CHEMICAL INSIGHTS

Emergence of Private Equity in Chemicals M&A

Part I - What is driving the competitiveness of financial sponsors in Chemicals M&A?

At Grace Matthews, we are often asked by our large, corporate clients why and how private equity has been so successful in purchasing businesses in the chemical industry. For many strategic players, how private equity functions and operates may not be fully understood. While it is easy to focus on the increasing valuation multiples being paid by private equity buyers, this ignores the broader process dynamics or differences between financial buyers and strategic buyers in M&A transactions. Corporate development groups at major chemical companies frequently ask us to present an overview of private equity, and the dialogue at these sessions makes it clear to us that drivers of financial sponsors' success are at best misunderstood, and at worst underestimated.

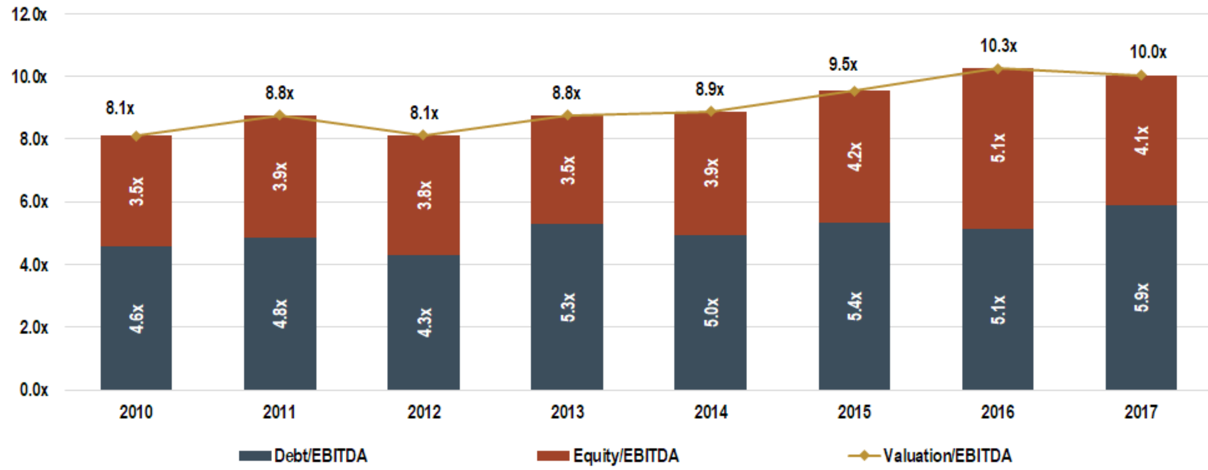
To understand private equity's increased competitiveness within the chemical industry, we must analyze two topical areas. First, we will look at simple financial and market metrics that help to explain why private equity is paying more in today's market. There also are "softer" explanations that revolve around positioning and process dynamics, where private equity has developed compelling tactical strategies, and where we believe the best market participants can in fact develop counter strategies and practices to increase their own competitiveness in processes.

Financial and Market Metrics – Why Private Equity Wins

By all accounts, the U.S. M&A market is very strong. Sale processes generating substantial interest are characterized by multiple buyers, offers, and attractive valuation multiples. Private equity seems to be stretching more for deals, expanding their search to include a broader range of chemicals deals, and finding ways to get comfortable with complex issues in diligence. There has been a record level of M&A activity over the last 18 months, which has been accompanied by robust valuation multiples – median North American EV/EBITDA multiples have been north of 10.0x since 2016 (see page 2, Figure 1). Per Grace Matthews' internally tracked listing of chemicals M&A transactions, in 2017 private equity / private equity-backed companies have continued to grow their share of transactions, and now account for more than a third of all transactions.

Figure 1: Median North American EV/EBITDA Multiples

2010 - 2017



Source: Pitchbook

This isn't your Grandpa's financial sponsor

To understand the emergence of private equity, or "financial sponsors", it helps to understand the drivers of private equity and how they have changed over time. The most direct factor that is driving competitiveness is the availability and pricing of capital. This influx of capital is actually twofold – the number of private equity firms and the amount of investable equity capital are both increasing, and there is a rise of direct lending and an influx of cash from nonbank lenders.

