

Q3FY23 result review
and earnings/ TP
revisionConsumer Staples &
Discretionary

Target price: Rs505

Earnings revision

(%)	FY23E	FY24E
Sales	↓ 3.3	↓ 4.9
EBITDA	↓ 9.4	↓ 6.3
PAT	↓ 11.2	↓ 7.4

Target price revision

Rs505 from Rs545

Shareholding pattern

	Jun '22	Sep '22	Dec '22
Promoters	75.0	75.0	75.0
Institutional investors	14.6	14.2	14.0
MFs and other	1.0	1.4	1.1
Insurance co	2.3	1.5	1.5
FII	11.3	11.3	11.4
Others	10.4	10.8	11.0

Source: BSE

ESG disclosure score

Year	2020	2021	Chg
ESG score	42	42.2	0.5
Environment	19	20	6.2
Social	23	23	-
Governance	84	83	(0.7)

Note - Score ranges from 0 - 100 with a higher score indicating higher ESG disclosures.
Source: Bloomberg, I-sec research

Research Analysts:

Aniruddha Joshi

aniruddha.joshi@icicisecurities.com
+91 22 6807 7249

Manoj Menon

manoj.menon@icicisecurities.com
+91 22 6807 7209

Karan Bhuwania

karan.bhuwania@icicisecurities.com
+91 22 6807 7351

Akshay Krishnan

akshay.krishnan@icicisecurities.com
+91 22 6807 7632

Berger Paints

REDUCE**Maintained**Transitory issues impacted Q3; cyclical challenges
emerge for FY24**Rs541**

Berger's Q3FY23 earnings declined 13.4% YoY due to (1) lower sales of exterior paints due to prolonged monsoon and (2) high priced inventory impacted EBITDA margin by 239bps. We note these issues are transitory and management is confident of double-digit revenue and volume growth in Q4FY23 with margin recovery. However, we model key trends to unfold as (1) revenue growth in FY24-25 is likely to be materially lower than FY22-23 due to negligible price hikes and lower volume growth with higher competitive pressures and revival of unorganized sector, (2) likely inferior revenue mix due to inflationary pressures and likely higher discounting by smaller players at low end of market and (3) With market leader planning to operate in EBITDA margin band of 17-20%, there is cap on EBITDA margin recovery for Berger. Our stance of industry profit pool shrinkage due to steep competitive pressures remain intact. **Maintain REDUCE.**

- **Q3FY23 results:** Berger reported revenue growth of 5.6% YoY. EBITDA and adjusted PAT declined 10.8% and 13.4%, respectively. Decorative volume growth was 6%. Gross and EBITDA margin declined 198bps and 239bps, respectively YoY due to high priced inventory and adverse revenue mix. Standalone revenue growth was 7.2% YoY but EBITDA and PAT declined 9.4% and 6.1% respectively. Adjusting from dividend from subsidiaries, Standalone PAT declined 19.7% YoY.
- **Lower sales of exterior emulsions:** Due to prolonged monsoon, revenues of exterior emulsion were affected. It led to lower realization as well as lower margins. The company expects the revenue mix to improve in Q4FY23 and is also confident of double digit revenue and volume growth in Q4FY23.
- **All regions doing well except North India:** Berger has reported growth across rural and urban markets. It has also done well in East, West and South India. However, it still continues to face issues in North India. Commencement of Sandila, UP plant is likely to better service North India market and the recoup lost market shares.
- **Revenue growth likely to be lower than recent past:** Berger reported strong revenue CAGR of 25% over FY21-23 led by strong volume growth and price hikes. However, we note there will be negligible price hikes in FY24-25. Volume growth is likely to be weaker along with inferior revenue mix with higher competitive pressures, revival of unorganized / smaller players and high inflation.
- **Maintain REDUCE:** We model Berger to report revenue and PAT CAGRs of 15% and 17% YoY respectively over FY22-25. RoE is expected to be stable ~23% over FY22-25. However, we believe the stock price upside is limited at current valuations (39x FY25E EPS) and hence maintain REDUCE rating with DCF-based revised target price of Rs505. Key upside risk is higher-than-expected market share gains in paints and steep correction in input prices.

Market Cap	Rs525bn/US\$6.4bn		Year to March (cons)	FY22	FY23E	FY24E	FY25E
Reuters/Bloomberg	BRGR.BO/BRGR IN		Net Revenue (Rs mn)	87,618	1,05,991	1,19,364	1,33,288
Shares Outstanding (mn)	971.4		Net Profit (Rs mn)	8,173	9,223	11,463	13,329
52-week Range (Rs)	743/540		Dil. EPS (Rs)	8.6	9.5	11.8	13.7
Free Float (%)	25.0		% Chg YoY	15.7	10.7	24.3	16.3
FII (%)	11.4		P/E (x)	63.1	57.0	45.8	39.4
Daily Volume (US\$'000)	6,367		CEPS (Rs)	10.9	12.2	14.7	16.9
Absolute Return 3m (%)	(9.2)		EV/EBITDA (x)	40.0	35.4	29.3	25.7
Absolute Return 12m (%)	(26.9)		Dividend Yield (%)	0.6	0.6	0.6	0.7
Sensex Return 3m (%)	(1.5)		RoCE (%)	19.0	18.3	20.0	20.2
Sensex Return 12m (%)	1.9		RoE (%)	22.7	21.8	23.3	23.1

Table 1: Q3FY23 financial performance (consolidated)*(Rs mn, year ending March 31)*

