

India

**Underweight** (no change)

**Highlighted Companies**

**Aarti Industries**

**REDUCE, TP Rs435, Rs684 close**

Aarti Industries has been heavily dependent on MMA due to its higher gross spreads compared to other molecules. However, as pointed out in our recent note, MMA has already passed its peak. Rising nitric acid prices and sluggish product demand are further negative factors for the company. We maintain our REDUCE rating on the stock.

**Deepak Nitrite Ltd**

**REDUCE, TP Rs1514, Rs2203 close**

We have retained our REDUCE rating on the stock with a target price of Rs1,514. Further supply chain disruption because of any reason can lead to extraordinary margins, Consensus earnings estimates are just too high and need to come down significantly for FY25F and FY26F. Rising nitric acid prices is one more negative factor for Deepak Nitrite.

**Summary Valuation Metrics**

P/E (x)	Mar24-F	Mar25-F	Mar26-F
Aarti Industries	56.61	47.23	39.38
Deepak Nitrite Ltd	38.33	39.53	37.15
P/BV (x)	Mar24-F	Mar25-F	Mar26-F
Aarti Industries	4.71	4.35	3.97
Deepak Nitrite Ltd	6.27	5.45	4.79
Dividend Yield	Mar24-F	Mar25-F	Mar26-F
Aarti Industries	0.37%	0.37%	0.37%
Deepak Nitrite Ltd	0.27%	0.27%	0.27%

# Chemicals - Overall

## Nitric acid prices are on the upswing

- The Chinese clampdown on fertilizer exports and related input materials has led to the rise in nitric acid prices in India.
- Even at 100% utilization, Deepak Fertilizers will not be able to meet captive as well as local demand, which means the domestic market will face scarcity.
- As a result, nitric acid prices are likely to rise, which is negative for Aarti Industries and Deepak Nitrite.

### Chinese ban on fertilizer exports leads to a rise in nitric acid prices

China was one of the largest exporters of nitric acid in CY23. However, since the beginning of CY24, China's exports of nitric acid have completely come to a standstill. This is mainly due to the ban on fertilizer exports by China owing to sky-high fertilizer prices in the domestic market. China has stopped issuing export licenses for fertilizer-related products, which is leading to limited exports. Moreover, a lot of its exports are to Western countries as due to supply chain problem in the Red Sea and water level decline in the Panama Canal, Chinese companies are fetching better margins in these regions. In China, nitric acid prices rose to Rs25/kg at the beginning of CY24. Although the prices have declined to Rs20/kg in Apr 2024, they are still far off from the long-term average of Rs11.6/kg. As a result, we expect exports from China to remain in tight supply, leading to nitric acid prices staying higher in India.

### India's imports of nitric acid decline significantly

India imports a significant amount of nitric acid from three countries - South Korea, China, and Taiwan. Although the country imports nitric acid from South Korea and Taiwan, imports from China have become close to zero since the beginning of CY24. This will result in downstream consumers of nitric acid facing declining margins.

### A big negative for Deepak Nitrite & Aarti Industries

The major consumers of nitric acid in the domestic market are Deepak Nitrite (REDUCE), Deepak Fertilizers (UNRATED) and Aarti Industries (REDUCE). However, after the commissioning of Deepak Fertilizer's ammonia plant, that has changed. Even if the current nitric acid plant (360kt capacity) runs at full throttle, still it will be unable to meet domestic demand. As a result, domestic nitric acid prices will rise. Indian nitric acid prices are already on the upswing (have increased by 170% in the last three months). While we don't have any view on the producers of nitric acid, users like Aarti Industries and Deepak Nitrite will face a double whammy of sluggish product demand and rising raw material prices. We remain sellers in Aarti Industries and Deepak Nitrite. For both these companies, consensus earnings estimates for FY25F are unrealistic and need to come down significantly.