As of December 2016, there were nearly 4,300 active PE firms in the U.S. that controlled $1.5 trillion dollars – both record highs.[1] Investors continue allocating capital to PE funds with $113 billion committed to funds through the first half of 2017 alone – half of that amount was focused on funds smaller than $500 million. Why is so much capital being allocated to PE funds? The simple answer is that investors continue to search for yield in a low interest rate environment, and private equity remains a top pick as these funds continue to generate returns that outperform public markets and comparable asset classes. This has created an environment with an increasing number of financial sponsors that are armed with record levels of "dry powder" that they need to put to work within a defined time horizon.

The increase in the number of private equity funds is being mirrored in the lending world. There are a growing number of nonbank debt funds that are providing capital at extraordinarily low pricing. Regulations that were instituted as the U.S. was emerging from the financial crisis helped push out or, at a minimum, reduce the role of many commercial banks in leveraged transactions. This void has been filled with nonbank debt providers, including private debt funds, business development corporations ("BDCs"), and a variety of other specialized sources of institutional capital. As a result of this influx of cash, leveraged buyouts ("LBOs") are more likely to be financed by capital indirectly, and sometimes directly, from an insurance company or a state's pension fund, rather than a commercial bank. These debt funds are operating in a highly competitive financing market, competing with one another to finance transactions and are therefore showing an increased appetite for higher leverage multiples.

Over the last two years, average leverage multiples in the middle market have ranged from 5-6x EBITDA, levels not seen since prior to the financial downturn. These debt levels are partly driven by the increased competition among lenders, but they also are driven by sponsors' willingness to over-equitize capital structures – meaning that sponsors will put more equity capital in a transaction structure in order to complete a deal. Debt/Equity levels in middle market transactions are at reasonable levels – far below a standard "rule of thumb" of 60% debt to 40% equity. Why are sponsors using so much equity in transactions? Simply put, the market is competitive and they need to put their capital to work! Sponsors are using more equity than historically and combining it with debt financing that is at levels higher than historically.

"...the market is competitive and sponsors need to put their capital to work!"

1 Pitchbook Quarterly M&A Report and Quarterly PE Breakdown Report

All of this has created an environment that can be simply characterized as follows: 1) there are a growing number of private equity firms that 2) are receiving an increasing amount of capital to invest, 3) who can now seek financing from a growing number of debt funds 4) that are providing cheap capital driven by artificially low interest rates.

1 + 2 + 3 + 4 = $$$

Valuations and Returns on Investment

While the influx of capital explains how sponsors are able to stretch on valuation, it does not explain why they are choosing to do so. In some respect, private equity does not have a choice – they are in the business of buying and selling companies and therefore cannot choose to sit by idly waiting for valuations to decline (if they are buying) or rise (if they are selling). However, given the increased valuation multiples and the over-equitized capital structures, sponsors are showing a willingness to accept a lower rate of return than they have in the past in order to remain competitive. All else equal, excess supply of capital drives down expected returns.

Rather than accept a lower rate of return, another way that sponsors are stretching on valuation is through a buy and build approach. Increasingly in the chemical industry, successful sponsors are willing to pay a "full" multiple for a platform investment, with the anticipation of making a series of add-on investments at much lower multiples. The goal is to blend down the initial investment multiple by acquiring smaller companies at lower multiples – either via a proprietary process (i.e., without an investment banker) or because the add-on is smaller and may not draw a competitive process that a larger platform-type investment would. Additionally, as private equity buyers add on to their platform investments, they improve EBITDA through cost synergies and economies of scale, which can also lead to a higher multiple upon exit. Sponsor-backed strategics often are the most active in the chemicals market, combining the benefits of a sponsor's M&A approach with the synergies and know-how of a strategic buyer.

What does this mean? Simply put, private equity valuations are calculable, based on a few key variables: debt amounts and interest rates, expected equity rates of return, and forecasted cash flow available to the business. Obviously, there are other factors, but these are sufficient for a first approximation. To distill all of the above information into an over-simplified example, let's use a hypothetical company that was purchased by private equity in 2010 vs. 2017:

Chemical Company A
Sales: $100,000,000
EBITDA: $20,000,000
Growth Rate: 2.5% - 3.5% / year

Same buy-in / sale multiple

	2010	2017
Debt Multiple	3.5x EBITDA	5.0x EBITDA
Debt Pricing	L+9.0%	L+7.0%
Targeted Equity IRR	20%+	18%+
Price / Multiple	**$155 million / 7.5x EBITDA**	**$205 million / 10.0x EBIDTA**

Using incredibly simple terms, the combination of financial factors and market dynamics discussed above outline how the same hypothetical company might sell for significantly more to private equity in 2017 vs. 2010. At Grace Matthews, we begin each sale process with an internal private equity leveraged buyout model based on moderately aggressive assumptions on these variables. This analysis helps us establish an auction floor valuation expectation for our client.

