




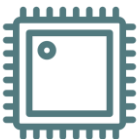






Advanced Materials and Chemicals Update

October 2023

Advanced Polymers 	Agriculture Chemicals 	Catalysts 	ChemTech 	Coatings 
Electronic Materials 	Engineered Materials 	Biosciences / Bio-Chemicals / Bio-Industrials 	Ingredients and Additives 	Sustainable Materials 

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Key Index Trading Performance

	Share Price Performance (Indexed to Today)				
	3-Years	1-Year	YTD	3 Months	1 Month
S&P 500	28%	8%	9%	(9%)	(2%)
S&P Chemicals Index	22%	0%	(3%)	(11%)	(3%)
S&P Commodity Chemicals Index	27%	4%	(2%)	(13%)	(6%)
S&P Specialty Chemicals Index	1%	(6%)	(7%)	(15%)	(6%)

(Indexed to 100)



	Average Performance (EV / NTM EBITDA)					
	3-Years	1-Year	YTD	3 Months	1 Month	Current
S&P 500	12.3x	12.6x	12.3x	12.8x	12.4x	12.1x
S&P Chemicals Index	10.9x	10.7x	11.1x	11.0x	10.6x	10.5x
S&P Commodity Chemicals Index	6.3x	6.7x	6.5x	7.0x	6.8x	6.7x
S&P Specialty Chemicals Index	13.5x	12.0x	13.4x	11.9x	11.3x	11.0x

(EV / NTM EBITDA)



Advanced Materials and Chemicals Industry M&A Activity

	2023		2022		YoY Change	
	#	Value (\$bns)	#	Value (\$bns)	#	Value
1Q	181	\$22.2	219	\$29.1	(17%)	(24%)
2Q	158	\$24.5	190	\$38.0	(17%)	(35%)
3 Q	141	\$15.0	138	\$9.5	2%	58%
October	47	\$4.2	48	\$1.9	(2%)	121%
Year to Date	527	\$66.0	595	\$78.5	(11%)	(16%)

Source: Company filings, Dealogic, Mergermarket, Factset as of October 31st, 2023. All estimates reflect Factset consensus estimates.

Select Mergers & Acquisitions

- On October 2, **Greif**, a provider of industrial packaging products and services, acquired **Reliance Products**, a supplier of packaging for crop protection chemicals ([Press Release](#))
- On October 2, **Palmdale Oil**, a leading provider of fuels, lubricants, and chemicals, acquired **Como Oil & Propane of Florida**, a full-service fuel and propane distributor ([Press Release](#))
- On October 3, **Fortescue Metals Group**, an iron ore mining company, acquired an undisclosed stake in **Electric Hydrogen**, a U.S.-based decarbonization company and producer of clean hydrogen gas, for **\$380 million** ([Press Release](#))
- On October 3, **Solenis**, a producer of chemicals for water-intensive industries, acquired **CedarChem**, a provider of water and wastewater treatment products ([Press Release](#))
- On October 4, **Kensing**, a manufacturer of natural vitamin E, plant sterols and high-purity surfactants, acquired **Advanced Organic Materials**, a producer of non-GMO plant-based vitamin E and phytosterols ([Press Release](#))
- On October 10, **Ara Partners**, a private equity firm specializing in industrial decarbonization investments, acquired **Vacuumschmelze**, a leading producer of advanced magnetic materials ([Press Release](#))
- On October 12, **Glenwood Investment Management**, a South Korea-based private equity firm, acquired **SK Pucore**, a global manufacturer of polyurethane raw materials, for **\$304 million** ([Press Release](#))
- On October 18, **Codelco**, the world's largest copper producer, acquired 100% of the share capital of **LPI**, an Australia-based lithium company, for **\$243 million¹** ([Press Release](#))
- On October 24, **Shrieve Chemical Company**, a value-added chemicals distributor, acquired **Gilbert & Jones**, a distributor of industrial chemicals throughout North America ([Press Release](#))
- On October 30, **Clariant**, a sustainability-focused specialty chemical company, acquired **Lucas Meyer Cosmetics**, a provider of high value ingredients for the cosmetics and personal care industry, from **IFF**, for **\$810 million** ([Press Release](#))
- On October 30, **IDEX**, the manufacturer of pumps, flow meters, valves and fluidic systems, acquired **Superior Technical Ceramics**, the manufacturer of technical ceramic components, for **\$206 million** ([Press Release](#))

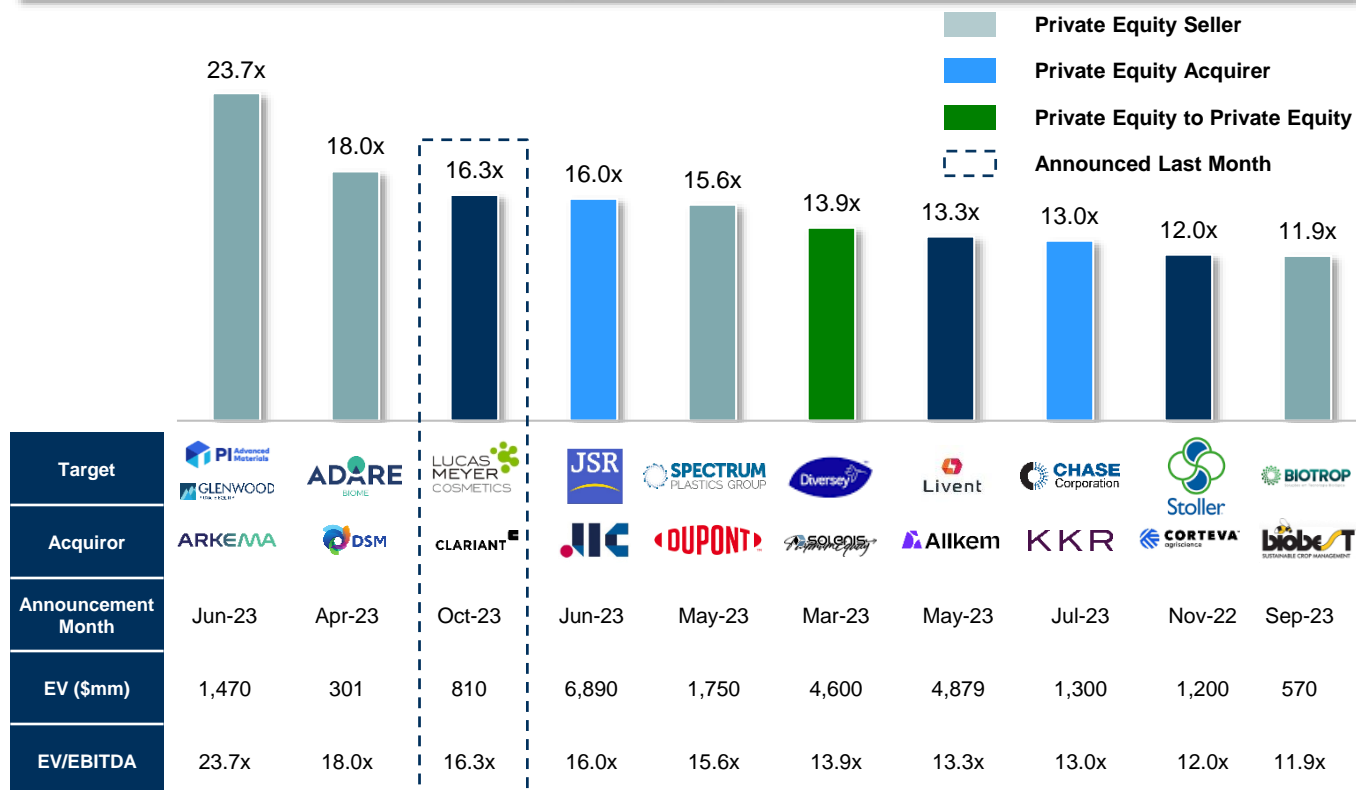
Select Capital Raises

- On October 13, **Venator Materials**, a global manufacturer and marketer of chemical products, completed its Chapter 11 recapitalization process ([Press Release](#))
- On October 26, **Cyclyx International**, a joint venture between **Agilyx**, the Oslo-based energy company, and **ExxonMobil**, raised **\$135 million** from **LyondellBasell**, the global chemical business, and **ExxonMobil** ([Press Release](#))

