PwC Chemicals Valuation Quarterly UpdateQ3 2014

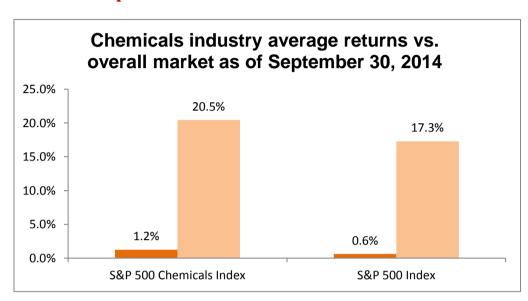




http://www.pwc.com/us/en/industrial-products/chemicals As of September 30, 2014 USD in millions, unless otherwise noted

Industrial Products Industry - Chemicals Valuation Quarterly Update (Q3 2014)

Recent Market Trends & Developments



Notable metrics in Q3 2014 for the largest chemicals companies

Change in market capitalization

Quarter-o	ver-quarter	Year-over-year						
Average	Median	Average	Median					
-3.5%	-8.7%	8.6%	6.3%					

Average EV/EBITDA multiple

	_	Year-over-year change
11.8	-0.2%	8.2%

- 9 of the top 25 constituents of the chemicals industry, based on market capitalization, saw increase in market capitalization during the third quarter of 2014.
- 16 of the top 25 constituents of the chemicals industry saw increases in market capitalizations for the year ended June 30, 2014.
- Sigma-Aldrich Corporation experienced the largest increase in market capitalization over the last quarter with increases of 34.3 percent. Sigma-Aldrich Corporation experienced the largest increase in market capitalization over the last year with an increase of 57.9 percent. Overall, the top constituents of the chemicals industry experienced average and median increases in market capitalization over the last year of 8.6 and 6.3 percent, respectively.
- The three largest transactions involving public acquirers that closed during the third quarter of 2014 included Merck KGaA's acquisition of Sigma-Aldrich Corporation, Albemarle Corporation's acquisition of Rockwood Holdings, Inc., and Eastman Chemical Co.'s acquisition of Taminco Corporation

Recent Developments:

- According to PwC's 2014 Global CEO Survey, chemicals CEOs are far more optimistic about the economy than in prior years with 56.0 percent of CEOs believing the global economy will improve over the next twelve months. Only 2.0 percent of CEOs surveyed expect the global economy to decline.
- Chemicals CEOs surveyed also identified high and volatile energy and raw material prices as a key concern.
 75.0 percent of chemicals CEOs (compared to 56.0 percent of CEOs across all industries) are somewhat or extremely concerned that high and volatile energy costs could threaten growth.
- 82.0 percent of chemicals CEOs (compared to 55.0 percent of CEOs across all industries) worry about high and volatile materials prices.
- According to PwC's Chemicals Compounds October 2014 M&A review, there was a slight decline in deal volume in the third quarter, however, deal value grew significantly sequentially, and year on year, driven by nine mega-deals (valued at \$1 billion or more). Average deal value grew to \$756m, aided by the 9 mega-deals, which collectively valued at almost \$24 billion.
- In the third quarter, Asia again led globally in deal volume. The region was involved in 23 deals, valued at almost \$12.3 billion.

 China based companies were the key driver of Asian deal activity, with 18 deals of which 16 were local market. In North America, the United States drove volume and value, with \$13.1 billion of deal value.

Exhibits in This Quarterly Update

Market metrics of the largest global chemicals companies Market metrics of the largest chemicals companies by region Summary metrics of recent transactions

Citations

2014 PwC Global CEO Survey PwC study, Chemical compounds, October 2014 http://www.pwc.com/gx/en/ceo-survey/2014/industry/chemicals.jhtml http://www.pwc.com/en_US/us/industrial-products/publications/assets/pwc-chemicals-industry-mergers-acquisitions-q3-2014.pdf



Industrial Products Industry - Chemicals Valuation Quarterly Update

Top Chemicals Companies (1)

