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Design Thinking as a Driver for Innovation in the Chemical Industry

Market Intelligence





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### Notes:

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# Chemicals Industry Momentum Improved in Q2 2017

### **Guest Columnist**

Based on economic and industry reports through mid-July, we believe business conditions for the U.S. chemical industry remained healthy during the recently completed second quarter. Domestic economic activity continued to grow in the quarter with the consensus forecast of about 2.5% real GDP growth, somewhat better than first quarter's 1.4% annual rate.

The expansion of the domestic manufacturing sector continued during the second quarter. U.S. construction and automobile markets remain very healthy, including housing starts 4% higher in the first half although monthly vehicles sales so far in 2017 were modestly lower versus year earlier levels and for the full year will likely be below 2016's record pace. Price inflation early this year for various key raw materials, including petrochemical derivatives, became a bigger negative factor in the quarter for industrial users of these inputs.

The American Chemistry Council (ACC) reported its Chemicals Activity Barometer (CAB), a leading macroeconomic indicator based on chemical industry data, on a three-month moving average basis, was flat in June following small gains in both April and May. This marked a slowing from the first quarter's average 0.5% monthly gain. This recent modest gain still suggested continued growth through 2017.

The global manufacturing sector, the largest customer base for the chemical industry, continued to expand during the just completed second quarter of 2017, according to the monthly worldwide PMI business surveys, but at slightly slower pace than in the first quarter, which was at the fastest rate since 2011.

The U.S. manufacturing sector also appears to have continued to strengthen during the second quarter. According to the Institute for Supply Management's monthly reports for manufacturing activity, U.S. manufacturing activity in June expanded for the tenth consecutive month and growth was at the fastest monthly pace in nearly three years.

The ISM manufacturing monthly reports indicated that the U.S. chemical products industry expanded in each month of the second quarter. The industry's last monthly contraction was reported for last September. The Federal Reserve Board reported that industrial production grew at a 4.7% annual rate during the second quarter, but on strong increases for the mining and utilities sectors. Manufacturing output rose at a 1.4% pace although its level in June was little different from early in 2017. Output for the chemicals industry was estimated to have risen 1.0% in the second quarter, following a small decline in the first.

Several "hard data" points suggest that the pace of chemicals shipments grew during the second quarter of 2017. According to the Association of American Railroads, the number of U.S. chemicals railroad carloads in the second quarter rose 1.4% from the year earlier period, including a 4.1% gain for June, an improvement from the 1.2% drop of the first quarter. Railroads carry about 30% of industry shipments.

Industry production of chlorine, a widely used chemical, rose 2% in the second quarter from the year earlier period, following a similar size decline in the first quarter, driven by a strong increase in June following unusual amounts of plant downtimes that reduced output in the quarter's first two months. Meanwhile, plastic resins production in April and May rose less than 1% each month from the year earlier levels. Output had eased 1.8% in the first quarter.

Selling prices for key basic chemicals, intermediates, and plastics decreased during the second quarter although many were higher compared to their year earlier levels. These higher price comparisons for chemical products were a greater cost headwind than at the start of 2017 to buyers such as specialty producers as their ability to implement selling price typically lag a rise in input costs.

The monthly average of a global index published by S&P Global Platts of seven widely used petrochemicals, in June was up 4.6% from the year earlier but down 15% from the recent high in February as feedstocks costs had declined.

The domestic monthly contract prices for ethylene, the largest volume petrochemical monomer, fluctuated in a narrow range in the second quarter and averaged marginally lower than the first quarter but modestly higher versus the second quarter of 2016. We believe U.S. contract ethylene margins narrowed in the second quarter from the lower prices.

Domestic prices for most of the major derivative plastics faced increased customer resistance during the second quarter.





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Richard O'Reilly, CFA Managing Analyst Revere Associates +1 (732) 821-5043 reor11@verizon.net Polyethylene makers had achieved price gains in February and March on tight supplies but gave up a portion of those gains in May. Polyethylene makers include Dow Chemical, LyondellBasell, and Westlake Chemical. Polyvinyl chloride prices, which climbed in February and March ahead of the spring seasonal pickup of construction activity, were largely unchanged during the second quarter as another price hike failed during the quarter. Vinyl producers include Westlake Chemical, now the second largest U.S. vinyl resins producer following its purchase of Axiall Corp. in August 2016.