	Q3FY23	Q3FY22	% YoY	Q2FY23	% QoQ
Net revenues	26,936	25,508	5.6	26,709	0.8
Raw materials	17,591	16,153	8.9	17,281	1.8
% of sales	65%	63%	198 bps	65%	61 bps
Employee costs	1,481	1,360	8.9	1,604	(7.7)
% of sales	5.5%	5.3%	17 bps	6.0%	-51 bps
Other expenditure	4,367	4,074	7.2	4,185	4.3
% of sales	16%	16%	24 bps	16%	54 bps
Total expenditure	23,439	21,587	8.6	23,070	1.6
EBITDA	3,497	3,921	(10.8)	3,640	(3.9)
<i>EBITDA margin (%)</i>	<i>13.0%</i>	<i>15.4%</i>	<i>-239 bps</i>	<i>13.6%</i>	<i>-65 bps</i>
Other income	109	155	(29.6)	126	(13.5)
PBDIT	3,605	4,076	(11.5)	3,765	(4.2)
Depreciation	644	561	14.8	625	3.0
PBIT	2,962	3,515	(15.7)	3,141	(5.7)
Interest	296	139	113.4	241	22.5
PBT	2,666	3,377	(21.0)	2,899	(8.0)
Tax	680	842	(19.3)	735	(7.5)
% of PBT	25%	25%	56 bps	25%	14 bps
Extraordinary	89	(106)		(96)	
PAT	2,076	2,429	(14.6)	2,068	0.4
Share in Associates	23	(7)	(413.9)	29	(22.6)
Reported PAT	2,098	2,422	(13.4)	2,098	0.0
Adjusted PAT	26,936	25,508	5.6	26,709	0.8

Source: Company data, I-Sec research

Table 2: Q3FY23 financial performance (standalone)*(Rs mn, year ending March 31)*

	Q3FY23	Q3FY22	% YoY	Q2FY23	% QoQ
Net revenues	24,189	22,562	7.2	23,738	1.9
Raw materials	16,009	14,437	10.9	15,546	3.0
% of sales	66%	64%	220 bps	65%	69 bps
Employee costs	1,115	983	13.4	1,205	(7.4)
% of sales	5%	4%	25 bps	5%	-47 bps
Other expenditure	3,952	3,706	6.6	3,804	3.9
% of sales	16%	16%	-9 bps	16%	31 bps
Total expenditure	21,076	19,126	10.2	20,555	2.5
EBITDA	3,113	3,436	(9.4)	3,183	(2.2)
<i>EBITDA margin (%)</i>	<i>12.9%</i>	<i>15.2%</i>	<i>-236 bps</i>	<i>13.4%</i>	<i>-54 bps</i>
Other income	395	140	182.6	142	177.8
PBDIT	3,508	3,576	(1.9)	3,325	5.5
Depreciation	569	494	15.1	550	3.4
PBIT	2,940	3,082	(4.6)	2,775	5.9
Interest	256	123	107.7	208	23.0
PBT	2,684	2,959	(9.3)	2,567	4.5
Tax	613	756	(19.0)	660	(7.2)
% of PBT	23%	26%	-272 bps	26%	-289 bps
PAT	2,071	2,203	(6.0)	1,907	8.6
Extraordinary items	18	5		(29)	
Reported PAT	2,089	2,207	(5.4)	1,878	11.2
Adjusted PAT	2,071	2,204	(6.1)	1,907	8.6

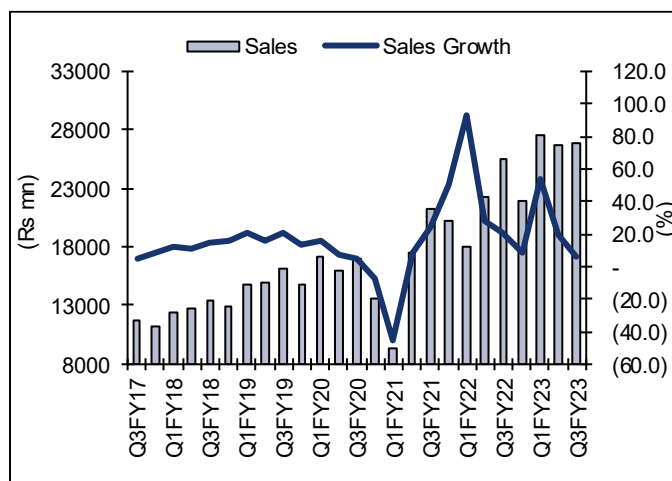
Source: Company data, I-Sec research

Takeaways from Q3FY23 results and conference call

- Berger's Decorative business was impacted in Q3FY23 due to (1) extended monsoon, (2) high base effect and (3) short festive season.
- Higher rainy days resulted in lower sales of exterior emulsion and it led to change in revenue mix.
- With higher proportion of low value paints, the company reported volume growth of 6% YoY.
- While recovery in Auto and industrial sectors have helped Industrial paints report healthy growth, weak demand from fan industry led to lower revenues of powder coating.
- The company has achieved additional price hikes from its Industrial customers in Q3FY23.
- The company is confident of reporting higher double digit revenue and volume growth in Q4FY23.
- Berger has seen growth across the rural as well as urban markets.
- It is doing well in East, West and South regions. However, its North India sales are relatively impacted.
- The company had high priced raw material inventory and it led to lower margins in Q3FY23. Berger expects some benefit of correction in input prices in Q4FY23 and also expects full benefit of lower commodity prices in Q1FY24.
- Nepal subsidiary reported revenue decline due to steep inflationary pressures and Poland subsidiary reported muted revenues due to unrest with Ukraine war and steep inflation.
- The company has added 8,000 sales touch points in 9MFY23. It also added 4,300 Colorbank machines.
- Commencement of Sandila, Uttar Pradesh plant is expected to result in lower inventory holding and will also help to reduce working capital.
- The company expects the revenue mix to improve in Q4FY23 with higher sales of exterior emulsions. While the winter is expected to impact exterior paints in North India, the company does not expect any material impact.
- The company indicated that there are normal rebates and trade discounts in market and there is no steep discounting in the market.

