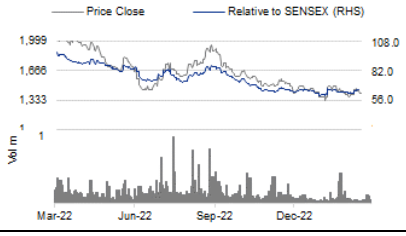
India

REDUCE *(no change)*

Consensus ratings*:	Buy 5	Hold 3	Sell 2

Current price:	Rs1,315
Target price: ▼	Rs660
Previous target:	Rs847
Up/downside:	-49.8%
InCred Research / Consensus:	-58.2%
Reuters:	
Bloomberg:	CLEAN IN
Market cap:	US$1,694m
	Rs139,729m
Average daily turnover:	US$1.3m
	Rs105.5m
Current shares o/s:	106.3m
Free float:	26.4%

**Source: Bloomberg*



Source: Bloomberg

Price performance	1M	3M	12M
Absolute (%)	(6.2)	(7.2)	(33.9)
Relative (%)	(3.3)	(1.7)	(34.1)

Major shareholders	% held
Promoter & Promoter Group	73.6
Axis Mutual Fund Trustee Limited	2.6
Nomura India Investment Fund	1.2

Clean Science and Technology

Still pricing in dreams - REDUCE

- Hindered amine light stabilizer (HALS) is perceived as a panacea for Clean Science. However, entry barriers in this business are high. Also, assuming that it will garner a 10% market share in a highly competitive market is misplaced.
- Camlin Fine Sciences (Camlin) has a distinct cost advantage vs. Clean Science in making MEHQ as it has commissioned a vanillin plant (thus wiping out catechol loss). With a 3,000t capacity and the incumbent re-entering a slowing market, it makes price competition inevitable. Clean Science has everything to lose, while Camlin has everything to gain in a price war.
- We see significant disappointment in consensus earnings. We have cut target multiple to 20x FY25F and retained REDUCE rating with a new TP of Rs660.

Entry into HALS business could be impeded by a saturated market

Clean Science and Technology (Clean Science) is planning to foray into the HALS market by initially installing 2,000t capacity, or 2% of global market, and later increase it to 10,000t. The global demand for HALS is ~100,000t, and Asia Pacific is the largest market, with the automotive industry being the largest user. There are at least 34 existing players in the market, and entry barriers for new suppliers are high in segments like industrial coatings, automotive, and consumer plastics. While Clean Science may be able to enter agriculture and construction segments, achieving a 10% market share appears to be a distant dream. Clean Science sees HALS as a potential solution for growth, but it will not offer high margins. It is simply not possible for HALS to make and gross profit using Pt/C catalyst (as stated in the EC document); the company will have to use an alternate catalyst. We believe that Clean Science will make Rs150-200/kg gross profit in HALS.

MEHQ spreads to fall as Camlin's catechol predicament has ended

The chemistry of HQ production is such that if HQ is made using phenol and hydrogen peroxide, the process will produce 55% catechol and 45% HQ. Although MEHQ spread from the HQ route is much higher than that of anisole, due to catechol loss, HQ's effective cost was high and hence, Camlin was not able to undercut Clean Science and capture market share. However, with catechol being utilized to make vanillin, the effective cost of HQ has declined significantly for Camlin. Currently, Clean Science makes Rs450/kg gross spread on MEHQ and Camlin can make the same spread even at a 20% lower MEHQ price. The MEHQ market is small (13,000t) and hence, Camlin's re-entry (it had stopped making MEHQ since last 1 year) with a 3,000t capacity will be negative for all incumbents.

TBHQ will barely make money; retain REDUCE with lower target price

While Clean Science has ventured into TBHQ manufacturing, it is dependent on imported /bought-out HQ to manufacture TBHQ and hence, margins will be at a bare minimum of ~Rs100/kg. Also, TBHQ is mostly sold as a blend with BHA. Camlin took years to master this, as it's an iterative process. May be Clean Science will take less time but still, it cannot happen with 3-4 quarters. We have valued Clean Science at 20x FY25F EPS to arrive at our new target price of Rs660 (Rs847 earlier). Upside risk: Liquidity-driven P/E expansion.

Financial Summary	Mar-21A	Mar-22A	Mar-23F	Mar-24F	Mar-25F
Revenue (Rsm)	5,124	6,849	9,481	10,471	12,595
Operating EBITDA (Rsm)	2,590	2,999	3,694	3,928	4,576
Net Profit (Rsm)	1,984	2,285	2,845	3,120	3,588
Core EPS (Rs)	18.7	21.5	26.8	29.4	33.8
Core EPS Growth	42.1%	15.2%	24.5%	9.7%	15.0%
FD Core P/E (x)	70.48	61.19	49.14	44.81	38.96
DPS (Rs)	0.0	0.0	0.0	0.0	0.0
Dividend Yield	0.00%	0.00%	0.00%	0.00%	0.00%
EV/EBITDA (x)	53.04	45.74	36.77	34.06	28.58
P/FCFE (x)	3,894.46	287.12	74.69	55.76	50.54
Net Gearing	(45.9%)	(34.5%)	(41.9%)	(51.9%)	(60.8%)
P/BV (x)	25.91	18.19	14.61	12.05	9.40
ROE	45.0%	34.9%	33.0%	29.5%	27.1%
% Change In Core EPS Estimates			0.07%	0.04%	0.06%
InCred Research/Consensus EPS (x)					

SOURCE: INCRED RESEARCH, COMPANY REPORTS

Analyst(s)

Satish KUMAR
T (91) 22 4161 1562
E satish.kumar@incredcapital.com

Abbas PUNJANI
T (91) 22 4161 1598
E abbas.punjani@incredcapital.com

Difficult to make money in HALS

HALS is perceived to be a panacea for Clean Science, but it is just another normal chemical where the margins are going to be thin. The foray into TBHQ will be counter-productive for Clean Science as it doesn't have backward integration in hydroquinone. MEHQ is going to face intense competition because of the re-entry of Camlin (with total backward integration and no loss on catechol because of vanillin production).