Contract prices for propylene, the second largest volume monomer, declined in the second guarter after increasing by two-thirds during the first guarter on tightened supplies to the highest in March since 2014. Prices for the second quarter averaged 13% lower versus the first quarter but were up by about 25% against the year earlier quarter. We expect prices to average lower during the current third guarter on greater industry supplies. The higher propylene prices combined with supply issues for some products have resulted in increased prices for derivatives such as resins and solvents to buyers, including paint makers (Sherwin-Williams, PPG Industries, and Axalta).

Inorganic prices have increased so far in 2017. Caustic soda contract prices have risen since early 2016 on stronger overall demand, breaking a trend of price weakness during 2015. Prices appear to have increased each month during the second quarter, in part on reduced industry production, and producers will continue to push their recent proposed hikes, including those announced for 2017's third quarter.

Chlorine prices rose modestly in the seasonally strong second quarter as producers achieved a large portion of their proposed price increases. We believe solid demand and tightening supply balances should allow producers to achieve additional price gains in the third quarter. Olin Corp. and Westlake Chemical are major chloralkali makers.

Titanium dioxide pigment prices and margins, while still down from their peaks in 2012, have greatly increased globally since bottoming in the first quarter of 2016 as producers have been able to implement various regional price increases due to stronger industry supply and demand fundamentals, including due to some capacity closures. We expect further price gains through the rest of 2017 and into 2018. The leading producers are Chemours (the pigment business of DuPont), former Huntsman Corp., and Tronox. These higher selling prices in 2017 are negatively impacting important users such as paint and plastics makers.





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# Design Thinking as a Driver for Innovation in the Chemical Industry

### The Backdrop: Megatrends

To understand the changes in the chemical industry, as well as help chart a path forward, industry executives should look at the underlying megatrends that are reshaping the world, as well as the industry. Accenture analysis has identified five megatrends that will drive new challenges and opportunities over the next decade and a half.

Resource availability describes the current situation that some resources are available in abundance while others are becoming—or predicted to become—scarce. The finite amount of fossil fuel left as feedstock is one example for how this trend affects the chemical industry directly. Water and carbon emissions management, as well as renewable energy sources are further ones. The result of these trends will be the emergence of circular processes where product design enables feedstock generation from waste.

Changing populations, changing societies summarizes trends like the aging of the population in Europe, urbanization and the changed expectations of generations that grew up with technology, a rapidly evolving world and environmental responsibility. The effects are shorter production lifecycles and the necessity for companies to provide an unmistakable product experience.

The increasing demand for chemicals in emerging markets like China, India or Mexico is both an opportunity and threat. The former entails chances to participate in growth, while the latter involves increased competition from new players emerging together with those markets.

The convergence of software, hardware and communication technologies leads to increased and improved automation (e.g. through robots and 3D printing) and thereby to a higher level of operational efficiency. A side effect is that labor as a factor of production will decrease in meaning.

The opening of new frontiers involves, on one hand, the exploration of previously inaccessible commodity sources, such as the seabed or deep-earth mining. On the other hand, these techniques, together with the pushing of the boundaries in both private spaceflights and the aerospace industry, require new high performance materials and thus offer new opportunities for the chemical industry. Together, these five megatrends provide vital insight into the coming decade and beyond.

### The Drive for Innovation

To remain relevant and competitive, the current and next generation of CEOs must manage these megatrends to drive innovation activities forward. Key to such innovation is the digitalization of both the administrative andmore importantly-production processes. Yet, chemical companies often encounter barriers that hamper the innovation processes. These barriers can be divided into two categories: Internal and external. For the chemical industry, the most influential of the external barriers is the increasing restrictiveness of regulation. The costly and timely authorization processes for new products can act as a deterrent to developing new products and delay public acceptance of meaningful products from an environmental, health and safety perspective.

Additionally, weak venture capital markets are responsible for further difficulties affecting companies that do not have the necessary capital for more innovative projects.