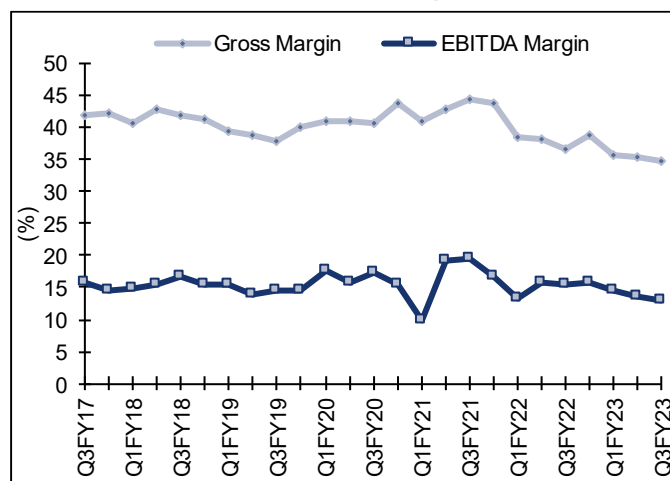
Quarterly operational highlights (Consolidated)

Chart 1: Revenues and Growth rates



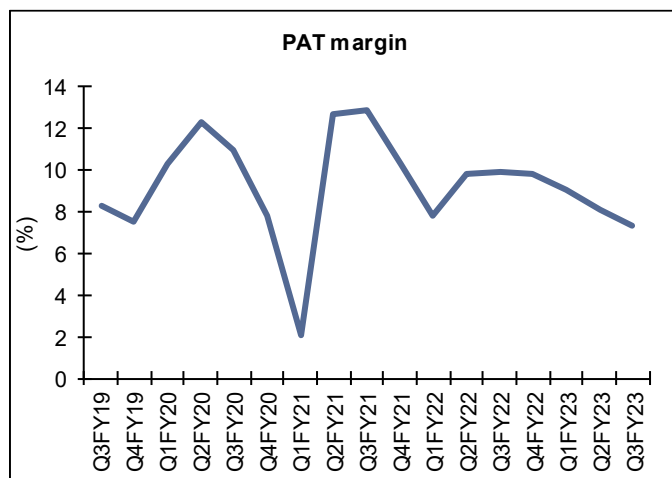
Source: Company data, I-Sec research

Chart 2: Gross and EBITDA margins



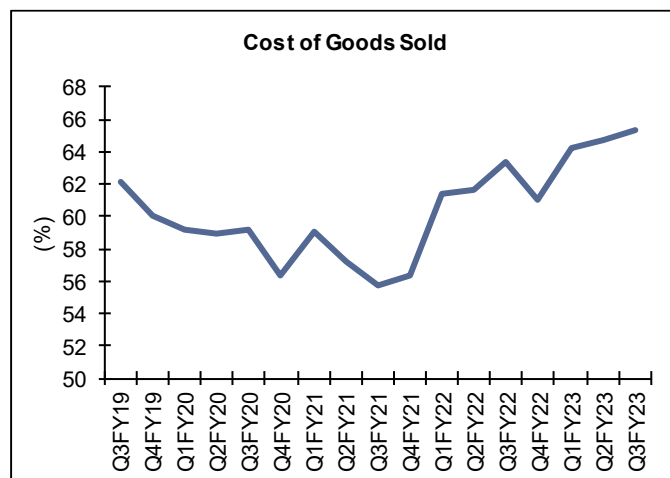
Source: Company data, I-Sec research

Chart 3: PAT margin



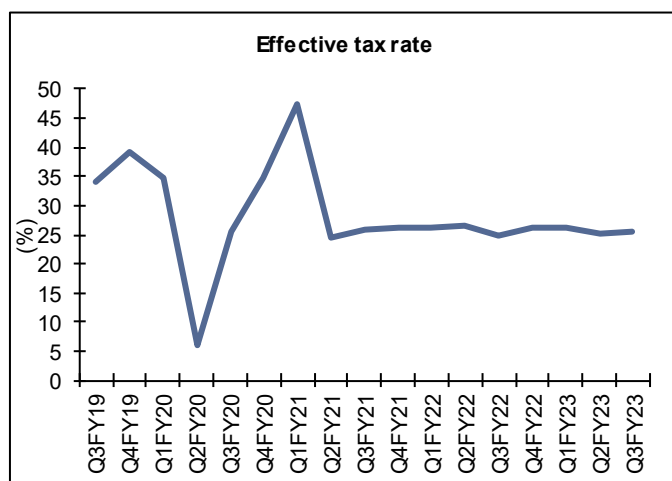
Source: Company data, I-Sec research

Chart 4: COGS as % of Net sales



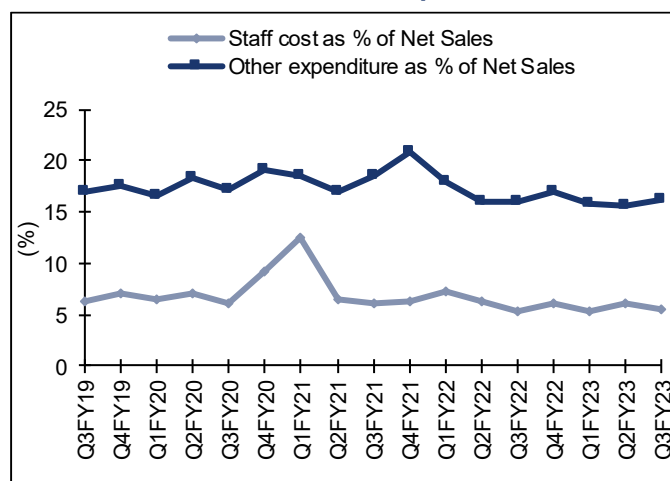
Source: Company data, I-Sec research

Chart 5: Effective tax rate



Source: Company data, I-Sec research

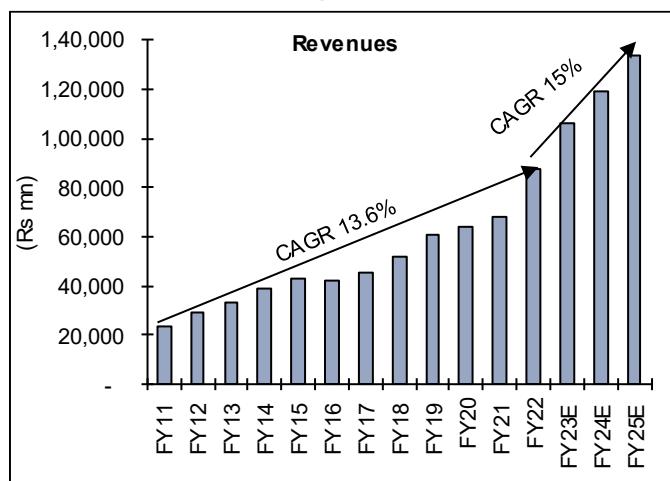
Chart 6: Staff cost and other expenditure



Source: Company data, I-Sec research

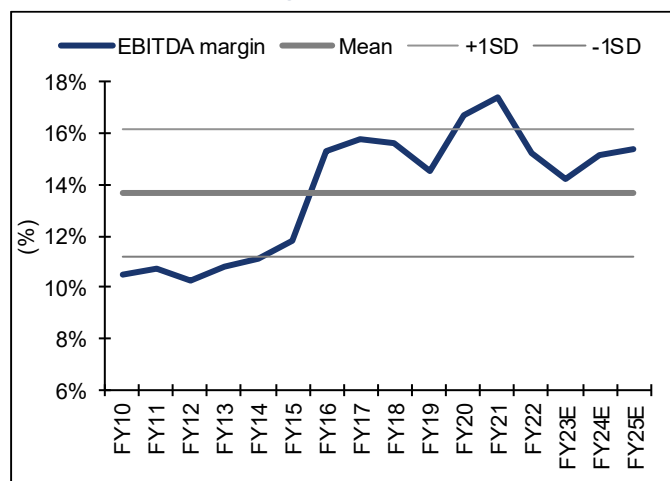
Annual operational highlights (Consolidated)