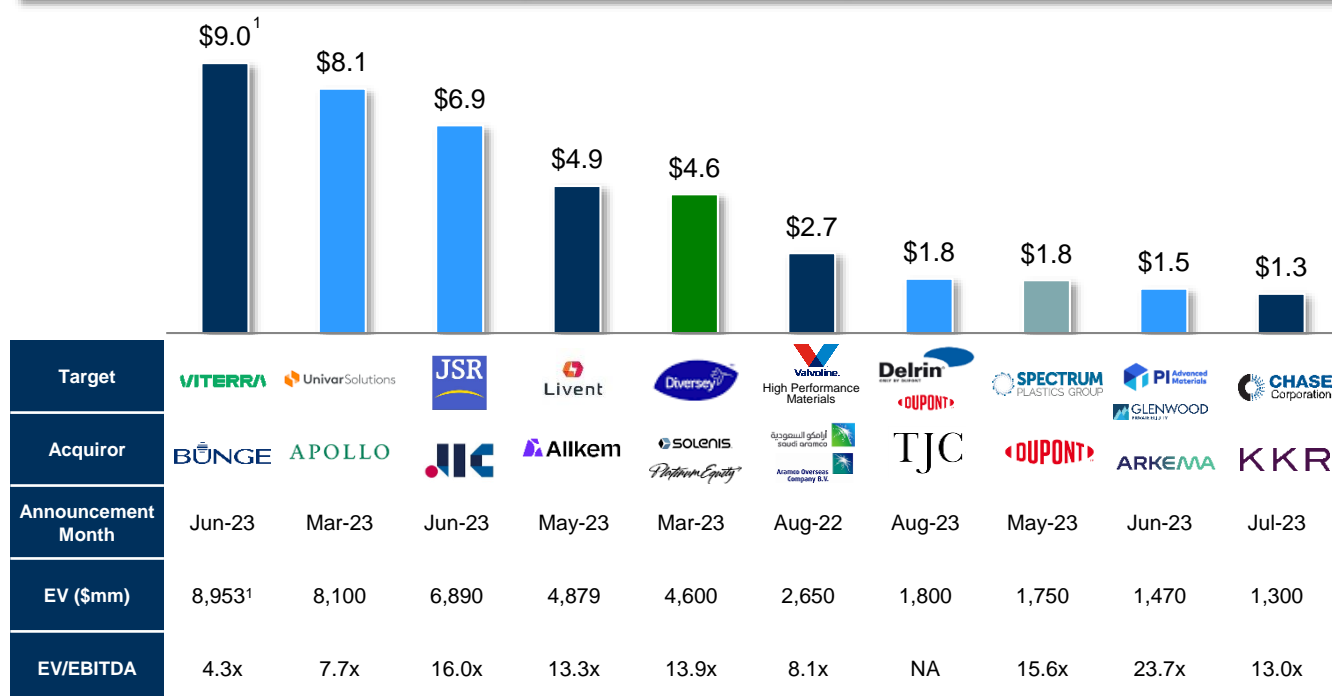
**Corporate and
Market
Announcements**

- **GlassPoint**, a leader in decarbonizing industrial process heat, partnered with the **Ministry of Investment of Saudi Arabia** to build a solar manufacturing facility and technology showcase in the Eastern Province of Saudi Arabia ([Press Release](#))
- **Lummus Technology**, a global provider of process technologies and value-driven energy solutions, announced an agreement with **Dongyang Environment Group** to deploy Lummus' advanced plastics recycling technology in South Korea ([Press Release](#))
- **GLX Filtration**, a leading innovator in water and wastewater treatment solutions, announced a turn-key solution for effectively removing per- and polyfluoroalkyl substances from water sources to meet stringent regulatory levels ([Press Release](#))
- **Avalon Advanced Materials**, a mineral development company expanded its partnership with **Metso**, a provider of sustainable technologies, to advance the construction of a full-service lithium processing facility ([Press Release](#))
- **Ginkgo Bioworks**, a U.S.-based biotech company, and **Zenfold Sustainable Technologies**, a developer of specialty ingredients, announced a collaboration to leverage **Ginkgo Enzyme Services** in its effort to discover an enzyme critical to the manufacturing of veterinary products ([Press Release](#))
- **LBB Specialties**, a distributor of specialty chemicals and ingredients throughout North America, announced its partnership with **Viscofan**, a global leader in collagen manufacturing ([Press Release](#))
- **Olin**, a global Epoxy solutions provider, achieved International Sustainability and Carbon Certification PLUS certification for its Stade, Germany facility ([Press Release](#))
- **Proman**, an integrated energy company and producer of methanol and fertilizer, signed an MoU with **Mitsubishi**, a conglomerate that operates businesses in natural gas, industrial materials, petroleum & chemicals, to explore building an ultra low-carbon ammonia facility ([Press Release](#))
- **Zymergen**, a unit of **Ginkgo Bioworks**, a U.S.-based biotech company, filed for Chapter 11 bankruptcy in Delaware ([Press Release](#))
- **Re Sustainability**, the integrated waste management company, and **PolyCycl**, a chemical recycler of post-consumer plastics, announced a business collaboration for development of a network of feedstock facilities in India for chemical recycling of plastics ([Press Release](#))
- **Goodyear**, the tire manufacturer, and **Visolis**, a sustainable technology company, announced a project to produce isoprene through the upcycling of biobased materials ([Press Release](#))

Highest Multiples Paid



Largest Transaction Size by EV



Source: Company filings, Mergermarket, Factset as of October 31st, 2023. All estimates reflect Factset consensus estimates.

1. Bunge acquisition of Viterro assumes RMI of \$9.0bn to be netted off from net debt.

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Markets Update

WTI / Brent



Natural Gas



Ethylene / Polyethylene



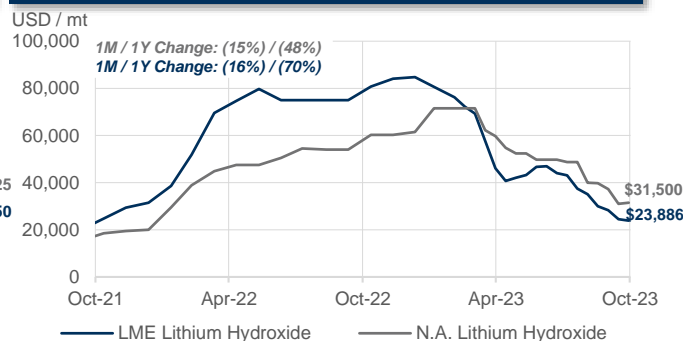
TiO₂



Nitrogen



Lithium



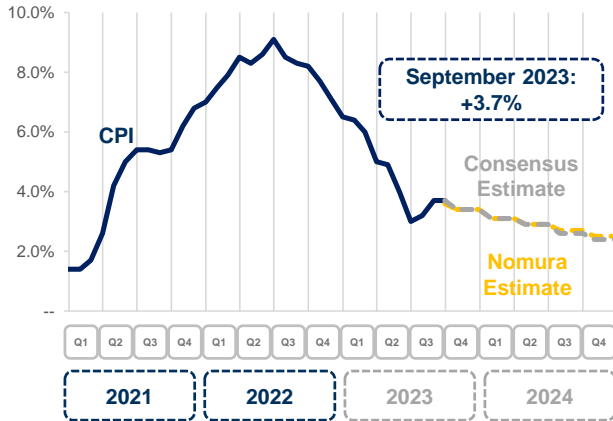
Corn



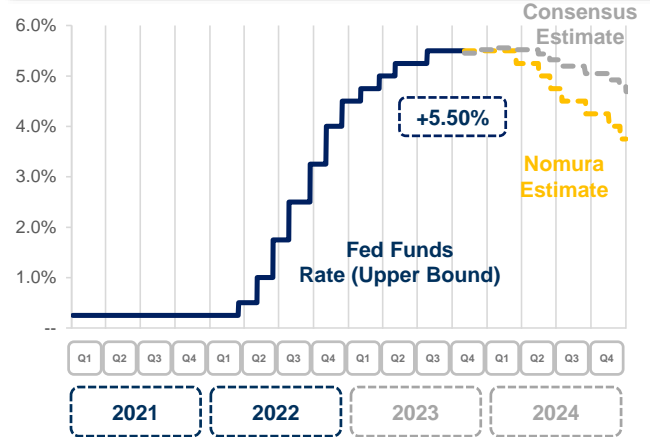
Soy



Inflation Estimates Approaching Fed Target

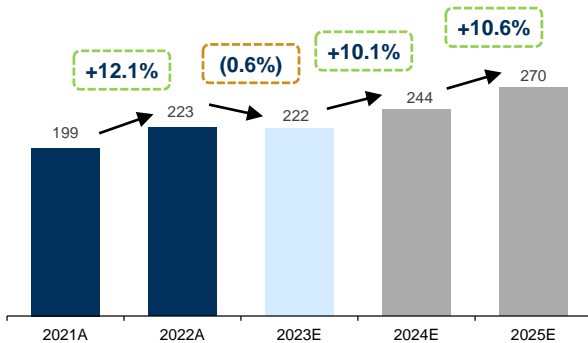


Fed Tightening Cycle Likely Complete

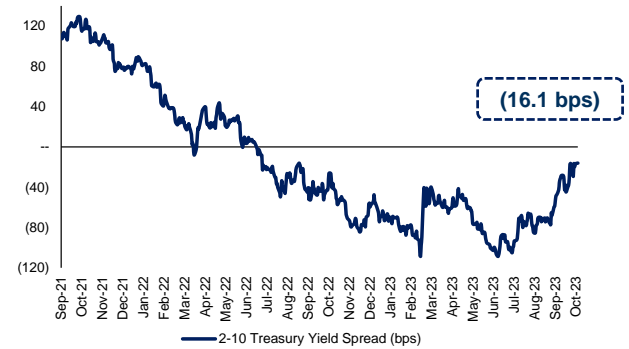


Markets Looking Past '23 Earnings Contraction

Consensus S&P 500 Expected Earnings



In-Line with the Signal from the Yield Curve



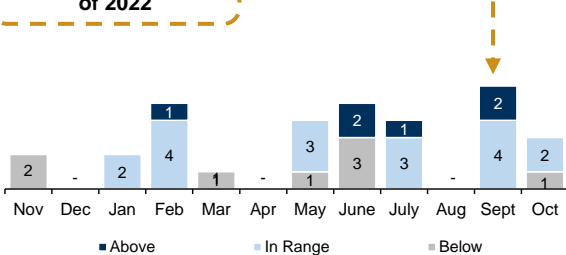
IPO Activity has Picked Up in Recent Months

