ICRA Rating Feature

Rating Methodology for Entities in the Chemical Industry

This rating methodology updates and supersedes ICRA's earlier methodology note on the sector, published in January 2015. While this revised version incorporates a few modifications, ICRA's overall approach to rating entities in the sector remains materially similar.

Overview

Chemicals can be broadly classified as organic or inorganic, each with a number of sub-segments, which in turn have their own unique characteristics and are governed by distinct sets of business fundamentals. However, in this methodology, ICRA has categorised the chemical industry into the commodity and specialty chemical businesses, each of which is characterised by different types of risk factors. Notable examples of commodity chemicals are petrochemicals such as polyvinylchloride (PVC), high-density polyethylene (HDPE), low-density polyethylene (LDPE), polypropylene (PP) and methanol, and examples of inorganic commodity chemicals such as caustic soda and soda ash. Specialty chemicals, on the other hand, include certain types of adhesives, catalysts, water treatment chemicals, leather chemicals, pigments, and surfactants. In reality, however, it is difficult to categorise chemical companies as pure specialty or commodity players, as most product offerings possess traits of both commodity and specialty chemicals.

Commodity chemicals are usually traded widely and exhibit cyclicality in demand and price, and hence companies that have a high dependence on such products are usually exposed to high levels of business risk. ICRA recognises the sensitivity of such companies to demand-supply fluctuations in individual product segments. However, the rating usually takes into consideration the entity's overall cost competitiveness and its ability to generate and sustain cash flows that are adequate in relation to its debt service obligations, particularly during prolonged periods of weak product pricing.

Specialty chemicals, on the other hand, are niche products with specific product applications. In the specialty chemicals business, factors like technology, product patents and high development costs act as entry barriers, limiting competition and allowing relatively higher levels of profitability. However, such products can lose their niche status and get exposed to the risk of product obsolescence once alternative technologies and products come up.

ICRA's rating methodology for chemical companies is based on an objective assessment of industry level risks and entails evaluating the entity's operating, marketing, and financial position, besides its ability to generate cash flows from operations and the adequacy of the same in relation to its contractual debt service obligations. ICRA also assesses the entity's management for its growth plans, risk appetite, and financial policies. The list of rating drivers covered in this methodology note is not exhaustive by itself, but provides an overall perspective on the most important rating considerations. For analytical convenience, the key factors are grouped under the following broad heads—Business Risk Assessment, Financial Risk Assessment and Management Quality.

- ***Industry Risk Assessment***
- ***Business Risk Assessment***
  - Operational Assessment
    a) Commodity Chemicals

- Feedstock Risks
- Operating Risks related to Technological, R&D and Safety Aspects
- Economies of Scale
- Level of Vertical Integration
- Location Advantage
- Environmental Risk Mitigation

b) Specialty Chemicals
- Sustainable Competitive Position Owing to Technological Strengths
- Ability to Commercialise New Value-added Products
- Concentration Risk

- ***Management Risk***

- ***Financial Risk Assessment***
  - Profitability
  - Capital Structure and Debt Coverage
  - Working Capital Intensity
  - Cash Flow Analysis and Liquidity Assessment
  - Foreign Currency Related Risks
  - Tenure Mismatches, and Risks Relating to Interest Rates and Refinancing
  - Accounting Quality
  - Contingent Liabilities/Off-balance Sheet Exposures:
  - Financial Flexibility

Business Risk Assessment

Industry Risk Assessment

Commodity Chemicals: The industry risks that impact the commodity chemicals segment pertain primarily to the increasing linkage of the domestic market for these products to the global markets and the progressive reduction in the extent of duty protection accorded to the segment. ICRA's analysis of the commodity chemicals segment involves primarily an assessment of the global demand-supply position in the individual product groups, with the aim of identifying the likely demand and price trends in the medium term. ICRA also takes a view on the extent and nature of regulatory protection available to individual product groups and the likelihood of its sustenance in the foreseeable future. However, since most commodity chemicals are priced on an import parity basis, in a scenario of depreciation of the Indian rupee against the US dollar, the domestic players get a protection that partly mitigates the impact of declining import duty protection levels. Another source of risk for commodity chemical manufacturers is the threat of large-scale imports from low-cost producers like China. The industry level analysis also factors in concerns related to a fragmented supply base, which leads to limited economies of scale, relatively high capital and interest costs, and limited availability of low-cost feedstock, factors that adversely affect the segment's cost competitiveness. ICRA's rating assessment therefore also takes into account the overall cost competitiveness of the domestic commodity chemicals segment and the consequences of large-scale imports on the structure and viability of the players concerned, especially in a scenario of declining import duty protection. For commodity chemicals, since the prices of both the finished products and the feedstock tend to be volatile, it is critical to look at the trends in tolling margin to understand the impact of such volatility on the profitability of a chemical entity. A sharp fall in prices of finished goods and/or raw materials could lead to material inventory loss for an entity, especially with higher inventory levels.

