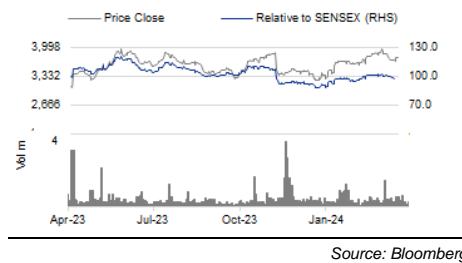


India

**REDUCE** (no change)

Consensus ratings*: Buy 20 Hold 2 Sell 5	
Current price:	Rs3,771
Target price: ▲	Rs3,091
Previous target:	Rs2,417
Up/downside:	-18.0%
InCred Research / Consensus:	-23.5%
Reuters:	PIIL.NS
Bloomberg:	PI IN
Market cap:	US\$6,865m Rs572,167m
Average daily turnover:	US\$18.1m Rs1507.2m
Current shares o/s:	138.0m
Free float:	53.3%
*Source: Bloomberg	



<b>Price performance</b>	1M	3M	12M
Absolute (%)	(0.6)	16.3	22.8
Relative (%)	(0.8)	13.5	1.8

<b>Major shareholders</b>	% held
Promoter & Promoter Group	46.8
ICICI Prudential	3.5
Axis Mutual Fund	2.5

Research Analyst(s)

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# PI Industries Ltd

## Sample analysis paints a grim growth picture

- Our analysis of the product pipeline of PI Industries shows that its weak and highly concentrated in agrochemicals (mostly generic).
- The risk to pricing and sales stagnation is inherent in these chemicals. Going ahead, we don't see even a low double-digit EPS growth for PI Industries.
- PI Industries lacks the product diversification of Navin Fluorine. We prefer Navin Fluorine over PI Industries. SELL PI Industries and BUY Navin Fluorine.

### We have analyzed 25 significant sample molecules, but no big winner

We have analyzed 25 sample molecules of PI Industries, most of them are in the generic agrochemical space, but there are a few bright spots. However, those molecules will take a long time (if at all they succeed) to contribute significantly to revenue. We list three probable candidates here: 1) 3,3',3,3'-biphenyl tetracarboxylic dianhydride (BPODA), and 2) diethyl amino malonate monohydrochloride, 3) 2-chloro-4-methylsulfonyl benzoic acid or CMSBA. BPODA is being supplied to SABIC. BPODA (3,3',4,4'-biphenyltetracarboxylic dianhydride) is a raw material for the polyimide resin component of one of the super-engineering plastics. It is used for many important information and electronic technology products such as mobile phones, printed circuit boards and copying machines. However, it's still very early days for the chemical and won't contribute anything in the next two-to-three years. Diethyl amino malonate monohydrochloride is used as an intermediate for favipiravir (but it is still in the R&D stage). 2-chloro-4-methylsulfonyl benzoic acid or CMSBA helps in preparing components that are useful for treating proliferative disorders, e.g. cancer (Merck patent filing). PI Industries has sent a sample to SB Biotech. Still, it appears to be a R&D stage molecule.

### Out of the rest 22, 19 are commercial and 3 R&D stage agrochemicals

Out of the rest 22 samples, 19 are commercial agrochemicals. Some of them are age-old generics in which multiple competitors are in the fray. Only three are R&D molecules. They are 1) pyridachlometyl, 2) cyclopyranil, and 3) aminopyrifin. Pyridachlometyl is a new chemical class of fungicide - tubulin polymerization promoter. It is still debated how successful it can be. Cyclopyranil is a post-emergent rice herbicide. It might do well in Japan but as seen in bispyribac sodium, its success in other countries will be highly doubtful. Aminopyrifin is a wide spectrum SDHI fungicide and can be a decent size chemical, but there is no evidence on the same as of now.

### EPS growth to be anaemic as the best of pyroxasulfone is behind us

We have revised our EPS estimates for FY24F, 25F and 26F because of a lower tax rate and high gross margin. We have kept our revenue assumptions unchanged. PI Industries suffers from production concentration which shall lead to a lower EPS growth. Please see our earlier reports: [IN: PI Industries Ltd - Product pipeline is dull; reiterate REDUCE \(REDUCE - Maintained\)](#) and [IN: PI Industries Ltd - Downgrade to REDUCE \(REDUCE - Downgrade\)](#). Upside risk: Fall in raw materials prices leading to gross margin expansion.

Financial Summary	Mar-22A	Mar-23A	Mar-24A	Mar-25F	Mar-26F
Revenue (Rsm)	53,466	64,920	77,806	85,079	93,082
Operating EBITDA (Rsm)	11,895	15,421	22,418	24,583	26,965
Net Profit (Rsm)	8,909	12,295	17,448	17,953	19,612
Core EPS (Rs)	58.6	80.9	114.9	118.2	129.1
Core EPS Growth	12.0%	38.0%	41.9%	2.9%	9.2%
FD Core P/E (x)	64.31	46.60	32.83	31.91	29.21
DPS (Rs)	2.2	3.1	4.4	4.5	4.9
Dividend Yield	0.06%	0.08%	0.12%	0.12%	0.13%
EV/EBITDA (x)	46.48	35.06	24.25	21.58	19.08
P/FCFE (x)	172.09	85.51	202.51	41.67	35.86
Net Gearing	(32.6%)	(44.8%)	(33.0%)	(40.0%)	(55.0%)
P/BV (x)	9.36	7.96	6.45	5.40	5.40
ROE	15.5%	18.5%	21.7%	18.4%	18.5%
% Change In Core EPS Estimates			34.75%	22.24%	
InCred Research/Consensus EPS (x)					

SOURCE: INCRED RESEARCH, COMPANY REPORTS

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## Sample analysis paints a grim growth picture

### **3,3',4,4'-biphenyl tetracarboxylic dianhydride (BPODA) - a possible big molecule (but years away) if all works well ▶**