Total IPO Proceeds (\$bn)

0.1 -- 0.3 1.6 0.3 -- 5.6 1.7 1.0 -- 7.1 1.9

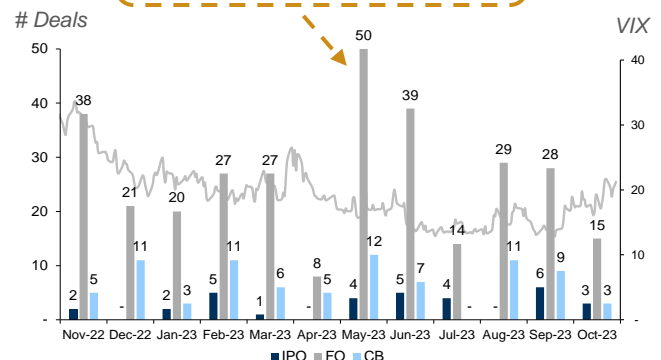
30 IPOs priced YTD compared to 20 in all of 2022

Arm's \$5.2bn IPO: largest IPO since Rivian in November 2021



Follow-On Activity at 22/23 Highs

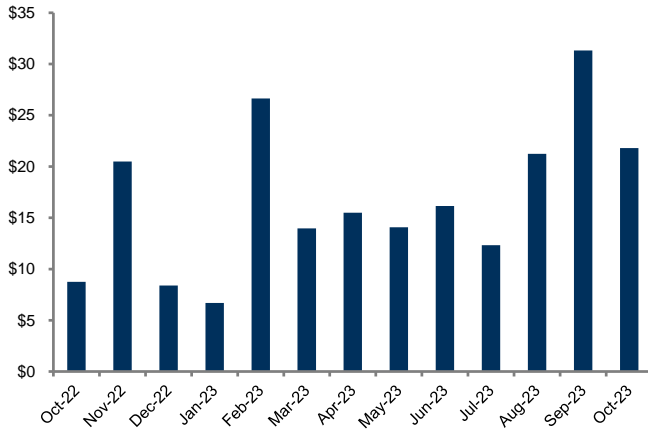
May was the first month since November 2021 to break 50+ follow-on offerings and 12+ converts¹



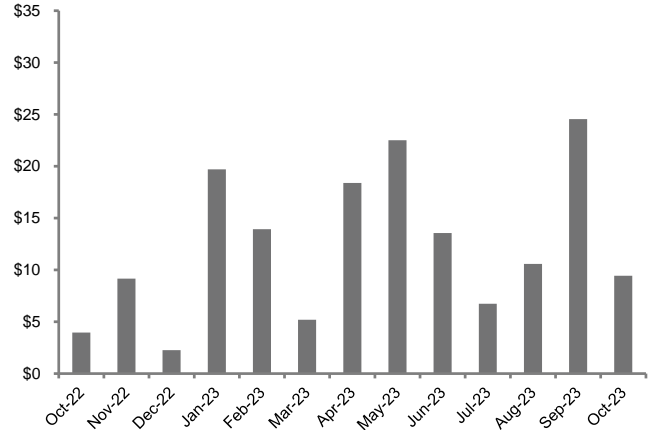
Source: Bloomberg as of market close October 31st, 2023. Inflation chart reflects September data.

1. November 2021 saw 23 IPOs, 69 Follow-ons and 18 Convertible Bonds over \$50m priced

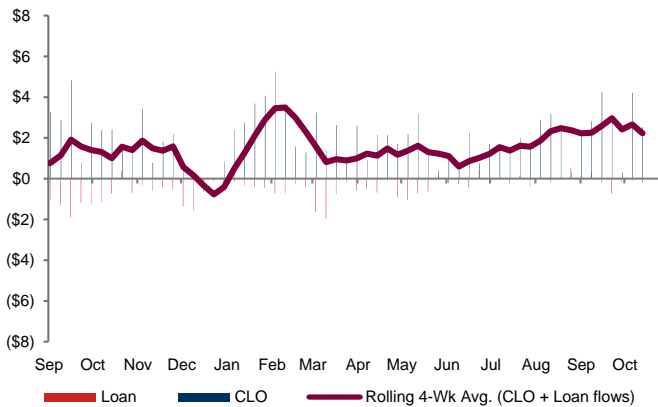
Loan Volume



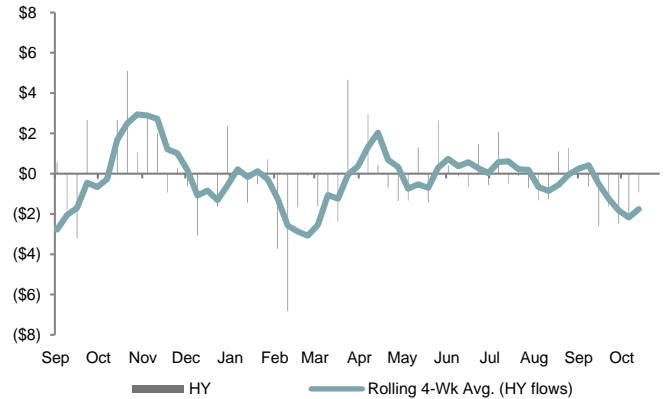
High Yield Volume (\$bn)



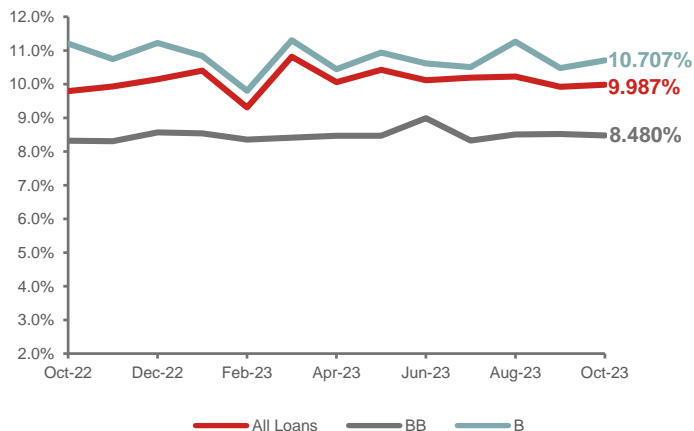
CLO Issuance + Loans Funds Flows (\$bn)



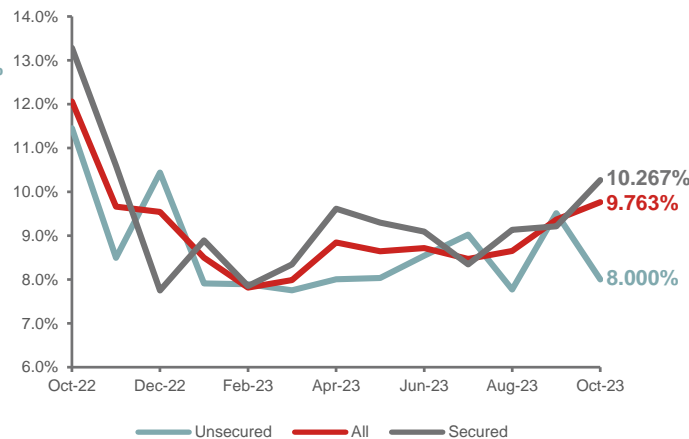
Recent High Yield Funds Flows (\$bn)



