



Chemicals Rating Methodology

Corporates

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Contacts

Sebastian Zank, CFA
Managing Director
+49 30 27891-225
s.zank@scoperatings.com

Ivan Castro Campos
Director
+49 69 66 77 389 09
i.castro@scoperatings.com

Nidhi Marwaha
Associate Director
+49 69 66 77 389 53
n.marwaha@scoperatings.com

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1. Introduction

This methodology is an update of the 'Chemicals Rating Methodology', and complements the General Corporate Rating Methodology, superseding it in event of conflict, inconsistency or ambiguity. The different issuer-specific and rating-relevant characteristics laid out in this methodology must not be seen as a predetermined ranking or scorecard. We apply the underlying criteria in an opinion-driven way at the issuer level

The updated methodology does not add new rating drivers to the existing methodology and does not lead to any change to existing ratings.

We define chemical corporates as corporates which generate most of their revenue and operating profit (EBITDA) from the manufacturing of chemicals or products which have similar characteristics and are used in various industries. Corporates acting in the refining business are not covered by this methodology, as these corporates are subject to global energy market drivers, especially oil and gas. The rating methodology can be applied to chemical corporates operating globally.

This updated version introduces the following changes:

- Alignment of general elaborations to Scope's General Corporate Rating Methodology, particularly on the industry risk matrix, the assessment of key credit metrics and the deduction of an issuer rating based on assessments of business risk, financial risks and supplementary rating drivers;
- Aligning definitions for the Issuer rating assessment, Environmental, Social and Governance (ESG) assessment with General Corporate Methodology
- Clarifications for the Market Share assessment (Section 3.1.2)
- Minor editorial changes

2. The chemical industry

The chemical industry is a broad sector which consists of various subsectors. These subsectors have different drivers and can develop differently to the general chemical market. We reflect these different dynamics in our rating assessments by splitting the chemical industry into commodity-focused chemical corporates and specialty chemical corporates. In this regard, we differentiate between base/commodity products (typically upstream products) and specialty products (typically downstream products) by looking at factors including operating profitability and its volatility, the transparency of product markets and their prices, as well as R&D intensity. Typically, upstream products are categorised as commodities due to their lower added value, while downstream products are considered specialty items owing to higher production costs. However, in some cases, this alignment does not hold, as downstream products initially deemed specialty may become commoditized as the market begins to replicate them.

Figure 1: Selected chemical products: Upstream vs. downstream

Upstream products	Downstream products
Petrochemicals: including ethylene, propylene, butadiene, benzene	Sealants, adhesives, derivatives
Base products: including polyolefins, monomers, solvents	High performance plastics and technical polymers
Titanium dioxide and other metal oxides	Coatings and decorative paints
Carbon fibres	Industrial gases
Resins and inorganic materials	Agrochemicals and seeds
Precious and nonprecious metals	Food and feed ingredients
Elastomers	Flavours and fragrances
Potash, fertilisers	Battery materials
Pigments	Composite materials

Source: Scope

Commodity-focused chemical corporates

Commodity-focused chemical corporates typically generate most of their revenue and earnings from the manufacturing of base chemicals and basic materials. Under the term basic materials, we group firms that generate most of their revenues through the extraction of materials which are used in high quantities in the chemical industry with limited to no pricing power. The product pricing process is transparent with a well-functioning market, resulting in producers being price takers. Therefore, the respective cost structure is a critical success factor. Economies of scale are achieved through high levels of capacity utilisation, often in conjunction with backward-integration, supporting a favourable cost position. Product innovation and R&D (research and development) intensity are of lower Importance given the commoditised nature of products, with a vast majority being in later stages of their life cycle. Consequently, the commodity-focused chemical industry is dominated by large-sized corporates. The portfolios of these large-sized corporates often include a substantial proportion of specialty chemicals operations, improving diversification and mitigating cyclicity of earnings.

With regard to industry-specific factors, we believe that producers face high revenue and earnings cyclicity because chemicals products are used as raw materials in many different industries. As economic scenarios change, demand for base chemicals tends to react promptly. There are also considerable entry barriers. Beyond the large capital expenditures typically required to build large-scale production facilities, further capital expenditures result from working capital and the obligations to meet safety and environmental protection requirements. Lengthy building permit approval times for new production facilities can also represent a substantial entry barrier.

Over the last decade, the manufacturing of upstream products has become more competitive, mainly driven by commodity-focused oil and gas corporates expanding their base chemical businesses. Consequently, few commodity-focused chemical corporates are purely focused on the production of commodity products. Commodity-focused corporates tend to have substantial downstream operations, hedging their earnings cyclicity and increasing the number of higher yielding products in their product portfolio. Additionally, due to the market entrance of new producers and expanded production, several products previously classified as specialty chemicals have increasingly become commoditised over the past few years or are likely to become a commodity product, e.g. pigments and several types of additives. Producers located in the Middle East and emerging countries entering markets for downstream products have also contributed to this development. Lastly, corporates from the Western hemisphere have been increasing their production capacities in Asia and emerging markets in order to promptly service fast growing local demand for chemical products.