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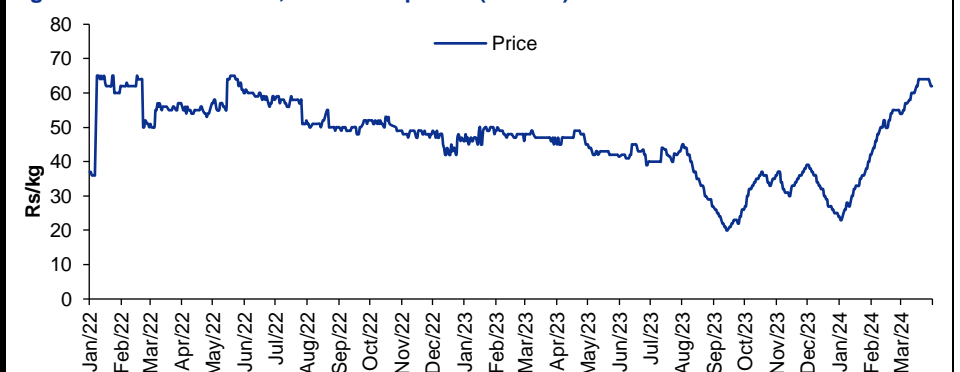
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**Figure 1: After weakness, nitric acid prices (68-70%) are on the rise in India**



SOURCE: INCRED RESEARCH, COMPANY REPORTS

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## Nitric acid prices are on the upswing

### Nitric acid is one of the most important chemicals

Nitric acid is one of the most important chemicals for making agrochemicals, fertilizers and in the defence industry as well. It is one of the key ingredients of ammonium nitrate which is used as a fertilizer. Globally, South Korea is one of the biggest exporters of nitric acid. India is a net importer of the commodity. China dumped the commodity in the international market in CY23 and has completely pulled back so far in CY24, resulting in a scarcity in the supply chain.

### Nitric acid is an important ingredient for multiple essential chemicals ➤

Nitric acid ( $\text{HNO}_3$ ) is a highly corrosive and reactive chemical compound with various uses across different industries and applications. Here are some of its common uses:

**Chemical Manufacturing:** Nitric acid is a key ingredient in the production of several important chemicals, including ammonium nitrate, which is used widely in fertilizers and explosives. It is also used in the manufacturing various organic compounds, such as nylon and nitrobenzene.

**Metal Processing:** Nitric acid is used for etching metals, particularly in the electronics industry for making printed circuit boards (PCBs). It's also used for passivation and cleaning of stainless steel and other metals to remove rust and impurities.

**Laboratory and Analytical Chemistry:** In laboratories, nitric acid is commonly used as a reagent for various analytical procedures, such as in the preparation of samples for analysis by inductively coupled plasma mass spectrometry (ICP-MS) or atomic absorption spectroscopy (AAS).

**Rocket Propellants:** Nitric acid, particularly mixed with hydrazine or other organic compounds, is used as a rocket propellant in certain types of rockets and missiles.

**Nitrating Agent:** It is used as a nitrating agent in the production of explosives, dyes, and pharmaceuticals.

**Cleaning Agent:** Due to its strong oxidizing properties, nitric acid is used for cleaning and removing mineral deposits from various surfaces, equipment, and industrial machinery.

**Pickling Agent:** In metalworking, nitric acid is used as a pickling agent to remove impurities and oxide layers from the surface of metals like steel and aluminum.

**Wastewater Treatment:** It's employed in the treatment of wastewater and effluents from industries, particularly in neutralizing alkaline solutions and removing heavy metals through precipitation.

**Dye Production:** Nitric acid is used in the production of dyes and pigments, especially in the synthesis of nitro compounds, which are intermediates in dye manufacturing.

**Fuming Nitric Acid:** Concentrated nitric acid, known as fuming nitric acid, is used in specialized applications, such as in the manufacture of explosives and rocket propellants, due to its higher reactivity and purity.

It's important to note that while nitric acid has many industrial applications, it is also highly corrosive and requires careful handling to prevent accidents and exposure. Proper safety measures should always be followed when working with nitric acid.

## Concentrated and weak nitric acids have slightly different manufacturing processes ➤

On an industrial scale, the production of weak nitric acid typically involves a multi-step process called the Ostwald process. This process involves the oxidation of ammonia to produce nitric oxide, which is then oxidized further to produce nitrogen dioxide, and finally absorbed in water to form nitric acid.

### Ammonia Oxidation:

Ammonia (NH<sub>3</sub>) is oxidized to nitric oxide (NO) in the presence of a platinum or rhodium catalyst at high temperatures (around 900-1000°C) according to the following reaction:  $4 \text{NH}_3(\text{g}) + 5 \text{O}_2(\text{g}) \rightarrow 4 \text{NO}(\text{g}) + 6 \text{H}_2\text{O}(\text{g})$

This step typically occurs in a high-temperature reactor known as the ammonia burner.