Leveraged Loan New Issue Yields¹



High Yield New Issue Yields



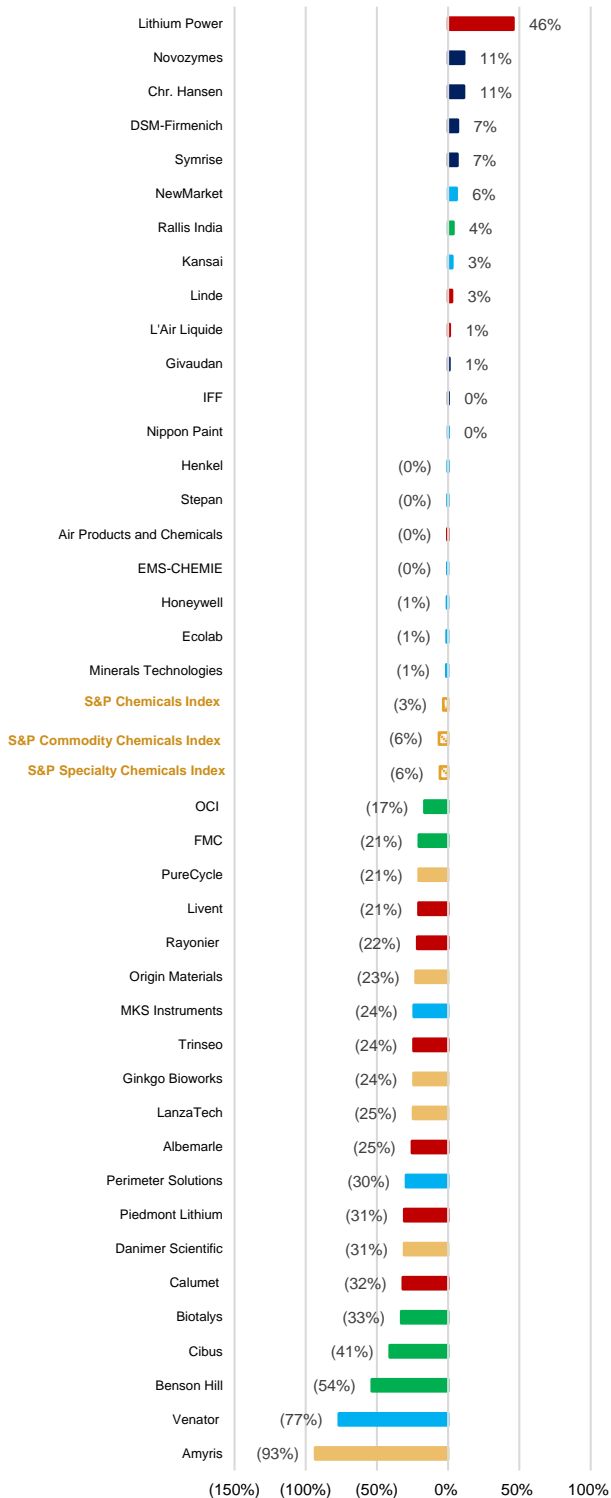
Source: Nomura, LCD.

1. Reflects rolling 30-day period.

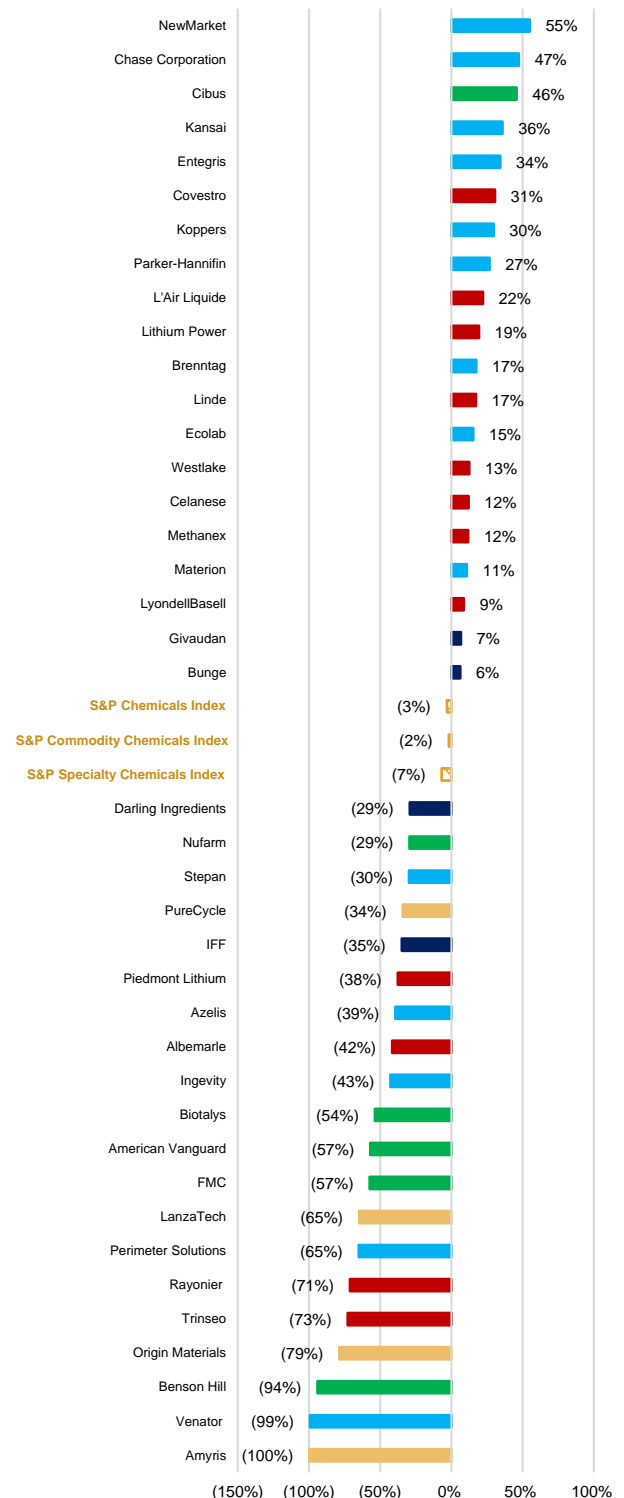
Advanced Materials and Chemicals

Share Price Performance

1 Month (Top & Bottom 20 Performers)



Year-to-Date (Top & Bottom 20 Performers)

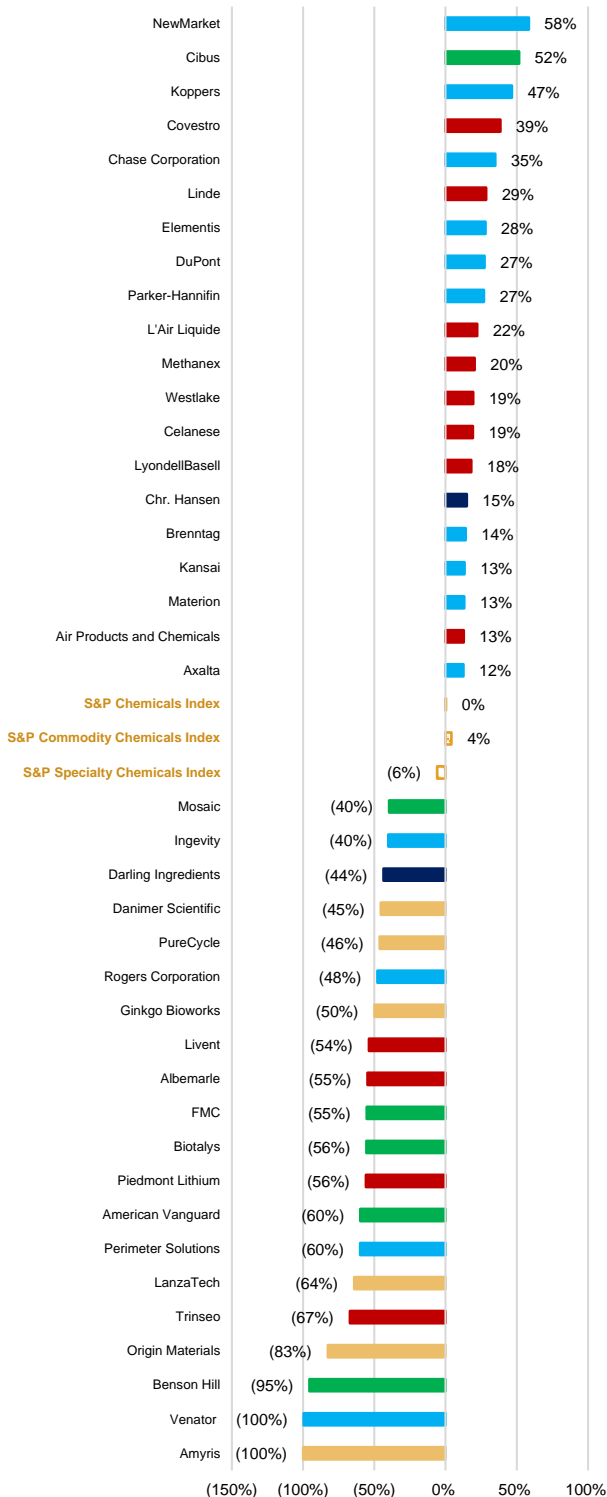


● Agriculture Chemicals
 ● Commodity & Diversified
 ● Chemicals Technology
 ● Ingredients
 ● Specialties
 ● Indices