Internal barriers can often be significant, including sales cannibalization and the filtering effect that the existing business model can have on the flow of information in R&D and innovation teams. While this can be solved quite easily by building innovation teams consisting of both long-tenured employees and new hires (Govindarajan and Trimble, 2010), other barriers, such as limited corporate resources, cannot and have to be split between the ongoing business and new innovation projects. Accenture's Chief Strategy Officer, Omar Abbosh, has just recently released a blog article on this topic (Abbosh, 2017).

Traditionally there is a "no failure culture" established in many firms with the effect that risky, disruptive innovations with the potential to achieve breakthrough are not pursued, and only incremental improvements are made. Kersten et al. (2017) propose a "fast failing culture" to overcome the barriers, meaning that innovation projects are allowed to fail at an early stage which may prevent them from being pushed to launch once it becomes clear that they won't bring the expected outcome.

This would enable the opportunity to learn from the failing projects and additionally foster the eagerness to experiment and take risks (Kersten et al., 2017). Additionally, companies





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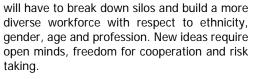
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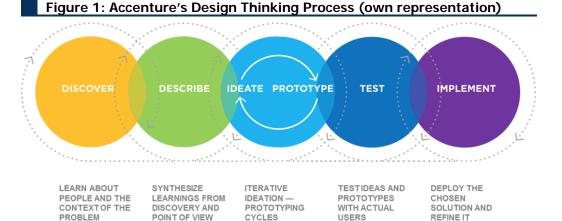


Innovation takes place at the intersection of departments and is facilitated by an innovation ecosystem. As Accenture's CEO, Pierre Nanterme, said at the last Accenture SAP Leadership Council in June 2017, "The challenges businesses face today are so complex, no single company can navigate them without partners who share a common vision. The innovation ecosystem is a powerful part of the new reality we operate in... and key to a successful ecosystem is collaboration between technology providers and business and, of course, clients. In other words, disruptors who are not afraid to disrupt each other to drive innovation and growth." One methodology that is allowing new business model to gain traction in a variety of industries is Design Thinking.

### Design Thinking as a Method

Design Thinking is a form of product design that has been established over many years and is now being applied far beyond product design. In contrast to conventional approaches, which start with technical solvability, Design Thinking puts customers' needs, as well as user-centered inventions, at the heart of the process. Furthermore, Design Thinking requires continuous feedback between the innovator and the customer.

From its underlying mindset and culture, to the design and selection of tools and exercises, all the way to the implementation of a project— Design Thinking puts an unconditional focus on the user group, where the user's needs are researched and understood from the beginning. The idea-generation that results from the Design Thinking process is built upon the implicit needs of the user. The technology to be applied for the solution is secondary, and so is the business model. Accenture's Design Thinking process follows different phases, from "Discover" through to "Implement", while embedding feedback loops and early prototypes (see figure 1).



The crucial difference between Design Thinking and other methodologies (e.g. Stage-Gate) is the ability to move back and forth between the phases, depending on the feedback from prototypes and user testing. In fact, this movement is an encouraged part of the process.

All of this happens in a unique work culture, which is defined through:

a. The combination of experts or expert knowledge from diverse areas

b. Early prototypes, built based on a minimal heuristic basis

c. An iterative, agile and fully aware project management team

d. The permission to fail, often and early, or better yet—the opportunity for quick success, by working with an early prototype

The chemical industry has not yet been challenged by disruptive innovators, unlike other industries, such as telecommunications, media, and automotive. Nevertheless, the pressure is increasing. Design Thinking could be especially valuable to the industry at the product and system levels.

In summary, Design Thinking helps to identify customer needs, as well as helps define what a client-centric solution might look like. The close collaboration with the customer, the frequent testing of assumptions and the strong collaboration of experts from different company divisions may open up the chemical company's view on how they may deliver the best value—to their industrial clients, to the end consumer, and society as a whole.