Specialty chemical corporates

Going down the chemical value chain, specialty chemicals are typically produced in smaller quantities. Markets are medium-size and are often relatively concentrated. Product innovation and the amount of intellectual property owned allow for a favourable pricing position. Here, the number of new product launches is key. For instance, various corporates pursue a 'spill-over strategy' introducing existing products to new applications and end-markets. The production of specialty chemicals typically requires limited quantities of raw materials which results in lower sensitivity to input price changes. In addition, higher feedstock prices (input prices) for several specialty chemicals are commonly automatically passed on to customers. Compared with commodity-focused chemicals corporates, economies of scale are less important for specialty chemicals corporates, given their greater pricing power (they are not 'price takers'). However, as product prices usually decline when economic growth stalls, a specialty chemical corporate's cost position is also of considerable importance in the event of an economic downturn.

In our view, specialty chemicals corporates face medium cyclicity. Specialty materials often account for a small share of production costs, where those specialty chemicals are used (such as in automotive coatings). The production of these end-products typically continues at lower volumes even in periods of weaker economic demand. We see high barriers to entry for the specialty chemicals sector owing to the high investment in R&D, special knowledge and long-standing customer relationships of existing players in the industry. Substitution risks for the specialty chemicals industry are low. Specialty chemicals are used in a myriad of different products with specific technical requirements that are barely met by other technological solutions.

As shown in Figure 1, specialty chemical corporates can be grouped into various product types. Due to the wide range of products and higher levels of intellectual property involved, the specialty chemical industry is less transparent than the commodity chemicals industry. Specialty chemicals are used in a broad range of end-markets, including automotive, construction, and consumer products. Smaller-sized corporates often operate successfully in the specialty chemicals industry. Segments such as industrial gases or agrochemicals, after years of strong M&A activity, have become significantly concentrated. Beyond expanding market shares, M&A has been driven by the aim of improving end-market diversification and offsetting the decline in earnings caused by the

commoditisation of former specialty materials products. Lastly, commodity-focused players have strengthened their product offering through the acquisition of downstream assets.

Investment grade rated chemical corporates typically have large scale with strong market share and pricing power. This often goes hand in hand with a strong cost position, indicated by high utilisation rates and/or gross margin. Furthermore, investment-grade rated chemicals corporates usually display a diversified portfolio with no major concentration on certain industries, products or geographies. Ample and robust free operating cash flow generation is coupled with solid credit metrics and a solid ability for deleveraging.

The credit quality of chemical corporates having a non-investment grade rating is often characterised by a moderate or weak market position in rather fragmented markets. This is typically associated with limited ability to exert pricing power and weak and volatile EBITDA margin as well as a relatively concentrated portfolio in terms of industries where corporate's products are applied. Such comparatively high business risks are often coupled with weaker cash flow generation which translates into moderate free operating cash flow and weaker credit metrics.

3. Rating drivers

We apply our rating methodology as outlined in Figure 2 and 3. The rating analysis takes into account credit risk factors specific to Chemical Corporates as specified in this sector methodology as well as factors common to all industries such as management, liquidity, legal structure, governance and country risks which are explained in more detail in the General Corporate Rating Methodology.

The following business risk and financial risk indicators are non-exhaustive and may overlap; some may not apply to certain corporates. We may add issuer-specific rating factors, and a company's business model is decisive for the applicable indicators. No rating driver has a fixed weight in the assessment. Please refer to the General Corporate Rating Methodology for more detail.