HALS (hindered amine light stabilizer) - much ado about nothing

While the investors perceive HALS as the next big molecule for Clean Science, this belief is misplaced. HALS is a widely known molecule and has multiple producers globally. The global market size of the molecule is US$1bn (currently).

Globally, there are multiple producers of HALS »

There are several companies that produce HALS, including:

1. **BASF**: The company offers a range of HALS under its Tinuvin brand, including Tinuvin 770, Tinuvin 622, and Tinuvin 123.
2. **Clariant**: The company produces a variety of HALS under its Hostavin brand, including Hostavin 3070, Hostavin 3326, and Hostavin N30.
3. **Solvay:** The company produces HALS under its Cyasorb brand, including Cyasorb UV 3638, Cyasorb THT 833, and Cyasorb THT 3903.
4. **Songwon**: The company offers a range of HALS under its Songstab brand, including Songstab CZ-425, and Songstab CZ-950.
5. **Chitec:** The company produces HALS under its Chinox brand, including Chinox 168, and Chinox 1010.

These companies are some of the leading producers of HALS, but there are also other manufacturers in the market. The choice of HALS depends on the specific application and performance requirements of the polymer material.

HALS has multiple usage »

Hindered amine light stabilizer (HALS) is used as an additive in polymer materials to improve their resistance to ultraviolet or UV light and weathering. HALS is particularly effective in stabilizing plastics and other polymers that are exposed to sunlight and other environmental factors that can cause degradation and discolouration. Some common uses of HALS include:

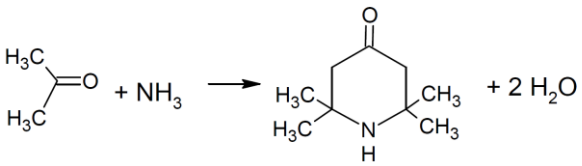
1. **Packaging materials**: HALS is often added to plastic films and containers used for food packaging to increase their resistance to light and prevent spoilage.
2. **Construction materials:** HALS is commonly used in building materials such as PVC pipes, window profiles, and roofing membranes to protect them from the effects of sunlight and other environmental factors.
3. **Automotive components**: HALS is used in the manufacture of automotive components such as bumper, trim, and interior parts to improve their durability and prevent fading.
4. **Coatings:** HALS is used in coatings for a variety of applications, including automotive finishes, industrial coatings, and wood coatings, to enhance their resistance to UV light and weathering.

Overall, HALS play a critical role in extending the lifespan of polymers and improving their performance in a variety of applications.

There is a standard production technique for manufacturing HALS ➤

Figure 1: Acetone +ammonia in the presence of Pt/C and zeolite makes 2, 2, 6, 6-tetramethyl-4-piperidinol

Chemical reaction: -



Acetone	ammonia	2, 2, 6, 6-tetramethyl-4-piperidinol	+ Water
174	17	155	36

SOURCE: INCRED RESEARCH, COMPANY REPORTS

Figure 2: 2, 2, 6, 6-tetramethyl-4-piperidinol, dimethyl sebacate, and toluene makes HLAS-770, which is going to be the main product for Clean Science

2,2,6.6 Tetramethyl- 4- Piperidinol
Dimethyl Sebacle
Dibutyl tin Oxide
Toluene
Mintroleum

SOURCE: INCRED RESEARCH, COMPANY REPORTS

The highest-cost item in the manufacture of HALS is Pt/C catalyst ➤

As per the Environmental Clearance or EC document of Clean Science, it uses platinum on activated carbon as a catalyst to make HALS. By its nature itself platinum on activated carbon is a costly catalyst. Please note that in the manufacture of 2, 2, 6, 6-tetramethyl-4-piperidinol, 20gm of Pt/C catalyst is needed per kg of the molecule. Normally, 10gm platinum 5 wt.% on activated carbon costs Rs1,900/gm.

Figure 3: What is the meaning of 10g platinum 5 wt.% on activated carbon?

'10gm platinum 5 wt.% on activated carbon' means there is a mixture of platinum and activated carbon, and the platinum constitutes 5% of the total weight of the mixture. Specifically, the mixture contains 10gm of platinum and a total of 200gm (10gm of platinum + 190gm of activated carbon) to make up a total weight of 200gm, resulting in a 5 wt.% platinum loading.

This type of mixture is often used as a catalyst, where the activated carbon provides a support structure for the platinum and enhances its surface area, allowing for increased catalytic activity. The specific application and performance requirements will dictate the appropriate percentage of platinum on activated carbon needed for the catalyst.