Chart 7: Revenues and growth rates



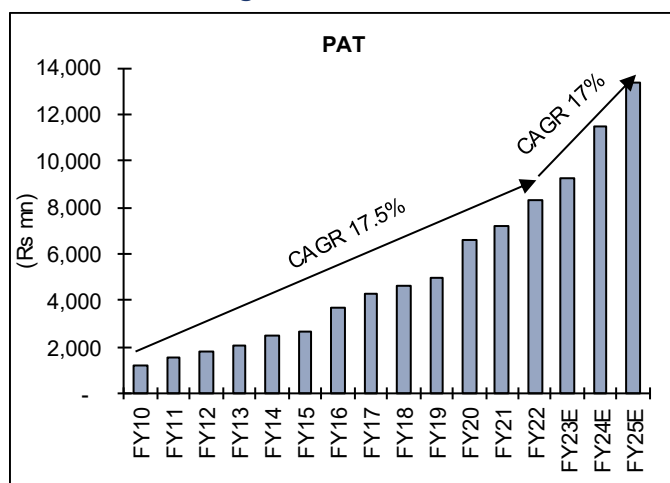
Source: Company data, I-Sec research

Chart 8: EBITDA margin



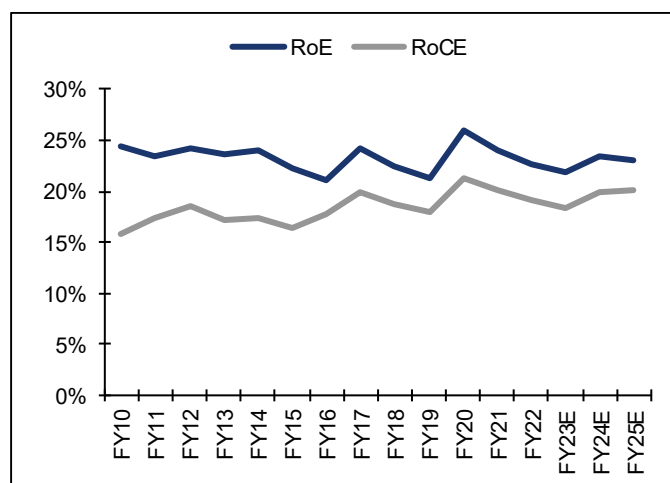
Source: Company data, I-Sec research

Chart 9: PAT and growth rates



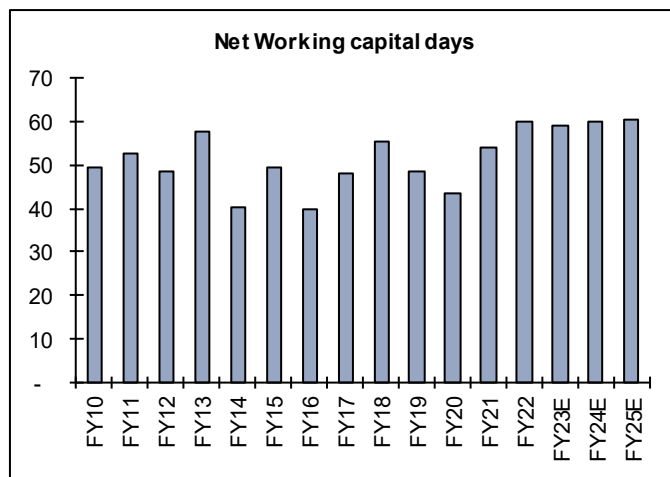
Source: Company data, I-Sec research

Chart 10: RoE & RoCE



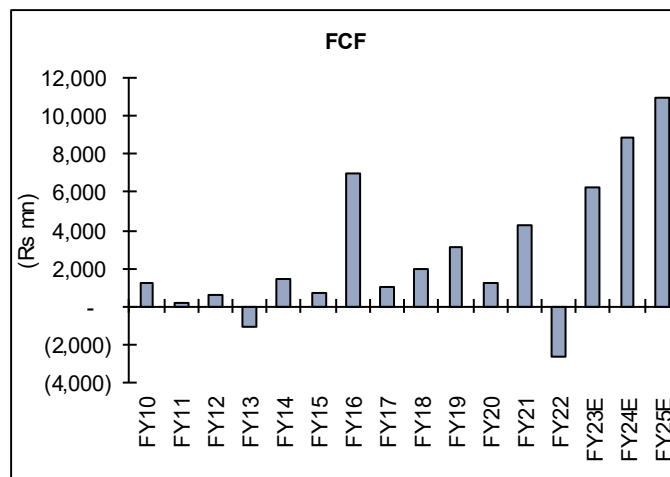
Source: Company data, I-Sec research

Chart 11: Net working capital days



Source: Company data, I-Sec research

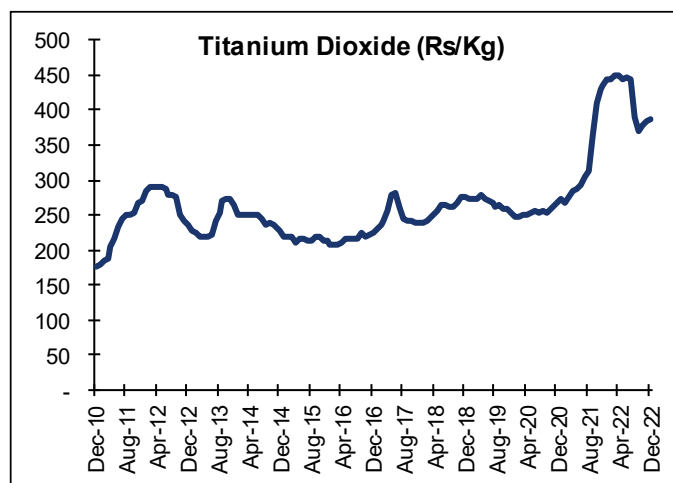
Chart 12: Free cash-flow



Source: Company data, I-Sec research

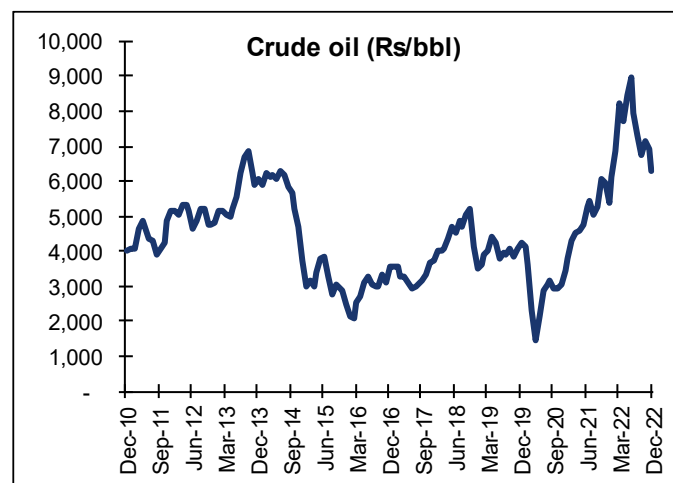
Key raw material prices

Chart 13: Titanium di-oxide



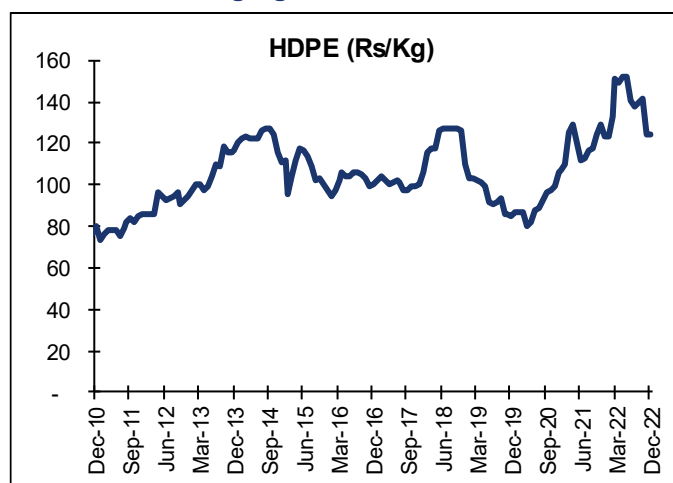
Source: Company data, I-Sec research

Chart 14: Crude oil



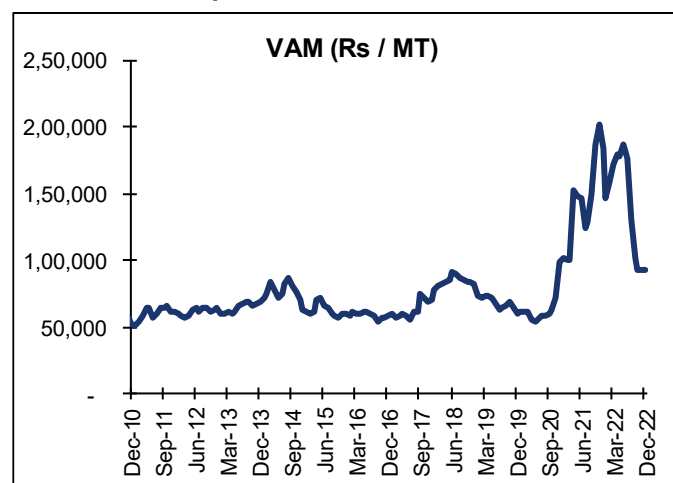
Source: Company data, I-Sec research

Chart 15: Packaging material - HDPE



