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## Key Credit Factors For The Commodity Chemicals Industry

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# Key Credit Factors For The Commodity Chemicals Industry

*(Editor's Note: These criteria supersede "Key Credit Factors: Criteria For Rating Companies In The Global Commodity Chemicals Industry," published Sept. 19, 2012.)*

1. Standard & Poor's Ratings Services is refining and adapting its methodology and assumptions for the commodity chemicals industry. We are publishing this article to help market participants better understand the key credit factors in this industry. This article is related to our global corporate criteria (see "Corporate Methodology," published Nov. 19, 2013) and to our criteria article "Principles Of Credit Ratings," published Feb. 16, 2011.
2. These criteria supersede "Key Credit Factors: Criteria For Rating Companies In The Global Commodity Chemicals Industry," published Sept. 19, 2012.

## SCOPE OF THE CRITERIA

3. Standard & Poor's Ratings Services is refining its criteria for the global commodity chemical industry. By commodity chemical companies, we mean issuers that derive a majority of their revenue from the production of commodity chemicals. This includes producers of petrochemicals, inorganic chemicals, fertilizers and other agricultural chemicals, and numerous other commodity chemicals. These criteria do not cover companies deriving more than 50% of sales from chemical products distribution. For those companies, see "Key Credit Factors For The Business and Consumer Services Industry", published Nov. 19, 2013. These criteria also do not cover specialty chemicals companies, to which we apply our criteria "Key Credit Factors For The Specialty Chemicals Industry," published Dec. 31, 2013.

## SUMMARY OF CRITERIA UPDATE

4. We view commodity chemicals as a "moderately high risk" industry under our criteria, given its "moderately high risk" cyclicality and "moderately high risk" degree of competitive risk and growth. In assessing the competitive position of a commodity chemical issuer, we put particular emphasis on market position and growth prospects of its market segments, level of product and end-market diversity, cyclicality of raw material costs and selling prices, capital intensity, production flexibility, and cost structure. In our assessment of the financial risk profile, we believe capital investment requirements and industry- or company-specific working capital characteristics (including seasonality and cyclicality of cash flows) are important factors, so we focus on free operating cash flow to debt in addition to our core ratios.

## IMPACT ON OUTSTANDING RATINGS

5. We do not expect these criteria, in and of themselves, to result in any rating changes. See global corporate criteria for

the impact on ratings for this industry.

## EFFECTIVE DATE AND TRANSITION

6. These criteria are effective immediately on the date of publication.

## METHODOLOGY

### Part I--Business Risk Analysis

#### Industry risk

7. Within the framework of Standard & Poor's global criteria for assessing industry risk, we view commodity chemicals as a "moderately high risk" industry (category 4). Our industry risk assessment for commodity chemicals is derived from our view of the segment's moderately high risk (4) cyclicality, and our assessment that the industry warrants a moderately high risk (4) competitive risk and growth assessment.
8. Key drivers of cyclicality in the commodity chemicals industry include global economic growth, industrial and manufacturing production, and the balance of industry segment supply and end-market demand. The cyclicality of demand can vary significantly across different industry segments because many commodity chemicals serve end markets and industries with different cyclicality profiles. Some chemicals are tied more generally to economic growth and industrial and manufacturing production, while others are tied more closely to specific end-market demand indicators, such as housing starts, automotive builds, or agricultural trends. Large-scale shifts in regional costs of production, particularly for many petrochemicals, or emerging growth trends can also lead to longer-term cycles that vary by region.
9. Pricing competition is high in most commodity chemical segments. Because of the interchangeable nature of commodity chemicals and the lack of product differentiation, competition is primarily based on price. Movements in any of the industry's key economic indicators can lead to chemical-specific supply and demand imbalances and significant pricing cyclicality. Large capacity additions or shutdowns in an industry segment can also lead to significant volatility. In certain segments, such as fertilizers, weather-related events can lead to increased pricing volatility.