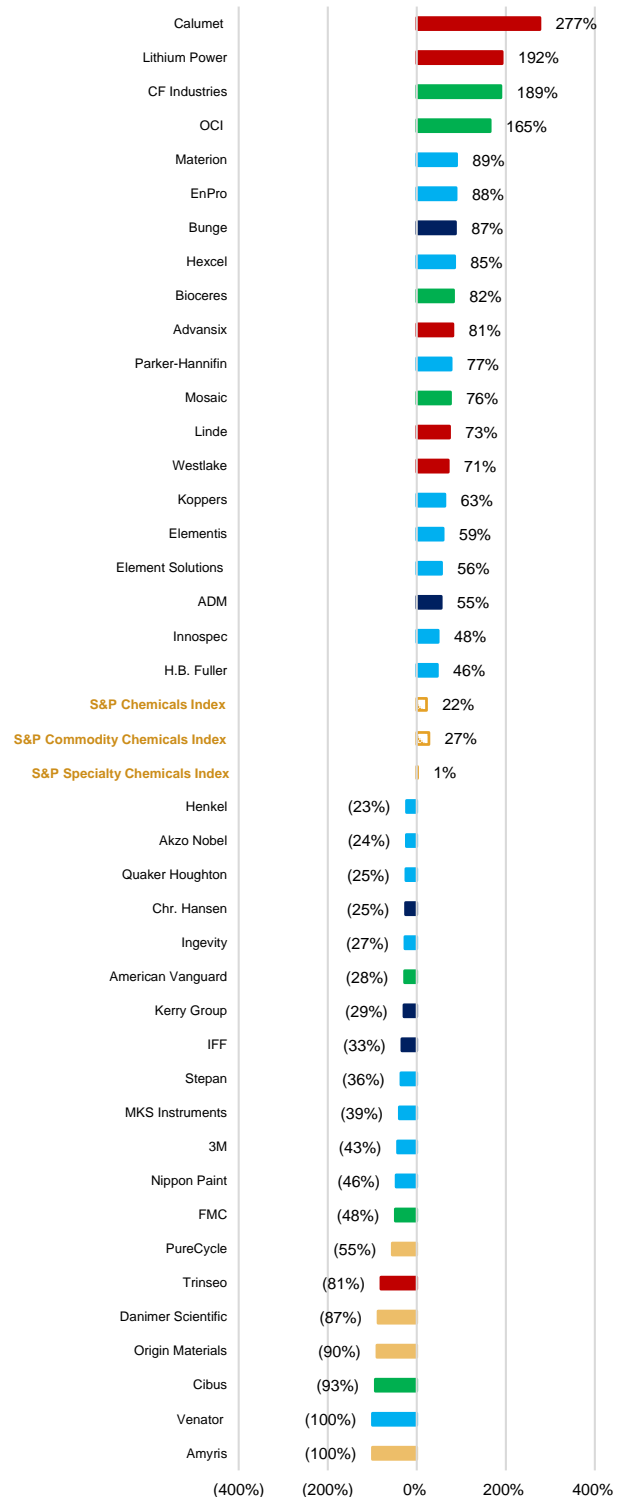
Advanced Materials and Chemicals

Share Price Performance

1 Year (Top & Bottom 20 Performers)



3 Years (Top & Bottom 20 Performers)

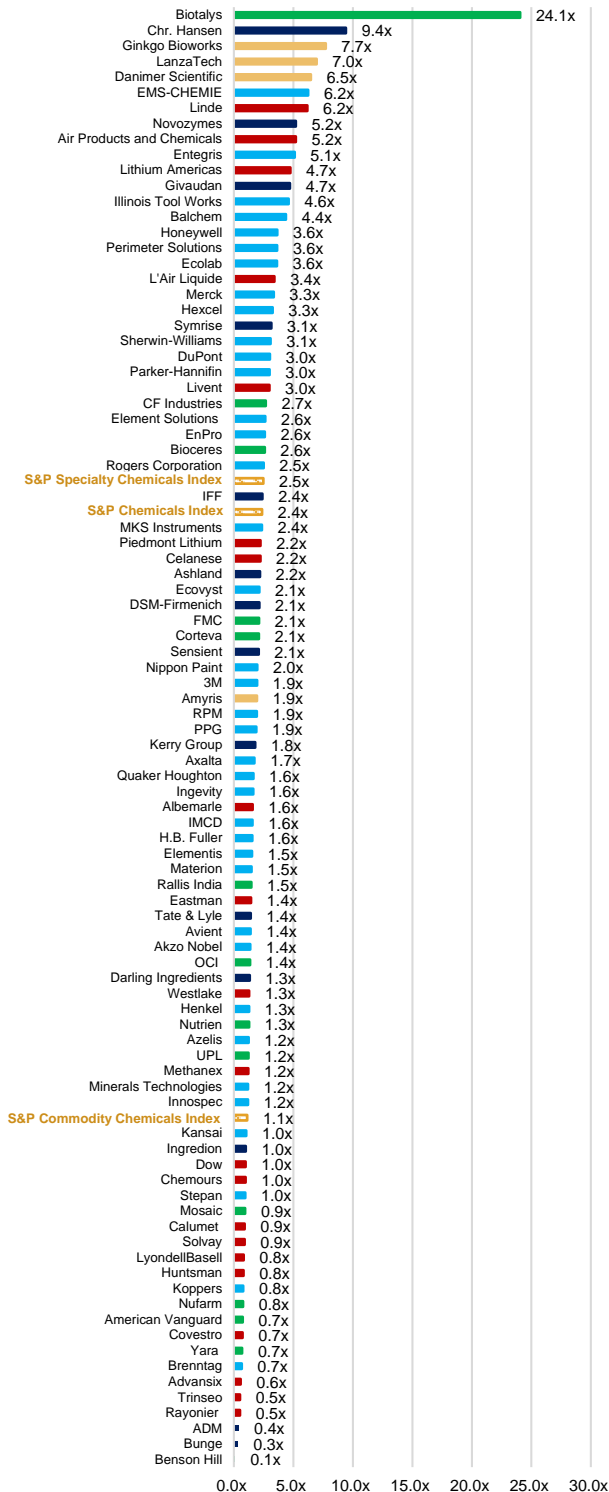


● Agriculture Chemicals
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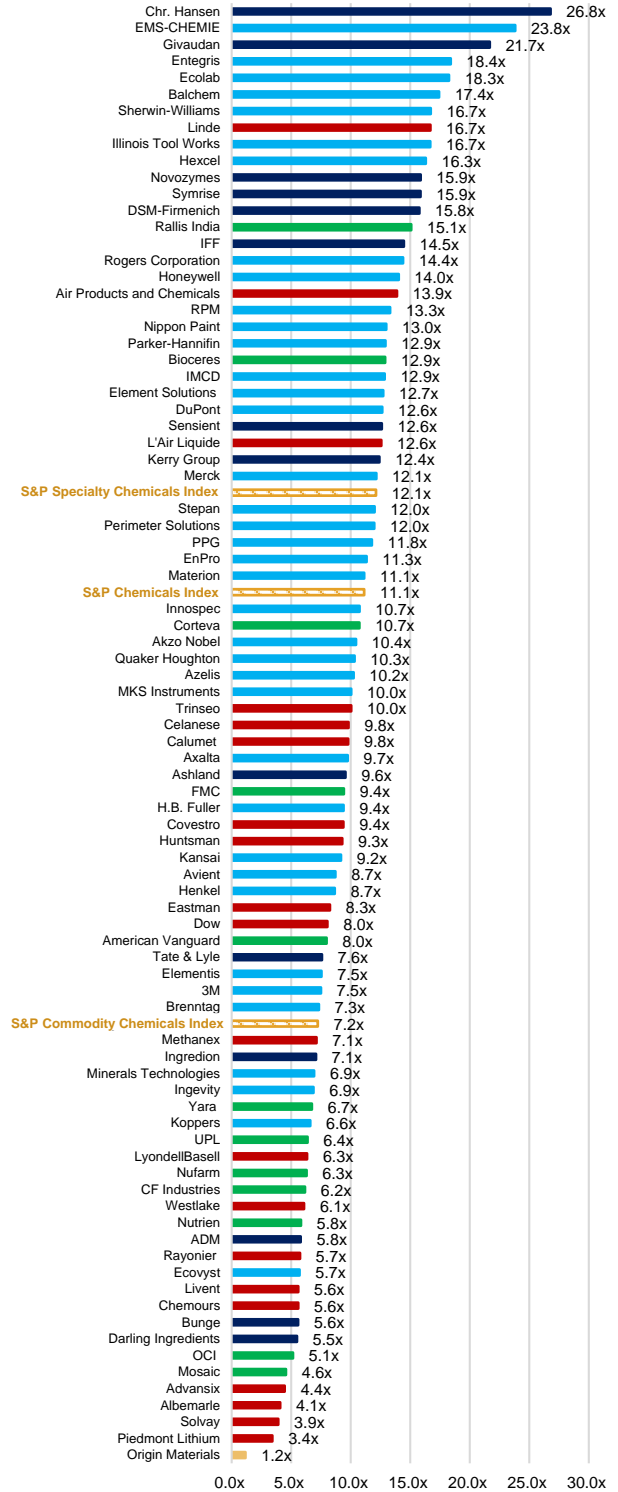
Advanced Materials and Chemicals