Operating Tactics – How Private Equity Wins

The influx of capital to private equity and robust financing markets are not exclusive to the chemical industry; rather, this is a trend impacting the entire M&A market. This begs the question whether there are other factors driving the increased success for sponsors in the chemicals industry. The answer is a resounding "**YES**". While sponsors are constantly modifying their approach to maintain a competitive edge, two specific ways that they have been able to differentiate themselves in chemicals processes through their use of industry executives and their ability to quantify and successfully negotiate potential issues found in diligence.

Partners in Industry

Me + You^{PhD} = **Us**^{PhD}

The use of industry executives or operating partners is not a new concept. However, how these partners are used has changed slightly. Sponsors historically utilized these partners as outsourced third-party consultants. Over time, sponsors began partnering with these industry executives, calling on the executives to provide oversight on all deals that fell within their specific industry. Today, sponsors continue to use executives as operating partners, but many funds also have industry resources on staff. These resources might be employees and/or partners in the fund, with an explicit economic interest in the performance of the fund. With economic interests aligned based on fund performance, partners today aren't simply acting as an industry library, answering questions, but instead are actively involved in the acquisition, integration, and operating processes. Whereas sponsors previously differentiated themselves with an operating partner on staff, they now view in-house resources or industry experts as a requirement to be successful in chemicals M&A.

Investing in chemicals requires specialized knowledge and expertise – value chain, environmental, regulatory, financing do's and don'ts, globalization, feedstock dynamics, etc. The cost of a "don't know what you don't know" situation is prohibitively high. Having technical resources in-house obviously brings numerous benefits to sponsors. Most obvious, it immediately brings sponsors up-to-speed from a technical perspective rather than spending countless hours of research and still being substantially behind a strategic buyer in terms of know-how. Having an industry expert on-staff allows a sponsor to compete with strategic buyers from a technical standpoint, shortening the time for a sponsor to determine their interest level and allowing them to focus on building out their investment thesis. For lack of a better term, sponsors no longer need to have the "fear of language" when analyzing complex chemical transactions. This has led to the emergence of operating partners on the buy-side and specialized investment banks with industry and operational focus on the sell-side. As a point of reference, half of the Grace Matthews staff consists of those with a technical background or who have previously worked in industry.

Process Expertise in Diligence

While value is obviously an important consideration to sellers, certainty to close can be the difference between a successful transaction and a dead deal. The ability to manage issues raised in diligence is critical because in today's M&A world, no stone goes unturned during a sale process. The speed at which sponsors are able to manage multiple diligence workstreams has become a key point of differentiation in M&A processes. These firms will take a divide-and-conquer approach, engaging third party professional service firms on short notice to review a particular area of the business. This can include environmental consultants, financial auditors, insurance and benefits experts, corporate attorneys, and IT consultants. Turning diligence into a highly organized, efficient process frequently allows sponsors to get further ahead of their strategic counterparts in a process. Completing diligence ahead of others increases certainty to close and makes an attractive and easy option for a seller to take to reduce risk. As bankers, we work to balance the diligence process among buyers to ensure that no buyer is trailing far behind, but buyers that are not adequately prepared for diligence become a constant challenge.

While the pace and efficiency of sponsors in diligence processes has certainly created a point of differentiation from their strategic counterparts, the ability of private equity firms to identify and get comfortable with complex issues frequently raised in diligence is a major contributing factor to private equity's success in chemicals transactions. Historically, the chemicals industry was long thought of as a difficult sector for financial buyers to penetrate for a variety of reasons, including the technical know-how of the businesses, environmental concerns, regulatory / OSHA issues, unionized workforces, commodity risk, handling of hazardous materials and other issues. These effectively served as barriers to entry for financial buyers given that chemical businesses likely deal with one or many of these items. We have a saying in our office that effectively states that once a buyer has completed one chemical industry transaction, they immediately become a more credible buyer for the next process, as they have shown an ability to get their arms around a series of complex issues that are inherently present.