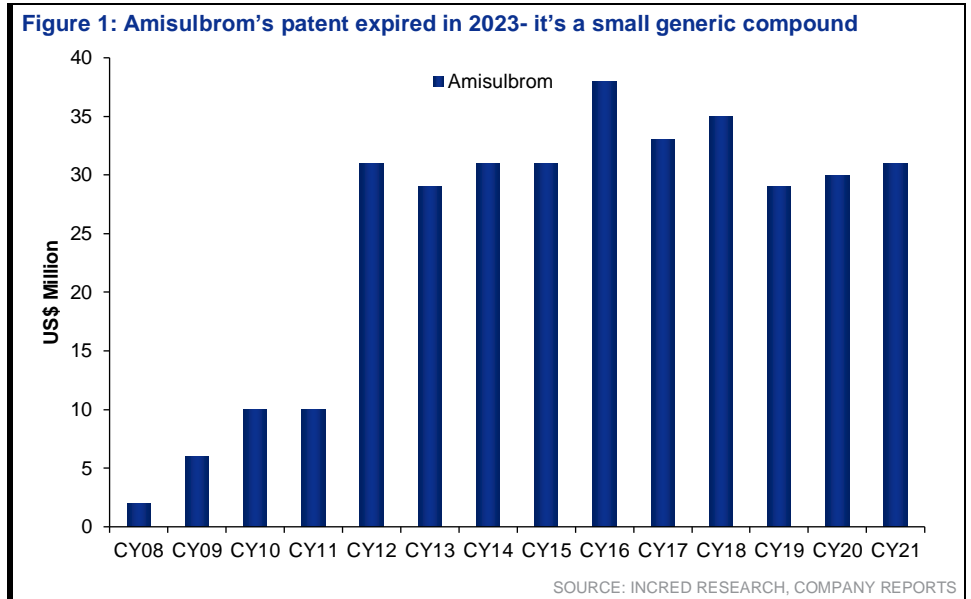
- 3,3',4,4'-biphenyltetracarboxylic dianhydride (BPDA) is a chemical compound with the formula  $C_{16}H_6O_6$ . It is a white, crystalline solid that is soluble in organic solvents. BPDA is a monomer used in the production of polyimides, a class of high-performance polymers with excellent thermal, mechanical, and electrical properties.
- It is being sent in small quantities to SABIC Innovative Plastics. BPODA (3,3',4,4'-biphenyltetracarboxylic dianhydride) is a raw material for the polyimide resin component of one of the super-engineering plastics. It is used for many important information and electronic technology products such as mobile phones, printed circuit boards and copying machines.
- Rising demand for lightweight and durable materials in the sectors like automotive and aerospace, where BPDA dianhydride plays a vital role in enhancing the performance and longevity of products. Additionally, the growing focus on sustainability and environmental regulations is driving the adoption of BPDA-based polymers due to their recyclability and eco-friendly characteristics. PI Advanced Materials also has many patents filed for this compound.
- The possible raw materials used in its manufacture are 3,3,4,4-tetracarboxylic benzene, acetic anhydride and a catalyst.

### **3-(3-bromo-6-fluoro-2-methyl-1H-indol-1-yl) sulfonyl) N, N-dimethyl-1H-1,2,4-triazole-1-sulfonamide or amisulbrom▶**

- It is being sent in small quantities to Nissan Chemicals Corporation. 3-(3-bromo-6-fluoro-2-methyl-1H-indol-1-yl) sulfonyl)-N,N-dimethyl-1H-1,2,4-triazole-1-sulfonamide, also known as amisulbrom, a fungicide used to control late blight and downy mildew in potatoes. It is a member of the bromoindole class of fungicides.
- Nissan Chemicals uses it as a proprietary active ingredient in the manufacture of Leimay, which is highly effective against the epiphytotic downy mildew, a serious disease that affects potatoes and vegetables. It is highly resistant to rain, and firmly protects crops from disease damage.
- Amisulbrom is highly toxic to aquatic life due to long-lasting effects, causes serious eye irritation and is suspected to be carcinogenic.
- The raw materials used in its manufacture are 3-bromo-3,6-difluoro-2-methyl-1H-indole, N,N-dimethyl-1H-1,2,4-triazole-1-sulfonamide, and chlorosulfonic acid.

Global sales of this molecule are barely anything to speak about.

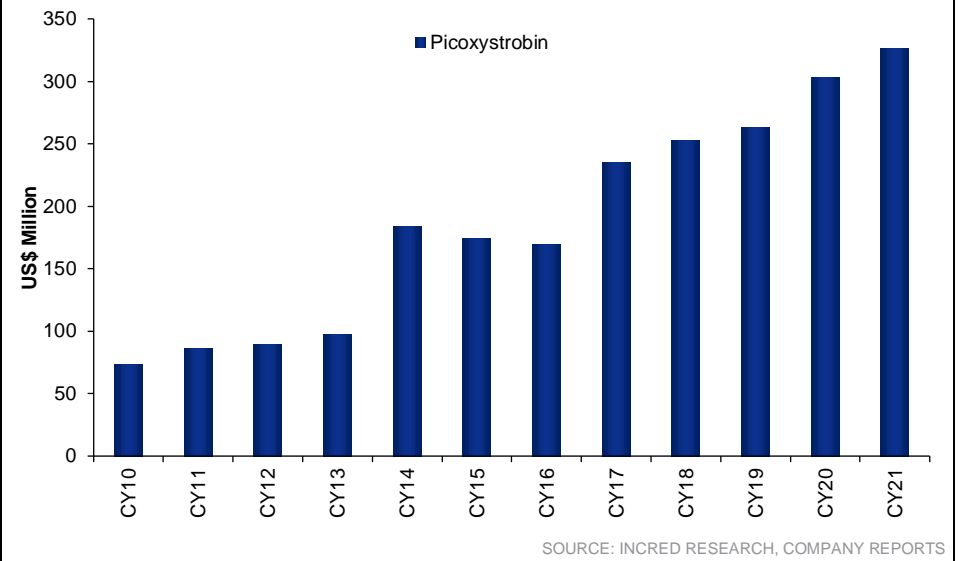
Figure 1: Amisulbrom's patent expired in 2023- it's a small generic compound



### Picoxystrobin- a generic fungicide of Corteva (erstwhile Dupont) ➤

- It is sent in small quantities to Dupont De Nemours. Dupont De Nemours, now Corteva Agriscience, has many recent filings for its use as a picolinamide fungicide along with other fungicides against soybean rust and cereals. There have been other potential uses as a fungicide discovered by other companies as well. They include its application in prevention and treatment of crop diseases caused by Fusarium.
- The raw materials used in its manufacture are 3 – iso chromanone, methyl formate, dimethyl carbonate, sodium hydride, toluene(solvent), hydrochloride gas, ethylene dichloride solvent, 2- chloro -6-trifluoro methyl pyridine, potassium hydroxide, xylene (solvent) and water.
- Facts regarding picoxystrobin:
  - Reportedly the most systemic of strobilurins, with its major strength being curative activity against yellow rust as well as a good control over Septoria, and of net blotch in barley.
  - Syngenta registered the product in most European markets, predominantly for use on barley and apples, some niches where azoxystrobin was not so strong, although the commercial potential was held back due to positioning alongside azoxystrobin.
  - In 2017, DuPont launched Vessarya (picoxystrobin, benzovindiflupyr) in Brazil for use on cereals.
  - In 2017, DuPont granted FMC an exclusive licence for rice applications in the EEA to address the European Commission's concern on product competition for rice blast fungicides. In 2018, Adama launched Cronnos (picoxystrobin + tebuconazole + mancozeb), for use on soybean in Brazil.
  - It was supposed to be used as an alternative to mancozeb (which is highly toxic).