## Chemicals and Materials Index

				<b>-</b>	LTM		YoY		Enterprise Value/LTM	
Company Name	Share Price	% of 52 Week High	Market Cap	Enterprise Value	Revenue	EBITDA	Revenue Growth	EBITDA Margin	Revenue	EBITDA
Commodity Chemicals										
Air Liquide	\$123.45	93.9%	\$47,77	\$65,67	\$23,28	\$5,544	33.4%	23.8%	3.17x	13.1x
Air Products and Chemicals	143.06	90.6%	31,147	31,787	9,951	3,183	24.3%	32.0%	3.26x	9.6x
Braskem	10.34	92.5%	7,630	15,651	15,313	2,878	(1.0%)	18.8%	1.07x	5.7x
Cabot Corporation	53.43	87.1%	3,338	4,255	2,613	488	6.1%	18.7%	1.68x	8.5x
Formosa Plastics Corporation	3.05	94.5%	19,409	18,226	6,340	884	13.3%	13.9%	2.99x	10.0x
Fuchs Petrolub	54.66	92.6%	7,089	6,875	2,713	469	10.7%	17.3%	2.58x	14.0x
K+S	25.58	89.9%	4,897	7,549	3,729	438	(9.5%)	11.8%	1.90x	16.1x
Linde	189.89	92.7%	35,250	44,154	19,780	4,227	7.5%	21.4%	2.25x	10.1x
LyondellBasell Industries	84.39	86.4%	33,840	41,237	31,945	6,141	8.4%	19.2%	1.34x	6.5x
Mexichem	2.69	90.9%	5,659	9,241	5,531	919	1.8%	16.6%	1.62x	7.4x
North Huajin Chemical Industries	1.48	66.5%	2,362	4,088	4,439	693	9.4%	15.6%	0.91x	5.8x
Olin Corporation	30.28	89.4%	5,023	8,494	5,932	843	31.4%	14.2%	1.47x	10.1x
Quaker Chemical Corporation	145.23	94.4%	1,930	1,917	778	107	5.5%	13.7%	2.51x	17.4x
SK Chemicals	64.27	90.6%	1,354	4,420	6,356	286	24.1%	4.5%	0.71x	14.7x
Trinseo	68.70	94.6%	3,022	3,784	4,103	477	8.3%	11.6%	0.96x	5.8x
Ultra-Petroleum	10.85	79.8%	2,139	5,405	764	552	16.9%	72.3%	7.65x	10.9x
Westlake Chemical Corporation	66.21	97.3%	8,544	12,147	6,936	1,328	63.7%	19.2%	2.01x	10.4x
Specialty Chemicals										
A. Schulman	\$32.00	84.9%	\$939	\$1,950	\$2,419	\$207	(5.7%)	8.6%	0.81x	9.4x
Akzo Nobel	86.81	91.6%	21,701	24,319	16,545	2,472	3.0%	14.9%	1.48x	9.5x
Albemarle Corporation	105.54	90.5%	11,689	12,293	2,810	745	2.5%	26.5%	4.48x	15.6x
Ashland Global Holdings	65.91	51.4%	4,102	6,263	5,063	719	42.8%	14.2%	1.24x	8.0x
Celanese Corporation	94.94	97.9%	13,387	16,256	5,615	1,159	2.1%	20.6%	2.98x	12.3x
Chugoku Marine Paints	7.69	96.4%	504	403	724	63	(30.7%	8.7%	0.55x	6.3x
Clariant	22.04	92.3%	7,144	8,796	6,346	837	6.1%	13.2%	1.44x	9.7x
Ecolab	132.75	98.4%	38,504	45,907	13,363	2,890	0.7%	21.6%	3.47x	15.9x
Elementis	3.82	91.7%	1,771	1,690	740	134	13.7%	18.1%	2.44x	13.3x
Evonik Industries	31.93	86.9%	14,881	17,525	15,590	2,349	8.6%	15.1%	1.15x	7.7x
Ferro Corporation	18.29	94.4%	1,530	2,080	1,239	175	10.7%	14.1%	1.75x	12.4x
Ferrovial	22.17	93.4%	16,344	23,008	13,828	1,106	28.9%	8.0%	1.74x	19.4x