Figure 2: Scope's rating approach for commodity-focused chemical corporates

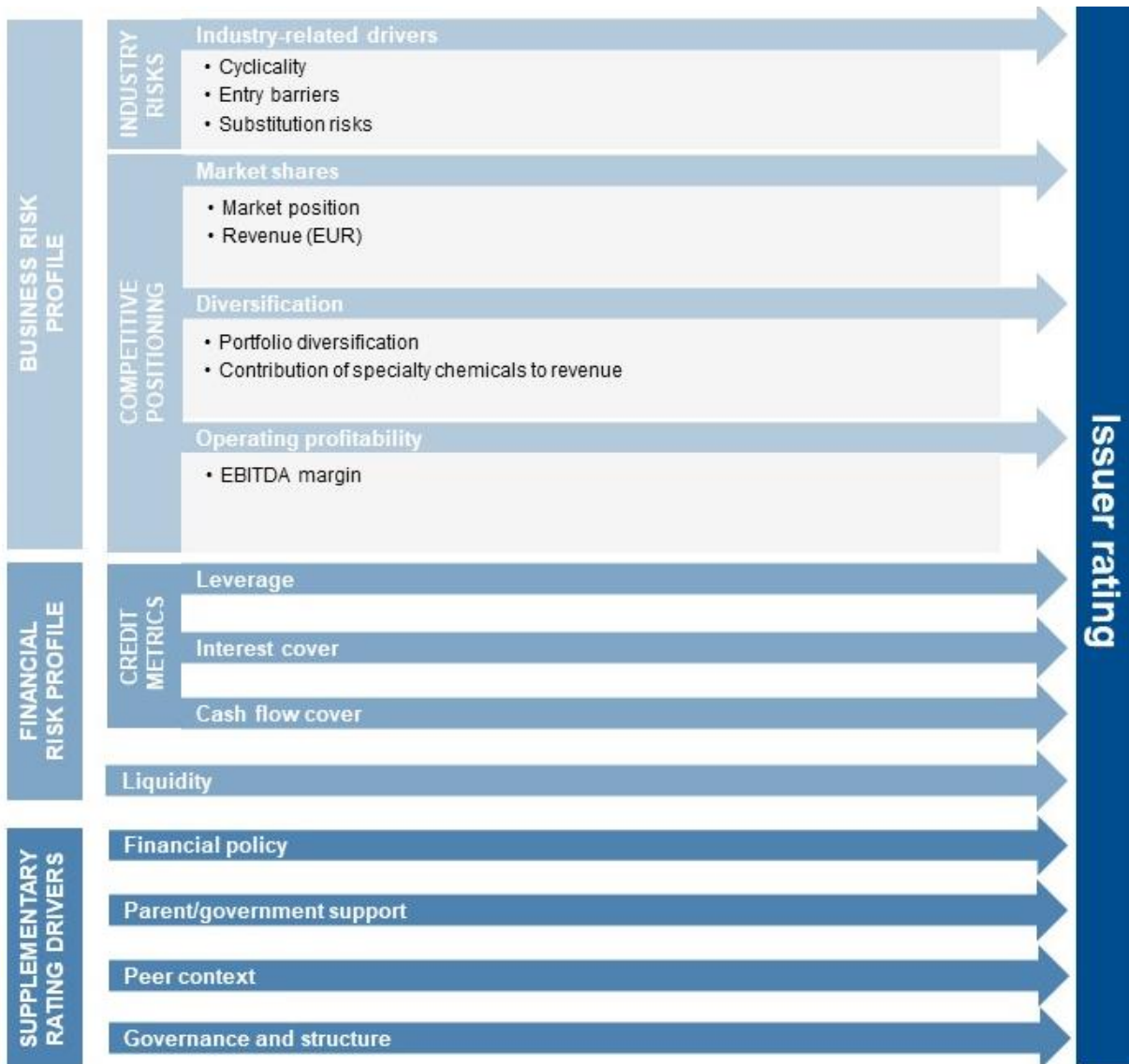
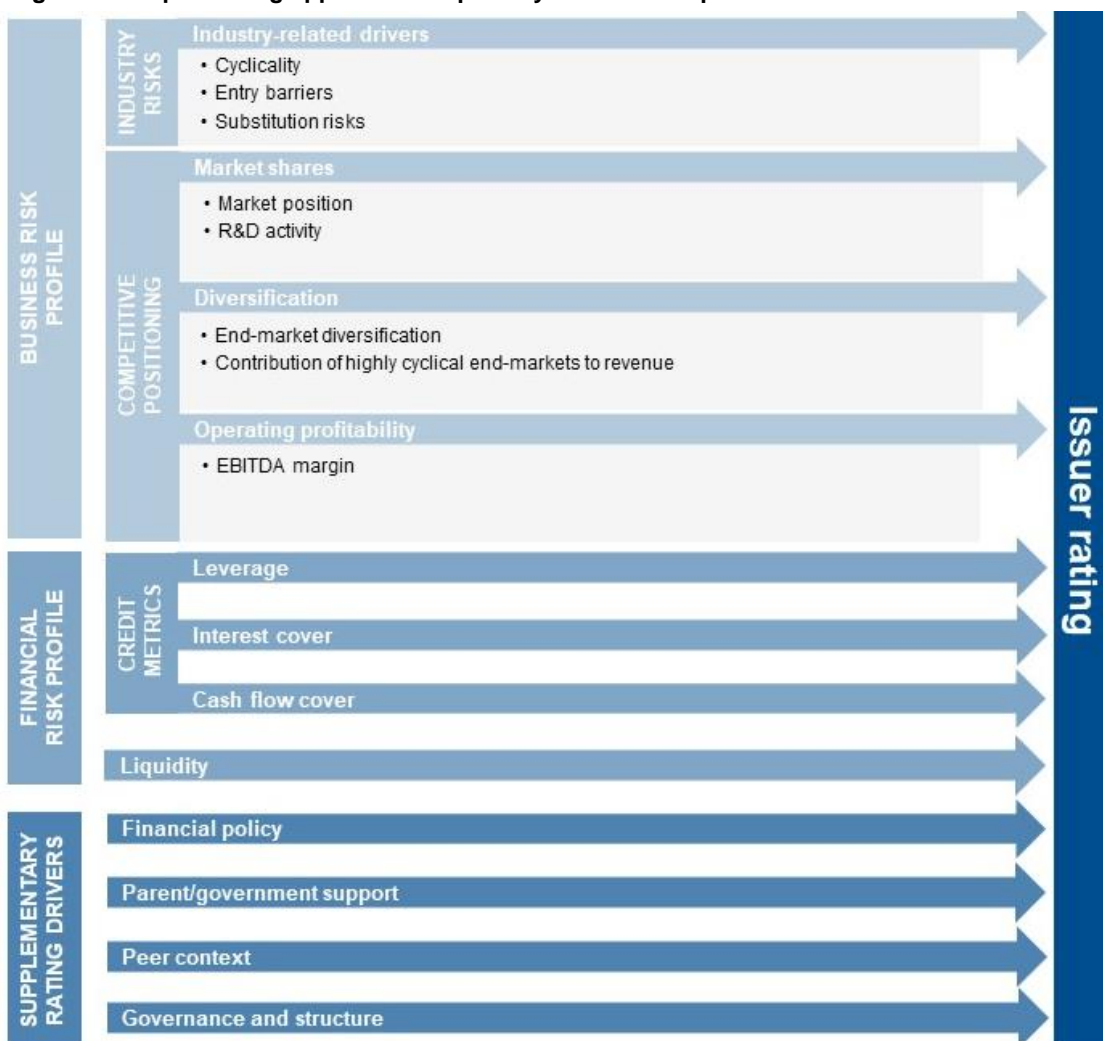