	Mar	rket Capitaliza	tion	Pric	e/Earnings (I	TM)	Enterpris	e Value/Rever	nue (LTM)	Enterprise Value/EBITDA (LTM)		
Company	9/30/2013	6/30/2014	9/30/2014	9/30/2013	6/30/2014	9/30/2014	9/30/2013	6/30/2014	9/30/2014	9/30/2013	6/30/2014	9/30/2014
Saudi Basic Industries Corporation	76,994	91,588	104,931	24.5x	29.6x	33.3x	1.9x	2.1x	2.3x	6.5x	7.0x	7.9x
BASF SE	87,889	107,079	84,041	18.7x	21.3x	17.2x	1.1x	1.2x	1.1x	8.0x	9.1x	8.0x
E. I. du Pont de Nemours and Company	54,076	60,097	65,678	24.8x	24.1x	26.8x	1.7x	1.9x	2.1x	10.6x	11.2x	12.1x
The Dow Chemical Company	46,472	61,961	62,618	19.1x	22.8x	21.6x	1.2x	1.4x	1.4x	8.6x	9.7x	9.7x
Monsanto Company	55,641	65,438	59,022	25.9x	28.9x	26.1x	3.7x	4.3x	3.9x	12.8x	14.5x	13.1x
LyondellBasell Industries N.V.	41,507	51,490	55,670	13.7x	17.4x	17.9x	1.0x	1.2x	1.3x	6.9x	8.6x	9.0x
L'Air Liquide SA	43,295	46,319	41,836	23.6x	25.2x	24.6x	2.5x	2.6x	2.6x	10.4x	10.8x	10.8x
Praxair Inc.	35,443	38,913	37,672	26.1x	26.5x	25.3x	3.9x	4.0x	3.9x	12.7x	12.8x	12.3x
Linde Aktiengesellschaft	36,760	39,418	35,525	26.8x	30.3x	29.5x	2.3x	2.3x	2.3x	10.0x	10.0x	10.2x
Ecolab Inc.	29,763	33,424	34,407	35.0x	34.8x	34.5x	3.0x	2.9x	3.0x	15.5x	15.0x	14.9x
Syngenta AG	37,493	34,172	29,144	25.5x	26.1x	25.2x	2.7x	2.5x	2.4x	13.1x	12.6x	12.4x
Potash Corp. of Saskatchewan, Inc.	27,067	31,881	28,769	13.6x	23.1x	25.5x	3.9x	5.5x	5.7x	7.8x	12.1x	13.0x
Shin-Etsu Chemical Co., Ltd.	25,991	25,882	27,816	23.2x	23.3x	27.1x	2.1x	1.8x	2.1x	8.6x	7.7x	9.1x
Air Products & Chemicals Inc.	22,342	27,303	27,730	23.9x	29.0x	28.7x	2.8x	3.3x	3.3x	11.0x	12.8x	12.7x
PPG Industries Inc.	23,874	29,055	27,118	22.2x	29.6x	25.2x	1.6x	1.9x	1.7x	10.5x	12.3x	11.1x
The Sherwin-Williams Company	18,707	20,619	21,415	30.6x	31.2x	31.1x	2.0x	2.1x	2.1x	16.2x	16.4x	16.4x
Nan Ya Plastics Corporation	16,689	19,083	17,368	46.0x	29.7x	25.5x	2.1x	2.1x	1.9x	21.3x	15.2x	12.9x
Akzo Nobel NV	15,766	18,186	16,612	21.9x	34.5x	33.0x	1.0x	1.1x	1.1x	8.1x	10.7x	10.4x
The Mosaic Company	18,319	18,972	16,638	12.8x	45.7x	54.7x	1.6x	2.5x	2.3x	5.4x	13.6x	12.7x
Sigma-Aldrich Corporation	10,256	12,060	16,196	24.9x	28.5x	37.7x	3.8x	4.3x	5.7x	12.5x	14.1x	18.8x
Evonik Industries AG	17,223	18,501	16,144	15.4x	24.7x	25.0x	1.0x	1.0x	1.0x	6.6x	9.5x	9.9x
LG Chem, Ltd.	18,845	19,284	15,917	17.4x	19.0x	18.5x	1.0x	0.9x	0.8x	7.9x	7.5x	6.9x
Petronas Chemicals Group Berhad	16,818	16,864	15,217	19.8x	24.9x	26.7x	2.8x	3.2x	3.0x	7.5x	9.1x	9.2x
Formosa Plastics Corporation	16,433	17,001	15,092	37.5x	35.7x	31.4x	2.5x	2.5x	2.2x	19.3x	17.9x	15.2x
Givaudan SA	13,421	15,323	14,709	34.1x	37.5x	38.3x	3.1x	3.3x	3.5x	15.7x	16.5x	17.1x
Average	32,283	36,797	35,491	24.3x	28.1x	28.4x	2.3x	2.5x	2.5x	10.9x	11.9x	11.8x
Median	25,991	29,055	27,816	23.9x	28.5x	26.7x	2.1x	2.3x	2.3x	10.4x	12.1x	12.1x

