of publication of this report. However, since affiliates of CGS-CIMB India are engaged in the financial services business, they might have in their normal course of business financial interests or actual / beneficial ownership of one per cent or more in various companies including the subject company in this report.

CGS-CIMB India or its associates, may: (a) from time to time, have long or short position in, and buy or sell the securities of the subject company in this report; or (b) be engaged in any other transaction involving such securities and earn brokerage or other compensation or act as a market maker in the financial instruments of the subject company in this report or act as an advisor or lender/borrower to such company or may have any other potential conflict of interests with respect to any recommendation and other related information and opinions.

CGS-CIMB India and associates have not received any compensation for investment banking, merchant banking or brokerage services from the subject company mentioned in the report in the past 12 months.

CGS-CIMB India and associates have not managed or co-managed public offering of securities for the subject company mentioned in the report in the past 12 months.

Indonesia: This report is prepared for and distributed in Indonesia by PT CGS-CIMB Sekuritas Indonesia ("CGS-CIMB Indonesia"). The views and opinions in this report is prepared from data believed to be correct and reliable at the time of issue of this report and are subject to change. CGS-CIMB Indonesia has no obligation to update the opinion or the information in this report. This report is for private circulation only to clients of CGS-CIMB Indonesia. Neither this report nor any copy hereof may be distributed in Indonesia or to any Indonesian citizens wherever they are domiciled or to Indonesian residents except in compliance with applicable Indonesian capital market laws and regulations.

This report is not an offer of securities in Indonesia. The securities referred to in this report have not been registered with the Financial Services Authority (Otoritas Jasa Keuangan) pursuant to relevant capital market laws and regulations, and may not be offered or sold within the territory of the Republic of Indonesia or to Indonesian citizens through a public offering or in circumstances which constitute an offer within the meaning of the Indonesian capital market law and regulations.

Ireland: CGS-CIMB is not an investment firm authorised in the Republic of Ireland and no part of this document should be construed as CGS-CIMB acting as, or otherwise claiming or representing to be, an investment firm authorised in the Republic of Ireland.

Malaysia: This report is prepared for and distributed in Malaysia by CGS-CIMB Securities Sdn. Bhd. ("CGS-CIMB Malaysia") solely for the benefit of and for the exclusive use of our clients. Recipients of this report are to contact CGS-CIMB Malaysia, at 29th Floor Menara CIMB No. 1 Jalan Stesen Sentral 2, Kuala Lumpur Sentral 50470 Kuala Lumpur, Malaysia, in respect of any matters arising from or in connection with this report. CGS-CIMB Malaysia has no obligation to update, revise or reaffirm the opinion or the information in this report after the date of this report.

New Zealand: In New Zealand, this report is for distribution only to persons who are wholesale clients pursuant to section 5C of the Financial Advisers Act 2008.

Singapore: This report is prepared for and distributed in Singapore by CGS-CIMB Securities (Singapore) Pte Ltd ("CGS-CIMB Singapore"). CGS-CIMB Singapore is a capital markets services licensee under the Securities and Futures Act (Chapter 289). Accordingly, it is exempted from the requirement to hold a financial adviser's licence under the Financial Advisers Act, Cap 110 ("FAA") for advising on investment products, by issuing or promulgating research analyses or reports, whether in electronic, print or other form. CGS-CIMB Singapore is subject to the applicable rules under the FAA unless it is able to avail itself to any prescribed exemptions.

Recipients of this report are to contact CGS-CIMB Singapore, 50 Raffles Place, #16-02 Singapore Land Tower, Singapore in respect of any matters arising from, or in connection with this report. CGS-CIMB Singapore has no obligation to update the opinion or the information in this report. This publication is strictly confidential and is for private circulation only. If you have not been sent this report by CGS-CIMB Singapore directly, you may not rely, use or disclose to anyone else this report or its contents.