Figure 3: Scope’s rating approach for specialty chemical corporates



We note that rating drivers are not mutually exclusive or collectively exhaustive and may overlap. Issuer-specific rating factors may be added to our rating approach.

3.1 Business risk profile

We adopt a forward-looking approach when analysing an issuer’s business risk profile, taking into account the issuer’s market and sector dynamics, as well as business drivers. The business risk profile is divided into an analysis of the industry and of the company’s competitive positioning.

3.1.1 Industry-related drivers

Industry-related drivers aim to capture the general drivers for the underlying industry and consist of three sub-categories:

- Cyclicalities: risk of volatility in revenue and operating profits for the foreseeable future compared with past industry performance
- Entry barriers: level of protection for a company operating in an industry. These comprise high capital requirements, regulation, technological requirements, customer relationships, R&D requirements or distribution channels.
- Substitution risks: the risk and vulnerability of an industry to technological obsolescence/maturity. Here, we consider megatrends or transition risks (i.e. technological, ecological, or demographic) as well as structural shifts that can influence the industry’s trajectory and increase risk and vulnerability.

We assess the industry fundamentals of chemical corporates as follows.

Cyclicality

Commodity-focused chemicals corporates face high cyclicality because of their heightened sensitivity to fluctuations in raw material prices. The transparent price setting in these markets leads to reduced prices in an economic downturn scenario. Base chemicals are a key leading indicator for potential slowdowns in economic activity, as they are used in virtually all end-markets and base chemical product sales volumes are highly sensitive to demand changes.

In contrast, we believe that the specialty chemical sector has medium cyclicality. This is because aftermarket requires lower quantities of specialty chemicals in their product processes and prices tend to be negotiated individually.

Entry barriers

We consider entry barriers to be high for both the commodity-focused and the specialty chemical industry. Corporates wishing to enter the base chemical segments have to execute substantial capital investments, including investments in production facilities and working capital, as well as safety and environmental protection requirements. Manufacturers of specialty chemicals are also well protected from potential competitors. Key entry barriers are the need for large investments in R&D to acquire intellectual property for customised specialty chemicals and, to a lesser extent, capital investments.

In addition to investments in R&D, further barriers to entry for the specialty chemical sector come in the form of bespoke solutions and applications with long-term customer relationships which new entrants find difficult to destabilise. Specialty chemicals account for only a small proportion of the final product costs. Therefore, switching costs for customers in the specialty chemicals industry are high, resulting in reluctance to switch to realise only slight gains (customer 'stickiness'). In addition to commercial entry barriers, the industry is also tightly regulated on matters such as environmental protection, safety, and health. In general, specialty chemical markets are characterised by medium market sizes, high concentration and corporates offering niche products. Thus, the specialty chemical industry is more fragmented than the purely commodity-focused chemical industry.

Substitution risks

Chemical products play an important role in various products in different end-markets and have few alternative materials or products. We therefore believe that the risk of substitution is limited. However, different factors drive substitution risk for commodity-focused and specialty chemicals producers.

Risk of substitution is primarily caused by the broad application of innovative manufacturing processes in end-markets, lowering the overall demand for commoditised chemical products.

For specialty chemicals, we believe that for most no substitute products are generally available, or that the number of substitute products is very low. High technical production requirements and a lack of alternative production methods also lower substitution risk. Market sizes for specialty chemicals are often small to medium. We consider the absolute size of many specialty materials markets to make the large investments required to develop new products less attractive for bigger chemical players.

The industry matrix (Figure 4) shows how we derive the industry risk rating from our combined assessment of cyclicality, entry barriers and substitution risk for the chemicals sector. High entry barriers, high cyclicality and medium substitution yield an industry risk rating of 'BBB' for commodity-focused chemical corporates. Similarly, high entry barriers, medium cyclicality and low substitution risk translate into an industry risk assessment of 'A' for specialty chemical corporates.

Figure 4: Scope's industry risk matrix for commodity-focused and specialty chemical corporates

Cyclicality \ Entry barriers	Entry barriers		
	Low	Medium	High
High	CCC/B	B/BB	BB/BBB
Medium	B/BB	BB/BBB	BBB/A
Low	BB/BBB	BBB/A	A/AA

Commodity-focused chemical corporates

Specialty chemical corporates

3.1.2 Competitive positioning

The analysis of competitive positioning aims to capture the individual drivers for the rated company. These are discussed below for the chemical corporates.