Given that many of these issues are still highly relevant to chemicals transactions, what has changed that now allows sponsors to get around these issues? While the answer is partly specific to sponsors, much of it is due to changing industry dynamics, including a gradual decline in union participation and increased definition around industry regulations. While there may be the perception of an increased number of regulations, they are certainly more defined than they have been historically, allowing sponsors to get a firm grasp of their influence on a business.

Most importantly, the self-imposed, and to some extent government-imposed, evolution of the industry toward greater environmental stewardship has in fact made the industry more fertile from an M&A perspective as there is less concern about finding that hidden superfund site-in-waiting. For example, the use of underground storage tanks has basically been eliminated from the chemical industry. Also helping from an environmental standpoint is the improved ability to measure, quantify and remediate potential environmental issues. Third party environmental consultants are now able to provide fairly precise estimates of underground issues and quantify the costs to remediate – these types of concerns are no longer a 'black box' that would have historically been a nonstarter for private equity firms. Quantifying risk turns otherwise career-risking issues into "dollars and cents" negotiations, which private equity firms will gladly entertain.

From a private equity standpoint, sponsors are constantly innovating to gain a competitive advantage in the M&A world. This has led to recent tools like "rep & warranty" insurance, which allows a buyer to purchase an insurance policy that protects against a seller's breach of their representations and warranties in the sale contract. Other examples include the concept of allowing owners to "roll" equity (essentially re-investing in their business as a minority partner alongside the private equity buyer), providing owners with a simple and powerful way to maintain an ownership position in their company while still receiving liquidity and a second bite at the proverbial apple. While rolling equity may seem like a benefit to the seller, sponsors also benefit as there is less concern from the buyer about potential surprises post-closing given that the seller is maintaining an equity stake. As referenced previously, the use of third party service firms has also allowed sponsors to quantify potential issues across the entire business. All of these resources and tools serve the same purpose in increasing sponsors' competitiveness – they allow financial buyers to quantify issues, which in turn helps sharpen their offer.

Conclusion – Private Equity and Chemicals

In retrospect, the chemicals industry was primed for financial buyers' participation. Sponsors have always focused on achieving operating efficiencies and financial engineering, and in the chemicals industry there are a number of ways to effect change, including changes in capacity and utilization, raw material purchasing, and influencing regulatory decisions. These are all in addition to traditional top-line improvements like investing in growth opportunities or seeking bolt-on acquisitions. As a result of these changes, private equity buyers are targeting and completing transactions today that would have historically been thought of as nearly impossible. From closing on deals that have substantial uncompleted environmental remediation to those that require complex shared service arrangements with third parties, certain private equity groups have shown that they have the willingness, the know-how, and the structural tools to complete difficult transactions. Sponsors' involvement in chemicals transactions have therefore evolved from avoiding chemicals transactions altogether, to only targeting 'clean' businesses or industries, to today where sponsors are going so far as carving out non-core assets of large strategic organizations to operate as a stand-alone business. As Christopher Childres, Managing Partner with Edgewater Capital outlined in a recent issue from ChemicalWeek, "We do carve-outs without transaction services agreements, which is a big plus for sellers."

Taking a step back, it is clear that private equity loves chemical deals – however, chemical deals do not love all private equity funds. Of the 4,000+ private equity funds in existence today, there may be 100 that have true chemicals expertise and experience. In today's market, private equity has demonstrated an ability to compete on value, but without this expertise or experience, the risk of a false positive in a transaction increases substantially. Focusing 100% of our attention to the Chemicals and Materials Value Chain, we at Grace Matthews have learned that there is no such thing as a simple chemical business – more importantly for our readers, there is no such thing as a simple chemical transaction. Follow our next newsletter to learn how to best compete with private equity in a marketing process.

The next issue of Chemical Insights will be "Part II: Competing with Private Equity – How to Win," due to be released in Winter 2017/18.