If the recipient of this report is not an accredited investor, expert investor or institutional investor, CGS-CIMB Singapore accepts legal responsibility for the contents of the report without any disclaimer limiting or otherwise curtailing such legal responsibility. If the recipient is an accredited investor, expert investor or institutional investor, the recipient is deemed to acknowledge that CGS-CIMB Singapore is exempt from certain requirements under the FAA and its attendant regulations, and as such, is exempt from complying with the following:

- (a) Section 25 of the FAA (obligation to disclose product information);
- (b) Section 27 of the FAA (duty not to make recommendation with respect to any investment product without having a reasonable basis where you may be reasonably expected to rely on the recommendation);

- (c) MAS Notice on Information to Clients and Product Information Disclosure [Notice No. FAA-N03];
 (d) MAS Notice on Recommendation on Investment Products [Notice No. FAA-N16];
 (e) Section 36 of the FAA (obligation on disclosure of interest in specified products); and
 (f) any other laws, regulations, notices, directive, guidelines, circulars and practice notes which relates to the above, to the extent permitted by applicable laws, as may be amended from time to time, and any other laws, regulations, notices, directive, guidelines, circulars, and practice notes as we may notify you from time to time. In addition, the recipient who is an accredited investor, expert investor or institutional investor acknowledges that as CGS-CIMB Singapore is exempt from Section 27 of the FAA, the recipient will also not be able to file a civil claim against CGS-CIMB Singapore for any loss or damage arising from the recipient's reliance on any recommendation made by CGS-CIMB Singapore which would otherwise be a right that is available to the recipient under Section 27 of the FAA.

CGS-CIMB Singapore, its affiliates and related corporations, their directors, associates, connected parties and/or employees may own or have positions in specified products of the company(ies) covered in this report or any specified products related thereto and may from time to time add to or dispose of, or may be materially interested in, any such specified products. Further, CGS-CIMB Singapore, its affiliates and its related corporations do and seek to do business with the company(ies) covered in this report and may from time to time act as market maker or have assumed an underwriting commitment in specified products of such company(ies), may sell them to or buy them from customers on a principal basis and may also perform or seek to perform significant investment banking, advisory, underwriting or placement services for or relating to such company(ies) as well as solicit such investment, advisory or other services from any entity mentioned in this report.

As of CGS-CIMB Singapore does not have a proprietary position in the recommended specified products in this report.

CGS-CIMB Singapore makes a market on the specified products.

CGS-CIMB Singapore does not make a market on other specified products mentioned in the report.

South Korea: This report is prepared for and distributed in South Korea by CGS-CIMB Securities (Hong Kong) Limited, Korea Branch ("CGS-CIMB Korea") which is licensed as a cash equity broker, and regulated by the Financial Services Commission and Financial Supervisory Service of Korea. In South Korea, this report is for distribution only to professional investors under Article 9(5) of the Financial Investment Services and Capital Market Act of Korea ("FSCMA").

Spain: This document is a research report and it is addressed to institutional investors only. The research report is of a general nature and not personalised and does not constitute investment advice so, as the case may be, the recipient must seek proper advice before adopting any investment decision. This document does not constitute a public offering of securities.

CGS-CIMB is not registered with the Spanish Comision Nacional del Mercado de Valores to provide investment services.

Sweden: This report contains only marketing information and has not been approved by the Swedish Financial Supervisory Authority. The distribution of this report is not an offer to sell to any person in Sweden or a solicitation to any person in Sweden to buy any instruments described herein and may not be forwarded to the public in Sweden.

Switzerland: This report has not been prepared in accordance with the recognized self-regulatory minimal standards for research reports of banks issued by the Swiss Bankers' Association (Directives on the Independence of Financial Research).

Thailand: This report is prepared for and distributed in Thailand by CGS-CIMB Securities (Thailand) Co. Ltd. ("CGS-CIMB Thailand") based upon sources believed to be reliable (but their accuracy, completeness or correctness is not guaranteed). The statements or expressions of opinion herein were arrived at after due and careful consideration for use as information for investment. Such opinions are subject to change without notice and CGS-CIMB Thailand has no obligation to update its opinion or the information in this report.

CGS-CIMB Thailand may act or acts as Market Maker, and issuer and offerer of Derivative Warrants and Structured Note which may have the following securities as its underlying securities. Investors should carefully read and study the details of the derivative warrants in the prospectus before making investment decisions.