SOURCE: INCRED RESEARCH, COMPANY REPORTS

Is there any other way to manufacture HALS i.e without costly platinum over activated carbon ctalayst? Yes, it's possible with an organic catalyst? ➤

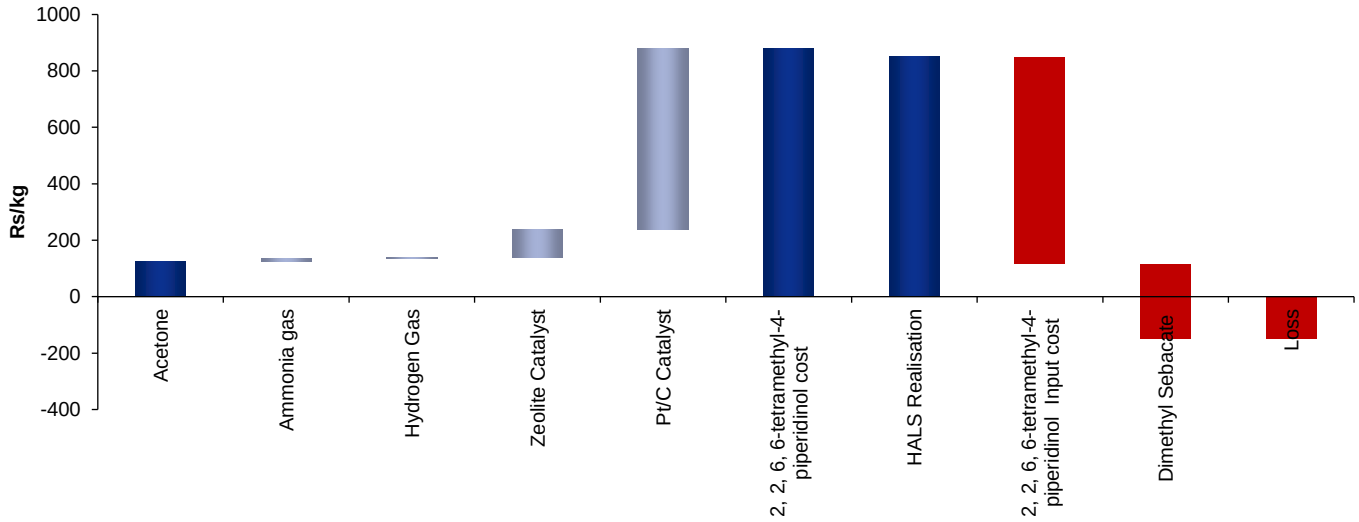
Platinum on activated carbon is not typically used to make HALS. HALS is a type of stabilizer that is used to protect polymers from degradation due to UV radiation. These stabilizers typically contain a hindered amine functional group, which can absorb UV radiation and prevent it from causing damage to the polymer.

The most commonly used catalysts in the production of HALS are organic compounds such as triethanolamine, triethylamine, and pyridine. These compounds are often used in a combination with other reagents and solvents to produce HALS.

While platinum catalysts are widely used in many other types of reactions, they are not typically used in the production of HALS due to their high cost and limited efficacy for this particular application. Instead, organic catalysts are preferred because they can be more easily tailored to produce the desired chemical structure and properties of HALS.

The spread analysis of HALS indicates that Clean Science cannot make money using Pt/C catalyst »

Figure 4: It's just not possible to make money in HALS by using Pt/C catalyst (as filed in the EC document), Clean Science will have to use an alternate catalyst

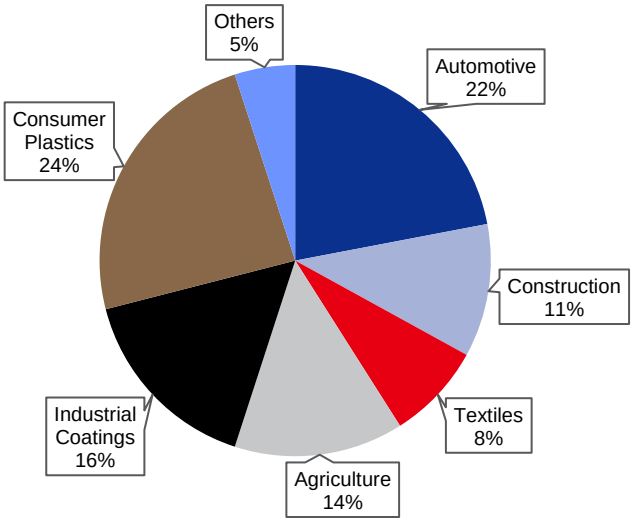


SOURCE: INCRED RESEARCH, COMPANY REPORTS

How easy is it for Clean Science to penetrate the HALS market? It's very difficult »

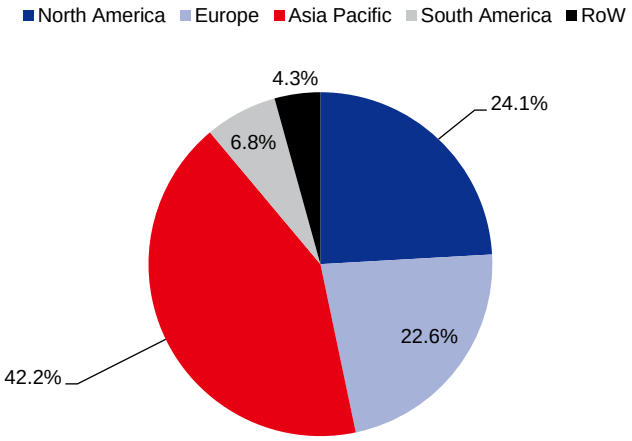
There are at least 34 incumbent players in this market, and global demand for HALS is ~100,000t. Asia Pacific is the largest market for HALS, and consumer goods followed by automotive industry are the largest consumers of HALS.