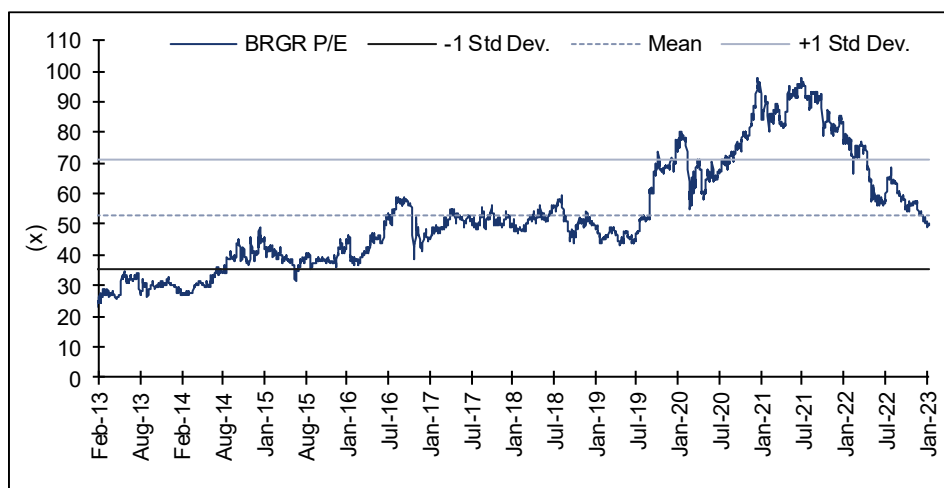
Source: Company data, I-Sec research

Chart 16: VAM prices



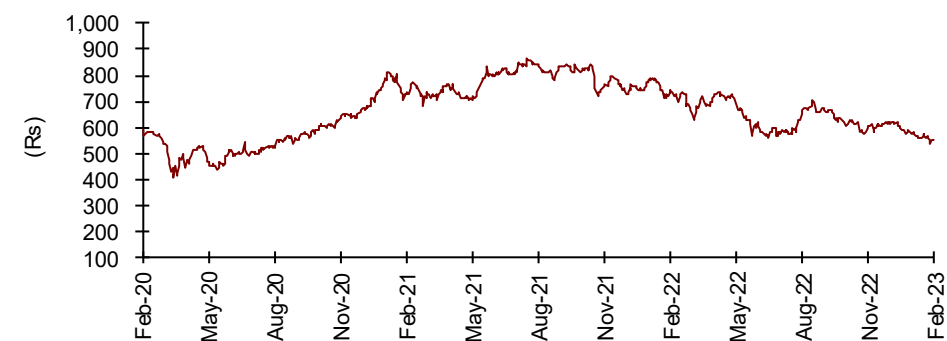
Source: Company data, I-Sec research

Chart 17: Mean PE and Standard deviation



Source: Company data, I-Sec research

Price chart



Source: Bloomberg

Financial summary (consolidated)

Table 3: Profit & loss statement

(Rs mn, year ending March 31)

	FY22	FY23E	FY24E	FY25E
Net Revenues	87,618	1,05,991	1,19,364	1,33,288
Operating Expenses	74,307	90,939	1,01,252	1,12,751
EBITDA	13,311	15,053	18,112	20,537
% margins	15.2%	14.2%	15.2%	15.4%
Depreciation & Amortisation	2,265	2,612	2,850	3,097
Gross Interest	507	722	722	722
Other Income	646	562	736	1,051
Recurring PBT	11,184	12,280	15,275	17,770
Less: Taxes	2,893	3,095	3,849	4,478
Less: Minority Interest	38	38	38	38
Net Income (Reported)	8,328	9,223	11,463	13,329
Extraordinaries (Net)	155	-	-	-
Recurring Net Income	8,173	9,223	11,463	13,329

Source: Company data, I-Sec research

Table 4: Balance sheet

(Rs mn, year ending March 31)

	FY22	FY23E	FY24E	FY25E
Assets				
Total Current Assets	39,702	46,765	54,106	63,488
of which cash & cash eqv.	3,130	2,524	4,283	7,853
Total Current Liabilities & Provisions	21,936	26,897	29,900	33,275
Net Current Assets	17,765	19,868	24,206	30,213
Investments	4,490	7,990	11,490	14,990
Net Fixed Assets	19,113	19,300	19,250	19,153
Capital Work-in-Progress	6,055	6,055	6,055	6,055
Goodwill	2,756	2,756	2,756	2,756
Total Assets	50,179	55,969	63,757	73,168
Liabilities				
Borrowings	10,320	10,320	10,320	10,320
Deferred Tax Liability	517	517	517	517
Minority Interest	72	72	72	72
Equity Share Capital	971	971	971	971
Face Value per share (Rs)	10	10	10	10
Reserves & Surplus*	38,299	44,089	51,876	61,287
Less: Misc. Exp. n.w.o.				
Net Worth	39,270	45,060	52,848	62,259
Total Liabilities	50,179	55,969	63,757	73,168