Trading Multiples

EV / 2023E Sales



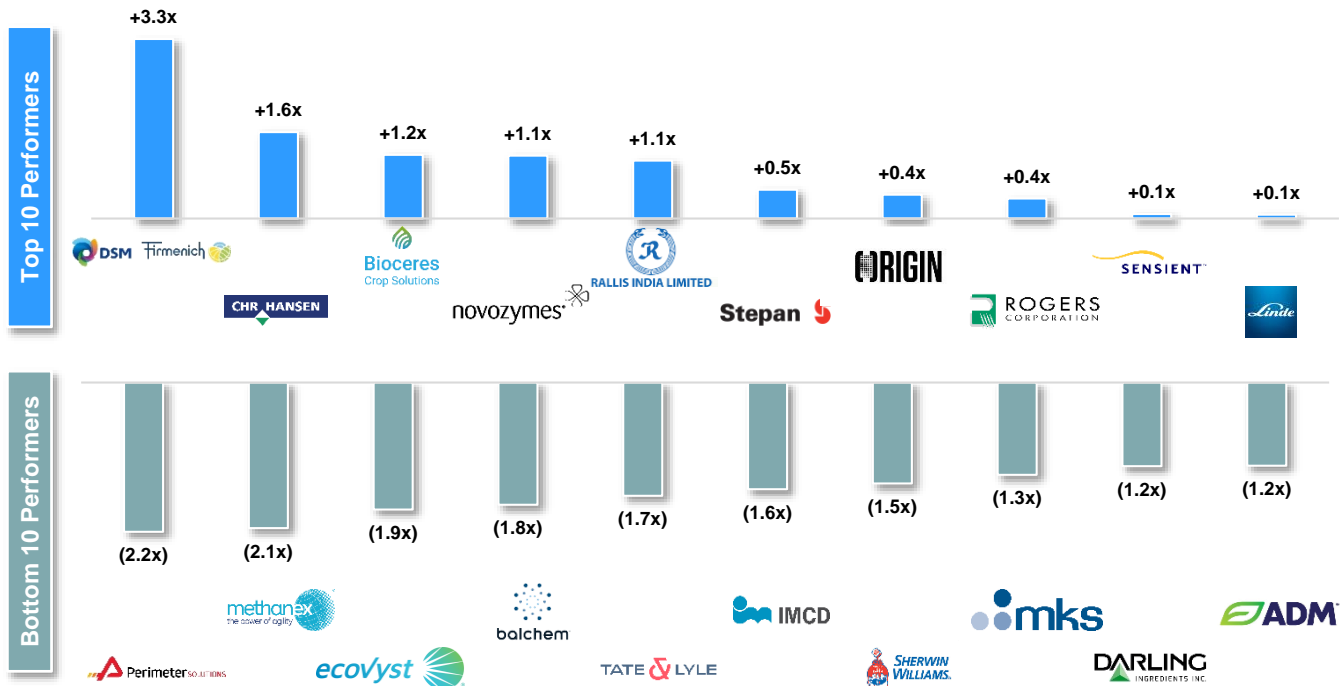
EV / 2023E EBITDA



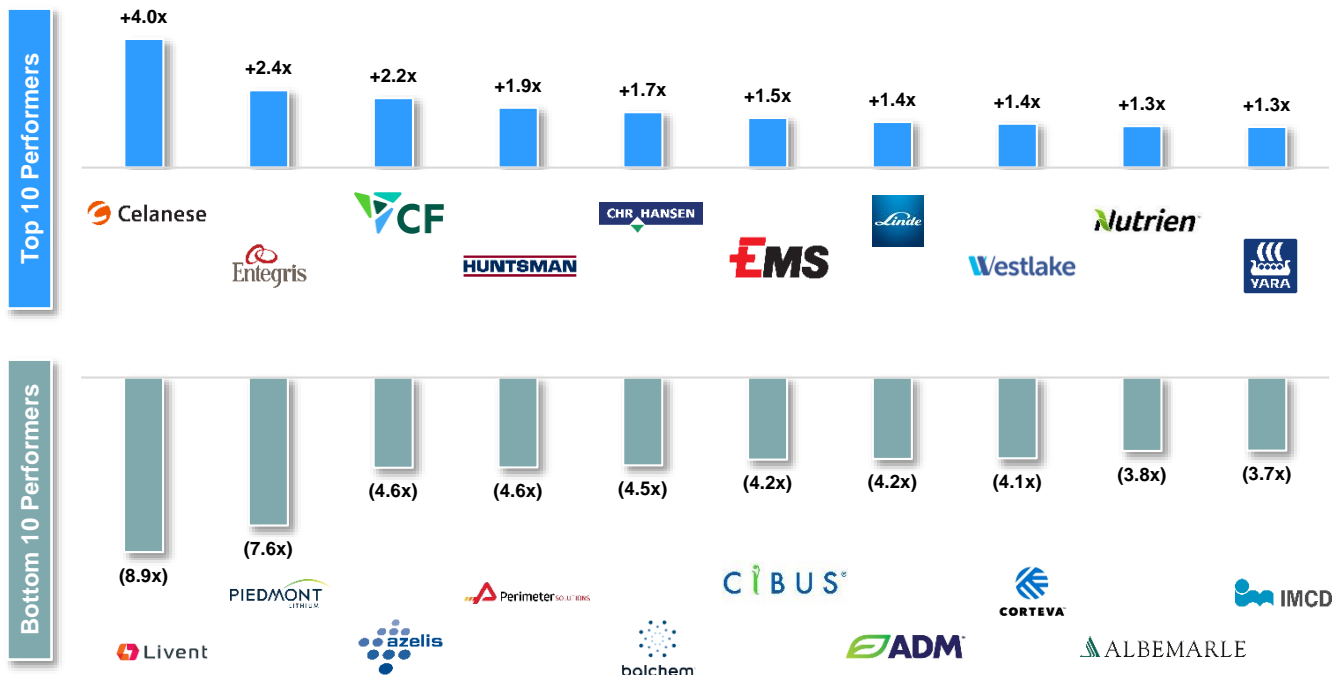
● Agriculture Chemicals ● Commodity & Diversified ● Chemicals Technology ● Ingredients ● Specialties ● Indices

Advanced Materials and Chemicals Top & Bottom Performers (EV Multiple)

1 Month Change (EV / NTM EBITDA)



1 Year Change (EV / NTM EBITDA)



Source: Factset as of October 31st, 2023. All estimates reflect Factset consensus estimates.

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Trading Comparables

Advanced Materials and Chemicals

Trading Comparables

Agriculture Chemicals

Company	Local Currency	Local Price as of 31-Oct-2023	% of 52 week high	Price Return YTD	Dividend Yield	Sales 2023E	EBITDA 2023E	EBITDA Margin 2023E	Sales CAGR 2022A-2024E	Equity Value	Enterprise Value	EV/Sales 2023E	EV/EBITDA 2023E	2024E	Price/Earnings 2023E	2024E	Net Leverage 2023E
AgChem Majors																	
Corteva	USD	48.14	70%	(18%)	1.3%	17,574	3,436	19.6%	2.8%	34,397	36,849	2.1x	10.7x	9.8x	17.8x	15.1x	0.7x
FMC	USD	53.20	40%	(57%)	4.3%	4,728	1,063	22.5%	(7.4%)	6,657	10,014	2.1x	9.4x	8.3x	12.6x	10.2x	3.2x
Mean			55%	(38%)	2.8%			21.0%	(2.3%)			2.1x	10.1x	9.0x	15.2x	12.6x	1.9x
Median			55%	(38%)	2.8%			21.0%	(2.3%)			2.1x	10.1x	9.0x	15.2x	12.6x	1.9x
UPL	INR	540.40	67%	(25%)	1.8%	6,328	1,216	19.2%	3.0%	4,872	7,748	1.2x	6.4x	5.8x	13.0x	10.5x	0.0x
Nufarm	AUD	4.33	68%	(29%)	2.3%	2,303	282	12.2%	0.4%	1,052	1,772	0.8x	6.3x	5.9x	12.3x	11.2x	1.3x
Rallis India	INR	217.05	80%	(10%)	1.4%	347	34	9.7%	4.3%	507	508	1.5x	15.1x	11.9x	27.6x	20.5x	0.0x
American Vanguard	USD	9.36	39%	(57%)	n.a.	570	53	9.3%	(1.2%)	277	420	0.7x	8.0x	6.6x	25.3x	14.4x	2.8x
Mean			63%	(30%)	1.8%			12.6%	1.6%			1.0x	8.9x	7.6x	19.6x	14.1x	1.0x
Median			67%	(27%)	1.8%			11.0%	1.7%			1.0x	7.2x	6.3x	19.2x	12.8x	0.6x

Agriculture Technology

Company	Local Currency	Local Price as of 31-Oct-2023	% of 52 week high	Price Return YTD	Dividend Yield	Sales 2023E	EBITDA 2023E	EBITDA Margin 2023E	Sales CAGR 2022A-2024E	Equity Value	Enterprise Value	EV/Sales 2023E	EV/EBITDA 2023E	2024E	Price/Earnings 2023E	2024E	Net Leverage 2023E
Ag Tech																	
Bioceres	USD	11.04	74%	(8%)	n.a.	447	90	20.1%	19.3%	975	1,157	2.6x	12.9x	9.5x	24.0x	13.2x	2.1x
Cibus	USD	10.75	28%	46%	n.a.	1	(67)	n.m.	n.m.	250	338	n.m.	n.m.	n.m.	n.m.	n.m.	0.7x
Biotalsys	EUR	3.15	43%	(54%)	0.0%	3	(21)	n.m.	0.8%	109	76	24.1x	n.m.	n.m.	n.m.	n.m.	1.7x
Benson Hill	USD	0.15	4%	(94%)	n.a.	413	(65)	(15.8%)	4.9%	34	27	0.1x	n.m.	n.m.	n.m.	n.m.	0.1x
Mean			37%	(28%)	0.0%			2.2%	8.3%			8.9x	12.9x	9.5x	24.0x	13.2x	1.1x
Median			35%	(31%)	0.0%			2.2%	4.9%			2.6x	12.9x	9.5x	24.0x	13.2x	1.2x