**Figure 2: Growth is not that much, and it has become generic in CY16; Corteva was the innovator but after it become generic, there are multiple other players**

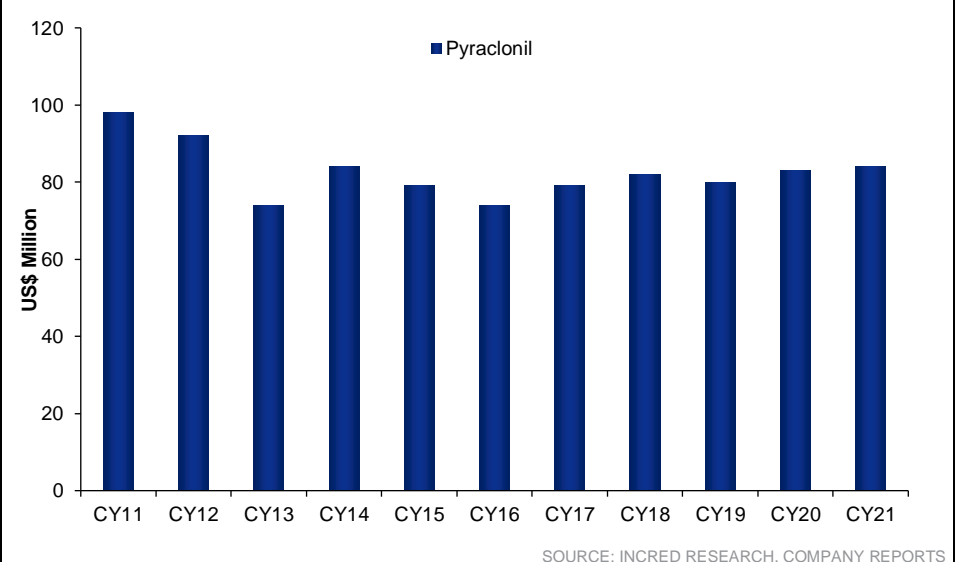


**5-amino-1-(3-chloro-4 5 6 7-tetrahydropyrazolo (1 5-A) pyridine-2 -YL) pyrazole-4-carbonitrile and pyraclonil ➤**

- A small quantity of it is sent to Kyoyu Agri Co. It is a research chemical. It could also be an intermediate in the preparation of pyraclonil, a selective herbicide that is used to control a variety of weeds in rice crop. Pyraclonil is also directly sent by PI Industries to AgroSciences Research Centre and Kyoyu Agri Co. in Japan. Kyoyu Agri Co. has a patent for its use as rice herbicide active ingredient, which gained a broad user base throughout Japan, thanks to its high level of effectiveness against sulfonylurea-resistant weeds, which had been become a significant problem at farms nationwide. As a result, pyraclonil has become Japan’s top seller rice herbicide ingredient for nine years in a row. If this is the beginning of a partnership, it will be a big win for PI Industries.
- Pyraclonil was banned in the European Union in 2008 due to high toxicity to fish and other aquatic organisms.
- The possible raw materials used in its manufacture are phenyl glycolic acid, propane dinitrile, 5-chlorovaleryl chloride and a strong Lewis Acid catalyst.

Pyraclonil is a pre-emergent rice herbicide and so it will have limited success in the developing world. As indicated, it is already banned in Europe. So, there is nothing great to write about this product.

**Figure 3: If 5-amino-1-(3-chloro-4 5 6 7-tetrahydropyrazolo (1 5-A) pyridine-2 -YL) pyrazole-4-carbonitrile is used as an intermediate for pyraclonil, then it has a limited future**

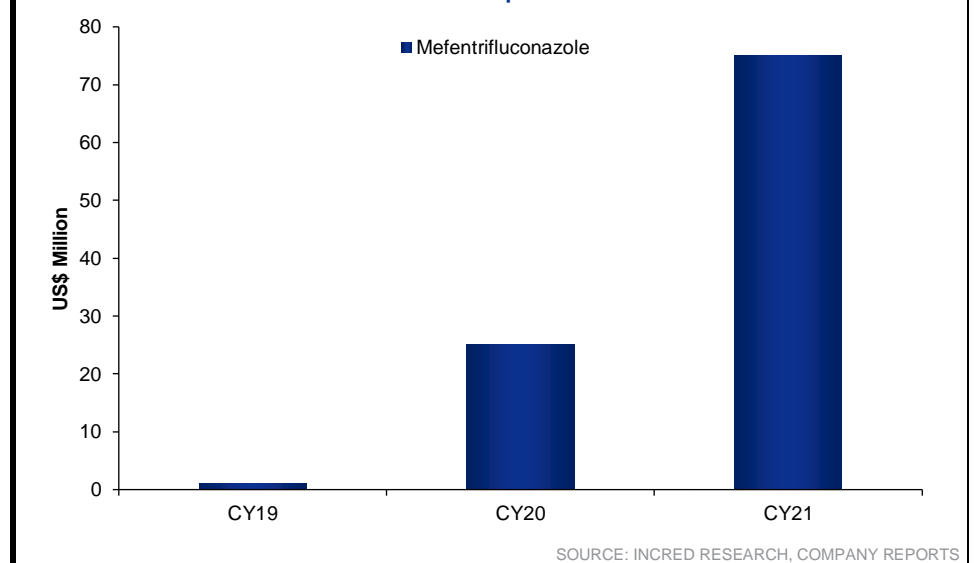


### 1-(4-(chloro phenoxy)-2-(trifluoro methyl)phenyl) ethanone - possible intermediate to manufacture Revysol ➤

- It is being sent in small quantities to BASF SE. BASF SE recently filed a patent for the preparation of 1-[4-nitro-2-(trifluoromethyl)-phenyl]-alkanones and substituted phenoxy phenyl ketones.
- It could be a helpful intermediate to manufacture Revysol, a triazole fungicide. Revysol delivers superior control against Septoria in cereals, both as a protectant and curative solution. It can also be used in Revystar, an innovative co-formulation fungicide that combines Xemium® (SDHI) with a latest generation triazole.
- BASF triazoles target a wide range of fungal diseases that can devastate crops. BASF was estimating billion-dollar sales for Revysol, but specific sales information is not known. However, please note that triazoles as a class of fungicide has limited future, as globally it is getting replaced by SDHI fungicides.
- Revysol fungicide and its related products will help growers in many regions to address the issues relating to northern corn leaf blight, cercospora leaf spot, frog-eye leaf spot and powdery mildew, among other common diseases.
- It is highly toxic to aquatic life with long-lasting effects. So, there is a possibility of a ban in the future.
- The raw materials used in the manufacture of this compound are 4-chlorophenol, 2-trifluoromethyl benzene, ethylene fluoride and a strong Lewis Acid catalyst.

It's a new triazole, but we are not positive about the future of the chemical.

**Figure 4: Revysol is the brand name of mefentrifluconazole; it had grown post-Covid channel-filling; it is registered almost everywhere in the world; however, remember triazoles as a class are abhorred because of pollution concerns**



### Diethyl amino malonate monohydrochloride, an intermediate for favipiravir, which is a high potential drug:

- Sent in small quantities to Fujifilm at a high price. Diethyl amino malonate hydrochloride is primarily used as a pharmaceutical intermediate. It is used in a method for preparing favipiravir, an anti-viral that prevents viral duplication in the body by inhibiting the enzyme that drives the viral replication. It is also useful in a method for inhibiting PERK and for treating related conditions, diseases, and disorders.
- It is also useful for preventing/treating eicosanoid-associated diseases such as atherosclerosis, diabetes, obesity, atherothrombosis, asthma, fever, pain, cancer, rheumatism, osteoarthritis and atopic dermatitis.