Market shares

Commodity-focused chemical corporates

The market share of commodity-focused chemical corporates is influenced by a number of interrelated factors, whereby we primarily look at market position and revenue.

- (i) Market position. We assess various factors that influence an issuer's market positioning, ideally relying on transparent and current information. However, when such data are not fully accessible, often due to smaller companies not publicly disclosing these metrics, we utilise the available information to form an approximate understanding of the market positioning.
 - a. Issuer's share in global/ target production capacities, over all upstream and downstream activities
 - b. Cost position, measured by:
 - i. Capacity utilisation rates
 - ii. Gross margin
 - iii. Reported margins for specific products (e.g. ethylene/ propylene margin) and product groups
 - c. Efficiency of production facilities (e.g. age, maintenance backlog, location)
 - d. Stage of product commoditisation
 - e. Capex spending¹
- (ii) Revenue (EUR), as an indication of the corporate's competitive advantage, ability to generate significant economies of scale and relevance in the market

We believe that a commodity-focused chemical corporate has to have a minimum critical size in order to be market-relevant. This factor often goes hand in hand with the corporate's share in global production capacities. We therefore consider smaller producers to generally be in a weaker position than their larger competitors. Larger corporates are better able to establish a favourable cost position and to benefit from economies of scale. This is an important factor given that commodity-like products have transparent (world market) prices and that chemicals corporates' ability to pass on higher raw material costs (input costs) is limited.

Our assessment of market positioning also includes more granular factors. These include the location of production facilities with connections to pipeline networks, operational diversification, and backward integration for feedstock supplies. With regard to maintaining or improving market position, we also form an opinion about a corporate's capacity expansion plans and spending on maintenance capex. The corporate's track record, timing and strategy for expanding its production capacity are of particular interest.

We use the market positioning criteria defined for specialty chemical corporates when assessing the market positioning of downstream division(s). We look at the respective division size, compared to the size of the corporate and in isolation. This helps us to establish whether the division(s) lacks competitiveness because it has not attained the critical size necessary to be relevant in the market.

Figure 5: Commodity-focused chemical corporates: market positioning by rating category

	AA and above	A	BBB	BB	B	CCC and below
Market position*	Very strong market position and/or market share over all upstream and downstream activities	Strong market position and/or market share over all upstream and downstream activities	Good market position and/or market share over all upstream and downstream activities	Moderate market position and/or market share over all upstream and downstream activities	Modest market position and/or market share over all upstream and downstream activities	Very modest market position and/or market share over all upstream and downstream activities
Revenue (EUR)	>30bn		30bn to 15bn	15bn to 5bn	<5bn	

* Strength of the issuers market position is driven by the above stated factors, depending on the scope of business and relevance of information, among others. For example, strong market position is indicated by a substantial share in global production capacities, together with a favorable cost position and continuously high capacity-utilisation rates.

¹ Over the last decade, capital expenditures as a percentage of sales (capital expenditures/sales) in the chemical industry averaged about 6.5% per year. This amount varies between the respective sub-sectors.

Specialty chemical corporates

When assessing market position for specialty chemical corporates, we consider the corporate's market share and/or position across the whole product portfolio, R&D activity and capex spending. In general, a high market share or being among the leading players in a large market (such as consumer chemicals or engineering plastics) results in a better assessment of the corporate's market position and vice versa. In our assessment of market share, we look at the following factors:

- (i) Market position
- (ii) R&D activity, including:
 - a. Intellectual property portfolio
 - b. R&D ratio as an indicator for spending on R&D and patent applications
- (iii) Capex spending²

Our analytical approach also includes an evaluation of the degree of market concentration paired with intensity of competition. Many markets such as those for adhesives or surfactants are fragmented. We consider consolidated markets to be more advantageous: corporates operating in them tend to have much greater pricing power and the risks of a changing competitive landscape are limited. We have a negative view of markets characterised by limited consolidation and negative growth projections.

We believe product innovation is important to maintaining market position, with key factors including continuous investment in R&D and stable intellectual property portfolios. In addition, a corporate with meaningful revenue growth stemming from new products is credit-positive.

Expiring trademarks and patents should be replaced with new trademarks and patents for a corporate to maintain its competitive position. In line with the assessment of operational factors for commodity-focused chemical corporates, we look at factors such as a corporate's production facilities, their location, diversification, backward integration regarding feedstock supply, track record and strategy for expanding production capacity. For sub-segments directly catering to consumers such as decorative paints, construction chemicals or adhesives, a corporate's market positioning is strongly influenced by the strength of its corporate brand portfolio. As these subsectors tend to generate a considerable share of their revenue in the consumer sector, the scope and value of a corporate's brand portfolio is also determined by its market position.