#### Cyclicality

10. We assess cyclicality for the commodity chemical industry as "moderately high risk" (4). The industry has demonstrated moderately high cyclicality--relative to other industries--in profitability, with more moderate cyclicality in revenue. Revenue and profitability are two key measures used to derive an industry's cyclicality assessment (see "Methodology: Industry Risk"). Based on our analysis of global Compustat data, commodity chemical companies experienced an average peak-to-trough (PTT) decline in revenues of about 7% during recessionary periods since 1950. In the three most recent recessions, revenue declined significantly more than the 7% average, with the steepest decline (23% drop in revenues) occurring during the most recent downturn. Over the same period, commodity chemical companies experienced an average PTT decline in EBITDA margin of about 15% during recessionary periods. In two of the three most recent periods, declines materially exceeded the 15% average, with the largest decline (28%)

occurring during the 1989-1992 recession.

11. With an average drop in revenues of 7% and an average profitability decline of 15%, the commodity chemicals sector cyclical assessment calibrates to "moderately high risk" (4). We generally consider that the higher the level of profitability cyclical in an industry, the higher the credit risk of entities operating in that industry. However, the overall effect of cyclical on an industry's risk profile may be mitigated or exacerbated by an industry's competitive and growth environment.

### **Competitive risk and growth**

12. We view commodity chemicals as warranting a moderately high risk (4) competitive risk and growth assessment. To assess competitive risk and growth, we assess four sub-factors as low, medium, or high risk. These sub-factors are:
  - Effectiveness of industry barriers to entry;
  - Level and trend of industry profit margins;
  - Risk of secular change and substitution by products, services, and technologies; and
  - Risk in growth trends.

### **Effectiveness of the commodity chemicals industry's barriers to entry--high risk**

13. The effectiveness of barriers to entry in the commodity chemicals industry is typically limited. Capital requirements necessary to set up new processing plants can act as a barrier to entry. However, because commodity chemical products are not differentiated, existing producers do not have an inherent advantage over new entrants. Moreover, because of sensitivity to supply and demand balance, even a single new entrant can cause changes in industry conditions that have a significant impact on the profitability and cash flows of existing participants in an industry segment. However, for some individual products, companies could benefit from proprietary process technology, logistical advantages, or limited availability of core input materials that would increase barriers to entry.

### **Level and trend of commodity chemicals industry profit margins--high risk**

14. Industry profit margins show a high degree of sensitivity to global economic growth and the balance of industry segment supply and demand. Cyclical demand declines can lead to intense price competition, and lower production volumes can significantly reduce fixed cost absorption and profit margins. Large-scale capacity additions in an industry segment can also lead to declining prices resulting from a supply and demand imbalance. Often, companies must make decisions to add capacity well in advance of the start of commercial production. Such decisions expose these companies to uncertain demand. The global nature of the industry also exposes producers to new competition from regions that offer lower-cost raw materials or labor.
15. Industry profit margins are heavily affected by exposure to changes in input costs. Many raw material inputs experience significant pricing volatility, and commodity chemical companies have limited ability to pass on this volatility to customers because of the competitive nature of the industry. Some commodity chemical companies require a large amount of energy during the production process and, thus, are susceptible to fluctuations in energy prices. Transportation costs can also be significant for global companies or companies that export their products. The degree to which commodity chemical companies can offset these effects through successful productivity gains and restructuring actions can meaningfully affect profit margins.

### **Risk of secular change and substitution by products, services, and technologies--medium risk**

16. Overall, product substitution risk from non-chemical alternatives is generally limited for commodity chemicals issuers. However, commodity chemicals are susceptible to improvements in customers' processing technology. Development of new, more efficient processes that require a reduced amount of raw materials would limit demand. In addition, in certain cases specialty chemicals could lessen the quantity of commodity chemicals required in a particular process. In certain industry sectors, customers or suppliers could benefit from vertically integrating and bringing production of commodity chemicals in house. Such a shift would reduce overall production in and demand from the sector. Finally, global or country-specific energy, health, or environmental policies or regulations could also bolster or inhibit demand for certain commodity chemicals.