Select Private Equity Involved Chemical Transactions

Transaction values in $US millions

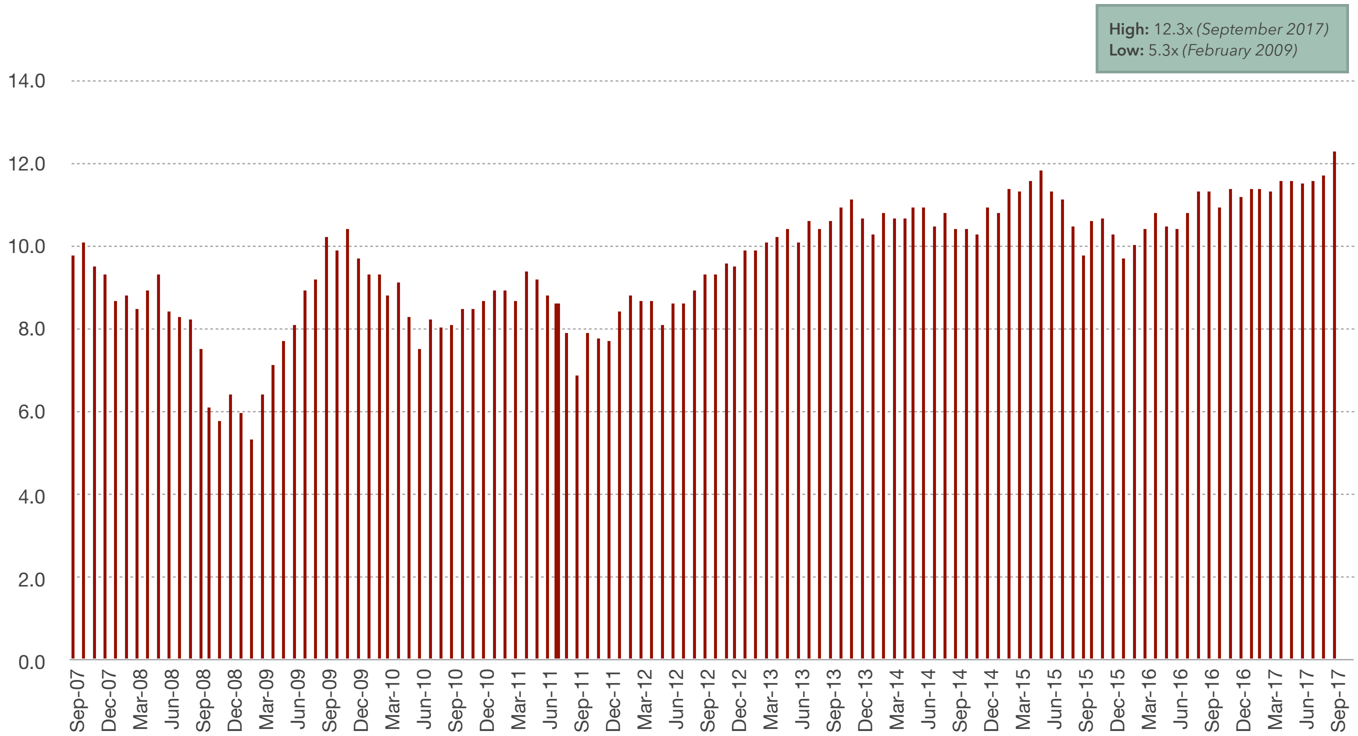
Date	Acquirer / Target	Target Description	Enterprise Value	EV / Sales*	EV / EBITDA*
Pending	H.I.G Capital / Vantage Specialty Chemicals	Fatty acids, specialty derivatives, and specialty chemical blends	N/A	N/A	N/A
Pending	Apax Partners (Azelis) / Georges Walther	Distributes cosmetic ingredients, essential oils and fragrances, pharma ingredients, food supplements, dietary and food	N/A	N/A	N/A
Pending	Gryphon Investors (Washing Systems) / Clearbrook	Water treatment chemicals	N/A	N/A	N/A
Pending	CVC (Pro-Pac Packaging) / Integrated Packaging Group	Packaging and associated systems for agricultural and industrial industries (Australia)	$138.0	N/A	N/A
Pending	One Rock Capital Partners / FXI	Polyurethane foam and polymer products for the healthcare and electronics sectors	N/A	N/A	N/A
Pending	Speyside Equity / SKW Metallurgie	Chemical additives for hot-metal desulfurization (Germany)	$87.0	N/A	N/A
Pending	SK Capital Partners / Perrigo API business	Active pharmaceutical ingredients (Israel)	$110.0	N/A	N/A
Pending	CCMP Capital Advisors / Hayward Industries	Commercial pool equipment	N/A	N/A	N/A
Pending	Littlejohn & Co. / Cornerstone Chemical Company	Chemical intermediates including acrylonitrile, melamine, sulfuric acid and others	N/A	N/A	N/A
Pending	New Mountain Capital (Avantor Performance Materials) / VWR Corporation	Laboratory products, services, and solutions to the life science and general research industries globally	$6,477.0	1.4x	13.5x
Oct-17	Littlejohn & Co. (PSC) / Aquilex (Hydrochem)	Industrial cleaning processes	N/A	N/A	N/A
Sep-17	CRC Industries / Weld-Aid Products	Maintenance chemicals for the welding and metalworking industries	N/A	N/A	N/A
Sep-17	CI Capital Partners (Maroon Group) / Seidler Chemical	Supplier, distributor, blender and re-packager of quality chemicals and ingredients	N/A	N/A	N/A
Sep-17	J.H. Whitney Capital Partners / Accupac	Consumer commodity, over-the-counter, and prescription products for pharmaceutical and consumer products companies	N/A	N/A	N/A