Figure 5: Entry barriers for a new supplier will be very high in segments like industrial coatings, automotive, consumer plastics, etc



SOURCE: INCRED RESEARCH, COMPANY REPORTS

Figure 6: Asia Pacific is the biggest consumer of HALS

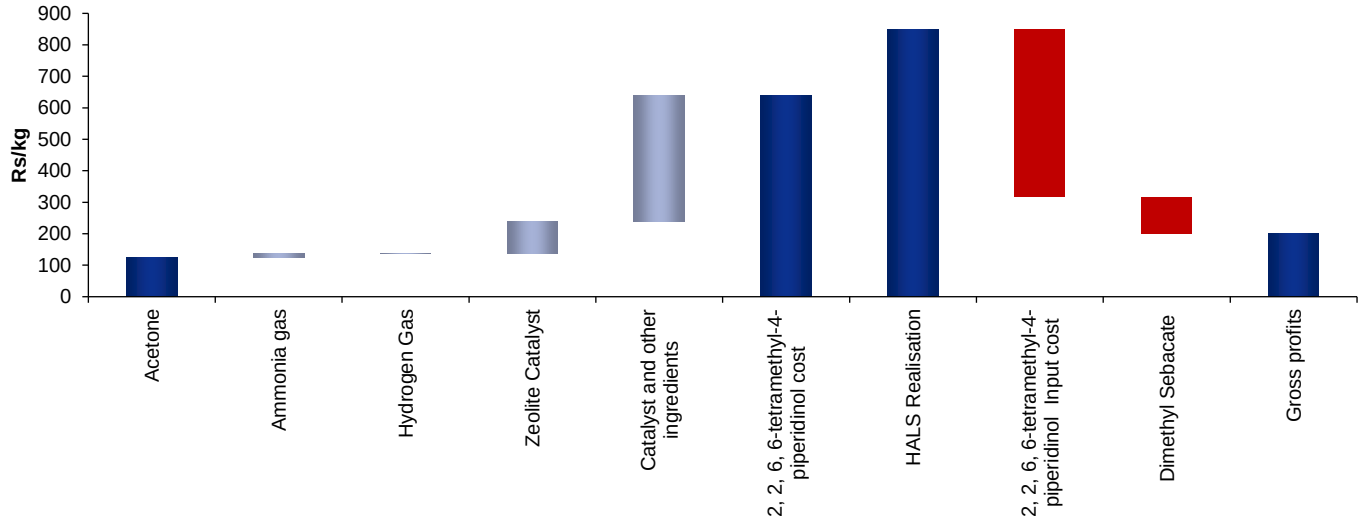


SOURCE: INCRED RESEARCH, COMPANY REPORTS

Clean Science is planning to install 2,000t capacity (2% of global market) initially ad later on it will increase this to 10,000t (10% of global market). Entry barriers for a new supplier will be very high in segments like industrial coatings, automotive, consumer plastics, etc. May be Clean Science can get an entry into agriculture and construction segments but garnering a 10% market share appears to be a distant dream as of now.

What can be the probable spread for Clean Science using other catalysts? In our view, not more than Rs200/kg ➤

Figure 7: On an average, we expect Clean Science to make Rs200/kg gross profit on incremental HALS volume



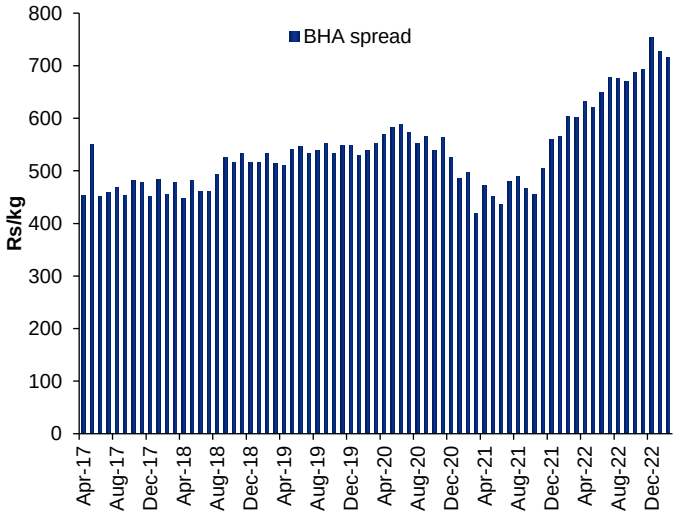
SOURCE: INCRED RESEARCH, COMPANY REPORTS

In MEHQ, margins will fall but in TBHQ, Clean Science can be barely EBITDA positive

Camlin has sorted out its internal problems regarding its di phenol plant stabilization, which means Camlin can get cheap HQ which will boost its gross margin to Rs600/kg in case of MEHQ as against Rs450/kg for Clean Science. TBHQ expansion for Clean Science is beyond comprehension. In a nutshell, margins will fall and earnings growth, if at all, will be anaemic.