Specialty Chemicals: The specialty chemicals industry, on the other hand, is exposed to a different set of industry risks, which emanate from the likely development of alternative technologies and applications and the resulting product obsolescence. In this case, the industry risks are, therefore, closely associated with the dynamics of the end-user industries. A case in point would be the demand for certain oilfield chemicals that are used for oil exploration activity: a sudden reduction in exploratory activity because of low oil prices could severely affect demand. ICRA's assessment of industry risks involves an understanding of global

trends in the use of such chemicals, and the stability of the technology and product application that drives their demand.

Operational Assessment

Commodity and specialty chemicals being associated with different risk profiles, ICRA evaluates the product mix of chemical companies for their ability to achieve diversification in revenues and profits. The ability to offer a broader array of products and services across market segments constitutes a competitive advantage. A portfolio of diverse products lowers business risks and the risk of product obsolescence or commoditisation in any specific product line. An entity offering a wider range of products, addressing different buyer requirements, is likely to have a more sustainable market position than a single-product entity. ICRA believes that a higher proportion of specialty chemicals in the product mix can fetch better margins in the long term, given the relatively greater price stability in these products; it would, however, need to be accompanied by sustained investments in research and client servicing.

(a) Commodity Chemicals

Considering the high vulnerability of the commodity chemicals business to price volatility in the international markets and the declining trends in duty protection levels, the operating profitability of this business hinges on its ability to sustain a competitive cost structure. The cost structure of a commodity chemicals entity is a function of a number of factors, including feedstock cost, technology, economies of scale, and level of vertical integration. ICRA analyses each of these factors to determine the cost-competitiveness of the entity concerned.

Feedstock Risks

Given that raw material cost is the single largest component of the cost structure of a chemical entity, issues related to the availability and pricing of raw materials have a critical bearing on its operating performance. Availability is particularly important, considering that most chemical companies operate continuous process plants and an unplanned shutdown can have severe cost implications. In this context, ICRA evaluates the entity's sources of raw material supply, supplier concentration risk, its bargaining power relative to the feedstock supplier, and the pricing structure. ICRA also assesses the regulatory risks associated with the pricing of certain key raw materials, such as natural gas, the increase in price of which can have a significant impact on the cost structures of companies using it as a primary feedstock. The cascading effect of the central and sales taxes, and transportation costs, also are likely to have an impact on the delivered cost of the feedstock and could have a material impact on the cost competitiveness of a chemical entity.

Operating Risks Related to Technological, R&D and Safety Aspects

While rating a chemical entity, ICRA also assesses the technology adopted by the entity, its process efficiencies, product yields, and history of planned and unplanned shutdowns. Usually, access to process technology has not been a major issue for chemical companies as the technology has achieved a certain degree of maturity. ICRA, however, evaluates the candidate entity’s ability to absorb the technology adopted and stabilise the operating parameters within the design norms. ICRA also assesses the entity’s technical ability through in-house research & development efforts in order to improve the process efficiency in existing operations as well as to develop new products so as to diversify the presence and sustain growth. ICRA also assesses the yield levels relative to other players operating in similar product segments; however, such evaluation may at times be constrained by the lack of availability of comparative data. Chemical process plants are also prone to accidents, and the rating process involves understanding the safety and risk management practices of the entity, its track record in safety, and the adequacy of insurance covers.

Economies of Scale

The chemical industry being capital intensive, achieving economies of scale and having a competitive cost structure are of considerable importance. Some Indian players who have built up relatively large capacities benefit from the resulting competitive advantages. The ability to maintain high capacity utilisation levels is influenced by factors such as favourable demand levels, extent of cost competitiveness and availability of

feedstock. For some products, in case there is overcapacity in the domestic industry, exports could help in maintaining high capacity utilisation. However, exports may also fetch lower margins in the absence of duty protection. An efficient producer can address this risk by recovering all fixed costs through domestic sales and operate on a marginal costing basis for exports.

Level of Vertical Integration

A high level of vertical integration lowers earnings volatility and protects against raw material unavailability risks and volatility in prices. Globally, there is relatively lower merchant trade in some petrochemical building blocks such as ethylene and propylene. Thus, plants dependent on external supplies of these chemicals are exposed to relatively high business risks in the form of price volatility.

Locational Factors

For low-value chemical commodities such as chlor alkali products (caustic soda, chlorine, soda ash) the locational factor, among others, could play a significant role in determining the competitive advantage of a chemical entity. As the freight cost as a percentage of the landed cost to the final consumer can be high, if the product is transported from a longer distance, proximity to major end-users could impart strength to the manufacturer. For units producing high-value commodities, proximity to raw material sources (examples: petrochemical units located near a refinery; alcohol-based chemical units located in a sugar belt; and units dependent on imported raw materials located near a port) could impart competitive advantage via competitive feedstock costs.