AAV, ACE, ADVANC, AEONTS, AMATA, AOT, AP, BAM, BANPU, BBL, BCH, BCP, BCPG, BDMS, BEC, BEM, BGRIM, BH, BJC, BTS, CBG, CENTEL, CHG, CK, CKP, COM7, CPALL, CPF, CPN, CRC, DELTA, DOHOME, DTAC, EA, EGCO, ESSO, GLOBAL, GPSC, GULF, GUNKUL, HANA, HMPRO, ICHI, INTUCH, IRPC, IVL, JAS, JMART, JMT, KBANK, KCE, KKP, KTB, KTC, LH, MAJOR, MEGA, MINT, MTC, NRF, OR, ORI, OSP, PLANB, PRM, PSL, PTG, PTL, PTT, PTTEP, PTTGC, QH, RATCH, RBF, RS, SAWAD, SCB, SCC, SCGP, SINGER, SPALI, SPRC, STA, STEC, STGT, SUPER, SYNEX, TASCO, TCAP, THANI, TISCO, TKN, TOP, TQM, TRUE, TTB, TU, TVO, VGI, WHA

Corporate Governance Report:

The disclosure of the survey result of the Thai Institute of Directors Association ("IOD") regarding corporate governance is made pursuant to the policy of the Office of the Securities and Exchange Commission. The survey of the IOD is based on the information of a company listed on the Stock Exchange of Thailand and the Market for Alternative Investment disclosed to the public and able to be accessed by a general public investor. The result, therefore, is from the perspective of a third party. It is not an evaluation of operation and is not based on inside information.

The survey result is as of the date appearing in the Corporate Governance Report of Thai Listed Companies. As a result, the survey result may be changed after that date. CGS-CIMB Thailand does not confirm nor certify the accuracy of such survey result.

Score Range:	90 - 100	80 - 89	70 - 79	Below 70	No Survey Result
Description:	Excellent	Very Good	Good	N/A	N/A

United Arab Emirates: The distributor of this report has not been approved or licensed by the UAE Central Bank or any other relevant licensing authorities or governmental agencies in the United Arab Emirates. This report is strictly private and confidential and has not been reviewed by, deposited or registered with UAE Central Bank or any other licensing authority or governmental agencies in the United Arab Emirates. This report is being issued outside the United Arab Emirates to a limited number of institutional investors and must not be provided to any person other than the original recipient and may not be reproduced or used for any other purpose. Further, the information contained in this report is not intended to lead to the sale of investments under any subscription agreement or the conclusion of any other contract of whatsoever nature within the territory of the United Arab Emirates.

United Kingdom and European Economic Area (EEA): In the United Kingdom and European Economic Area, this material is prepared for and being distributed by CGS-CIMB Securities (UK) Limited ("CGS-CIMB UK"). CGS-CIMB UK is authorized and regulated by the Financial Conduct Authority and its registered office is at 27 Knightsbridge, London, SW1X7YB. The material distributed by CGS-CIMB UK has been prepared in accordance with CGS-CIMB's policies for managing conflicts of interest arising as a result of publication and distribution of this material. This material is for distribution only to, and is solely directed at, selected persons on the basis that those persons: (a) are eligible counterparties and professional clients of CGS-CIMB UK; (b) have professional experience in matters relating to investments falling within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (as amended, the "Order"), (c) fall within Article 49(2)(a) to (d) ("high net worth companies, unincorporated associations etc") of the Order; (d) are outside the United Kingdom subject to relevant regulation in each jurisdiction, material (all such persons together being referred to as "relevant persons"). This material is directed only at relevant persons and must not be acted on or relied on by persons who are not relevant persons. Any investment or investment activity to which this material relates is available only to relevant persons and will be engaged in only with relevant persons.

This material is categorised as non-independent for the purposes of CGS-CIMB UK and therefore does not provide an impartial or objective assessment of the subject matter and does not constitute independent research. Consequently, this material has not been prepared in accordance with legal requirements designed to promote the independence of research and will not be subject to any prohibition on dealing ahead of the dissemination of research. Therefore, this material is considered a marketing communication.

United States: This report is prepared for and distributed in the United States of America by CGS-CIMB Securities (USA) Inc, a U.S. registered broker-dealer and an affiliate of CGS-CIMB Securities Sdn. Bhd., CGS-CIMB Securities (Singapore) Pte Ltd, PT CGS-CIMB Sekuritas Indonesia, CGS-CIMB Securities (Thailand) Co. Ltd, CGS-CIMB Securities (Hong Kong) Limited and CGS-CIMB Securities (India) Private Limited, and is distributed solely to persons who qualify as "U.S. Institutional Investors" as defined in Rule 15a-6 under the Securities and Exchange Act of 1934. This communication is only for Institutional Investors whose ordinary business activities involve investing in shares, bonds, and associated securities and/or derivative securities and who have professional experience in such investments. Any person who is not a U.S. Institutional Investor or Major Institutional Investor must not rely on this communication. The delivery of this report to any person in the United States of America is not a recommendation to effect any transactions in the securities discussed herein, or an endorsement of any opinion expressed herein. CGS-CIMB Securities (USA) Inc, is a FINRA/SIPC member and takes responsibility for the content of this report. For further information or to place an order in any of the above-mentioned securities please contact a registered representative of CGS-CIMB Securities (USA) Inc.