### Nitric Oxide to Nitrogen Dioxide:

Nitric oxide (NO) is further oxidized to nitrogen dioxide (NO<sub>2</sub>) by reacting it with excess oxygen in the presence of air:  $2 \text{NO}(\text{g}) + \text{O}_2(\text{g}) \rightarrow 2 \text{NO}_2(\text{g})$

This step often occurs in a separate oxidation chamber.

### Absorption of Nitrogen Dioxide in Water:

The nitrogen dioxide (NO<sub>2</sub>) produced is then dissolved in water to form nitric acid (HNO<sub>3</sub>):  $3 \text{NO}_2(\text{g}) + \text{H}_2\text{O}(\text{l}) \rightarrow 2 \text{HNO}_3(\text{aq}) + \text{NO}(\text{g})$

The resulting nitric acid solution typically has a concentration of around 50-70%.

### Concentration and Purification:

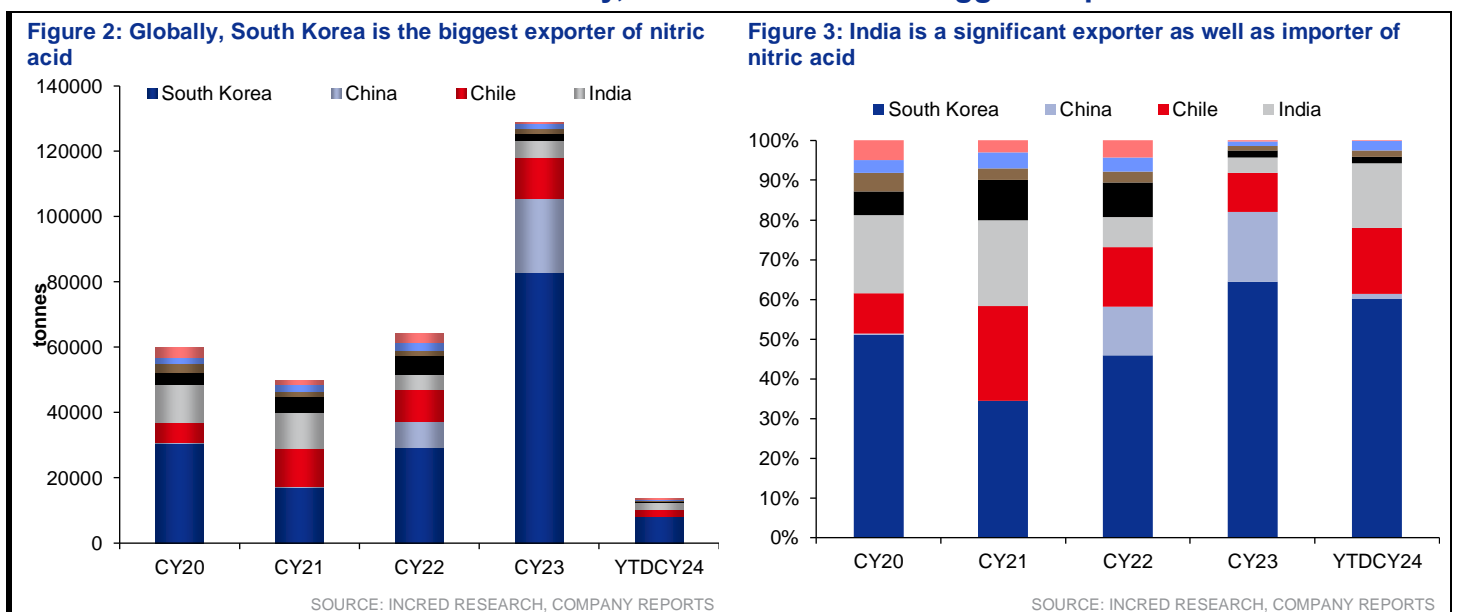
The weak nitric acid solution obtained from the absorption step is concentrated further through distillation or other concentration methods to achieve the desired concentration. This may involve multiple distillation steps.

Additional purification steps may be employed to remove impurities, depending on the intended application of the nitric acid.