Environmental Risk Mitigation

ICRA accords high importance to the pollution control systems employed by a chemical entity. In the past, several chemical plants have been shut down internationally or have had to pay high penalty, having failed to comply with the relevant pollution control norms. The trend in complying with the norms of the local pollution control board can give insights into the environmental pollution abatement systems implemented by a chemical entity. Given that environmental regulations are becoming stricter in India with rising concerns on pollution, they are likely to have an impact on the kind of investments a chemical entity would need to make to ensure compliance with environmental standards. In this context, ICRA assesses companies' compliance with environmental norms (which could be by way of either zero discharge or effluent discharge in line with the stipulated parameters) and their ability to sustain the same, given that any deviation in compliance could lead to disruption in their operations until they are remedied.

(b) Specialty Chemicals

In the specialty chemicals business, the operating position of an entity is driven by its ability to consistently deliver value-added products to the market. Although sensitivity to prices is lower in this segment as compared to that in commodity chemicals, cost economics cannot be altogether ignored in this case as specialty chemicals also get commoditised within a few years post-launch because of duplication by others. The following issues are, therefore, of primary importance when assessing the long-term fundamentals of a specialty chemical business.

Sustainable Competitive Position Owing to Technological Strengths

ICRA focuses on the complexity of the technology used by the entity to assess the extent of entry barriers present in the segment. The more complex the technology, lesser the possibility of re-engineering, and, therefore, lower the probability of the product becoming a commodity within a short span of time. In this context, ICRA also analyses the technological capabilities of the entity concerned, evaluating the quality of manpower in its R&D department, its track record in filing patents, and the support it gets from its technologically advanced parent, if any. ICRA also analyses the entity's track record in introducing new products and sustaining volumes and margins.

Ability to Commercialise New Value-added Products

A specialty chemicals entity may have a large number of products in the pilot plant stage. In that case, ICRA analyses the entity's ability to successfully launch these products and secure market acceptance for the same, which reflects management / technical bandwidth of the entity. The trends in the share of the new products to the overall sales are also important to understand the track record of new product introduction.

Concentration Risk

Specialty chemicals being niche products are developed for a few customers, which exposes the chemical entity concerned to customer concentration risk. This risk assumes critical importance when the customer either goes through a business downturn or phases out production of a product line that requires use of specialty chemicals.

Management Quality

All debt ratings necessarily incorporate an assessment of the quality of the entity's management, as well as the strengths/weaknesses arising from the entity's being a part of a "group". Also of importance are the issuer's likely cash outflows arising from the possible need to support other group entities, in case the entity is among the stronger entities within the group. Usually, a detailed discussion is held with the management of the entity to understand its business objectives, plans and strategies, and views on past performance, besides the outlook on the (entity's) industry. Some of the other points assessed are:

- Experience of the promoter/management in the line of business concerned
- Commitment of the promoter/management to the line of business concerned
- Attitude of the promoter/management to risk taking and containment
- The entity's policies on leveraging, interest risks and currency risks
- The entity's plans on new projects, acquisitions, expansion, etc.
- Strength of the other companies belonging to the same group as the entity
- The ability and willingness of the group to support the entity through measures such as capital infusion, if required

Financial Risk Assessment

The various financial metrics assessed by ICRA could be divided into four categories viz., Profitability, Leverage, Coverage and Liquidity. This document provides a brief summary of why ICRA considers these ratios to be important. For a more detailed description, readers may refer to the note titled, "Approach for Financial Ratio Analysis" published on ICRA's website.

The financial evaluation of a chemical entity involves assessment of its cost structure relative to that of its competitors and also the sensitivity of its cash flows or debt-servicing ability to weak product pricing, trend in input costs, and levels of duty protection. For specialty chemical companies, ICRA would evaluate the stability of their operating margins over a period of time to ascertain the extent to which their pricing power has remained intact. For commodity chemicals, in general, an entity with superior economies of scale and efficient utilisation of by-products would have a lower cost of production than a smaller entity. As ICRA attempts to rate commodity chemical companies through the cycles, the average tolling margin for the past two to three cycles is also analysed, besides trends in the long-term average of other credit metrics such as Operating Profit Before Depreciation Interest Tax Amortisation (OPBDITA) and Return on Capital Employed (RoCE) margins and debt coverage. Further, ICRA evaluates the asset turnover ratios for such companies to assess their utilisation of capacity.