- It is also used in the preparation of heteroaryl-substituted serine amides which can be utilized as herbicides by BASF, according to a patent filing.
- The raw materials used in its manufacture are diethyl malonate, ethyl amine and concentrated hydrochloric acid.

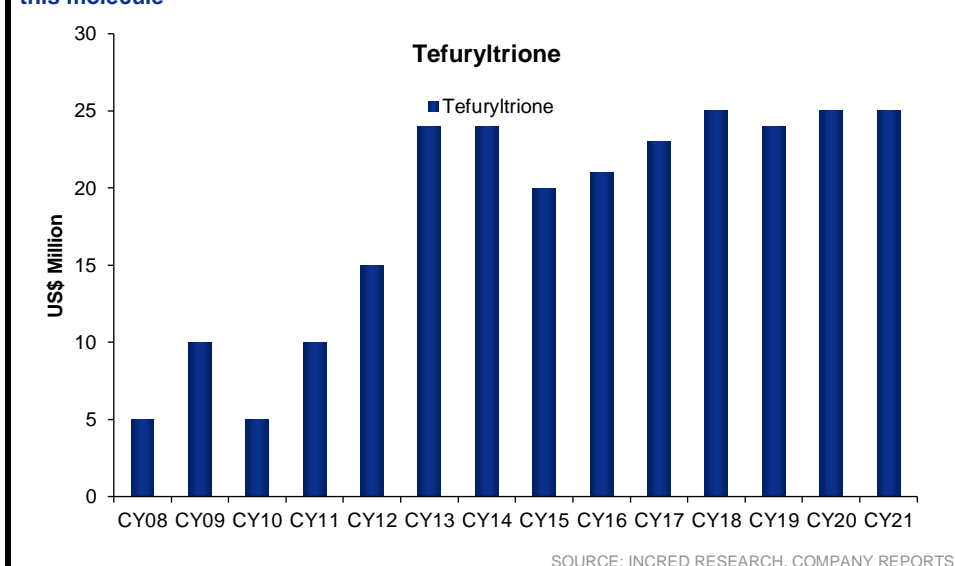
## 2 (2 4-dichloro phenoxy) propionic acid - probably being used to make a highly toxic herbicide:

- Sent to Atsushi Okada at a relatively high price in small quantities.
- It helps in an herbicide composition that exhibits a superior effect of controlling weeds, and a method for controlling weeds, according to a patent filed by Sumitomo.
- It is an occupational hepatotoxin and hence, there is a possibility of a ban in the future.
- The possible raw materials used in its manufacture are 2,4-dichlorophenol, propionic anhydride and a strong Lewis Acid catalyst..

## Tefuryltrione is a generic herbicide which has been banned in the EU since 2013:

- It is sent to Zen-Noh R&D centre in packs of small quantities.
- Tefuryltrione is a herbicide used in paddy rice cultivation to control weeds. It is a herbicide used in paddy fields and is effective against sulfonylurea-tolerant weeds as well as annual and perennial weeds.
- It can also be used as a veterinary medicine used to treat respiratory conditions in cattle and pigs. It acts as a bronchodilator, relaxing the airway to improve breathing.
- European Union (EU) imposed a ban on the sale and use of tefuryltrione as a veterinary medicine in 2013.
- The raw materials used in its manufacture are 2-chloro-3-methyl-4- (methyl sulfonyl) benzoic acid, tetra hydro furan-2-yl) methanol, N- bromo succinimide, cyclohexane 1,3-dione, toluene and methanol.

Figure 5: Extremely low and stagnant sales for multiple years shows the potential of this molecule



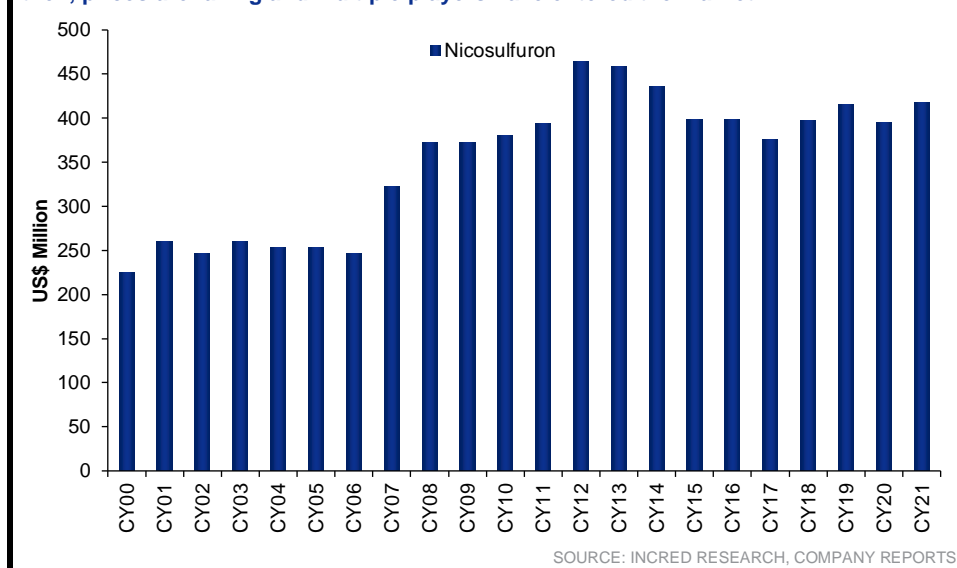
## 2-[[[4 6-dimethoxypyrimidin-2-yl) carbamoyl] sulfamoyl]- N N-dimethylpyridine-3-carboxamide or nicosulfuron ➤

- It is being sent to Ascena Agro in small quantities. The common name of 2-[[[4,6-dimethoxypyrimidin-2-yl) carbamoyl]sulfamoyl]-N,N-diethylpyridine-3-carboxamide is nicosulfuron.
- Nicosulfuron is a member of the sulfonylurea family of herbicides, which is known for herbicidal properties. The pyrimidine group is responsible for the

herbicidal properties of the compound, while the sulfamoyl and dimethyl amino groups are responsible for its solubility in water.

- Nicosulfuron is a selective herbicide, which means that it only kills certain types of plants. It is not harmful to most crops, but it can be toxic to animals and humans.
- It has uses in maize cultivation, particularly for controlling annual and perennial weeds. It is used for control of weeds such as Johnson grass, quack grass, foxtails. There have been many recent patents filed by major agrochemical giants.
- It became generic in 2006 and as of now, multiple companies have introduced this chemical. While Corteva Agriscience was the innovator, this stagnant molecule has multiple other producers now like Syngenta, Ishihara, IPESA and Nortox.