### **Risk in commodity chemicals industry growth trends--medium risk**

17. Commodity chemical industry growth trends are generally tied to global economic conditions. Industry revenue and earnings growth generally outpaces global GDP growth during peak periods and falls below global GDP growth during trough periods. Therefore, ongoing economic weakness in mature and emerging markets would represent a significant risk to the industry. Demand for many commodity chemicals is tied to cyclical industries, such as housing or automotive. However, a portion of demand is also tied to more steady industries, such as food and beverage, providing some growth stability.
18. Factors that are generally supportive of long-term demand for commodity chemical industry growth include rising standards of living in developing regions, and investment in industrial and manufacturing production in developed markets. Companies with substantial revenue and earnings from global operations can benefit from long-term demand growth in emerging markets. In mature markets, producers can also benefit from increased use of commodity chemicals as inputs into markets such as housing and automotive.

### **Country risk**

19. Country risk plays a critical role in determining all ratings on companies in a given country. Country-related risk factors can have a substantial effect on company creditworthiness, both directly and indirectly. In assessing country risk for a commodity chemical company, our analysis uses the same methodology as with other corporate issuers (see "Corporate Methodology"). A key factor in our business risk analysis for corporate issuers is the country risk assessment, which includes the broad range of economic, institutional, financial market, and legal risks that arise from doing business in a specific country.
20. We generally determine exposure to country risk using revenues, as this information is consistently available. However, this may not capture country risks beyond those affecting demand potential. Therefore, if country exposure by EBITDA or assets is available and indicative of a materially different country exposure profile, we may use EBITDA or assets. This could be the case, for instance, if a company's production footprint is in countries with a higher risk profile than where it derives its revenue from, and if those assets are not easily movable.

### **Competitive position (including profitability)**

21. Under our global corporate criteria, a company's competitive position is assessed as (1) excellent, (2) strong, (3) satisfactory, (4) fair, (5) weak, or (6) vulnerable. In assessing the competitive position for commodity chemical issuers, we review an individual company's:

- Competitive advantage;
  - Scale, scope, and diversity;
  - Operating efficiency; and
  - Profitability.
22. The first three components are independently assessed as either (1) strong, (2) strong/adequate, (3) adequate, (4) adequate/weak, or (5) weak. Profitability is assessed through the combination of two subcomponents, the level of profitability and the volatility of profitability.
23. After evaluating separately competitive advantage; scale, scope, and diversity; and operating efficiency, we determine the preliminary competitive position assessment by ascribing a specific weight to each component. The applicable weightings will depend on the company's Competitive Position Group Profile (CPGP). The CPGP assigned to most commodity chemical issuers is "Commodity Focus/Cost Driven," whereby we weight the first three components of competitive position as follows: competitive advantage (15%); scale, scope, and diversity (35%); and operating efficiency (50%). Commodity chemical companies do not benefit from product differentiation or brand identification. For most of these companies, the ability to maximize production efficiency and position the business as a low-cost provider are more important than becoming a large scale producer. This typically makes operating efficiency the most important determinant of competitiveness.
24. We may assign the Commodity Focus/Scale Driven CPGP to commodity chemical companies in industry segments where costs are comparable among peers and competitive advantage is achieved primarily through scale. The component weighting for companies assigned to this CPGP is as follows: competitive advantage (10%); scale, scope, and diversity (55%); and operating efficiency (35%).

### **Competitive advantage**

25. In assessing the competitive advantage of a commodity chemical company, we consider its:
- Market position and the robustness and sustainability of its business strategy; and
  - Ability to maintain sufficient capital investment and execute projects successfully.
26. In evaluating strategic positioning and execution, we consider a company's relative success, or lack thereof, at establishing leadership positions in the markets in which it competes, and at protecting or growing market shares in a profitable manner. Commodity chemical companies that are able to defend or grow market share are unlikely to gain a pricing advantage, but might enjoy a more favorable cost position or better relationships with suppliers and customers. Because of the heterogeneous nature of the commodity chemical industry, we consider a company's positioning in the context of its specific industry segment, including growth prospects, barriers to entry, capital-intensity and supply-demand balance profile of those markets.
27. We consider the ability to maintain sufficient capital investment as important for commodity chemical companies. A company's ability to select and execute strategies aligned with its strengths in the markets in which it participates is important to building competitive advantage. Such execution requires research and development (R&D) and technology capabilities. In addition, because many capital projects take several years to complete, a track record of competent market forecasting and good project execution are imperative to maintaining long-term profitability. In addition, the ability to fund such long-term projects from previous investments can be a key to success. A subpar or

limited track record of successful capital investment would limit competitive advantage and likely result in weaker profitability.