Notes:

(1) Market data provided by Capital IQ, Inc. Selected companies represent the largest global companies in the chemicals industry based on market capitalization.



Industrial Products Industry - Chemicals Valuation Quarterly Update (continued)

Top Chemicals Companies - Americas (1)

	Mai	rket Capitaliza	tion	Pric	e/Earnings (L	TM)	Enterpris	se Value/Rever	nue (LTM)	Enterprise Value/EBITDA (LTM)		
Company	9/30/2013	6/30/2014	9/30/2014	9/30/2013	6/30/2014	9/30/2014	9/30/2013	6/30/2014	9/30/2014	9/30/2013	6/30/2014	9/30/2014
E. I. du Pont de Nemours and Company	54,076	60,097	65,678	24.8x	24.1x	26.8x	1.7x	1.9x	2.1x	10.6x	11.2x	12.1x
The Dow Chemical Company	46,472	61,961	62,618	19.1x	22.8x	21.6x	1.2x	1.4x	1.4x	8.6x	9.7x	9.7x
Monsanto Company	55,641	65,438	59,022	25.9x	28.9x	26.1x	3.7x	4.3x	3.9x	12.8x	14.5x	13.1x
Praxair Inc.	35,443	38,913	37,672	26.1x	26.5x	25.3x	3.9x	4.0x	3.9x	12.7x	12.8x	12.3x
Ecolab Inc.	29,763	33,424	34,407	35.0x	34.8x	34.5x	3.0x	2.9x	3.0x	15.5x	15.0x	14.9x
Potash Corp. of Saskatchewan, Inc.	27,067	31,881	28,769	13.6x	23.1x	25.5x	3.9x	5.5x	5.7x	7.8x	12.1x	13.0x
Air Products & Chemicals Inc.	22,342	27,303	27,730	23.9x	29.0x	28.7x	2.8x	3.3x	3.3x	11.0x	12.8x	12.7x
PPG Industries Inc.	23,874	29,055	27,118	22.2x	29.6x	25.2x	1.6x	1.9x	1.7x	10.5x	12.3x	11.1x
The Sherwin-Williams Company	18,707	20,619	21,415	30.6x	31.2x	31.1x	2.0x	2.1x	2.1x	16.2x	16.4x	16.4x
The Mosaic Company	18,319	18,972	16,638	12.8x	45.7x	54.7x	1.6x	2.5x	2.3x	5.4x	13.6x	12.7x
Average	33,170	38,766	38,107	23.4x	29.6x	30.0x	2.6x	3.0x	2.9x	11.1x	13.0x	12.8x
Median	28,415	32,653	31,588	24.3x	29.0x	26.5x	2.4x	2.7x	2.6x	10.8x	12.8x	12.7x

Top Chemicals Companies - Europe, Middle East, and Africa (1)