Coatings, Adhesives, Sealants and Elastomers (CASE)

Company	Local Currency	Local Price as of 31-Oct-2023	% of 52 week high	Price Return YTD	Dividend Yield	Sales 2023E	EBITDA 2023E	EBITDA Margin 2023E	Sales CAGR 2022A-2024E	Equity Value	Enterprise Value	EV/Sales 2023E	EV/EBITDA 2023E	2024E	Price/Earnings 2023E	2024E	Net Leverage 2023E
CASE																	
Sherwin-Williams	USD	238.21	84%	0%	1.1%	22,963	4,230	18.4%	3.1%	61,638	70,732	3.1x	16.7x	15.9x	23.3x	21.5x	2.1x
PPG	USD	122.77	80%	(2%)	2.1%	18,159	2,904	16.0%	2.7%	29,096	34,191	1.9x	11.8x	10.8x	16.1x	14.6x	1.7x
Henkel	EUR	59.66	85%	(1%)	3.2%	22,791	3,362	14.8%	(1.6%)	27,386	29,088	1.3x	8.7x	8.2x	14.0x	12.9x	0.5x
Nippon Paint	JPY	1,007.00	77%	(3%)	1.3%	9,418	1,424	15.1%	7.4%	15,618	18,487	2.0x	13.0x	12.4x	20.3x	19.3x	0.0x
Akzo Nobel	EUR	63.26	80%	1%	3.1%	11,377	1,503	13.2%	1.5%	11,119	15,692	1.4x	10.4x	9.1x	17.4x	13.3x	3.1x
RPM	USD	91.27	85%	(6%)	1.6%	7,430	1,074	14.5%	5.1%	12,031	14,288	1.9x	13.3x	11.9x	19.5x	17.0x	2.1x
Axalta	USD	26.23	78%	3%	n.a.	5,187	921	17.8%	4.8%	5,876	8,968	1.7x	9.7x	9.0x	18.0x	14.7x	3.3x
H.B. Fuller	USD	66.15	81%	(8%)	1.3%	3,553	587	16.5%	(0.2%)	3,724	5,515	1.6x	9.4x	8.6x	17.1x	14.9x	3.0x
Kansai	JPY	2,199.00	89%	36%	1.6%	3,615	408	11.3%	7.6%	3,284	3,745	1.0x	9.2x	8.4x	9.8x	12.2x	0.0x
Quaker Houghton	USD	143.72	66%	(14%)	0.8%	1,958	311	15.9%	1.8%	2,612	3,214	1.6x	10.3x	9.6x	19.4x	16.7x	2.2x
Chase Corporation	USD	127.06	94%	47%	n.a.	n.a.	n.a.	n.m.	n.m.	1,217	1,304	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.
Mean			82%	5%	1.8%			15.3%	3.2%			1.7x	11.3x	10.4x	17.5x	15.7x	1.8x
Median			81%	(1%)	1.6%			15.5%	2.9%			1.7x	10.4x	9.3x	17.7x	14.8x	2.1x

Chemical Distribution

Company	Local Currency	Local Price as of 31-Oct-2023	% of 52 week high	Price Return YTD	Dividend Yield	Sales 2023E	EBITDA 2023E	EBITDA Margin 2023E	Sales CAGR 2022A-2024E	Equity Value	Enterprise Value	EV/Sales 2023E	EV/EBITDA 2023E	2024E	Price/Earnings 2023E	2024E	Net Leverage 2023E
Chemicals Distribution																	
Brenntag	EUR	70.12	90%	17%	2.8%	18,818	1,692	9.0%	(2.5%)	10,749	12,377	0.7x	7.3x	7.1x	13.4x	12.5x	1.0x
IMCD	EUR	113.50	72%	(15%)	1.9%	4,839	587	12.1%	2.9%	6,842	7,551	1.6x	12.9x	12.1x	19.3x	18.1x	1.3x
Azelis	EUR	16.10	59%	(39%)	1.8%	4,558	551	12.1%	5.8%	4,151	5,642	1.2x	10.2x	9.6x	15.4x	13.4x	2.7x
Mean			74%	(12%)	2.2%			11.1%	2.1%			1.2x	10.1x	9.6x	16.1x	14.7x	1.7x
Median			72%	(15%)	1.9%			12.1%	2.9%			1.2x	10.2x	9.6x	15.4x	13.4x	1.3x

Chemical Technology

Company	Local Currency	Local Price as of 31-Oct-2023	% of 52 week high	Price Return YTD	Dividend Yield	Sales 2023E	EBITDA 2023E	EBITDA Margin 2023E	Sales CAGR 2022A-2024E	Equity Value	Enterprise Value	EV/Sales 2023E	EV/EBITDA 2023E	2024E	Price/Earnings 2023E	2024E	Net Leverage 2023E
Chem Tech																	
PureCycle	USD	4.45	37%	(34%)	n.a.	21	(76)	n.m.	n.m.	752	958	n.m.	n.m.	n.m.	n.m.	n.m.	(2.7x)
Danimer Scientific	USD	1.43	31%	(20%)	n.a.	68	(30)	n.m.	68.6%	149	436	6.5x	n.m.	n.m.	n.m.	n.m.	(9.5x)
Origin Materials	USD	0.99	16%	(79%)	n.a.	48	(52)	n.m.	n.m.	153	(60)	n.m.	1.2x	1.0x	n.m.	n.m.	4.1x
Mean			28%	(44%)	NA			NA	68.6%			6.5x	1.2x	1.0x	NA	NA	(2.7x)
Median			31%	(34%)	NA			NA	68.6%			6.5x	1.2x	1.0x	NA	NA	(2.7x)

Commodity

Company	Local Currency	Local Price as of 31-Oct-2023	% of 52 week high	Price Return YTD	Dividend Yield	Sales 2023E	EBITDA 2023E	EBITDA Margin 2023E	Sales CAGR 2022A-2024E	Equity Value	Enterprise Value	EV/Sales 2023E	EV/EBITDA 2023E	2024E	Price/Earnings 2023E	2024E	Net Leverage 2023E
Commodity																	
Dow	USD	48.34	79%	(4%)	5.8%	44,612	5,448	12.2%	(9.7%)	34,411	43,797	1.0x	8.0x	6.6x	21.7x	14.0x	1.9x
LyondellBasell	USD	90.24	88%	9%	5.4%	41,261	5,337	12.9%	(10.4%)	29,425	33,759	0.8x	6.3x	5.9x	10.3x	9.3x	1.5x
Westlake	USD	115.36	83%	13%	1.2%	12,889	2,721	21.1%	(8.1%)	14,896	16,526	1.3x	6.1x	5.8x	13.2x	12.1x	0.8x
Methanex	CAD	57.26	77%	12%	1.8%	3,652	623	17.1%	(4.7%)	2,786	4,437	1.2x	7.1x	5.5x	20.3x	13.3x	1.8x
Advansix	USD	27.55	62%	(28%)	1.1%	1,581	203	12.8%	(8.8%)	772	901	0.6x	4.4x	4.0x	8.1x	6.8x	0.6x
Mean			78%	0%	3.1%			15.2%	(8.4%)			1.0x	6.4x	5.6x	14.7x	11.1x	1.3x
Median			79%	9%	1.8%			12.9%	(8.8%)			1.0x	6.3x	5.8x	13.2x	12.1x	1.5x