28. A commodity chemical company with a "strong" or "strong/adequate" competitive advantage assessment typically is characterized by a combination of:
- Leading or near-leading market position and successful strategic positioning demonstrated by an ability to profitably protect or grow leading market shares in the key industry segments in which it competes;
  - Participation in industry segment(s) with favorable medium and long-term growth prospects and/or supply-demand balance characteristics;
  - Some evidence of leverage with customers and customer stickiness, achieved for instance through: long-term supply contracts or long-standing relationships;
  - Strong R&D and technology capabilities; and
  - Strong track record of identifying, funding, and executing well-timed capacity or product line expansions.
29. A commodity chemical company with a "weak" or "adequate/weak" assessment of its competitive advantage typically is characterized by a combination of:
- Meaningfully weaker or eroding market position and strategic positioning than leading competitors in the industry segments in which it competes;
  - Participation in industry segment(s) with unfavorable medium and long-term growth prospects and/or supply-demand balance characteristics;
  - Limited or no R&D or technology capabilities; and
  - Limited or lack of a track record of identifying, funding, or executing well-timed capacity or product line expansions.

### **Scale, scope, and diversity**

30. In assessing the scale, scope, and diversity of a commodity chemical company, we consider:
- Relative size of its revenue base and that of its target markets,
  - The depth and breadth of its product offering,
  - The diversity of its raw material inputs and end markets,
  - The geographic balance of its sales, profits and manufacturing footprint, and
  - Its level of supplier and customer concentration.
31. Greater size and scale of operations often afford better diversity. Many rated issuers in the commodity chemicals industry are relatively small, niche players with limited product and geographic diversity and high dependence on relatively few customers or end markets, and therefore have a high sensitivity to relatively small changes in demand, market share loss, or other adverse market conditions.
32. Product, end-market, and raw material diversity are important factors for commodity chemical companies, because a narrow focus can make a company more vulnerable to cyclical pressures. However, the degree to which these factors are correlated affects the potential benefit to a company's stability of earnings and cash flows. Exposure to a wide array of end markets can lead to more stable demand patterns and improve the stability of earnings. A wider range of inputs can mute the impact of volatility of any particular raw material cost. The relative attractiveness of these end markets (in terms of size, expected growth, cyclicality, barriers to entry, intensity of competition, etc.) and how the company is positioned in those markets also affect our assessment.

33. Diversity of production is important to the sustainability of earnings and cash flows. Multiple production facilities can insulate a chemical producer from event risks, such as extreme weather events or facility-specific operational problems. Multiple production lines at a single facility could serve to partially mitigate the lack of diversity for a single-site producer. Geographic diversity can offer enhanced growth prospects through exposure to developing regions with higher growth rates than more mature markets. Globally diversified commodity chemical companies typically feature multiple production facilities, spread across geographic regions. Such diversity of sales and production limits exposure to economic or political risk in any given nation or region.
34. Significant customer concentration (i.e., sales to a single customer that exceed 10% of total sales) can adversely affect operating performance if that customer is facing its own business or financial challenges. In the same way, significant supplier concentration often limits a company's flexibility to control costs in the absence of a beneficial contractual agreement. In certain cases, there can be a high level of interdependence between chemical companies and suppliers or customers. In such cases where there are co-located facilities or sole-supplier arrangements, some degree of concentration could be favorable.
35. A commodity chemical company that warrants a "strong" or "strong/adequate" assessment of scale, scope and diversity typically is characterized by a combination of:
- Revenue base and/or target markets of large size relative to that of other participants in the industry;
  - Well-diversified portfolio, in which all products are not subject to the same external factors such as raw material prices, regulations, or cyclicity;
  - Products aimed at a wide array of not closely correlated end markets with an adequate balance of cyclical and noncyclical demand and favorable supply/demand fundamentals;
  - Geographically diversified revenue base and production footprint in both developed and developing markets; and
  - Well-diversified raw material supplier base and no significant dependency on any single raw material, and well-diversified customer base.
36. A commodity chemical company warranting a "weak" or "adequate/weak" assessment of scale, scope, and diversity typically is characterized by a combination of:
- Revenue base and/or target markets of limited size relative to other participants in the industry;
  - Narrowly focused product portfolio, reflecting participation in only a very small number of end markets, regions, or product categories that have limited growth prospects or that are closely correlated to one another;
  - Reliance on a single raw material or single source thereof;
  - Concentration of production at a single facility or a very small number of facilities; and
  - An elevated degree of customer or supplier concentration (for instance, the largest customer accounts for 10% or more of sales or operating profit) that is not mitigated by the characteristics of the customer or supplier base.