Source: Company data, I-Sec research

Table 5: Cashflow statement

(Rs mn, year ending March 31)

	FY22	FY23E	FY24E	FY25E
Operating Cashflow	10,556	11,798	14,276	16,388
Working Capital Changes	(4,430)	(2,708)	(2,579)	(2,437)
Capital Commitments	(8,799)	(2,800)	(2,800)	(3,000)
Free Cashflow	(2,674)	6,290	8,897	10,951
Cash flow from Investing Activities	332	(3,500)	(3,500)	(3,500)
Issue of Share Capital	-	-	-	-
Inc (Dec) in Borrowings	3,847	-	-	-
Dividend paid	(3,010)	(3,155)	(3,398)	(3,641)
Change in Deferred Tax Liability	17	-	-	-
Chg. in Cash & Bank balances	(1,267)	(606)	1,759	3,570

Source: Company data, I-Sec research

Table 6: Key ratios

(Year ending March 31)

	FY22	FY23E	FY24E	FY25E
Per Share Data (Rs)				
EPS	8.6	9.5	11.8	13.7
Cash EPS	10.9	12.2	14.7	16.9
Dividend per share (DPS)	3.1	3.3	3.5	3.8
Book Value per share (BV)	40.4	46.4	54.4	64.1
Growth (%)				
Net Sales	28.5	21.0	12.6	11.7
EBITDA	12.0	13.1	20.3	13.4
PAT	15.7	10.7	24.3	16.3
Cash EPS	12.7	11.8	21.0	14.8
Valuation Ratios (x)				
P/E	63.1	57.0	45.8	39.4
P/CEPS	49.8	44.5	36.8	32.1
P/BV	13.4	11.7	9.9	8.4
EV / EBITDA	40.0	35.4	29.3	25.7
EV / Sales	6.1	5.0	4.5	4.0
Operating Ratios				
Raw Material / Sales (%)	62.0	63.0	62.0	61.7
Employee cost / Sales (%)	6.2	6.1	6.2	6.2
SG&A / Sales (%)	16.6	16.7	16.7	16.6
Other Income / PBT (%)	5.8	4.6	4.8	5.9
Effective Tax Rate (%)	25.9	25.2	25.2	25.2
Working Capital (days)	60.1	58.9	60.1	60.4
Inventory Turnover (days)	95.2	95.2	95.2	95.2
Receivables (days)	43.3	43.3	43.3	43.3
Payables (days)	119.5	119.5	119.5	119.5
Net D/E Ratio (x)	0.3	0.2	0.2	0.2
Profitability Ratios (%)				
Net Income Margins	9.5	8.7	9.6	10.0
RoACE	19.0	18.3	20.0	20.2
RoAE	22.7	21.8	23.3	23.1
Dividend Payout	36.3	34.4	29.7	27.4
Dividend Yield	0.6	0.6	0.6	0.7
EBITDA Margins	15.2	14.2	15.2	15.4

Source: Company data, I-Sec research

This report may be distributed in Singapore by ICICI Securities, Inc. (Singapore branch). Any recipients of this report in Singapore should contact ICICI Securities, Inc. (Singapore branch) in respect of any matters arising from, or in connection with, this report. The contact details of ICICI Securities, Inc. (Singapore branch) are as follows: Address: 10 Collyer Quay, #40-92 Ocean Financial Tower, Singapore - 049315, Tel: +65 6232 2451 and email: navneet_babbar@icicisecuritiesinc.com, Rishi_agrawal@icicisecuritiesinc.com.

"In case of eligible investors based in Japan, charges for brokerage services on execution of transactions do not in substance constitute charge for research reports and no charges are levied for providing research reports to such investors."

New I-Sec investment ratings (all ratings based on absolute return; All ratings and target price refers to 12-month performance horizon, unless mentioned otherwise)

BUY: >15% return; ADD: 5% to 15% return; HOLD: Negative 5% to Positive 5% return; REDUCE: Negative 5% to Negative 15% return; SELL: < negative 15% return

ANALYST CERTIFICATION

I/We, Aniruddha Joshi, CA; Manoj Menon, MBA, CMA; Karan Bhuwania, MBA; Akshay Krishnan, MBA; authors and the names subscribed to this report, hereby certify that all of the views expressed in this research report accurately reflect our views about the subject issuer(s) or securities. We also certify that no part of our compensation was, is, or will be directly or indirectly related to the specific recommendation(s) or view(s) in this report. Analysts are not registered as research analysts by FINRA and are not associated persons of the ICICI Securities Inc. It is also confirmed that above mentioned Analysts of this report have not received any compensation from the companies mentioned in the report in the preceding twelve months and do not serve as an officer, director or employee of the companies mentioned in the report.

Terms & conditions and other disclosures:

ICICI Securities Limited (ICICI Securities) is a full-service, integrated investment banking and is, inter alia, engaged in the business of stock brokering and distribution of financial products.