H.B. Fuller Company	51.11	94.1%	2,583	3,280	2,153	266	3.5%	12.4%	1.52x	11.9x
Hexcel Corporation	52.79	94.4%	4,797	5,556	1,954	442	1.0%	22.6%	2.80x	12.3x
Hitachi Chemical Company	29.82	99.4%	6,210	5,731	5,173	764	(0.5%)	14.8%	1.16x	7.4x
Kansai Paint	23.01	98.3%	5,922	6,785	3,019	422	(4.0%)	14.0%	2.31x	14.9x
Kraton Corporation	34.44	91.8%	1,074	2,783	1,853	339	33.1%	18.3%	1.56x	8.7x
Morgan Advanced Materials	3.68	83.8%	1,049	1,422	1,341	188	9.9%	14.0%	1.11x	7.9x
NewMarket Corporation	460.48	95.2%	5,458	5,808	2,108	403	2.7%	19.1%	2.79x	14.3x
Nippon Paint Holdings	37.83	94.5%	12,133	12,682	5,146	1,043	(1.6%)	20.3%	2.37x	11.5x
Novozymes	43.72	85.1%	12,913	13,201	2,207	771	5.5%	35.0%	6.03x	17.2x
PolyOne Corporation	38.74	94.8%	3,167	4,307	3,454	419	10.9%	12.1%	1.27x	10.6x
PPG Industries	109.96	96.9%	28,172	31,294	14,850	2,557	2.6%	17.2%	2.12x	12.2x
RPM International	54.55	96.6%	7,287	9,214	4,958	639	3.0%	12.9%	1.88x	14.1x
Sanyo Chemical Industries	47.00	98.1%	1,036	1,031	1,351	184	(10.9%	13.7%	0.77x	5.2x
Shenzhen Capchem Technology	3.39	64.0%	1,283	1,242	250	52	35.8%	20.8%	5.01x	22.3x
The Sherwin-Williams Company	350.96	96.8%	32,684	33,621	12,559	2,108	8.7%	16.8%	2.79x	16.5x
Toray Industries	8.37	91.5%	13,386	19,142	18,306	2,151	(9.9%)	11.8%	1.06x	8.5x
W. R. Grace & Co.	72.01	89.4%	4,923	6,406	1,673	371	6.1%	22.2%	3.92x	15.5x
Wacker Chemie	108.44	82.5%	5,387	6,250	6,285	1,190	15.0%	18.9%	1.00x	5.2x
Diversified Chemicals										
3M Company	\$208.19	97.0%	\$124,3	\$133,7	\$30,53	\$8,531	1.5%	27.9%	4.40x	15.4x
Arkema	106.59	93.4%	8,063	9,822	9,173	1,500	9.4%	16.4%	1.10x	6.8x
BASF	93.45	87.0%	85,835	103,82	70,713	12,720	6.1%	18.0%	1.51x	8.3x
The Dow Chemical Company	63.07	96.3%	77,053	94,052	52,567	9,270	13.9%	17.6%	1.86x	9.8x
E. I. du Pont de Nemours	80.71	96.2%	69,978	74,880	25,295	5,322	2.7%	21.0%	3.00x	14.1x
Eastman Chemical Company	83.99	97.3%	12,248	19,010	9,197	2,150	(0.1%)	23.4%	2.09x	9.0x
FMC Corporation	73.05	94.4%	9,789	11,715	3,314	708	12.3%	21.4%	3.58x	16.4x
Huntsman Corporation	25.84	91.6%	6,198	10,161	9,843	1,177	(0.3%)	12.0%	1.04x	9.1x
Kemira	12.62	88.1%	1,923	2,693	2,763	314	3.8%	11.4%	0.99x	8.5x
LANXESS	75.63	93.8%	6,922	8,677	9,993	1,270	18.1%	12.7%	0.99x 0.93x	7.3x
Mitsubishi Chemical Holdings	8.28	93.8%	11,917	29,311	30,974	4,255	(13.5%	13.7%	0.93x 0.98x	7.3x 7.0x
Monsanto Company	118.36	99.5%	51,998	60,309	14,516	4,255	9.2%	28.9%	4.15x	14.4x
	110.00	17.370	51,770	00,007	17,510	+,107	7.2/0	20.7/0	4.1JA	14.44