## Global trade in nitric acid is limited to ~100-150kt

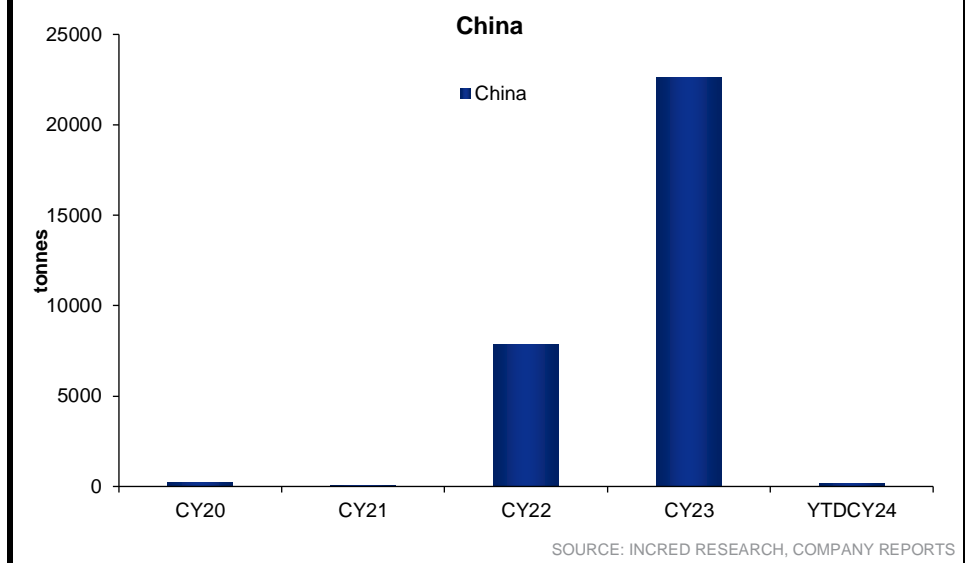
Global trade in nitric acid is limited to 100-150kt, with South Korea being the biggest exporter of the commodity. India's imports over the past few years have primarily been from South Korea and China. In the past few weeks, China has imposed a quasi-ban on nitric acid exports as its domestic prices have skyrocketed, leading to cost inflation in fertilizers. This has led to a global shortage of nitric acid and hence, their prices are rising across the countries

## Globally, South Korea is the biggest exporter of nitric acid ➤



**China’s exports increased dramatically in CY23, but collapsed equally dramatically since the beginning of CY24**

Figure 4: China’s exports have dropped dramatically so far in CY24



**China has put restrictions on the export of fertilizers**

Given the high prices of fertilizers and nitric acid, China’s government has put restrictions on the export of urea as well as nitric acid. Please note that nitric acid is used to make ammonium nitrate, which is also used as one of the major fertilizers in the country.

**India imports primarily from China and South Korea but China is absent so far in CY24 and, as a result, domestic prices are rising**

Nitric acid is imported in India primarily from South Korea and China. While the imports from South Korea are continuing in CY24, there are hardly any imports from China due to the ban. This is leading to higher import prices of nitric acid and its domestic market prices are also rising.