Sep-17	Peak Rock Capital / Hasa	Water treatment products for swimming pools, water tanks and containment vessels	N/A	N/A	N/A
Sep-17	SK Capital (Archroma) / M. Dohmen (26% stake)	Synthetic dyes for automotive, polyamide, wool, paper, technical textiles, wood, and plastic industries (Switzerland)	N/A	N/A	N/A
Sep-17	Bain Capital / Sealed Air Diversey Care division & Food Hygiene and Cleaning business	Cleaning products, tools, machines, and services for facilities, and food care and hygiene services	$3,200.0	1.2x	10.5x
Aug-17	Capital Partners (Parkway Products, Inc.) / LMR Plastics	Custom precision plastic injection molding	N/A	N/A	N/A
Aug-17	Huron Capital (Valentus) / PoloPlaz	Wood floor paints and coatings for gymnasium and residential applications	N/A	N/A	N/A
Aug-17	Exponent Private Equity / The Scotts Miracle-Gro Company (Europe & Australian business)	Lawn and garden products (Europe and Australia)	$250.0	N/A	N/A
Aug-17	HGGC / Nutraceutical International	Nutritional supplements and natural products	$391.0	1.8x	9.9x
Aug-17	Five Points Capital (WaterBridge Resources) / EnWater Solutions	Multi-service water management solutions to oil and gas operators in the Permian Basin	N/A	N/A	N/A
Aug-17	Artemis Capital Partners / StanChem	Specialty chemicals	N/A	N/A	N/A
Aug-17	Advent International (QualaWash) / Alpha Technical	Cleaning solutions for hazardous bulk containers	N/A	N/A	N/A
Aug-17	The Jordan Company (ACR Electronics) / United Moulders	Plastic injection moldings (UK)	N/A	N/A	N/A
Aug-17	First Nations Capital Partners (PRC Composites) / Globe Plastics	Precision compression molded products for aerospace, sound, lighting, and oil and gas industries	N/A	N/A	N/A
Aug-17	Arsenal Capital Partners / Cyalume Technologies	Chemiluminescent products for military, commercial, public safety, and specialty chemicals	$40.0	0.9x	4.7x
Aug-17	Arsenal Capital Partners (SASCO Chemical Group) / Michelman (Wood Release Agent product line)	Mold release agents for panel pressing processes for fiberboard, strand board, and particle board	N/A	N/A	N/A
Jul-17	Arsenal Capital Partners / PolyOne (designed structures and solutions business)	Polymer structures, rigid barrier packaging, and specialty cast acrylics	$115.0	N/A	N/A