ICICI Securities is Sebi registered stock broker, merchant banker, investment adviser, portfolio manager and Research Analyst. ICICI Securities is registered with Insurance Regulatory Development Authority of India Limited (IRDAI) as a composite corporate agent and with PFRDA as a Point of Presence. ICICI Securities Limited Research Analyst SEBI Registration Number – INH000000990. ICICI Securities Limited SEBI Registration is INZ000183631 for stock broker. ICICI Securities is a subsidiary of ICICI Bank which is India's largest private sector bank and has its various subsidiaries engaged in businesses of housing finance, asset management, life insurance, general insurance, venture capital fund management, etc. ("associates"), the details in respect of which are available on www.icicibank.com.

ICICI Securities is one of the leading merchant bankers/ underwriters of securities and participate in virtually all securities trading markets in India. We and our associates might have investment banking and other business relationship with a significant percentage of companies covered by our Investment Research Department. ICICI Securities and its analysts, persons reporting to analysts and their relatives are generally prohibited from maintaining a financial interest in the securities or derivatives of any companies that the analysts cover.

Recommendation in reports based on technical and derivative analysis centre on studying charts of a stock's price movement, outstanding positions, trading volume etc as opposed to focusing on a company's fundamentals and, as such, may not match with the recommendation in fundamental reports. Investors may visit icicidirect.com to view the Fundamental and Technical Research Reports.

Our proprietary trading and investment businesses may make investment decisions that are inconsistent with the recommendations expressed herein.

ICICI Securities Limited has two independent equity research groups: Institutional Research and Retail Research. This report has been prepared by the Institutional Research. The views and opinions expressed in this document may or may not match or may be contrary with the views, estimates, rating, and target price of the Retail Research.

The information and opinions in this report have been prepared by ICICI Securities and are subject to change without any notice. The report and information contained herein is strictly confidential and meant solely for the selected recipient and may not be altered in any way, transmitted to, copied or distributed, in part or in whole, to any other person or to the media or reproduced in any form, without prior written consent of ICICI Securities. While we would endeavour to update the information herein on a reasonable basis, ICICI Securities is under no obligation to update or keep the information current. Also, there may be regulatory, compliance or other reasons that may prevent ICICI Securities from doing so. Non-rated securities indicate that rating on a particular security has been suspended temporarily and such suspension is in compliance with applicable regulations and/or ICICI Securities policies, in circumstances where ICICI Securities might be acting in an advisory capacity to this company, or in certain other circumstances.

This report is based on information obtained from public sources and sources believed to be reliable, but no independent verification has been made nor is its accuracy or completeness guaranteed. This report and information herein is solely for informational purpose and shall not be used or considered as an offer document or solicitation of offer to buy or sell or subscribe for securities or other financial instruments. Though disseminated to all the customers simultaneously, not all customers may receive this report at the same time. ICICI Securities will not treat recipients as customers by virtue of their receiving this report. Nothing in this report constitutes investment, legal, accounting and tax advice or a representation that any investment or strategy is suitable or appropriate to your specific circumstances. The securities discussed and opinions expressed in this report may not be suitable for all investors, who must make their own investment decisions, based on their own investment objectives, financial positions and needs of specific recipient. This may not be taken in substitution for the exercise of independent judgment by any recipient. The recipient should independently evaluate the investment risks. The value and return on investment may vary because of changes in interest rates, foreign exchange rates or any other reason. ICICI Securities accepts no liabilities whatsoever for any loss or damage of any kind arising out of the use of this report. Past performance is not necessarily a guide to future performance. Investors are advised to see Risk Disclosure Document to understand the risks associated before investing in the securities markets. Actual results may differ materially from those set forth in projections. Forward-looking statements are not predictions and may be subject to change without notice.

ICICI Securities or its associates might have managed or co-managed public offering of securities for the subject company or might have been mandated by the subject company for any other assignment in the past twelve months.

ICICI Securities or its associates might have received any compensation from the companies mentioned in the report during the period preceding twelve months from the date of this report for services in respect of managing or co-managing public offerings, corporate finance, investment banking or merchant banking, brokerage services or other advisory service in a merger or specific transaction.

ICICI Securities or its associates might have received any compensation for products or services other than investment banking or merchant banking or brokerage services from the companies mentioned in the report in the past twelve months.

ICICI Securities encourages independence in research report preparation and strives to minimize conflict in preparation of research report. ICICI Securities or its associates or its analysts did not receive any compensation or other benefits from the companies mentioned in the report or third party in connection with preparation of the research report. Accordingly, neither ICICI Securities nor Research Analysts and their relatives have any material conflict of interest at the time of publication of this report.

Compensation of our Research Analysts is not based on any specific merchant banking, investment banking or brokerage service transactions.

ICICI Securities or its subsidiaries collectively or Research Analysts or their relatives do not own 1% or more of the equity securities of the Company mentioned in the report as of the last day of the month preceding the publication of the research report.

Since associates of ICICI Securities and ICICI Securities as a entity are engaged in various financial service businesses, they might have financial interests or actual/beneficial ownership of one percent or more or other material conflict of interest in various companies including the subject company/companies mentioned in this report.

ICICI Securities may have issued other reports that are inconsistent with and reach different conclusion from the information presented in this report.

Neither the Research Analysts nor ICICI Securities have been engaged in market making activity for the companies mentioned in the report.

We submit that no material disciplinary action has been taken on ICICI Securities by any Regulatory Authority impacting Equity Research Analysis activities.

This report is not directed 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, regulation or which would subject ICICI Securities and affiliates to any registration or licensing requirement within such jurisdiction. The securities described herein may or may not be eligible for sale in all jurisdictions or to certain category of investors. Persons in whose possession this document may come are required to inform themselves of and to observe such restriction.

This report has not been prepared by ICICI Securities, Inc. However, ICICI Securities, Inc. has reviewed the report and, in so far as it includes current or historical information, it is believed to be reliable, although its accuracy and completeness cannot be guaranteed.