Figure 6: Specialty chemical corporates: market positioning by rating category

	AA and above	A	BBB	BB	B	CCC and below
Market position**	Very strong market position and/or market share	Strong market position and/or market share	Good market position and/or market share	Moderate market position and/or market share	Modest market position and/or market share	Very modest market position and/or market share
R&D activity	Very strong R&D ratio and intellectual property portfolio	Strong R&D ratio and intellectual property portfolio	Good R&D ratio and intellectual property portfolio	Moderate R&D ratio and intellectual property portfolio	Modest R&D ratio and intellectual property portfolio	Very modest R&D ratio and intellectual property portfolio

** Strength of the issuer's market position is driven by the above stated factors listed under specialty chemical corporates, depending on scope of business and relevance of information, among others.

Diversification

Commodity-focused chemical corporates

Commodity-focused chemical corporates' degree of diversification is driven by portfolio and geographical diversification, and its global outreach and the proportion of downstream operations in the overall corporate portfolio.

² Over the last decade, capital expenditures as a percentage of sales (capital expenditures/sales) in the chemicals industry averaged about 6.5% per year. That said, this amount varies between the respective sub-sectors.

In order to analyse a corporate's portfolio diversification, we look at the following factors:

- (i) Portfolio diversification. We assess various factors that influence an issuer's portfolio diversification, ideally relying on transparent and current information. However, when such data are not fully accessible, often due to smaller companies no publicly disclosing these metrics, we utilise the available information to form an approximate understanding of the market positioning.
 - a. Geographical diversification
 - b. Diversification of raw material mix
 - c. Operational diversification, in terms of product portfolio, segmental diversification, customer base etc
- (ii) Contribution of specialty chemicals to revenue
- (iii) Mix of revenue and EBITDA through the economic cycle

In addition to these factors, we form an opinion about a corporate's diversification by analysing its specialty chemicals operations using specific assessment criteria. Generally speaking, demand for specialty materials is less cyclical than for base/commodity products and end-market diversification is broader. We therefore consider a substantial specialty chemicals exposure to be positive for our assessment of diversification. As outlined in the market positioning section, we analyse whether or not operations have attained a critical size. If a specialty division(s) does not meet this criterion, we see its diversification as weaker from a rating point of view.

As products of the chemical industry are used by virtually all sectors, we do not consider an evaluation of end-markets to be an appropriate measure of commodity-focused chemical corporates' diversification.

Figure 7: Commodity-focused chemical corporates: diversification by rating category

	AA and above	A	BBB	BB	B	CCC and below
Portfolio diversification***	Very strong portfolio diversification	Strong portfolio diversification	Good portfolio diversification	Moderate portfolio diversification	Modest portfolio diversification	Very modest portfolio diversification
Contribution of specialty chemicals to revenue	Very strong contribution of specialty chemicals to revenue	Strong contribution of specialty chemicals to revenue	Good contribution of specialty chemicals to revenue	Moderate contribution of specialty chemicals to revenue	Modest contribution of specialty chemicals to revenue	Very modest contribution of specialty chemicals to revenue

*** Degree of the issuers diversification is driven by the above stated factors, listed under commodity-focused chemical corporates, depending on scope of business and relevance of information, among others. For example, strong portfolio diversification is indicated by strong diversity of product portfolio and global presence.

Specialty chemical corporates

We assess the diversification of specialty chemical corporates by analysing their end-market diversification. Specialty chemical corporates often are relatively small and specific end-markets account for a more substantial share of their revenue and earnings, compared to upstream-oriented competitors. We therefore look at the following factors, when analysing the diversification of specialty chemicals corporates:

- (i) End-market diversification, compared to past periods
- (ii) Contribution of highly cyclical end-markets to revenue³

In order to gain a greater understanding, we compare recent and historic end-market diversification (for at least the previous three years). If the most recent end-market split has improved significantly or is similar to previous diversification (including factors such as improving the share of less cyclical end-markets), we treat it as positive and vice versa. In addition to a combination of end-markets, disclosed revenues generated by durable and non-durable products also indicate the sustainability of corporate sales in

³ Using the industry-related driver cyclicity the various end-markets are classified as following:

High risk (highly cyclical): Automotive, metals and mining, commodity chemicals, oil and gas, construction, transportation

Medium risk (medium cyclical): capital goods, durable consumer products

Low risk (low cyclical): Pharmaceutical and healthcare, nondurable consumer products

a downturn and offset negative growth in certain markets. Lastly, it is quite common for smaller-sized corporates in particular to be subject to customer concentration risk. When assessing diversification, we view a broad portfolio of customers positively.

We consider relative sector weights, end market diversification, the dependency on individual sectors and end-market cyclicality. A high proportion of end-markets with low cyclicality, is viewed positively. In addition, our rating analysis covers the aspects size of the product portfolio and geographic diversification. In addition to cyclicality, potential regulatory risk is a significant factor. We deem medium exposure to sectors with frequent regulatory changes to be a weakness.