Transaction values in $US millions

Date	Acquirer / Target	Target Description	Enterprise Value	EV / Sales*	EV / EBITDA*
Jul-17	Morgenthaler (Polytek Development Corp.) / Raw Materials Suppliers	Distributes private-labeled RTV silicone, urethane, mold release, and adhesive products	N/A	N/A	N/A
Jul-17	Lone Star / Esmalglass (Spain)	Frits, glazes, pigments, inks, and ceramic additives	$689.0	1.5x	N/A
Jul-17	One Rock Capital (Italmatch Chemicals) / Magpie Polymers	Filtration technology for the selective removal of transition metals from industrial waste and process water (France)	N/A	N/A	N/A
Jun-17	The Jordan Company (DuBois Chemicals) / BHS Specialty Chemical Products	FDA-approved chemicals for food, beverage, and other industries	N/A	N/A	N/A
Jun-17	Platte River Equity / MFG Chemical	Polymers, surfactants, and esters in oilfield, water treatment, mining, coatings, & agriculture	N/A	N/A	N/A
Jun-17	American Securities / Chromoflo Technologies	Chemical and pigment dispersions for architectural and industrial coatings, and thermoset composite industries globally	N/A	N/A	N/A
Jun-17	Wind Point Partners / Valicor Environmental Services	Non-hazardous wastewater treatment	N/A	N/A	N/A
Jun-17	American Securities (Royal Adhesives & Sealants) / Graco Supply Company (Ball Ground)	Aircraft sealant repackaging	N/A	N/A	N/A
Jun-17	SK Capital Partners / Foremark Performance Chemicals	Formaldehyde solutions and derivatives for oilfield, refinery, and petrochemical applications	N/A	N/A	N/A
Jun-17	SK Capital Partners / Tri-Tex	Dyes, pigments, enzymes, and auxiliary products for textile, paper, carpet, and leather (Canada)	N/A	N/A	N/A
Jun-17	Wind Point Partners (Aurora Plastics) / Valicor Environmental Services	Polyvinyl chloride (PVC) compounds and alloys for automotive, construction, fencing, footwear, furniture, and recreational industries (Canada)	N/A	N/A	N/A
May-17	Audax (RelaDyne) / Western Marketing	Gasoline distribution	N/A	N/A	N/A
May-17	Black Diamond Capital (Polynt Group) / Reichhold	Polyester resins, coating resins, intermediates, and composites (Italy)	N/A	N/A	N/A
May-17	AEA Investors (Evoqua Water Technologies) / Noble Water Technologies	Water purification equipment for commercial/ industrial, medical/laboratory, and pharmaceutical	N/A	N/A	N/A
Apr-17	New Mountain Capital (Avantor Performance Materials) / Puritan Products	Specialty chemicals for pharmaceutical, biotechnology, semiconductor, microelectronics, solar panel industries	N/A	N/A	N/A
Apr-17	Audax (RelaDyne) / Hager Oil Company	Petroleum products distribution	N/A	N/A	N/A
Apr-17	Pritzker Group (ProAmpac) / Trinity Packaging	Plastic packaging products	N/A	N/A	N/A
Apr-17	New Mountain Capital / Gelest (unknown stake)	Silane, silicone, organosilicon, and metal-organic compounds for commercial production	N/A	N/A	N/A
Apr-17	Arsenal Capital (Accella Performance Materials) / Covestro (spray polyurethane foam business)	Certain assets of Covestro's North American spray polyurethane foam business	N/A	N/A	N/A
Mar-17	VEI Capital (Finproject S.p.A) / Solvay (polyolefin cross-linkable compounds business)	Assets of Solvay's Polyolefin Cross-Linkable Compounds Business (Italy)	N/A	N/A	N/A
Mar-17	Goldner Hawn Johnson & Morrison / Applied Adhesives	Distribution of adhesives and dispensing equipment	N/A	N/A	N/A
Mar-17	American Securities (Chromoflo Technologies) / Elementis Specialties	Colorants business comprising of Tint-Ayd® and Dapro® product lines	N/A	N/A	N/A
Mar-17	The Jordan Company; The Riverside Company / DuBois Chemicals	Value-added specialty cleaning and process solutions for manufacturing, pulp and paper, transportation, water treatment and more	N/A	N/A	N/A
Mar-17	CenterOak Partners (Aakash Chemicals) / Heritage Color	Pigments, dyes, and chemical distribution	N/A	N/A	N/A
Mar-17	XPV Water Partners / Environmental Operation Solutions	Environmentally friendly chemicals for biological contaminant removal applications in water and wastewater treatment systems	N/A	N/A	N/A
Feb-17	CI Capital Partners (Maroon Group) / Lincoln Fine Ingredients	Value-added distributor of specialty chemicals & ingredients for personal care, food & beverage, pharma, and household and industrial markets	N/A	N/A	N/A
Feb-17	SK Capital / Niacet Corporation	Propionates and acetates for food and pharmaceutical industries	N/A	N/A	N/A
Jan-17	CenterOak Partners / Aakash Chemicals	Value-added distributor of pigments, dyes, waxes and other specialty chemicals	N/A	N/A	N/A

** EV = Enterprise Value (equity value, plus funded debt, minority interests and preferred shares; less cash and cash equivalents)*

Grace Matthews Chemicals Index: Enterprise Value / EBITDA (Last 10 Years)



Source: Grace Matthews & Capital IQ

The Grace Matthews Chemicals Index tracks the Enterprise Value / EBITDA ratios ("EV/EBITDA multiples" or just "EBITDA multiples") of 98 publicly-traded chemical companies that span multiple markets and geographies. The index aggregates the latest reported financial data and stock prices, and tracks valuation trends and operating metrics across different industry sectors. The Index averages are equally weighted, as opposed to weighting by market capitalization, in order to avoid having the valuations and financial performance of the largest companies determine index values.