### **Operating efficiency**

37. In assessing operating efficiency for a commodity chemical company, we consider:
- Its relative cost position compared with that of industry peers;
  - The flexibility of its cost structure in absorbing volatility of demand or input costs; and
  - Its flexibility of production.
38. To the extent a commodity chemical company has a high degree of operating efficiency, it should be able to generate



better profit margins than peers that compete in the same markets, whatever the nature of the prevailing market conditions.

39. In evaluating the relative cost position of a commodity chemical company compared to that of its peers, we primarily consider its EBITDA margin profile, supplemented by various indicators of cost efficiency and capital intensity, such as margin over raw material costs, capacity utilization rate, and capital spending to sales. Both the overall cost and margin profile of a commodity chemical company and that of its various reporting segments are important in our analysis.
40. Cost position relative to peers is particularly important for many commodity chemical companies. Because the cost of raw materials and production can vary significantly by region, the relative costs and availability of raw materials, energy, and labor can significantly affect a company's cost of production and, thus, its profitability. Internal sourcing or long-term supply contracts for raw material or energy inputs can also affect a company's cost structure. In addition, proximity to key end markets can have a considerable impact on transportation costs for bulky or hard-to-ship chemicals.
41. A commodity chemical company can demonstrate cost structure flexibility by limiting profit margin and cash flow deterioration in a cyclical downturn or by improving margins relative to industry segment peers in more stable periods. During weaker periods, a company's ability to quickly reduce costs, either naturally through incurring reduced variable costs or through specific actions, such as permanent labor force reductions or facility closures, is an indicator of cost flexibility. During other periods, companies that can minimize costs through production process improvements and improve cash flow through working capital management demonstrate cost efficiency.
42. In evaluating a commodity chemical company's flexibility of production, we consider the company's ability to shift raw material inputs or optimize production across facilities. Companies that are able to use different inputs--whether entirely different inputs or different grades of the same material--can enhance profitability and improve their competitive positions relative to peers that do not benefit from the same flexibility. In addition, companies that can optimize production across facilities can maximize fixed-cost absorption and take advantage of differences in regional production costs.
43. A commodity chemical company with a "strong" or "strong/adequate" operating efficiency assessment typically is characterized by a combination of:
  - Profitability, as measured primarily by EBITDA margins, that is consistently higher than that of peers (after taking into account differences in sales mix that also affect profit margins);
  - Evidence of a sustainable cost advantage, possibly achieved from: economies of scale, production efficiencies through low-cost footprint and sourcing, near-optimal operating rates, best-in-class production technology, or customer and end-market proximity;
  - Internal sourcing of raw materials or beneficial long-term supply contracts for raw materials and energy inputs;
  - Evidence of a flexible cost structure, including lower operating leverage than peers, good ability to adjust labor costs in down cycle, low-cost sourcing, good working capital management, ongoing measurable lean manufacturing practices, or limited profit sensitivity to raw material prices fluctuations;
  - Flexibility to optimize global production by altering the balance of raw material inputs or shifting production to more favorable facilities; and