**Figure 6: The molecule became generic in 2006, and its sales peaked in 2013; since then, prices are falling and multiple players have entered the market**



### **Pyridachlometyl is a R&D fungicide being developed by Sumitomo and BASF ➤**

- It is sent in small quantities to Sumitomo Chemicals at a high price.
- Pyridachlometyl primarily targets fungal pathogens that can infect various crops, including cereals (wheat, barley) and vegetables (tomatoes, cucumbers). It has a novel anti-tubulin mode of action.
- It has been developed by BASF, but there is a possibility that Sumitomo might be interested in the future.
- It exhibits potent antifungal activity against a broad range of fungal species belonging to the phyla ascomycota and basidiomycota.
- The mode of action is tentatively assigned as belonging to a new chemical class of tubulin polymerization promoters.

### **N-(5-pyrimidinyl methyl)-2-pyridinamine is possibly a R&D chemical for Dow AgroSciences ➤**

- It is being sent in small quantities to Dow Agrosciences.
- Dow Agrosciences has a patent for its use in mesoionic pesticides. It has uses in methods for controlling an invertebrate pest comprising contacting the invertebrate pest or its environment with a biologically effective amount of a compound or a composition of the invention. Dow Agrosciences is a new player in this category.
- The raw materials used in its manufacture are 2- amino pyridine, 5-methyl pyrimidine and 7-azabenzotriazol-1-yloxy)tripyrrolidinophosphonium hexafluorophosphate reagent.



### **2-chloro-4-methylsulfonyl benzoic acid [CMSBA] is a potential oncology drug intermediate ►**

- It helps in preparing components that are useful for treating proliferative disorders, e.g. cancer (Merck patent filing). It is sent to SK Biotek in small quantities.
- It can also be used in manufacturing a drug that treats Parkinson's disease.
- The raw materials used in its manufacture are 2-chlorotoluene, methane sulfonyl chloride and a catalyst.

### **3,5-diamino-1,2,4-triazole (Guanazole)- multiple usage and can be a big molecule for PI Industries ►**

- It is sent in small quantities to Syngenta.
- It also has uses in producing cleaning compositions that are used to clean semiconductor substrates, according to a patent filing by Fujifilm. It also has its use in preparing a biodegradable microcapsule.
- It can be used to manufacture drugs that treat cancer and other disorders and conditions associated with the expression of LRRC15 (early stage by Bayer).
- Due to its use in potential cancer treatment and in specialty chemicals, it could be a high potential compound for PI Industries.

### **3-CT (3-chloro thiophene) - multiple usage but too early to ascribe value ►**

- It is being sent to Crystal PI in small quantities.
- It can be used to manufacture phenoxy carboxylate herbicides. It also can be used as a reagent in pharmaceutical compositions. The compound can be useful in the treatment or prevention of cancers associated with and/or caused by budding uninhibited by benzimidazole 1 (BUB1) kinase.
- It is also used in the production of phenoxy carboxylate herbicide. It is also used in polymer films and substrates. It has many uses in specialty chemicals, pharmaceuticals and agrochemicals.

### **4-chlorophenyl hydrazine is a likely oncology medicine ►**

- It is being sent in small quantities to BASF SE. It has use in the prevention or treatment of metabolic diseases and/or cancer diseases through the action thereof as a PDK4 inhibitor.
- It also has uses in supramolecular polymer therapeutics and diagnostics in the detection and treatment of neurodegenerative diseases.
- It can be used as valuable intermediate products for producing anthranilic acid amides that have an insecticidal effect. According to BASF, anthranilic acid amide is a high-quality intermediate used to produce crop protection products.

### **Aminopyrifen is a R&D stage SDHI fungicide ►**

- It is sent in small quantities to Agro-Kanesho Co. Aminopyrifen is effective against various fungal diseases that attack plants, particularly those caused by ascomycetes and their related anamorphic fungi. These fungi can cause problems like powdery mildew, gray mold, and other plant diseases.
- Aminopyrifen works by inhibiting a specific protein (GWT-1) involved in the fungus' cell wall development. This disrupts the fungus' growth and ultimately kills it.
- Aminopyrifen shows effectiveness against a wide range of fungal pathogens, making it a versatile tool for plant protection.
- It's primarily used as a preventive fungicide, applied before fungal infection occurs. However, it also exhibits some translaminar action.
- The broad-spectrum fungicide molecule is from a unique 2-amino nicotinate chemistry that also features a new mode of action tentatively assigned as being the inhibition of GWT1 which catalyses the inositol acylation of

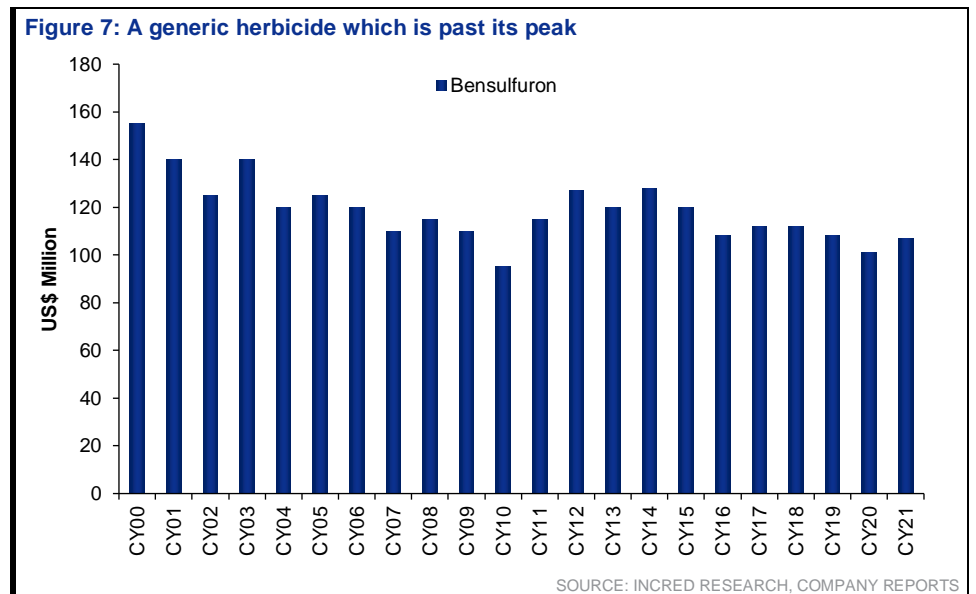


glycosylphosphatidylinositol on endoplasmic reticulum membranes. The molecule was shown to inhibit germ tube elongation. In trials against cucumber grey mould, excellent preventative, residual and translaminar activity was observed. Curative activity was fair. Additionally, no cross resistance to existing fungicides was observed.

**Bensulfuron-methyl is a generic herbicide whose patent expired in 1999 and is well past its peak ➤**

- It is sent in small quantities to Kumiai Chemical Industry.
- Bensulfuron-methyl is a selective herbicide used to control a variety of weeds in crops, particularly wheat and rice. It helps to control broadleaf weeds, sedges and some grasses that hinder rice and wheat production.
- Bensulfuron-methyl can be effective as both a pre-emergence herbicide and post-emergence herbicide.
- The raw materials used in its manufacture are methyl-2- {[Isocyanate sulfamoyl] methyl} benzoate, 4,6-dimethoxypyrimidin-2- amine in the presence of xylene solvent.
- At one time, bensulfuron was one of the largest-selling sulfonylurea herbicides and the leading rice herbicide worldwide. The product is still the cornerstone of many of the leading 'one-shot' rice herbicides in Japan.
- Marketing covers most rice-growing nations, although sales are in a phase of decline, exacerbated by the reduction in Japanese rice area and increased competition from new introductions.
- Some competition from generic material from China is also encountered. The rights outside Asia were acquired by UPL from DuPont in 2006.