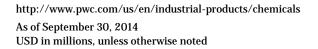
	Ma	Market Capitalization			Price/Earnings (LTM)			Enterprise Value/Revenue (LTM)			Enterprise Value/EBITDA (LTM)		
Company	9/30/2013	6/30/2014	9/30/2014	9/30/2013	6/30/2014	9/30/2014	9/30/2013	6/30/2014	9/30/2014	9/30/2013	6/30/2014	9/30/2014	
Saudi Basic Industries Corporation	76,994	91,588	104,931	24.5x	29.6x	33.3x	1.9x	2.1x	2.3x	6.5x	7.0x	7.9x	
BASF SE	87,889	107,079	84,041	18.7x	21.3x	17.2x	1.1x	1.2x	1.1x	8.0x	9.1x	8.0x	
LyondellBasell Industries N.V.	41,507	51,490	55,670	13.7x	17.4x	17.9x	1.0x	1.2x	1.3x	6.9x	8.6x	9.0x	
L'Air Liquide SA	43,295	46,319	41,836	23.6x	25.2x	24.6x	2.5x	2.6x	2.6x	10.4x	10.8x	10.8x	
Linde Aktiengesellschaft	36,760	39,418	35,525	26.8x	30.3x	29.5x	2.3x	2.3x	2.3x	10.0x	10.0x	10.2x	
Syngenta AG	37,493	34,172	29,144	25.5x	26.1x	25.2x	2.7x	2.5x	2.4x	13.1x	12.6x	12.4x	
Akzo Nobel NV	15,766	18,186	16,612	21.9x	34.5x	33.0x	1.0x	1.1x	1.1x	8.1x	10.7x	10.4x	
Evonik Industries AG	17,223	18,501	16,144	15.4x	24.7x	25.0x	1.0x	1.0x	1.0x	6.6x	9.5x	9.9x	
Givaudan SA	13,421	15,323	14,709	34.1x	37.5x	38.3x	3.1x	3.3x	3.5x	15.7x	16.5x	17.1x	
Saudi Arabian Fertilizer Company	13,132	14,287	14,549	19.5x	26.9x	28.0x	9.3x	12.4x	12.6x	11.0x	15.7x	16.2x	
Average	38,348	43,636	41,316	22.4x	27.3x	27.2x	2.6x	3.0x	3.0x	9.6x	11.1x	11.2x	
Median	37,127	36,795	32,335	22.7x	26.5x	26.6x	2.1x	2.2x	2.3x	9.0x	10.4x	10.3x	

Top Chemicals Companies - Asia/Pacific (1)

	Mai	Market Capitalization			Price/Earnings (LTM)			Enterprise Value/Revenue (LTM)			Enterprise Value/EBITDA (LTM)		
Company	9/30/2013	6/30/2014	9/30/2014	9/30/2013	6/30/2014	9/30/2014	9/30/2013	6/30/2014	9/30/2014	9/30/2013	6/30/2014	9/30/2014	
Shin-Etsu Chemical Co., Ltd.	25,991	25,882	27,816	23.2x	23.3x	27.1x	2.1x	1.8x	2.1x	8.6x	7.7x	9.1x	
Nan Ya Plastics Corporation	16,689	19,083	17,368	46.0x	29.7x	25.5x	2.1x	2.1x	1.9x	21.3x	15.2x	12.9x	
LG Chem, Ltd.	18,845	19,284	15,917	17.4x	19.0x	18.5x	1.0x	0.9x	0.8x	7.9x	7.5x	6.9x	
Petronas Chemicals Group Berhad	16,818	16,864	15,217	19.8x	24.9x	26.7x	2.8x	3.2x	3.0x	7.5x	9.1x	9.2x	
Formosa Plastics Corporation	16,433	17,001	15,092	37.5x	35.7x	31.4x	2.5x	2.5x	2.2x	19.3x	17.9x	15.2x	
Formosa Chemicals & Fibre Corporation	15,538	14,801	13,523	31.4x	31.8x	32.9x	1.5x	1.3x	1.2x	13.9x	12.6x	11.7x	
Asahi Kasei Corporation	10,525	10,692	11,342	14.5x	12.2x	14.1x	0.8x	0.7x	0.8x	6.8x	5.3x	6.1x	
Toray Industries, Inc.	10,708	10,564	10,563	20.6x	17.6x	18.6x	1.0x	0.9x	1.0x	9.6x	8.6x	9.2x	
Asian Paints Limited	7,044	9,460	9,752	45.5x	NMF	NMF	3.9x	4.4x	4.5x	25.0x	27.8x	28.0x	
Nitto Denko Corporation	10,741	7,733	9,050	25.3x	18.1x	22.1x	1.3x	0.9x	1.1x	8.5x	5.5x	7.2x	
Average	14,933	15,137	14,564	28.1x	23.6x	24.1x	1.9x	1.9x	1.9x	12.8x	11.7x	11.6x	
Median	15,985	15,833	14,308	24.2x	23.3x	25.5x	1.8x	1.5x	1.6x	9.1x	8.9x	9.2x	

Notes

(1) Market data provided by Capital IQ, Inc. Selected companies represent the largest companies in the chemicals industry in each region based on market capitalization.