Grace Matthews Index: Current Values

	Total Enterprise Value / Revenues	Total Enterprise Value / EBITDA	Gross Margin % Sales	EBITDA % Sales	1 Year Revenue Growth %	1 Year EBITDA Growth %
Mean	2.3x	12.3x	31.0%	17.0%	8.0%	11.0%
Median	2.0x	11.4x	30.0%	18.0%	5.0%	5.0%

As of October 20, 2017

Grace Matthews: Select Chemicals and Materials Transactions

- CiDRA has sold its subsidiary CiDRA Chemical Management Inc. (CCMI) to Buckman
- MFG Chemical, Inc. "Building Valuable Bonds" has been recapitalized by Platte River Equity
- Applied adhesives has been acquired by GHJ&M Goldner Hawn Johnson Morrison
- Aakash Chemicals The Sky is the Limit has been recapitalized by CenterOak Partners
- Henry has been acquired by American Securities
- United Paint has sold its global automotive interior rigid thermoplastics coatings business to Axalta
- TPC Group has sold its Baytown Operations to SI Group The Substance Inside
- Buckman has sold select Canadian assets to Triwater Holdings
- Ennis-Flint has been acquired by Olympus Partners
- Bacon Adhesives a division of Cass Polymers has been acquired by Royal Adhesives & Sealants
- 3M has sold its pressurized polyurethane foam adhesives business to ICP
- BASF The Chemical Company has sold its global Polyolefin Catalysts business to Grace
- americhem has acquired Vi-Chem Corporation
- Delos Capital sold its portfolio company California Products Corporation to Audax Group
- Taylor Innovative Science. Applied Technology. has been acquired by Dominus Capital
- CQC ChemQuest Chemicals has been acquired by Edgewater Capital Partners
- Silbond has been acquired by Evonik Industries
- Compass Chemical International has been acquired by One Rock Capital Partners
- jb Jones-Blair has been acquired by Hempel
- PChem has been acquired by Weatherford

Grace Matthews Clients Listed First

Grace Matthews Overview

Grace Matthews is recognized globally as a leader in transaction advisory services for manufacturers and distributors throughout the chemical value chain. Grace Matthews' clients include privately held businesses, private equity funds, and large, multinational corporations.

Grace Matthews' practice is global in scope, and focuses on several areas: sell-side transactions and divestitures for private companies, private equity holdings, and multi-national corporations; buy-side work for large public companies, major multi-nationals, and sponsor-backed chemical platforms; leveraged transactions and recapitalizations, strategic advisory analysis, and transaction fairness opinions. Areas of expertise include:

- Adhesives, Sealants, Tapes
- Catalysts, Petrochemicals
- Construction Chemicals, Building Products
- Contract Manufacturing, Custom Synthesis
- Distribution, Equipment, Infrastructure
- Food Ingredients, Flavors, Fragrances
- High Purity, Electronic Chemicals
- Industrial Minerals, Inorganic Chemicals
- Intermediates, Industrial Chemicals
- Lubricants, Lube Additives
- Oilfield & Water Treatment Chemicals
- Paints, Coatings, Inks
- Personal Care, Soaps, Medical Materials
- Plastics, Colorants, Additives
- Tolling, Private Label Products
- Additional Chemical Sectors

Grace Matthews is a privately held investment bank with successful chemical industry transactions dating back to the early 1990s. Grace Matthews principals have completed over 100 transactions involving global corporations such as AkzoNobel, 3M, Lubrizol, BASF, DuPont, Sherwin-Williams, PPG Industries, Ashland, Ceradyne, DSM, ICI, Borregaard, Air Products, Landec Corporation, The Home Depot, Hexion Specialty Chemicals, ITW, PolyOne, Weatherford, and Evonik, to name a few.

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