**Figure 7: A generic herbicide which is past its peak**

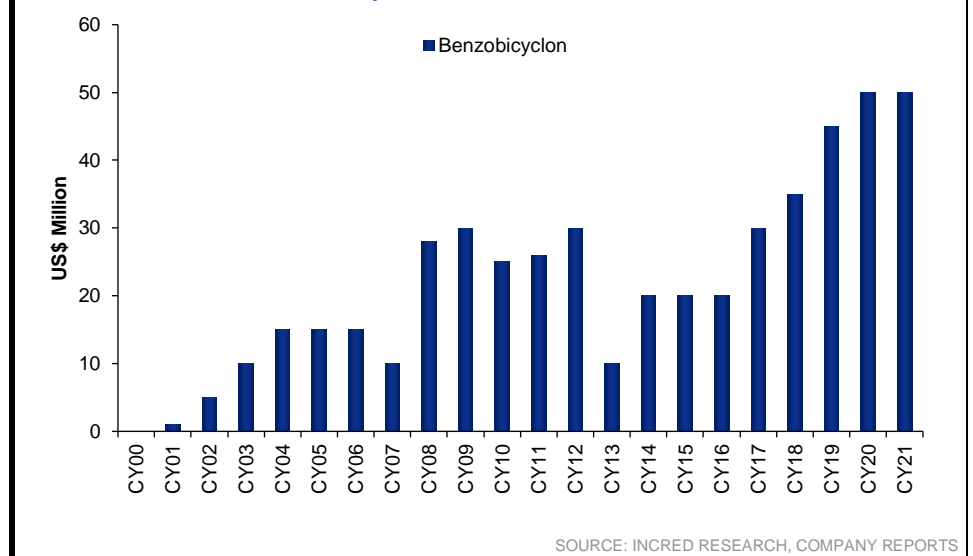


**Benzobicyclon is a generic herbicide which appears to be making a comeback, but the market is still very small (US\$60m) ➤**

- It is sent in small quantities to SDS Biotech. It has uses as a herbicide.
- It is a herbicide that is used to control a variety of annual and perennial weeds in rice crops. It is a selective herbicide, which means that it only kills certain types of plants. It is not harmful to most rice crops, but it can be toxic to animals and humans. It offers long-lasting weed control in the paddy field, suppressing weed growth for an extended period.
- The raw materials used in its manufacture are bicyclo[3.2.1]octane-2,4-dione, methylene dichloride, 2-chloro-4-methylsulfonylbenzoyl chloride, acetonitrile, trimethyl amine, acetone cyanohydrin, hydrochloric acid, diethyl ether, thionyl chloride, thiophenol and diethyl ether.

- It is a chlorophyll biosynthesis inhibitor with activity against sulfonylurea resistant weeds on both direct seeded and transplanted rice. Intended for use in mixtures with other products for barnyard grass control and utilized in a number of one-shot rice herbicides in Japan, including in 'Jumbo' formulations, from several companies such as Sankyo, Kumiai and Bayer, Kaken, Nissan, Ishihara, Mitsui Chemicals and Nihon Nohyaku. Gowan markets the product in the US and key EU countries for control of sedges, grasses and broadleaf weeds.

**Figure 8: The product became generic in 2016; in the recent past, sales have increased but the size is still very small**



### **Cyclopyranil is a R&D post-emergent rice herbicide, but nothing great to be excited about ►**

- It is sent in small quantities to Kyoyu Agrisciences. It is a pyrazole-based herbicide which controls monochromia vaginalis, barnyard grass, crabgrass, and amaranthus viridis. It also has a good control effect on weeds in dry field crops.
- It is applied to the soil and kills weeds by interfering with their growth. Cyclopyranil is effective against a variety of weeds, including dandelions, clover, and crabgrass. It is also effective against woody plants, such as trees and shrubs.
- Novel herbicide under development by Kyoyu Agri, likely belonging to the PPO mode of action classification based on being a structural analogue of pyraclonil. It can effectively control barnyard grass in rice production and other grass weeds. It also has a very good control effect on rosegrass, quinoa and amaranth in upland crops.

### **Dicloromezotiaz is a R&D insecticide for rice hoppers and if successful, it can become significant ►**

- Dicloromezotiaz is an organochlorine zwitterionic, rice insecticide for control of a broad range of lepidoptera. Lepidoptera pests including rice hoppers; diamondback moth; striped flea beetle.
- It is sent in small quantities to Zen Noh in Japan. It is a mesoionic insecticide used for control of rice hoppers. This makes it more stable and less harmful to the environment than the other types of insecticides.
- Dicloromezotiaz is an antagonist of insect nAChR channel. It disrupts the normal function of this channel in insects, ultimately leading to their death.

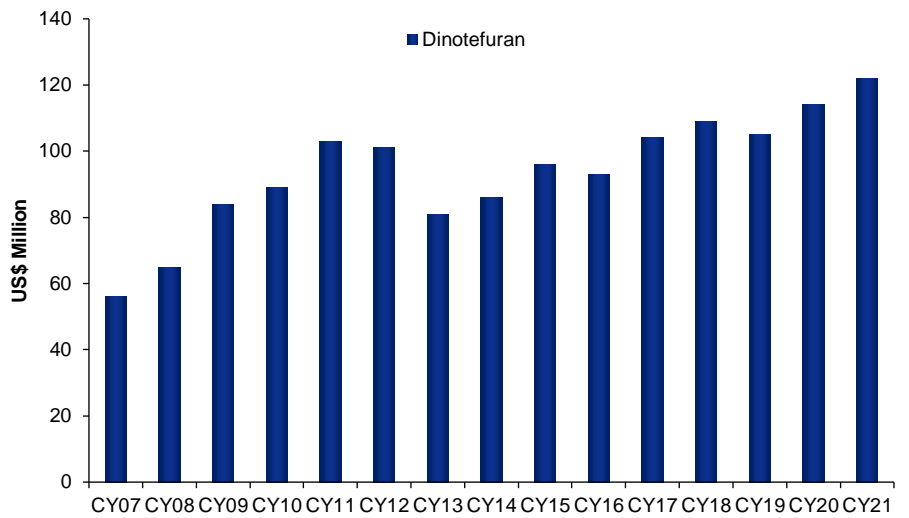
## **2-chloro-N-(2,6-diethylphenyl) benzamide is a R&D stage molecule:**

- Sent in small quantities to Kumiai Chemicals. It has its uses in pharmaceuticals and agrochemicals.
- It is suspected to have uses in herbicides and as an anti-cancer agent in old patent filings. Newer uses may be discovered in the future.
- The possible raw materials used in its manufacture are 2-chlorobenzoyl chloride, 2,6-diethylaniline N-oxide and a strong Lewis acid catalyst. The CAGR for the compound is estimated at 5.9%.