Industrial Products Industry - Chemicals Valuation Quarterly Update (continued)

Recent Transactions in the Chemicals Industry (1)

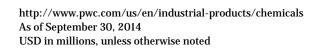
Recent Transactions in the Chemicals industry (1)					Total	Implied			
		Target	Announce		transaction		Implied equity	Implied EV	Implied EV
Acquirer	Target	Country	Date	Close Date	value	value	value	/ Revenue	/ EBITDA
Merck KGaA	Sigma-Aldrich Corporation	United States	9/22/2014	Pending	17,362.4	16,524.4	16,743.0	6.0x	19.8x
Sichuan Yahua Industrial Group Co., Ltd.	Sichuan State Lithium Material Co., Ltd.	China	9/22/2014	Pending	69.5	110.7	110.7	5.2x	N/A
Arkema S.A.	Bostik, Inc.	United States	9/19/2014	Pending	2,234.6	2,234.6	-	1.1x	11.0x
Eastman Chemical Co.	Taminco Corporation	United States	9/11/2014	12/5/14	2,774.9	2,707.9	1,729.9	2.1x	10.5x
FMC Corp.	Cheminova A/S	Denmark	9/8/2014	Pending	1,825.7	1,825.7	1,485.3	1.6x	N/A
Omega Protein Corporation	Bioriginal Food & Science Corporation	Canada	9/8/2014	9/5/14	79.5	79.5	49.3	0.8x	10.8x
Sunningdale Tech Ltd.	First Engineering Limited	Singapore	9/3/2014	11/12/14	80.0	80.0	66.1	0.6x	4.7x
D&L Industries, Inc.	Chemrez Technologies Inc	Philippines	9/1/2014	10/3/14	124.4	176.3	173.9	1.4x	11.5x
Hanwha Chemical Corp.	KPX Fine Chemical Co.,Ltd.	South Korea	8/13/2014	10/8/14	89.5	97.7	80.4	0.5x	N/A
Yara International ASA	Galvani Indústria, Comércio e Serviços	Brazil	8/5/2014	12/1/14	318.0	530.0	530.0	1.5x	11.0x
Mexichem, S.A.B. de C.V.	VESTOLIT GmbH & Co. KG	Germany	8/4/2014	12/1/14	293.8	293.8	-	0.5x	N/A
Albemarle Corporation	Rockwood Holdings, Inc.	United States	7/15/2014	Pending	7,637.9	6,941.6	6,142.1	4.9x	22.2x
Aalberts Industries NV	Impreglon SE	Germany	7/8/2014	Pending	162.0	162.0	162.0	0.9x	6.0x
Kemira Oyj	Akzo Nobel NV, Paper Chemical	Netherlands	7/8/2014	Pending	208.3	208.3	208.3	0.6x	6.7x
PPG Industries Inc.	Consorcio Comex, S.A. de C.V.	Mexico	6/30/2014	11/2/14	2,053.8	2,053.8	1,970.1	2.1x	N/A
Motor Oil Hellas Corinth Refineries SA	Cyclon Hellas SA	Greece	6/18/2014	11/7/14	60.0	31.1	25.3	0.1x	4.1x
Neenah Filtration, LLC	Crane Technical Materials, Inc.	United States	6/5/2014	7/1/14	85.0	85.0	72.0	1.7x	N/A
A. Schulman, Inc.	Ferro Corporation, Specialty Plastics	United States	6/4/2014	7/1/14	91.0	91.0	88.5	0.0x	5.6x
Myers Industries Inc.	Scepter Corporation	Canada	6/2/2014	7/2/14	160.7	146.0	97.1	1.6x	7.8x
Westlake Chemical Corp.	Vinnolit Holdings GmbH	Germany	5/28/2014	7/31/14	666.4	666.4	666.4	0.5x	6.0x
			ſ	Average	1,818.9	1,752.3	1,520.0	1.7x	9.8x
				Median	185.1	192.3	136.4	1.3x	9.2x