- High degree of vertical and/or horizontal integration of operations.
44. A commodity chemical company with a "weak" or "adequate/weak" assessment of its operating efficiency typically is characterized by a combination of:
- Profitability, as measured primarily by EBITDA margins, that is below that of its peer group (after taking into account differences in sales mix that also affect profit margins);
  - Evidence of cost disadvantage, possibly from: structural overcapacity, high-cost footprint and sourcing, sub-optimal operating rates, outdated production technology, or poorly situated production facilities;
  - Somewhat constrained access to raw materials;
  - Evidence of an inflexible cost structure, including a higher operating leverage than that of peers, an inability to adjust labor costs, poor working capital management, limited ability to invest in ongoing efficiency improvements, or high degree of sensitivity to raw material cost fluctuations; and
  - Limited or lack of production flexibility.

### **Profitability**

45. The profitability assessment can confirm or modify the preliminary competitive position assessment. The profitability assessment consists of two components: 1) the level of profitability; and 2) the volatility of profitability. The two components are combined into the final profitability assessment using a matrix (see "Corporate Methodology").

### **Level of profitability**

46. The level of profitability is determined on a three-point scale: "above average," "average," and "below average."
47. We use EBITDA margin as the primary indicator of a commodity chemical company's level of profitability, based on thresholds identified in Table 1 below. We use return on capital (ROC) as a supplementary indicator to refine our assessment when EBITDA margin is close to the thresholds for "below average" or "above average" (see ROC thresholds in table 2). For instance, if a company's EBITDA margin is at the high end of the defined range for "average" but its return on capital is comfortably in the "above average" range, we would assess its level of profitability as "above average". In accordance with the global corporate criteria, for this assessment we typically determine the five-year average EBITDA margin and ROC using the last two years of historical data and our forecasts for the current year and the following two years; we may put more emphasis on forecast years if historical data is not deemed representative, or to take into account deteriorating or improving profiles where prospective ratios meaningfully differ from average ratios. In some cases, the application of local accounting rules (for non-U.S. generally accepted accounting principles (GAAP) or non-international financial reporting standards (IFRS) reporting companies) may warrant using different thresholds to account for financial reporting differences.
48. Because profitability can vary so widely from year to year depending on industry conditions, when forecasting EBITDA and ROC, we generally forecast near-term market conditions (typically for the current year and for the following year) based on current trends but use normalized or mid-cycle expectations for the outer years.
49. We define mid-cycle conditions as a long-term average that typically encompasses the last 10 years, provided that the period contains both strong and weak market conditions. As an example, the most recent cyclical peak was 2005-2007 and the trough was 2008-2009.
50. We use, as guidelines, the thresholds in table 1 below to determine the level of profitability.

**Table 1**

<b>Commodity Chemical Companies' EBITDA Margins Under Mid-Cycle Conditions (%)</b>		
<b>Below Average</b>	<b>Average</b>	<b>Above Average</b>
< 9	9-17	> 17

**Table 2**

<b>Commodity Chemical Companies' Return On Capital Under Mid-Cycle Conditions (%)</b>		
<b>Below Average</b>	<b>Average</b>	<b>Above Average</b>
< 8	8-18	> 18

### Volatility of Profitability

51. The volatility of profitability is determined on a six-point scale, from '1' (lowest volatility) to '6' (highest volatility).
52. In accordance with our global corporate criteria, we generally determine the volatility of profitability assessment using the standard error of regression (SER), subject to having at least seven years of historical annual data. We generally use nominal EBITDA as the metric to determine the SER for commodity chemical companies, although we may also use EBITDA margin or ROC. In accordance with the global corporate criteria, we may--subject to certain conditions being met--adjust the SER assessment by up to two categories better (less volatile) or worse (more volatile). If we do not have sufficient historical information to determine the SER, we follow the global corporate criteria guidelines to determine the volatility of profitability assessment.