# Global Chemicals Group

Median		93.4%					6.1%	17.0%	1.7%	11.6x
Mean		91.0%					7.6%	17.5%	2.3%	12.3x
Univar	29.20	88.1%	4,094	6,841	8,058	474	(4.5%)	5.9%	0.85x	14.6x
Sinochem International Corporation	1.41	73.6%	2,937	6,778	6,591	-	7.3%	-	1.01x	-
Nexeo Solutions	8.30	83.5%	741	1,565	3,507	151	NM	4.3%	1.44x	33.3x
Nagase & Co.	15.21	99.4%	1,919	2,336	6,553	249	(7.9%)	3.8%	0.36x	10.0x
Monsanto Company	118.36	99.5%	51,998	60,309	14,516	4,189	9.2%	28.9%	4.15x	14.4x
Mitsui & Co.	14.29	91.6%	25,211	56,241	40,287	3,662	(8.0%)	9.1%	1.45x	11.7x
ITOCHU Corporation	14.86	99.6%	23,038	45,850	44,070	3,726	(8.2%)	8.5%	1.06x	8.9x
IMCD	54.14	89.5%	2,839	3,294	1,814	161	(3.6%)	8.9%	1.68x	18.9x
Brenntag	57.82	90.0%	8,933	10,820	12,811	919	11.7%	7.2%	0.87x	11.8x
Aceto Corporation	\$15.45	59.5%	\$465	\$771	\$579	\$63	3.7%	10.9%	1.33x	11.9x
Chemicals Distribution										
Symrise	70.76	89.5%	9,185	10,898	3,372	702	11.1%	20.8%	3.29x	15.7x
Sensient Technologies Corporation	80.53	95.2%	3,564	4,128	1,360	247	(2.0%)	18.2%	2.99x	16.4x
International Flavors & Fragrances	135.00	94.0%	10,661	11,919	3,211	671	5.0%	20.9%	3.77x	18.0x
Givaudan	2,001.9	90.6%	18,418	19,388	5,023	1,038	7.8%	20.7%	3.98x	19.0x
Frutarom Industries	69.95	99.3%	4,157	4,638	1,192	226	17.1%	19.0%	3.74x	19.6x
Chr. Hansen Holding	72.66	95.1%	9,544	10,333	1,163	387	12.8%	33.2%	9.00x	27.5x
Cambrex Corporation	59.75	94.9%	1,946	1,847	515	167	11.3%	32.4%	3.69x	11.4x
Balchem Corporation	\$77.71	86.8%	\$2,476	\$2,708	\$564	\$136	3.2%	24.0%	4.87x	19.8x
Ingredients Chemicals										
Sumitomo Chemical	5.75	94.7%	9,398	18,499	17,859	2,273	(8.4%)	12.7%	1.06x	7.3x
Solvay	134.06	94.2%	13,838	18,845	13,809	2,605	22.1%	18.9%	1.41x	7.3x
Pidilite Industries	12.42	95.9%	6,368	6,165	863	185	6.6%	21.4%	7.09x	31.2x

Source: Bloomberg, CapitalIQ and company filings, as of 06/30/2017

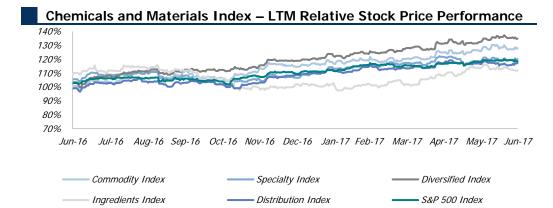
Note: \$ in millions, except share price