## **Dinotefuran- generic insecticide, no great success in the past, but EU action is on the cards and multiple copycats are there in the market ➤**

- Dinotefuran is a broad-spectrum insecticide which is proposed for food uses in/on leafy vegetables (except brassica), and for use in professional turf management, professional ornamental production, and in the residential indoor, pet, lawn and garden markets.
- Dinotefuran is used to control a variety of insect pests, including aphids, whiteflies, thrips, leafhoppers, leafminers, sawflies, mole cricket, white grubs, lacebugs, billbugs, beetles, mealybugs, and cockroaches. It is used on a variety of crops, including fruits, vegetables, ornamentals, and turf. It is a moderate eye irritant.
- Introduced in Japan 2002 as a 2% granule formulation for nursery box applications and a 20% soluble granule for foliar use. The product also has applications in animal health and household pest control.
- In 2015, Starkle 200 SG gained approval in Australia for use on cotton. In 2016, Hebei Veyong Bio-Chemical gained manufacturing approval in China for the active ingredient.
- In 2019, Mitsui received Brazilian approval for the ai for control of sucking pests such as whiteflies. Formulated products will have application rate restrictions and be prohibited from use during flowering periods. Also, in 2019, Ihara initiated the launch of Movidos a Dino (dinotefuran). The product is for use on several crops including soybean, sugar cane and coffee.
- BASF was granted the US EPA approval in 2021 for Ridesco (dinotefuran + alpha-cypermethrin) for use by domestic and professional users against "difficult-to-control pests" such as ants, house flies, American cockroaches and spiders. BASF introduced Alucion 35WG (alpha-cypermethrin + dinotefuran) in 2021 for control of ants, chinch bugs (*Blissus leucopterus*), cutworms (*euxoa* spp) and annual bluegrass weevils (*listronotus maculicollis*) in the US golf course market.
- In 2021, the US EPA decided to cancel registrations of BASF's dinotefuran-based Certador and Valent USA's insecticide/fungicide, V-10276 (metconazole + dinotefuran) following voluntary cancellation requests from the registrants. In May 2022, Best Agrolife debuted Ronfen (pyriproxyfen + diafenthurion + dinotefuran) for the control of sucking pests in crops such as cotton, chillies and vegetables, with the formulation receiving a 20-year Indian patent in Aug 2021 and AxeMan (dinotefuran + pymetrozine) for control of brown plant hoppers (*Nilaparvata lugens*) in rice

**Figure 9: Generic Insecticide with no great success; it can be banned in the EU and there are multiple copycats in the market**

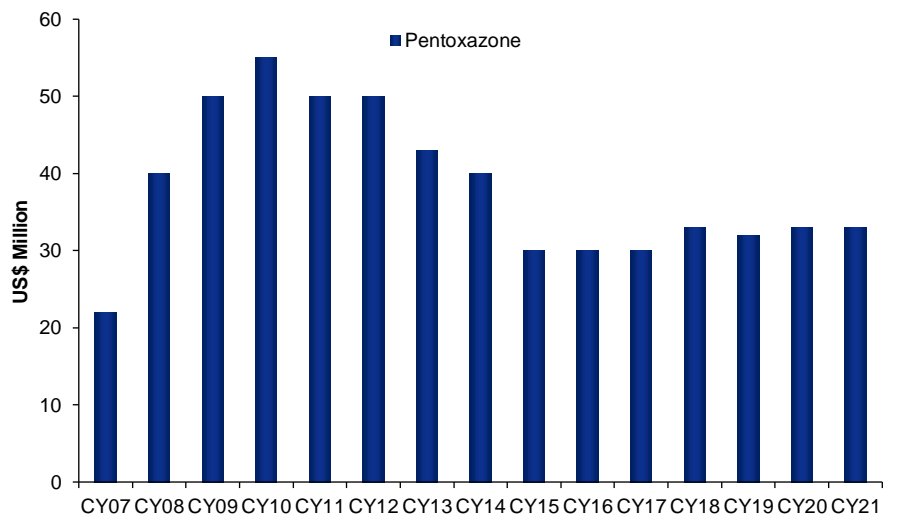


SOURCE: INCRED RESEARCH, COMPANY REPORTS

**Pentoxazone is a generic herbicide PI Industries is searching for pharmaceutical usage, but still it is at very early stage ➤**

- It is sent in batches of small quantities to Kaken Pharmaceuticals. It is an oxazolidinedione-type rice herbicide developed by Kaken.
- It also has potential use as a pre- and post-emergence herbicide to control weeds in rice. It is a selective herbicide with toxicity towards humans and animals.
- Long-acting oxazolidinedione herbicide active via PPO inhibition. Used in many 'one-shot' mixtures for echinocloa (barnyard grass) control, notably topgun (pyriminobac-methyl, bromobutide, bensulfuron-methyl and pentoxazone) and Sumitomo's Hammer Jumbo (propyrisulfuron, pentoxazone) in Japan. Introduced in Japan and registration achieved in Korea in 2001. In 2011, Ishihara gained approval in Japan in a mix with cumyluron and bensulfuron-methyl in the dohji-guard range. It has not achieved approval for use in the EU.
- There have been many recent patent filings for its use in controlling unwanted vegetation in crops.

**Figure 10: Herbicide was a failure as sales are going down every year - no EU registration; PI Industries is trying its luck with pharmaceutical usage**



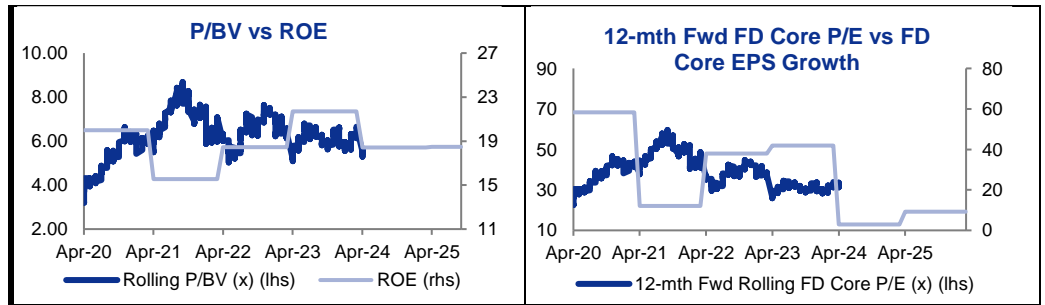
SOURCE: INCRED RESEARCH, COMPANY REPORTS

**N-ethylcaprolactam or NEC - a trial chemical - may be used in the production of nylon-6 ➤**

- It is being sent in small quantities to Advansix inc. Advansix is a company that produces nylon-6 (which uses caprolactam) among other things.
- N-ethylcaprolactam's specific use is not available, but it could be used to make nylon-6 or other similar polyamides.
- The raw materials used in its manufacture are cyclohexane, oxygen, hydroxylamine and a strong Lewis Acid catalyst. The CAGR for the caprolactam family is 5.8%.