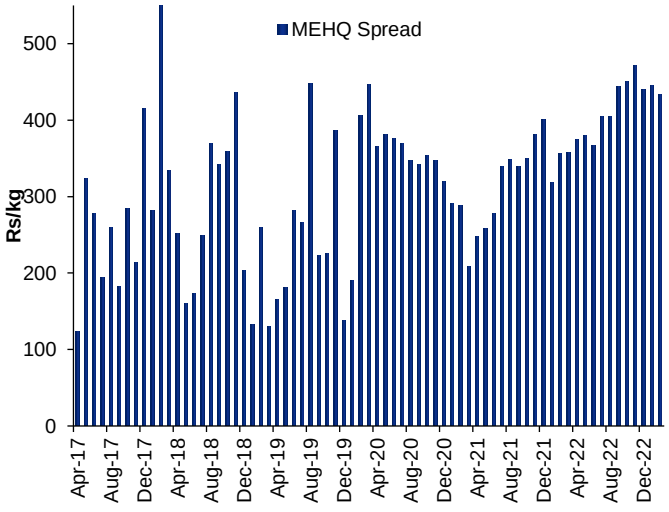
MEHQ and BHA have been money spinners for Clean Science in the past ➤

Figure 8: BHA spread has been highly consistent for Clean Science



SOURCE: INCRED RESEARCH, COMPANY REPORTS

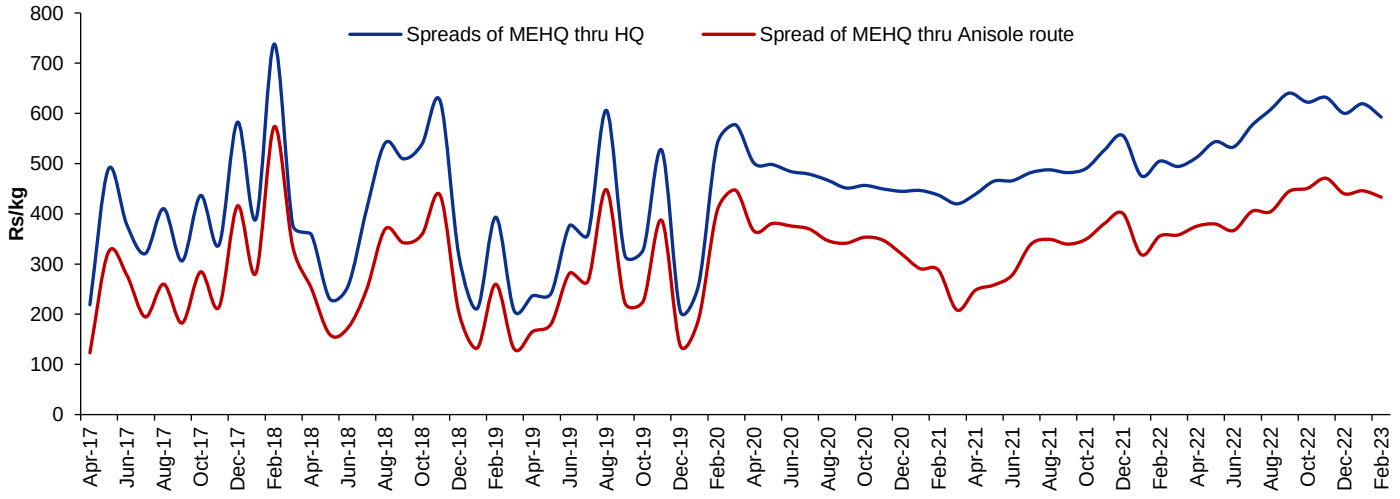
Figure 9: MEHQ spread has been somewhat volatile but in the past few months, it has only trended upwards; however, a minor declining trend is visible



SOURCE: INCRED RESEARCH, COMPANY REPORTS

Camlin will make MEHQ through the alternate route and at a much lower cost ➤

Figure 10: MEHQ spread through the HQ route is much cheaper compared to the anisole route used by Clean Science

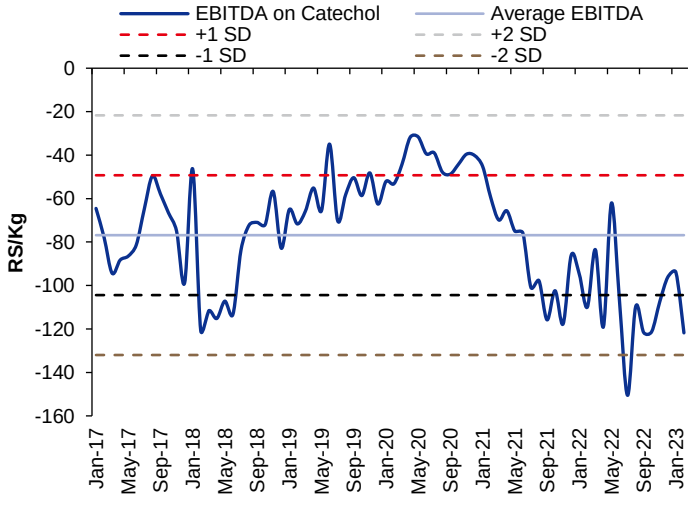


SOURCE: INCRED RESEARCH, COMPANY REPORTS

Then why didn't Camlin give pricing competition to Clean Science till date? This was because it was making losses on catechol ➤