Figure 8: Specialty chemical corporates: diversification by rating category

	AA and above	A	BBB	BB	B	CCC and below
End-market diversification	Very strong diversification, improved/ stable end-market diversification	Strong diversification, improved/ stable end-market diversification	Good diversification, improved/ stable end-market diversification	Moderate concentration, stable/ worse end-market diversification	Modest concentration, worse end-market diversification	Very modest concentration, worse end-market diversification
Highly cyclical end-markets	Contribution of highly cyclical end-markets to revenue <20%		Contribution of highly cyclical end-markets to revenue 20% to 40%	Contribution of highly cyclical end-markets to revenue 40% to 70%	Contribution of highly cyclical end-markets to revenue >70%	

Operating profitability

We regard the EBITDA margin as the most important measure of operating profitability and ability for debt service for both commodity-focused and specialty chemicals corporates. Depending on the nature of corporate's business, if we have grouped it as a commodity-focused or specialty chemicals, our analysis is performed on a different time series basis. This aims to capture the respective cyclicality, stability and visibility of corporate's operations, and likewise, avoiding an assessment based on EBITDA margins at the top or trough of the economic cycle. Furthermore, this approach captures changes in the corporate's setup which may have significant influence on a corporate's operating profile over time.

EBITDA margin is a sound indicator of a corporate's sustainable pricing power and cost position, among other things. We do not adjust reported EBITDA for expenses of a non-recurring or one-off nature. However, on rare occasions, we do adjust EBITDA e.g. for restructuring expenses, losses/gains from asset disposals or costs for repairing damage caused by natural disasters, if deemed to be material and one-off.

Commodity-focused chemical corporates

We view the operating profitability of commodity-focused issuers as the outcome of their market positioning, number and type of specialty material units in the portfolio, pricing power and the current stage in the economic cycle. A commodity-focused chemical corporate's relative cost position is reflected in its operating profitability. Usually, base or commodity chemical prices soar when the economic cycle peaks. In addition to these factors, geographical focus, long-term industry trends, regulatory frameworks, local prices and the availability of raw materials may also affect profitability.

Specialty chemicals corporates

Similar to commodity-focused chemical corporates, the operating profitability of a specialty chemicals corporate is primarily driven by its market positioning, types of specialty materials, pricing power and the current stage in the economic cycle. In contrast to upstream-oriented competitors, we believe the cost position plays a less important role, as specialty chemical corporates are able to exercise significant pricing power. The production of specialty materials usually consumes limited amounts of feedstock, so producers are less sensitive to commodity price development. However, as product prices usually decline as economic growth stalls, the cost position is of considerable importance during economic downturns.

Commoditisation of specific products may be responsible for a sustained decline in operating profitability. This may be driven by the entry of new players attracted by high growth in the market, or significant capacity expansions. In the past, several downturns in the chemical industry were caused by significant oversupply in the aftermath of large capacity coming online. In addition to the relative level of operating profitability, we take individual characteristics into consideration such as the ability to pass on higher commodity prices, take or pay clauses and the length of supply contracts (longer contracts being viewed positively).

Figure 9: Chemical corporates: Scope-adjusted EBITDA margin by rating category

	AA and above	A	BBB	BB	B	CCC and below
Scope-adjusted EBITDA margin	>30%	30% to 20%	20% to 15%	15% to 10%	10% to 5%	Scope-adjusted EBITDA insufficient to cover maintenance capex and interest expense

3.2 Financial risk profile

Our assessment of a chemical corporate's financial risk profile follows the general guidance in our General Corporate Rating Methodology. As part of our forward-looking analysis of the financial risk profile, we assess the issuer's financial leverage, cash flow generation, and ability to cover interest and principal payments (debt service).

We focus on cash-flow-based ratios such as leverage ratios, interest coverage and cash flow coverage. These are good indicators of credit risk as they tend to be less distorted by accounting policy than ratios based on P&L or balance sheet items. Liquidity considerations supplement our assessment of the financial risk profile.

The financial risk profile indicates a corporate's financial flexibility and viability in the short to medium term. A corporate with a strong financial risk profile is more likely to be resilient to economic downturns, adverse industry dynamics, unfavourable regulation or an unexpected loss of a revenue source. The ability to retain financial flexibility during an economic downturn is a rating driver for chemical corporates as it indicates an ability to invest during all phases of the economic cycle.

3.2.1 Credit metrics

Our general assessment of credit metrics (e.g. leverage, interest cover and cash flow cover) is outlined in the General Corporate Rating Methodology.

Scope's analysis typically adjusts the debt by various factors, including off-balance sheet debt from the leasing of long-term assets (if not reflected by IFRS 16), debt-like provisions such as unfunded pension provisions and unfunded asset retirement provisions for site remediation⁴.

3.2.2 Liquidity

There is no sector-specific assessment of a chemical corporates liquidity. Our general liquidity assessment is outlined in our General Corporate Rating Methodology.

3.3 Supplementary rating drivers

Supplementary rating drivers complement our analysis of the factors and drivers of business and financial risks. Our supplementary analytical aspects cover:

3.3.1 Financial policy

Our assessment of supplementary rating drivers is described in the General Corporate Rating Methodology.

3.3.2 Parent/ government support

Our assessment of parent support is described in the General Corporate Rating Methodology.

3.3.3 Peer context

Our assessment of peer context as part of the supplementary rating drivers is described in the General Corporate Rating Methodology.