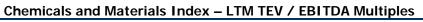


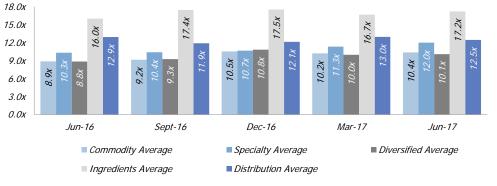
### **Global Chemicals Group**

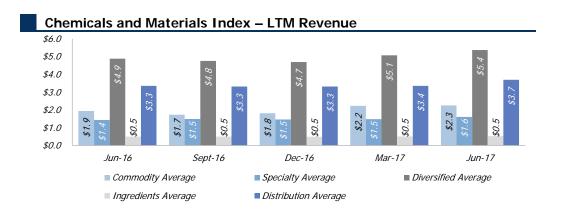


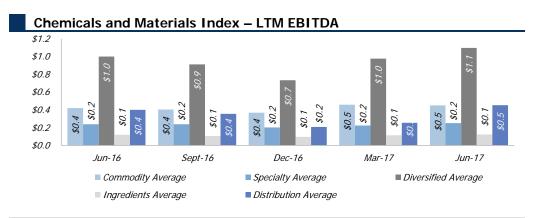
06/08/17: Rutland Group, a leading specialty chemical company serving the apparel and specialty industrial sectors, has been sold to PolyOne Corporation. Rutland manufactures screen printing inks for use on apparel and specialty industrial coatings for uses including automotive filtration, medical safety systems and other industrial applications. The combination of Rutland and PolyOne's Wilflex unit creates a dominant player in the North American screen printing ink industry. Tim Gosline, Partner at The Riverside Company, commented, "Lincoln International's hands-on approach, senior banker commitment and deep knowledge of the buyer universe resulted in excellent service and execution." Lincoln acted as the exclusive advisor to Rutland and Riverside.











Source: Bloomberg, CapitalIQ and company filings



### M&A Transaction Recap (Selected Announced Transactions)

Date	Target Company	Target Description	Acquiring Company
Jun-17	Spartech	Manufactures engineered polymer structures	Arsenal Capital Partners
Jun-17	Chryso	Manufactures admixtures and additives	Cinven
Jun-17	Industrielack	Manufactures protective household coatings	Helvetica Capital
Jun-17	MFG Chemical	Manufactures polymers, surfactants and esters	Platte River Equity
Jun-17	California Medical Innovations	Manufactures latex, plastisols and thermoplastic elastomers	Polytek Development
Jun-17	GRO-WELL Brands	Manufactures natural and organic lawn and garden care product	sGlobal Environment Fund
Jun-17	F4 Environmental Solutions	Manufactures industrial degreasers for oil & gas remediation	Phoenix Metals Corporation
lun-17	Haldor Topsøe	Heavy Duty Diesel and Stationary Catalyst Businesses	Umicore
Jun-17	LAM International	Manufactures biological pesticides	Certis
lun-17	MBA Polymers	Manufactures post-consumer recycled plastics	Elephant Equity
lun-17	Coral Chemical Company, Coral Seas Division	Manufactures pool and spa water care products	NC Brands
un-17	Applicazioni Plastiche Industriali	Manufactures thermoplastic compound materials and elastomers	Trinseo
Jun-17	Agilex Flavors and Fragrances	Manufactures fragrance compounds and delivery systems	Firmenich International
Jun-17	Starpharma Holdings	Petrochemical Polymer Technology Business	Loveland Products
Jun-17	FUJIFILM Europe	Pressroom Chemicals and Coating Operations	Heidelberger Druckmaschinen
Jun-17	Rutland Holdings	Manufactures inks and dyes	PolyOne Corporation
Jun-17	Cyclo Industries	Manufactures specialty chemicals for car care and maintenance	Niteo Products
un-17	Elixair International	Manufactures sealants	SOCOMORE
un-17	Foremark Performance Chemicals	Manufactures formaldehyde solutions and derivatives	SK Capital Partners
un-17	Reinier Plastic	Manufactures polyvinyl chloride compounds and alloys	Aurora Plastics
un-17	Tri-Tex	Manufactures dyes, pigments and enzymes	SK Capital Partners
May-17	E.I. DuPont de Nemours and Company	Copper Fungicide Facility	Kocide
/lay-17	Metamark	Manufactures self-adhesive sign vinyl and specialty materials	Primary Capital Partners
Jay-17	Spencer Coatings	Manufactures industrial coatings for the marine industy	Axalta Coating Systems
Jay-17	Biolink Gesellschaft	Manufactures self-adhesives and other bonding products	Saint-Gobain Performance Plastics Isofluor
Jay-17	Huntsman Corporation	Manufactures organic and inorganic chemical products	Clariant
Jay-17	BASF SE, Micronal PCM business	Manufactures acrylate-based microencapsulated materials	Microtek Laboratories
May-17	Caldic	Manufactures solutions for the chemicals and food markets	Goldman Sachs Group, Merchant Banking
Jay-17	VWR Corporation	Manufactures laboratory materials and provides lab services	Avantor Performance Materials
Jay-17	IFS Chemicals	Manufactures polyurethane insulation foam products	Huntsman Corporation
Jay-17	Trellis Earth Products	Manufactures bioplastics-based products	Beaconhouse Capital Management
May-17	Compounding Engineering Solutions	Manufactures specialty elastomers and bioplastics	Beaconhouse Capital Management
Apr-17	GAT Food Essentials	Manufactures microencapsulated functional food ingredients	Chemische Fabrik Budenheim
Apr-17	S.P.C. Group Srl	Manufactures high-end tile coatings	Ferro Corporation
\pr-17	Flowchem	Manufactures eco-friendly drag reducing additive solutions	KMG Chemicals
Apr-17	Puritan Products	Manufactures specialty chemicals and custom chemical blends	Avantor Performance Materials
Apr-17	Williams Olefins	Manufactures polymer grade ethylene and propylene	NOVA Chemicals
Apr-17	Pharmachem Laboratories	Manufactures nutritional and nutraceutical ingredients	Ashland
Apr-17	The Valspar Corporation, Valspar Wood	Manufactures industrial wood coatings	Axalta Coating Systems
Apr-17	Feyco, Treffert Coatings and Schekolin	Manufactures wood and industrial surface paints and coatings	Teknos Group
Apr-17	Houghton International	Manufactures specialty chemicals, oils and lubricants	Quaker Chemical Corporation
Apr-17	National Carwash Solutions	Manufactures car wash equipment and cleaning solutions	AEA Investors
Apr-17	Valley Processing	Manufactures custom mixed rubber compounds	Hexpol