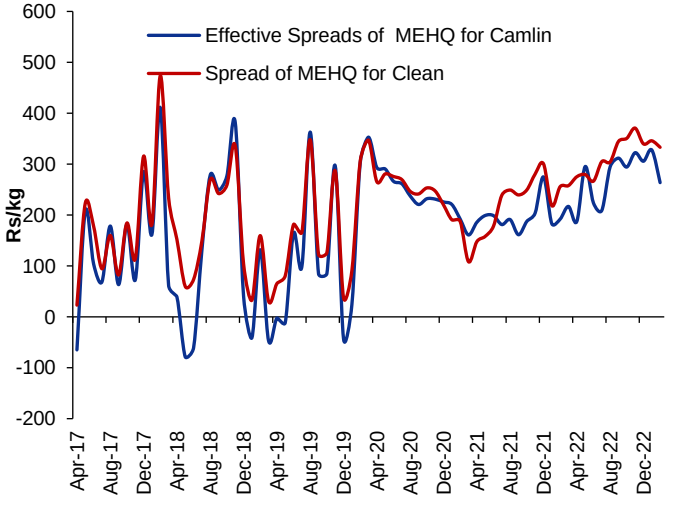
The chemistry of HQ production is such that if one produces HQ through phenol and hydrogen peroxide with acetone as a solvent, then the process stabilizes at 55% catechol and 45% HQ. Adjusted for the losses on catechol, Camlin's spread was lower than that of Clean Science. Hence, Camlin would have been able to compete with Clean Science.

Figure 11: Camlin used to lose money on catechol which raised the effective cost of HQ for the company



SOURCE: INCRED RESEARCH, COMPANY REPORTS

Figure 12: Thus, MEHQ spread of Camlin always used to be lower than that of Clean Science, and Camlin was never able to compete with Clean Science



SOURCE: INCRED RESEARCH, COMPANY REPORTS

What will change now? Camlin has started making vanillin which will recover all catechol costs and make money over and above that ➤

Till now, the problem for Camlin was the usage of catechol, which was raising the effective production cost of HQ. Moreover, as it was exporting catechol, effective FOB realization was even lower for Camlin. Camlin was subsidizing Chinese vanillin producers but as its capacity has been commissioned, its catechol issue has been resolved. This will also lead to lowering of the effective cost for producing HQ and thus, the spread of Camlin on MEHQ will be much higher than that of Clean Science.

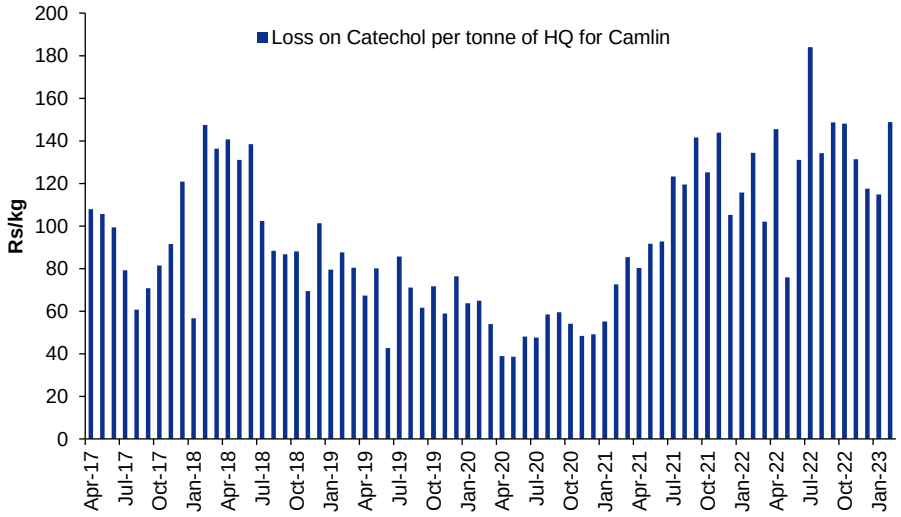
The problem of Camlin was perceived as a technology advantage for Clean Science

As it always happens, facts and reasons get distorted in the market cacophony. The catechol problems, which had tied the hands of Camlin, were perceived as a strategic advantage for Clean Science, which is over now.

We expect MEHQ prices to fall in the coming months

Camlin has nothing to lose in the MEHQ market, and even if the prices fall by Rs200/kg and the catechol loss becomes zero, it can still make decent margins.