For a multi-product entity, ICRA evaluates the trends in product-wise/segment-wise profitability to determine the adequacy and sustainability of cash flow generation, given the debt-service obligations. ICRA also measures the projected profitability of the entity by the returns on capital employed [Profit before Interest and Tax/(Total Debt + Tangible Net Worth + Deferred Tax Liability)] relative to the cost of capital, which would be a good indicator of its long-term sustenance. The commodity chemical business is capital intensive, which underscores the importance of the capital structure in determining the credit risk profile of the participant in this business. The ability of an entity to maintain conservative gearing levels would serve to counter the high business risks associated with commodity chemicals. However, a multi-product entity is also expected to continually upgrade/add new capacities (for commodity chemicals) to keep cost structure competitive and meet stricter environmental norms along with maintaining market specifications of the newer products. The entity in specialty chemicals could also invest substantially in R&D and product development so as to be able to meet its growth aspirations. ICRA assesses the sufficiency of internal generation vis-à-vis the funding requirement for such capital and product development expenditure, the

need for the entity to raise capital from the market, and the implications of the same on its future capital structure.

Some of the other aspects that are also analysed for both commodity and specialty chemical companies include the following:

- **Foreign currency-related risks*:*** Such risks arise if an entity's major costs and revenues are denominated in different currencies. Examples in this regard would include companies selling in the domestic market but making large imports, and export-oriented units operating largely on the domestic cost structure. The foreign currency risk can also arise from unhedged liabilities, especially for companies earning most of their revenues in local currency. Forex risk also arises for companies with exposure to foreign currency borrowings which could pertain to part-funding of capital expenditure and/or working capital requirements. The focus here is on assessing the natural hedge available as well as hedging policy of the entity concerned in the context of the tenure and nature of its contracts with clients (short term/long term, fixed price/variable price) to mitigate such risk for the net exposure.

- **Tenure mismatches, and risks relating to interest rates and refinancing*:*** Large dependence on short-term borrowings to fund-long term investments can expose an entity to significant re-financing risks, especially during periods of tight liquidity. The existence of adequate buffers of liquid assets/bank lines to meet short-term obligations is viewed positively. Similarly, the extent to which an entity would be impacted by movements in interest rates is also evaluated.

- **Accounting quality**: Here, the accounting policies, Notes to Accounts, and Auditor's Comments are reviewed. Any deviation from the Generally Accepted Accounting Practices is noted and the financial statements of the entity adjusted to reflect the impact of such deviations.

- **Contingent liabilities/Off-balance sheet exposures**: In this case, the likelihood of devolvement of contingent liabilities/off-balance sheet exposures and the financial implications of the same are evaluated.

- **Financial flexibility**: The entity's financial flexibility—as reflected by it unutilised bank/credit limits, liquid investments, and the nature of its relationship with banks, financial institutions and other intermediaries—is assessed. The comfort derived from a strong parentage also helps in improving its financial flexibility.

Summing up

ICRA takes a case-by-case approach to evaluating the credit risk profile of chemical companies, considering the diversity in their product lines and market dynamics. While the cost structure, level of vertical integration, and diversity of product mix would ultimately determine the business risk profile of a commodity chemical entity, use of sustainable technology and ability to introduce new products consistently would have the maximum bearing on the business risk profile of a specialty chemical entity. ICRA's financial risk analysis for commodity chemical companies focuses on profitability through cycles, the extent of leverage, ability to service the debt during a downcycle, and financial flexibility. With regard to specialty chemical companies, stability in profitability is analysed to understand the pricing power, apart from other factors.

ICRA Limited

CORPORATE OFFICE
Building No. 8, 2nd Floor, Tower A; DLF Cyber City, Phase II; Gurgaon 122 002
Tel: +91 124 4545300; Fax: +91 124 4050424
Email: info@icraindia.com, Website: www.icra.in

REGISTERED OFFICE
1105, Kailash Building, 11th Floor; 26 Kasturba Gandhi Marg; New Delhi 110001
Tel: +91 11 23357940-50; Fax: +91 11 23357014

Branches: **Mumbai**: Tel.: + (91 22) 24331046/53/62/74/86/87, Fax: + (91 22) 2433 1390 **Chennai**: Tel + (91 44) 2434 0043/9659/8080, 2433 0724/ 3293/3294, Fax + (91 44) 2434 3663 **Kolkata**: Tel + (91 33) 2287 8839 /2287 6617/ 2283 1411/ 2280 0008, Fax + (91 33) 2287 0728 **Bangalore**: Tel + (91 80) 2559 7401/4049 Fax + (91 80) 559 4065 **Ahmedabad**: Tel + (91 79) 2658 4924/5049/2008, Fax + (91 79) 2658 4924 **Hyderabad**: Tel +(91 40) 2373 5061/7251, Fax + (91 40) 2373 5152 **Pune**: Tel + (91 20) 2556 1194/0195/0196, Fax + (91 20) 2556 1231