# Market Intelligence

**04/24/2017: PPG Industries**, the manufacturer of coatings, specialty materials and glass products, is continuing to seek acquisition opportunities against the backdrop of its effort to combine with AkzoNobel. CEO Michael McGarry confirmed the group has an active pipeline of several acquisition targets.

**06/20/2017: Novacap**, a global pharmaceutical and chemical manufacturer, is finalizing the strategic combination with PCAS, a technology-oriented fine chemicals company.

**06/27/2017: Trinseo**, plans to make at least one more acquisition for its performance plastics segment before 2019 to reach its inorganic growth

EBITDA target, said President and CEO Christopher Pappas.

**06/30/2017: Caldic**, the chemical distributor and formulator, is planning to expand its Asia presence through an acquisition in Southeast Asia.

**07/27/2017: Venator Materials**, the subsidiary of Hunstman, has successfully launched an IPO. Venator is a manufacturer of titanium dioxide and performance additives.

**08/15/2017: HunstmanClariant**, The merger of equals is working towards settling antitrust implications with the U.S. FTC regarding its sodium isethionate and poletheramine products. The groups expects to clear any regulatory hurdles.

Source: Mergermarket, CapitalIQ, company filings, investor presentations and earnings transcripts



## Global Industry Groups

Aerospace & Defense Automotive & Truck **Building &** Infrastructure **Business Services Chemicals and Materials** Consumer Distribution Electronics **Energy & Power Financial Institutions** Food & Beverage Healthcare Industrials Packaging Technology, Media & Telecom

### **Global Locations**

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### **Advisory Services**

Mergers & Acquisitions Debt Advisory Special Situations JV & Partnering Valuations & Opinions



# **About Lincoln International**

Lincoln International specializes in merger & acquisition advisory services, debt advisory services, private capital raising and restructuring advice on mid-market transactions. Lincoln International also provides fairness opinions, valuations and joint venture and partnering advisory services on a wide range of transaction sizes. With eighteen offices in the Americas, Asia and Europe, Lincoln International has strong local knowledge and contacts in key global economies. The firm provides clients with senior-level attention, in-depth industry expertise and integrated resources. By being focused and independent, Lincoln International serves its clients without conflicts of interest. More information about Lincoln can be obtained at www.lincolninternational.com.

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