⁴ Provisions made for asset retirement obligations reflect commitments for the disposal, dismantling or decommissioning of assets during their operation and/or at the end of their lifetime in sectors such as power generation, mining or commodity exploration. Scope highlights that the characteristics of asset retirement obligations are different to conventional debt regarding timing, measurement of the estimated obligation including potential asset-salvage values, tax effects or funding mechanisms among others. Particularly, the payment schedule may often extend over a very long time horizon, with obligations arising more than 20 years after the cessation of assets. As with pension provisions, Scope-adjusted debt would consider the unfunded part of such obligations. Dedicated retirement fund assets are likely to cover required payments in times of economic distress. Scope's debt adjustments for asset retirement obligations aim at capturing the nature of the expected payments on an individual basis which Scope deems appropriate for the corresponding assets/activities (i.e. power plants, exploration sites, waste disposal). When assessing the debt burden from asset retirement obligations, Scope takes into account the likely funding requirement for the next 25 years only. The reasoning behind this approach is twofold: On the one hand, Scope views potential funding needs for very-long-term obligations as not overly representative of the creditworthiness of a corporate and of the full coverage of interest-bearing debt instruments, which are likely to mature in less than 25 years. On the other hand, Scope points to the strong impact of current discount rates on very-long-term provisions. As such discount rates may fluctuate strongly over a long time horizon, a full approach on the theoretical funding requirements may be misleading.

3.3.4 Governance and structure

Our assessment of governance and structure as part of the supplementary rating drivers is described in the General Corporate Rating Methodology.

3.4 Environmental, social and governance assessment

We implicitly capture general environmental, social and governance factors during the rating process with the sole criteria of their material impact on the credit quality of a rated entity. We only consider an ESG factor relevant to our credit rating process if it has a ubiquitously discernible and material impact on key rating factors (e.g. the rated entity's cash flow profile) and, by extension, its overall credit quality. If material, we explicitly highlight any such factor. Contrary to ESG ratings, which are largely based on quantitative scores for different rating dimensions, credit-relevant ESG drivers are mostly of a qualitative nature. Hence, identified ESG rating factors are based on an opinion in a relative context (factors are ordinal rather than cardinal)

ESG-related factors can be credit-positive, credit-negative or credit-neutral. Such factors need be assessed through either qualitative judgement or through quantitative measures.

ESG-related rating factors can directly or indirectly affect all key rating factors that make up our assessment of an issuer's business risk profile, financial risk profile and supplementary rating drivers. The importance/relevance of certain ESG factors is specific to each rated entity, industry and region, except for governance, which is universally applicable across all industries.

We conduct an explicit corporate governance assessment during the corporate rating process, under the supplementary rating drivers (see 3.3.4). For environmental factors, we review factors such as resource management, product innovation, physical risks or efficiencies in production processes. For social factors, we review factors such as labour management, health and safety, client relationships and supply chains, and regulatory/reputational risks.

The General Corporate Rating Methodology provides further detail on how ESG factors and supplementary rating drivers are incorporated in the credit analysis.

4. Issuer rating

The final issuer rating is based on our analysis of the business risk profile, financial risk profile and supplementary rating drivers. The rating committee decides on the relative importance of each rating driver. The business risk profile and financial risk profile are generally weighted equally for companies perceived as crossovers between investment grade and non-investment grade. The business risk profile is typically emphasised for investment-grade companies, while the financial risk profile is mostly the focus of ratings assigned to companies that are perceived as having high yield credit profiles. However, the latter also depends on the financial risk profile. Less focus is granted to strong financial risk profiles of companies showing a weak/vulnerable business risk profile (in the B or low BB category) since for such companies, the financial risk profile is subject to higher volatility. This takes into account that the credit rating of companies with business risks that reflect weak or moderate credit quality should not be bolstered by a temporary strong financial risk profile. Hence, the weighting between the business risk and financial risk profiles is adapted to each issuer's business model and market(s).

5. Additional methodology factors

For more details on our rating Outlooks for issuer ratings, long-term and short-term debt ratings, specific considerations for small and medium-sized enterprises, and the recovery analysis see the [General Corporate Rating Methodology](#).

6. Appendix

6.1 Related documents

For more information, please refer to the following documents:

- [General Corporate Rating Methodology](#)
- [Government Related Entities Rating Methodology](#)
- [Credit Rating definitions](#)



Chemicals Rating Methodology

Corporates

Scope Ratings GmbH

Headquarters Berlin

Lennéstraße 5
D-10785 Berlin

Phone +49 30 27891 0

Frankfurt am Main

Neue Mainzer Straße 66-68
D-60311 Frankfurt am Main

Phone +49 69 66 77 389 0

Paris

10 avenue de Messine
FR-75008 Paris

Phone +33 6 6289 3512

Oslo

Karenslyst allé 53
N-0279 Oslo

Phone +47 21 62 31 42

Madrid

Paseo de la Castellana 141
E-28046 Madrid

Phone +34 91 572 67 11

Milan

Via Nino Bixio 31
IT-201269 Milano

Phone +39 02 30315 814

Scope Ratings UK Limited

London

52 Grosvenor Gardens
London SW1W 0AU

Phone +44 20 7824 5180

info@scoperatings.com

www.scoperatings.com

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