Purchase Price Allocation Benchmarking - Transactions in the Chemicals Industry

_ u				Allo	Allocation of Purchase Price As a Percentage of Excess Consideration (2)							
			_		Total							
		Closing	Purchase]	Intangible	Trade names	Customer					
Target	Buyer	Date	Price (\$ MM)	Goodwill	Assets	/ trademarks	relationships	Technology	Other			
International Specialty Products, Inc.	Ashland Inc.	23-Aug-2011	2,179.0	55.0%	45.0%	7.8%	11.4%	22.1%	3.7%			
Value Plastics, Inc.	Nordson Corporation	26-Aug-2011	258.4	70.5%	29.5%	6.1%	15.9%	7.3%	0.2%			
Diversey Holdings, Inc.	Sealed Air Corporation	3-Oct-2011	2,925.3	52.4%	47.6%	20.0%	23.1%	3.7%	0.7%			
Tegrant Corporation	Sonoco Products Co.	8-Nov-2011	550.0	59.5%	40.5%	3.9%	34.4%	2.2%	0.0%			
ColorMatrix Corporation	PolyOne Corporation	21-Dec-2011	488.0	45.0%	55.0%	12.6%	24.9%	14.4%	3.2%			
Forbo Holding AG, Industrial Adhesives Business	HB Fuller Co.	5-Mar-2012	404.7	52.6%	47.4%	8.4%	22.7%	16.2%	0.0%			
Solutia Inc.	Eastman Chemical Co.	2-Jul-2012	3,375.0	55.5%	44.5%	13.5%	20.1%	10.9%	0.0%			
Norit N.V.	Cabot Corporation	31-Jul-2012	1,113.0	57.1%	42.9%	7.5%	15.7%	19.7%	0.0%			
Agrifos Fertilizer L.L.C.	Rentech Nitrogen Partners, L.P.	1-Nov-2012	160.9	67.9%	32.1%	0.0%	0.0%	28.4%	3.7%			
PPG Industries Inc., Commodity Chemicals Business	Georgia Gulf Corporation	28-Jan-2013	2,097.5	56.6%	43.4%	0.2%	41.1%	0.5%	1.5%			
Spartech Corp	PolyOne Corporation	13-Mar-2013	391.8	77.5%	22.5%	0.0%	8.7%	13.8%	0.0%			
Permian Mud Service, Inc.	Ecolab Inc.	10-Apr-2013	2,054.7	50.8%	49.2%	5.9%	41.4%	1.8%	0.0%			
Nypro	Jabil Circuit Inc.	1-Jul-2013	665.0	63.1%	36.9%	13.4%	13.6%	9.9%	0.0%			
Dow Chemical Company - UNIPOL Polypropylene Process	W.R. Grace & Co.	2-Dec-2013	500.0	51.0%	49.0%	2.4%	2.1%	41.4%	3.1%			
Technology Licensing and Catalysts												
Wolf Trax Inc.	Compass Minerals International Inc.	1-Apr-2014	84.5	54.6%	45.4%	14.3%	7.2%	3.6%	20.3%			
Average				57.9 %	42.1%	7.7%	18.8%	13.1%	2.4%			

Notes:

- (1) Includes recent acquisitions of chemicals companies with purchase price greater than or equal to \$50 million.(2) Excess purchase price defined as total consideration less net tangible assets acquired.





Contacts

To have a deeper discussion about valuation developments and trends, please contact:

Steve Shanker

US Industrial Products Valuation Services Leader steve.shanker@us.pwc.com +1 312 298 6982

Brian McCann

US Industrial Products Deals Leader brian.mccann@us.pwc.com +1 617 530 6364

Authors

Steve Shanker US Industrial Products Valuation Services Leader steve.shanker@us.pwc.com +1 312 298 6982

Jon Moulden jonathon.e.moulden@us.pwc.com +1 312 298 5248

Special Thanks To

Shalini R. Sivarajah