Figure 5: China was one of the major exporters of nitric acid to India in CY23

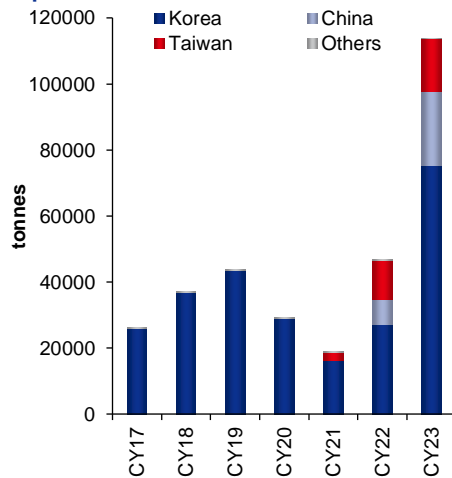


Figure 6: However, it has not exported anything so far in CY24

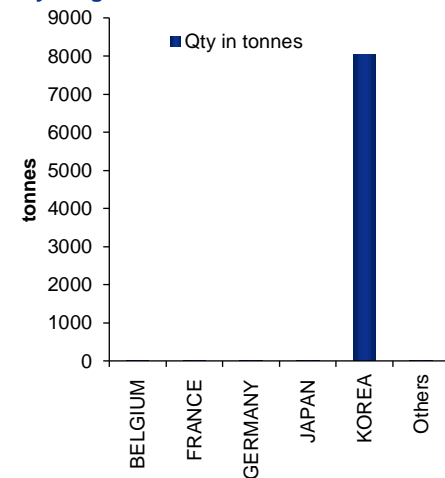
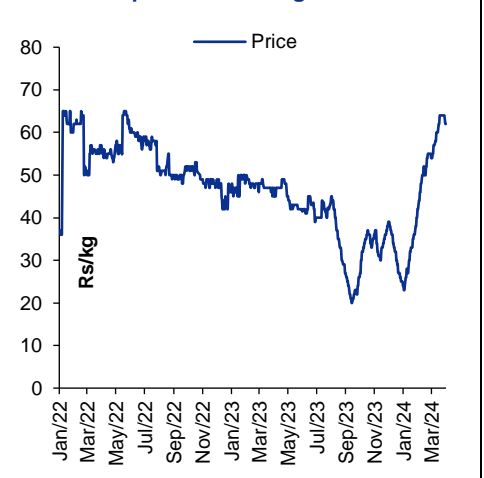


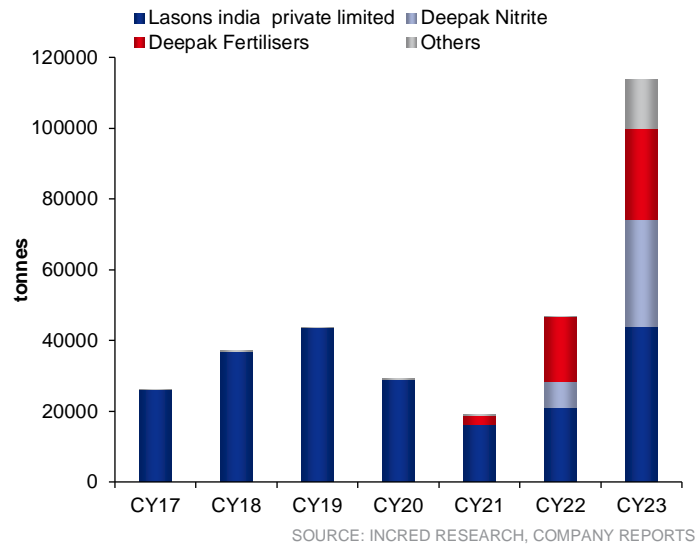
Figure 7: As a result, domestic (68-70%) nitric acid prices are rising



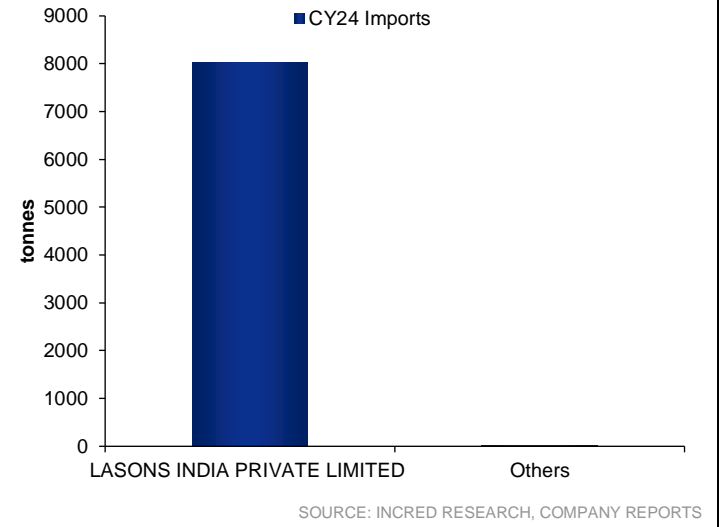
**Deepak Fertilizers and Deepak Nitrite are the two biggest importers of nitric acid**

Deepak Fertilizers and Deepak Nitrite used to be the top importers of nitric acid in India. However, since commissioning of Deepak Fertilizer’s new ammonia plant, it has ceased to be an importer of nitric acid.

**Figure 8: Lasons India, Deepak Nitrite and Deepak Fertilizers used to the biggest importers of nitric acid**



**Figure 9: However, after the commissioning of ammonia plant, Deepak Fertilizers is becoming a primary supplier for captive usage as well as Deepak Nitrite**



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