CGS-CIMB Securities (USA) Inc. has managed or co-managed a public offering of securities in the past 12 months.

CGS-CIMB Securities (USA) Inc. has not managed or co-managed a public offering of any of the securities mentioned in the past 12 months.

CGS-CIMB Securities (USA) Inc. has received compensation for investment banking services in the past 12 months.

CGS-CIMB Securities (USA) Inc. has not received compensation for investment banking services from any of the company mentioned in the past 12 months.

CGS-CIMB Securities (USA) Inc. expects to receive or intend to seek compensation for investment banking services within the next 3 months.

CGS-CIMB Securities (USA) Inc. neither expects to receive nor intends to seek compensation for investment banking services from any of the company mentioned within the next 3 months.

As of the end of the month immediately preceding the date of publication of this report, CGS-CIMB Securities (USA) Inc. beneficially owns 1% or more of any class of common equity securities.

United States Third-Party Disclaimer: If this report is distributed in the United States of America by Raymond James & Associates, Inc ("RJA"), this report is third-party research prepared for and distributed in the United States of America by RJA pursuant to an arrangement between RJA and CGS-CIMB Securities International Pte. Ltd. ("CGS-CIMB"). CGS-CIMB is not an affiliate of RJA. This report is distributed solely to persons who qualify as "U.S. Institutional Investors" or as "Major U.S. Institutional Investors" as defined in Rule 15a-6 under the Securities and Exchange Act of 1934, as amended. This communication is only for U.S. Institutional Investors or Major U.S. Institutional Investor whose ordinary business activities involve investing in shares, bonds, and associated securities and/or derivative securities and who have professional experience in such investments. Any person who is not a U.S. Institutional Investor or Major U.S. Institutional Investor must not rely on this communication. The delivery of this report to any person in the U.S. is not a recommendation to effect any transactions in the securities discussed herein, or an endorsement of any opinion expressed herein. If you are receiving this report in the U.S from RJA, a FINRA/SIPC member, it takes responsibility for the content of this report. For further information or to place an order in any of the above-mentioned securities please contact a registered representative of CGS-CIMB Securities (USA) Inc. or RJA. <https://raymondjames.com/InternationalEquityDisclosures>

Other jurisdictions: In any other jurisdictions, except if otherwise restricted by laws or regulations, this report is only for distribution to professional, institutional, or sophisticated investors as defined in the laws and regulations of such jurisdictions.

Corporate Governance Report of Thai Listed Companies (CGR). CG Rating by the Thai Institute of Directors Association (Thai IOD) in 2020, Anti-Corruption 2020