## Part II--Financial Risk Analysis

### Accounting and analytical adjustments

53. In assessing commodity chemicals companies' accounting characteristics, we use the same methodology as with other corporate issuers (see "Corporate Methodology"). Our analysis of a company's financial statements begins with a review of its accounting to determine whether the statements accurately measure the company's performance and position relative to its peers and the larger universe of corporate entities. To allow for globally consistent and comparable financial analyses, our rating analysis may include quantitative adjustments to a company's reported results. These adjustments also enable better alignment of a company's reported figures with our view of underlying economic conditions. Moreover, they allow a more accurate portrayal of a company's ongoing business. Adjustments that pertain broadly to all corporate industries, including this industry, are discussed in "Corporate Methodology: Ratios And Adjustments," published Nov. 19, 2013.

### Cash flow/leverage analysis

54. In assessing the cash flow adequacy of a commodity chemical issuer, our analysis uses the same methodology as with other corporate issuers (see "Corporate Methodology"). Cash flow/leverage is assessed on a six-point scale--ranging from (1) minimal to (6) highly leveraged--by aggregating the assessments of a range of credit ratios, predominantly cash flow-based, which complement one another by focusing attention on the different levels of a company's cash flow in relation to its obligations.

### **Core ratios**

55. For each company, we determine in accordance with Standard & Poor's ratios and adjustment criteria two core debt payback ratios: funds from operations (FFO) to debt and debt to EBITDA.

### **Supplemental ratios**

56. In addition to our analysis of a company's core ratios, we also consider supplemental ratios in order to develop a fuller understanding of a company's credit risk profile and refine our cash flow analysis in accordance with the global corporate criteria. We generally use for commodity chemical companies:
- Free operating cash flow (FOCF) to debt as the preferred supplemental ratio when the cash flow and leverage assessment indicated by the core ratios is intermediate or stronger. Working capital and capital expenditure cycles can significantly shape commodity chemical companies' cash flow generation patterns. Alternatively, in less common cases, we might use cash flow from operations (CFO) to debt for highly working capital-intensive companies (working capital to sales ratio greater than 25%) or discretionary cash flow (DCF) to debt for companies with unusually large dividend distributions (greater than 50% of FOCF).
  - We would generally use the debt service coverage ratio, EBITDA to interest, when the cash flow and leverage assessment indicated by the core ratios is significant or weaker. For such companies, the ability to service outstanding debt on a near-term basis is of greater importance. In less common cases where non-cash interest represents a significant portion of interest expense, we might use a ratio of FFO plus interest to cash interest.

## **Part III--Rating Modifiers**

### **Diversification/portfolio effect**

57. In assessing the diversification/portfolio effect on a commodity chemical company, we use the same methodology as with other corporate issuers (see "Corporate Methodology").

### **Capital structure**

58. In assessing a commodity chemical company's capital structure, our analysis uses the same general methodology as with other corporate issuers (see "Corporate Methodology").

### **Liquidity**

59. In assessing the liquidity of a commodity chemical company, our analysis uses the same general methodology as with other corporate issuers (see "Corporate Methodology").

### **Financial policy**

60. In assessing the financial policy of a commodity chemical company, our analysis uses the same methodology as with other corporate issuers (see "Corporate Methodology").

### **Management and governance**

61. In assessing management and governance of a commodity chemical company, our analysis uses the same methodology as with other corporate issuers (see "Corporate Methodology").

### **Comparable ratings analysis**

62. In assessing the comparable ratings analysis of a commodity chemical company, our analysis uses the same methodology as with other corporate issuers (see "Corporate Methodology").

## **Related Criteria And Research**

- Key Credit Factors For The Specialty Chemicals Industry, Dec. 31, 2013
- Corporate Methodology: Ratios And Adjustments, Nov. 19, 2013
- Corporate Methodology, Nov. 19, 2013
- Country Risk Assessment Methodology And Assumptions Nov. 19, 2013
- Methodology And Assumptions: Liquidity Descriptors For Global Corporate Issuers, Nov. 19, 2013
- Methodology: Industry Risk, Nov. 19, 2013
- Management And Governance Credit Factors For Corporate Entities And Insurers, Nov. 13, 2012
- Principles of Credit Ratings, Feb. 16, 2011

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