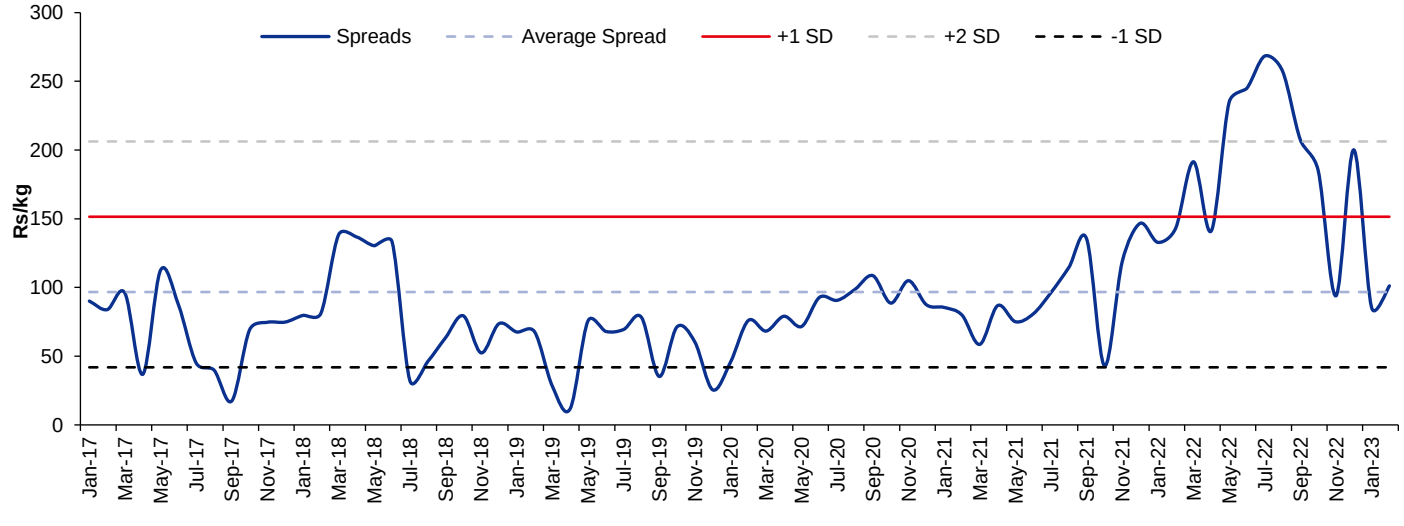
Figure 13: As catechol losses are zero now for Camlin, this can lead to a fall in MEHQ prices and enable garnering market share; Clean Science will lose incrementally, but for Camlin it will have no margin impact



SOURCE: INCRED RESEARCH, COMPANY REPORTS

Clean Science can be barely EBITDA positive on TBHQ

Figure 14: On imported HQ, Clean Science can barely remain EBITDA positive

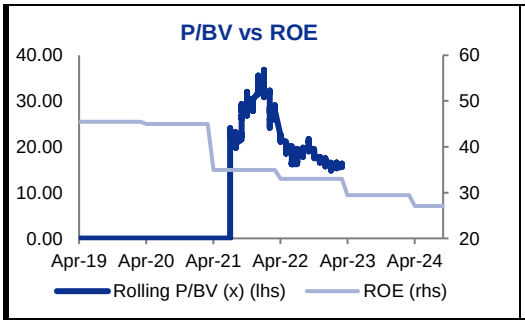


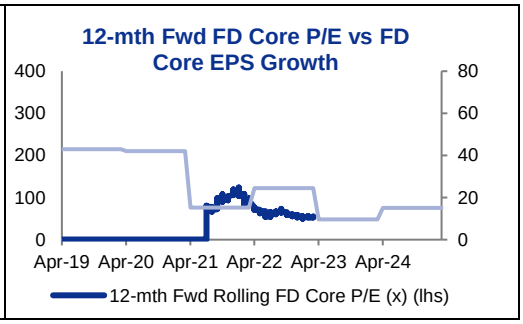
SOURCE: INCRED RESEARCH, COMPANY REPORTS

Globally, TBHQ is mostly sold as a blend; Clean Science has a long way to go

TBHQ is mostly sold as a blend (antioxidant blend, Xyendra for Camlin). Blend is just a mixture of chemicals which don't react with each other. Hence, potentially there can be infinite combinations of two chemicals (like TBHQ and BHA which are frequently used as blends). Making of a blend is mostly an iterative process and it takes multiple years before one master the blend (see Camlin's example in Mexico and USA).

BY THE NUMBERS





Profit & Loss

(Rs mn)	Mar-21A	Mar-22A	Mar-23F	Mar-24F	Mar-25F
Total Net Revenues	**5,124**	**6,849**	**9,481**	**10,471**	**12,595**
Gross Profit	**3,888**	**4,602**	**5,784**	**6,282**	**7,305**
Operating EBITDA	**2,590**	**2,999**	**3,694**	**3,928**	**4,576**
Depreciation And Amortisation	(172)	(249)	(263)	(288)	(311)
Operating EBIT	**2,417**	**2,750**	**3,431**	**3,640**	**4,265**
Financial Income/(Expense)	(1)	(1)	(1)	(1)	(1)
Pretax Income/(Loss) from Assoc.					
Non-Operating Income/(Expense)	256	300	374	533	533
Profit Before Tax (pre-EI)	**2,673**	**3,048**	**3,804**	**4,172**	**4,797**
Exceptional Items					
Pre-tax Profit	**2,673**	**3,048**	**3,804**	**4,172**	**4,797**
Taxation	(689)	(763)	(959)	(1,051)	(1,209)
Exceptional Income - post-tax					
Profit After Tax	**1,984**	**2,285**	**2,845**	**3,120**	**3,588**
Minority Interests					
Preferred Dividends					
FX Gain/(Loss) - post tax					
Other Adjustments - post-tax					
Net Profit	**1,984**	**2,285**	**2,845**	**3,120**	**3,588**
Recurring Net Profit	1,984	2,285	2,845	3,120	3,588
Fully Diluted Recurring Net Profit	**1,984**	**2,285**	**2,845**	**3,120**	**3,588**