ADVANC – Excellent, Certified, **AMATA** – Excellent, Certified, **ANAN** – Excellent, n/a, **AOT** – Excellent, n/a, **AP** – Excellent, Certified, **ASP** – Excellent, n/a, **AU** – Good, n/a, **BAM** – Very Good, Certified, **BAY** – Excellent, Certified, **BBL** – Very Good, Certified, **BCH** – Good, Certified, **BCP** - Excellent, Certified, **BCPG** – Excellent, Certified, **BDMS** – Excellent, n/a, **BEAUTY** – Good, n/a, **BH** - Good, n/a, **BJC** – Very Good, n/a, **BLA** – Excellent, Certified, **BTS** - Excellent, Certified, **CBG** – Very Good, n/a, **CCET** – n/a, n/a, **CENDEL** – Excellent, Certified, **CHAYO** – Very Good, n/a, **CHG** – Very Good, n/a, **CK** – Excellent, n/a, **COM7** – Very Good, Certified, **CPALL** – Excellent, Certified, **CPF** – Excellent, Certified, **CPN** - Excellent, Certified, **CPNREIT** – n/a, n/a, **CRC** – Very Good, n/a, **DELTA** - Excellent, Certified, **DDD** – Very Good, n/a, **DIF** – n/a, n/a, **DOHOME** – Very Good, n/a, **DREIT** – n/a, n/a, **DTAC** – Excellent, Certified, **ECL** – Excellent, Certified, **EGCO** - Excellent, Certified, **EPG** – Excellent, Certified, **ERW** – Very Good, Certified, **GFPT** - Excellent, Certified, **GGC** – Excellent, Certified, **GLOBAL** – Very Good, n/a, **HANA** - Excellent, Certified, **HMPRO** - Excellent, Certified, **HUMAN** – Good, n/a, **ICHI** – Excellent, Certified, **III** – Excellent, n/a, **INTUCH** - Excellent, Certified, **IRPC** – Excellent, Certified, **ITD** – Very Good, n/a, **IVL** - Excellent, Certified, **JASIF** – n/a, n/a, **JKN** – Excellent, Declared, **JMT** – Very Good, Declared, **KBANK** - Excellent, Certified, **KCE** - Excellent, Certified, **KEX** – n/a, n/a, **KKP** – Excellent, Certified, **KSL** – Excellent, Certified, **KTB** - Excellent, Certified, **KTC** – Excellent, Certified, **LH** - Excellent, n/a, **LPN** – Excellent, Certified, **M** – Very Good, Certified, **MAKRO** – Excellent, Certified, **MC** – Excellent, Certified, **MEGA** – Very Good, n/a, **MINT** - Excellent, Certified, **MTC** – Excellent, Certified, **NETBAY** – Very Good, n/a, **NRF** – n/a, n/a, **OR** – n/a, n/a, **ORI** – Excellent, Certified, **OSP** – Very Good, n/a, **PLANB** – Excellent, Certified, **PRINC** – Very Good, Certified, **PR9** – Excellent, n/a, **PSH** – Excellent, Certified, **PTT** - Excellent, Certified, **PTTEP** - Excellent, Certified, **PTTGC** - Excellent, Certified, **QH** – Excellent, Certified, **RBF** – Good, n/a, **RS** – Excellent, n/a, **RSP** – Good, n/a, **S** – Excellent, n/a, **SAK** – n/a, n/a, **SAPPE** – Very Good, Certified, **SAWAD** – Very Good, n/a, **SCB** - Excellent, Certified, **SCC** – Excellent, Certified, **SCGP** – n/a, n/a, **SHR** – Very Good, n/a, **SIRI** – Excellent, Certified, **SPA** – Very Good, n/a, **SPALI** - Excellent, Declared, **SPRC** – Excellent, Certified, **SSP** - Good, Declared, **STEC** – n/a, n/a, **SVI** – Excellent, Certified, **SYNEX** – Very Good, n/a, **TCAP** – Excellent, Certified, **THANI** – Excellent, Certified, **TIDLOR** – n/a, n/a, **TISCO** - Excellent, Certified, **TKN** – Very Good, n/a, **TMB** - Excellent, Certified, **TOP** - Excellent, Certified, **TRUE** – Excellent, Certified, **TU** – Excellent, Certified, **TVO** – Excellent, Certified, **VGI** – Excellent, Certified, **WHA** – Excellent, Certified, **WHART** – n/a, n/a, **WICE** – Excellent, Certified, **WORK** – Good, n/a.

- CG Score 2020 from Thai Institute of Directors Association (IOD)

- Companies participating in Thailand's Private Sector Collective Action Coalition Against Corruption programme (Thai CAC) under Thai Institute of Directors (as of January 30, 2021) are categorised into: companies that have declared their intention to join CAC, and companies certified by CAC.

Recommendation Framework

Stock Ratings

Definition:

Add	The stock's total return is expected to exceed 10% over the next 12 months.
Hold	The stock's total return is expected to be between 0% and positive 10% over the next 12 months.
Reduce	The stock's total return is expected to fall below 0% or more over the next 12 months.

The total expected return of a stock is defined as the sum of the: (i) percentage difference between the target price and the current price and (ii) the forward net dividend yields of the stock. Stock price targets have an investment horizon of 12 months.

Sector Ratings

Definition:

Overweight	An Overweight rating means stocks in the sector have, on a market cap-weighted basis, a positive absolute recommendation.
Neutral	A Neutral rating means stocks in the sector have, on a market cap-weighted basis, a neutral absolute recommendation.
Underweight	An Underweight rating means stocks in the sector have, on a market cap-weighted basis, a negative absolute recommendation.

Country Ratings

Definition:

Overweight	An Overweight rating means investors should be positioned with an above-market weight in this country relative to benchmark.
Neutral	A Neutral rating means investors should be positioned with a neutral weight in this country relative to benchmark.
Underweight	An Underweight rating means investors should be positioned with a below-market weight in this country relative to benchmark.