We acknowledge the contribution of Shakthi Sharvani Karanam (Intern) in the writing of this note.

BY THE NUMBERS



Profit & Loss

(Rs mn)	Mar-22A	Mar-23A	Mar-24A	Mar-25F	Mar-26F
<b>Total Net Revenues</b>	53,466	64,920	77,806	85,079	93,082
<b>Gross Profit</b>	53,466	64,920	77,806	85,079	93,082
<b>Operating EBITDA</b>	11,895	15,421	22,418	24,583	26,965
Depreciation And Amortisation	(2,018)	(2,265)	(3,631)	(4,062)	(4,492)
<b>Operating EBIT</b>	9,877	13,156	18,787	20,521	22,473
Financial Income/(Expense)	(128)	(371)			
Pretax Income/(Loss) from Assoc.	36	68			
Non-Operating Income/(Expense)	1,014	1,590	600	600	600
<b>Profit Before Tax (pre-EI)</b>	10,799	14,443	19,387	21,121	23,073
Exceptional Items					
<b>Pre-tax Profit</b>	10,799	14,443	19,387	21,121	23,073
Taxation	(1,890)	(2,148)	(1,939)	(3,168)	(3,461)
Exceptional Income - post-tax					
<b>Profit After Tax</b>	8,909	12,295	17,448	17,953	19,612
Minority Interests					
Preferred Dividends					
FX Gain/(Loss) - post tax					
Other Adjustments - post-tax					
<b>Net Profit</b>	8,909	12,295	17,448	17,953	19,612
Recurring Net Profit	8,909	12,295	17,448	17,953	19,612
<b>Fully Diluted Recurring Net Profit</b>	8,909	12,295	17,448	17,953	19,612

Cash Flow

(Rs mn)	Mar-22A	Mar-23A	Mar-24A	Mar-25F	Mar-26F
<b>EBITDA</b>	11,895	15,421	22,418	24,583	26,965
Cash Flow from Invt. & Assoc.					
Change In Working Capital	(5,276)	2,050	(9,902)	(2,284)	22,116
(Incr)/Decr in Total Provisions					
Other Non-Cash (Income)/Expense	(160)	(1,557)	(302)	16	(137)
<b>Other Operating Cashflow</b>	(2,795)	(3,087)	(3,277)	(5,736)	(26,965)
Net Interest (Paid)/Received	(128)	(371)			
Tax Paid	1,751	2,558	1,939	3,168	
<b>Cashflow From Operations</b>	5,287	15,014	10,876	19,747	21,978
Capex	(3,362)	(3,225)	(10,676)	(6,000)	(6,000)
Disposals Of FAs/subsidiaries					
Acq. Of Subsidiaries/investments					
Other Investing Cashflow	2,258	(1,737)	2,629		
<b>Cash Flow From Investing</b>	(1,104)	(4,962)	(8,047)	(6,000)	(6,000)
Debt Raised/(repaid)	(930)	(3,352)			
Proceeds From Issue Of Shares					
Shares Repurchased					
Dividends Paid	(758)	(1,137)	(667)	(686)	
Preferred Dividends					
Other Financing Cashflow	(85)	(342)			
<b>Cash Flow From Financing</b>	(1,773)	(4,831)	(667)	(686)	
Total Cash Generated	2,410	5,221	2,162	13,061	15,978
<b>Free Cashflow To Equity</b>	3,253	6,700	2,829	13,747	15,978
<b>Free Cashflow To Firm</b>	4,311	10,423	2,829	13,747	15,978

SOURCE: INCRED RESEARCH, COMPANY REPORTS

**BY THE NUMBERS...cont'd**

**Balance Sheet**

(Rs mn)	Mar-22A	Mar-23A	Mar-24A	Mar-25F	Mar-26F
Total Cash And Equivalents	22,649	32,272	29,320	42,382	58,360
Total Debtors	8,687	7,720	13,449	14,706	
Inventories	14,234	13,976	20,714	22,650	
Total Other Current Assets	5,960	2,655	6,147	6,244	5,117
<b>Total Current Assets</b>	<b>51,530</b>	<b>56,623</b>	<b>69,631</b>	<b>85,982</b>	<b>63,477</b>
Fixed Assets	24,842	28,901	35,946	37,884	43,884
Total Investments	448	313	448	448	448
Intangible Assets	828	828	828	828	828
Total Other Non-Current Assets	263	482	482	482	482
<b>Total Non-current Assets</b>	<b>26,381</b>	<b>30,524</b>	<b>37,704</b>	<b>39,642</b>	<b>45,642</b>
Short-term Debt	979				
Current Portion of Long-Term Debt					
Total Creditors	9,242	8,380	13,449	14,706	
Other Current Liabilities	3,261	3,438	4,427	4,175	2,515
<b>Total Current Liabilities</b>	<b>13,482</b>	<b>11,818</b>	<b>17,876</b>	<b>18,882</b>	<b>2,515</b>
Total Long-term Debt	1,699				
Hybrid Debt - Debt Component					
Total Other Non-Current Liabilities	571	678	571	571	571
<b>Total Non-current Liabilities</b>	<b>2,270</b>	<b>678</b>	<b>571</b>	<b>571</b>	<b>571</b>
Total Provisions	955	316	121	137	
<b>Total Liabilities</b>	<b>16,707</b>	<b>12,812</b>	<b>18,568</b>	<b>19,590</b>	<b>3,086</b>
Shareholders Equity	61,204	71,985	88,767	106,034	106,034
Minority Interests					
<b>Total Equity</b>	<b>61,204</b>	<b>71,985</b>	<b>88,767</b>	<b>106,034</b>	<b>106,034</b>

**Key Ratios**

	Mar-22A	Mar-23A	Mar-24A	Mar-25F	Mar-26F
Revenue Growth	15.4%	21.4%	19.8%	9.3%	9.4%
Operating EBITDA Growth	11.3%	29.6%	45.4%	9.7%	9.7%
Operating EBITDA Margin	22.2%	23.8%	28.8%	28.9%	29.0%
Net Cash Per Share (Rs)	131.46	212.44	193.01	278.99	384.17
BVPS (Rs)	402.89	473.86	584.32	697.99	697.99
Gross Interest Cover	77.16	35.46			
Effective Tax Rate	17.5%	14.9%	10.0%	15.0%	15.0%
Net Dividend Payout Ratio	3.8%	3.8%	3.8%	3.8%	3.8%
Accounts Receivables Days	53.67	46.12	49.65	60.40	28.83
Inventory Days	nm	nm	nm	nm	nm
Accounts Payables Days	nm	nm	nm	nm	nm
ROIC (%)	23.3%	30.8%	31.5%	32.1%	47.0%
ROCE (%)	16.2%	19.2%	23.3%	21.1%	21.2%
Return On Average Assets	12.2%	15.3%	17.9%	15.4%	16.7%

SOURCE: INCRED RESEARCH, COMPANY REPORTS



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