Cash Flow

(Rs mn)	Mar-21A	Mar-22A	Mar-23F	Mar-24F	Mar-25F
EBITDA	2,590	2,999	3,694	3,928	4,576
Cash Flow from Invt. & Assoc.					
Change In Working Capital	(149)	(1,210)	(536)	(202)	(433)
(Incr)/Decr in Total Provisions					
Other Non-Cash (Income)/Expense	(109)	(125)			
Other Operating Cashflow	257	301	374	533	533
Net Interest (Paid)/Received	(1)	(1)	(1)	(1)	(1)
Tax Paid	(659)	(691)	(959)	(1,051)	(1,209)
Cashflow From Operations	**1,928**	**1,272**	**2,572**	**3,207**	**3,466**
Capex	(844)	(1,397)	(350)	(350)	(350)
Disposals Of FAs/subsidiaries	4	1			
Acq. Of Subsidiaries/investments					
Other Investing Cashflow	(1,028)	611	(350)	(350)	(350)
Cash Flow From Investing	**(1,868)**	**(786)**	**(700)**	**(700)**	**(700)**
Debt Raised/(repaid)	(25)				
Proceeds From Issue Of Shares					
Shares Repurchased					
Dividends Paid	(33)		(711)	(780)	
Preferred Dividends					
Other Financing Cashflow	(1)	(1)			
Cash Flow From Financing	**(59)**	**(1)**	**(711)**	**(780)**	
Total Cash Generated	2	485	1,161	1,727	2,766
Free Cashflow To Equity	**36**	**487**	**1,872**	**2,507**	**2,766**
Free Cashflow To Firm	**62**	**488**	**1,873**	**2,508**	**2,767**

SOURCE: INCRED RESEARCH, COMPANY REPORTS

BY THE NUMBERS…cont'd

Balance Sheet

(Rs mn)	Mar-21A	Mar-22A	Mar-23F	Mar-24F	Mar-25F
Total Cash And Equivalents	2,478	2,658	4,012	6,022	9,050
Total Debtors	742	1,535	2,126	2,347	2,824
Inventories	529	881	1,220	1,347	1,621
Total Other Current Assets	203	628	628	628	628
Total Current Assets	**3,952**	**5,703**	**7,986**	**10,345**	**14,123**
Fixed Assets	2,408	3,399	3,345	3,162	2,979
Total Investments					
Intangible Assets					
Total Other Non-Current Assets	239	145	145	145	145
Total Non-current Assets	**2,647**	**3,544**	**3,490**	**3,307**	**3,124**
Short-term Debt		1	1	1	1
Current Portion of Long-Term Debt					
Total Creditors	610	1,021	1,414	1,561	1,878
Other Current Liabilities	410	327	327	327	327
Total Current Liabilities	**1,020**	**1,349**	**1,742**	**1,890**	**2,206**
Total Long-term Debt	3	3	3	3	3
Hybrid Debt - Debt Component					
Total Other Non-Current Liabilities					
Total Non-current Liabilities	**3**	**3**	**3**	**3**	**3**
Total Provisions	179	211	158	158	158
Total Liabilities	**1,203**	**1,562**	**1,904**	**2,051**	**2,368**
Shareholders Equity	5,397	7,684	9,571	11,599	14,874
Minority Interests					
Total Equity	**5,397**	**7,684**	**9,571**	**11,599**	**14,874**

Key Ratios

	Mar-21A	Mar-22A	Mar-23F	Mar-24F	Mar-25F
Revenue Growth	22.2%	33.7%	38.4%	10.4%	20.3%
Operating EBITDA Growth	39.8%	15.8%	23.2%	6.3%	16.5%
Operating EBITDA Margin	50.5%	43.8%	39.0%	37.5%	36.3%
Net Cash Per Share (Rs)	23.28	24.97	37.70	56.61	85.09
BVPS (Rs)	50.77	72.29	90.04	109.11	139.93
Gross Interest Cover	2,656.58	1,870.54	3,854.60	4,089.42	4,792.50
Effective Tax Rate	25.8%	25.0%	25.2%	25.2%	25.2%
Net Dividend Payout Ratio					
Accounts Receivables Days	51.31	60.69	70.47	77.96	74.93
Inventory Days	129.20	114.56	103.71	111.87	102.40
Accounts Payables Days	142.77	132.49	120.17	129.62	118.65
ROIC (%)	84.2%	66.5%	49.0%	47.6%	55.6%
ROCE (%)	53.0%	40.8%	38.9%	33.9%	31.8%
Return On Average Assets	36.4%	28.9%	27.5%	24.8%	23.2%

SOURCE: INCRED RESEARCH, COMPANY REPORTS

DISCLAIMER

This report (including the views and opinions expressed therein, and the information comprised therein) has been prepared by Incred Research Services Private Ltd.(formerly known as Earnest Innovation Partners Private Limited) (hereinafter referred to as "IRSPL"). IRSPL is registered with SEBI as a Research Analyst vide Registration No. INH000011024. 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. This report is not directed or intended for distribution to or use by any person or entity resident in a state, country or any jurisdiction, where such distribution, publication, availability or use would be contrary to law, regulation or which would subject IRSPL and its affiliates/group companies to registration or licensing requirements within such jurisdictions.

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.

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

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. IRSPL is not under any obligation to update this report in the event of a material change to the information contained in this report. IRSPL has not any and will not 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 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.

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 to any person to buy or sell any investments.

The opinions expressed are based on information which are believed 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.

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.

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.

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 thisreport 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.