Advanced Materials and Chemicals

Trading Comparables

Diversified

Company	Local Currency	Local Price as of 31-Oct-2023	% of 52 week high	Price Return YTD	Dividend Yield	Sales 2023E	EBITDA 2023E	EBITDA Margin 2023E	Sales CAGR 2022A-2024E	Equity Value	Enterprise Value	EV/Sales 2023E	EV/EBITDA 2023E	2024E	Price/Earnings 2023E	2024E	Net Leverage 2023E
Diversified																	
Celanese	USD	114.51	87%	12%	2.4%	11,165	2,537	22.7%	10.2%	12,495	24,874	2.2x	9.8x	8.7x	12.6x	9.3x	5.1x
Eastman	USD	74.73	81%	(8%)	4.2%	9,250	1,618	17.5%	(4.6%)	8,899	13,353	1.4x	8.3x	7.3x	11.6x	9.4x	2.7x
Solvay	EUR	99.74	88%	6%	4.1%	13,380	3,085	23.1%	(2.0%)	10,875	12,070	0.9x	3.9x	4.0x	7.4x	7.8x	0.5x
Covestro	EUR	47.70	88%	31%	n.a.	15,624	1,212	7.8%	(7.5%)	9,565	11,372	0.7x	9.4x	7.0x	n.m.	25.7x	1.7x
Chemours	USD	24.11	62%	(21%)	4.1%	6,030	1,057	17.5%	(4.0%)	3,621	5,900	1.0x	5.6x	4.9x	7.8x	5.9x	2.3x
Huntsman	USD	23.33	70%	(15%)	3.9%	6,310	548	8.7%	(9.9%)	4,205	5,082	0.8x	9.3x	7.0x	30.2x	13.7x	2.0x
Calumet	USD	13.03	64%	(23%)	n.a.	3,682	341	9.3%	(10.0%)	1,063	3,334	0.9x	9.8x	7.5x	29.7x	10.3x	5.9x
Trinseo	USD	6.19	20%	(73%)	8.0%	3,930	201	5.1%	(9.1%)	227	2,019	0.5x	10.0x	6.2x	n.m.	n.m.	10.2x
Koppers	USD	36.57	87%	30%	n.a.	2,128	253	11.9%	4.9%	811	1,673	0.8x	6.6x	6.1x	8.2x	7.7x	3.4x
Rayonier	USD	2.77	28%	(71%)	n.a.	1,698	151	8.9%	1.4%	190	866	0.5x	5.7x	4.1x	n.m.	n.m.	4.5x
Mean			72%	(7%)	4.5%			13.7%	(3.5%)			1.0x	8.1x	6.5x	15.4x	11.2x	3.8x
Median			81%	(8%)	4.1%			11.9%	(4.6%)			0.9x	9.3x	7.0x	11.6x	9.4x	2.7x

Electronic Chemicals & Materials

Company	Local Currency	Local Price as of 31-Oct-2023	% of 52 week high	Price Return YTD	Dividend Yield	Sales 2023E	EBITDA 2023E	EBITDA Margin 2023E	Sales CAGR 2022A-2024E	Equity Value	Enterprise Value	EV/Sales 2023E	EV/EBITDA 2023E	2024E	Price/Earnings 2023E	2024E	Net Leverage 2023E
Electronic Chemicals																	
Merck	EUR	142.35	70%	(21%)	1.5%	22,447	6,188	27.6%	(0.1%)	65,690	75,164	3.3x	12.1x	11.3x	16.6x	15.3x	1.6x
Entegris	USD	88.04	77%	34%	0.4%	3,575	993	27.8%	6.8%	13,345	18,270	5.1x	18.4x	15.7x	34.5x	24.6x	5.0x
MKS Instruments	USD	65.66	58%	(23%)	1.3%	3,659	858	23.4%	5.9%	4,462	8,611	2.4x	10.0x	8.8x	17.2x	11.7x	4.8x
Element Solutions	USD	18.23	83%	0%	1.4%	2,352	487	20.7%	(0.8%)	4,474	6,200	2.6x	12.7x	11.3x	14.1x	12.3x	3.5x
EnPro	USD	111.06	77%	2%	n.a.	1,084	249	22.9%	1.7%	2,344	2,816	2.6x	11.3x	10.4x	16.3x	14.7x	1.8x
Materion	USD	96.98	79%	11%	0.5%	1,672	223	13.3%	2.2%	2,065	2,479	1.5x	11.1x	9.9x	17.0x	14.7x	1.9x
Rogers Corporation	USD	122.89	51%	3%	n.a.	924	160	17.3%	0.2%	2,313	2,306	2.5x	14.4x	13.1x	29.4x	23.5x	0.0x
Mean			71%	1%	1.0%			21.9%	2.3%			2.9x	12.9x	11.5x	20.7x	16.7x	2.7x
Median			77%	2%	1.3%			22.9%	1.7%			2.6x	12.1x	11.3x	17.0x	14.7x	1.9x

Fertilizers

Company	Local Currency	Local Price as of 31-Oct-2023	% of 52 week high	Price Return YTD	Dividend Yield	Sales 2023E	EBITDA 2023E	EBITDA Margin 2023E	Sales CAGR 2022A-2024E	Equity Value	Enterprise Value	EV/Sales 2023E	EV/EBITDA 2023E	2024E	Price/Earnings 2023E	2024E	Net Leverage 2023E
Fertilizers																	
Nutrien	CAD	74.48	63%	(25%)	3.8%	28,136	6,169	21.9%	(12.0%)	26,590	35,868	1.3x	5.8x	5.9x	10.5x	10.4x	1.1x
CF Industries	USD	79.78	71%	(6%)	2.0%	6,668	2,903	43.5%	(24.9%)	15,478	17,870	2.7x	6.2x	6.9x	9.7x	11.7x	(0.1x)
Mosaic	USD	32.48	57%	(26%)	2.9%	13,424	2,799	20.9%	(20.5%)	10,890	12,749	0.9x	4.6x	4.9x	8.2x	9.4x	0.9x
Yara	NOK	365.00	73%	(15%)	6.8%	16,099	1,651	10.3%	(13.8%)	8,322	11,117	0.7x	6.7x	5.0x	25.8x	10.1x	0.2x
OCI	EUR	22.01	54%	(25%)	8.0%	5,568	1,475	26.5%	(20.9%)	4,928	7,582	1.4x	5.1x	4.1x	48.2x	11.4x	1.5x
Mean			64%	(20%)	4.7%			24.6%	(18.4%)			1.4x	5.7x	5.4x	20.5x	10.6x	0.7x
Median			63%	(25%)	3.8%			21.9%	(20.5%)			1.3x	5.8x	5.0x	10.5x	10.4x	0.9x

Ingredients

Company	Local Currency	Local Price as of 31-Oct-2023	% of 52 week high	Price Return YTD	Dividend Yield	Sales 2023E	EBITDA 2023E	EBITDA Margin 2023E	Sales CAGR 2022A-2024E	Equity Value	Enterprise Value	EV/Sales 2023E	EV/EBITDA 2023E	2024E	Price/Earnings 2023E	2024E	Net Leverage 2023E
Diversified Ingredients																	
ADM	USD	71.57	73%	(23%)	2.5%	96,013	6,281	6.5%	(3.1%)	38,702	36,393	0.4x	5.8x	6.5x	9.8x	10.8x	0.5x
Bunge	USD	105.98	91%	6%	2.5%	59,981	3,278	5.5%	(6.1%)	15,688	18,249	0.3x	5.6x	6.1x	8.3x	9.1x	0.9x
Darling Ingredients	USD	44.29	54%	(29%)	n.a.	7,134	1,733	24.3%	5.9%	7,188	9,486	1.3x	5.5x	5.4x	9.6x	9.6x	2.6x
Ingredion	USD	93.58	82%	(4%)	3.2%	8,418	1,194	14.2%	3.8%	6,307	8,444	1.0x	7.1x	6.8x	10.4x	9.7x	1.8x
Tate & Lyle	GBP	6.31	75%	(11%)	3.0%	2,152	401	18.6%	5.5%	3,050	3,033	1.4x	7.6x	7.1x	11.7x	10.6x	0.7x
Mean			75%	(12%)	2.8%			13.8%	1.2%			0.9x	6.3x	6.4x	10.0x	10.0x	1.3x
Median			75%	(11%)	2.7%			14.2%	3.8%			1.0x	5.8x	6.5x	9.8x	9.7x	0.9x
Specialty Ingredients																	
Ashland	USD	76.63	67%	(29%)	1.9%	2,226	510	22.9%	0.2%	3,966	4,874	2.2x	9.6x	8.6x	16.1x	13.3x	1.8x
DSM-Firmenich	EUR	85.59	70%	NA	2.3%	12,158	1,648	13.6%	22.9%	23,945	25,965	2.1x	15.8x	12.1x	45.7x	28.7x	1.3x
IFF	USD	68.35	58%	(35%)	4.5%	11,397	1,893	16.6%	(2.7%)	17,517	27,361	2.4x	14.5x	12.2x	21.2x	15.9x	5.2x
Givaudan	CHF	3,020.00	90%	7%	2.3%	7,638	1,659	21.7%	0.7%	30,713	35,963	4.7x	21.7x	20.1x	30.6x	27.7x	3.5x
Symrise	EUR	96.20	85%	(5%)	1.2%	5,052	1,001	19.8%	4.3%	14,212	15,875	3.1x	15.9x	14.4x	34.2x	27.9x	2.3x
Sensient	USD	56.42	71%	(23%)	3.0%	1,471	244	16.6%	3.6%	2,399	3,069	2.1x	12.6x	11.5x	19.4x	17.6x	2.8x
Kerry Group	EUR	72.88	73%	(13%)	1.6%	8,733	1,256	14.4%	(2.3%)	13,772	15,578	1.8x	12.4x	11.5x	16.9x	15.3x	1.6x
Mean			74%	(16%)	2.4%			17.9%	3.8%			2.6x	14.6x	12.9x	26.3x	20.9x	2.6x
Median			71%	(18%)	2.3%			16.6%	0.7%			2.2x	14.5x	12.1x	21.2x	17.6x	2.3x
Bio-Ingredients																	
Novozymes	DKK	316.60	73%	(10%)	1.8%	2,537	832	32.8%	3.5%	12,386	13,205	5.2x	15.9x	14.4x	26.3x	23.7x	0.1x
Chr. Hansen	DKK	480.50	80%	(4%)	1.4%	1,065	374	35.1%	11.3%	8,989	10,029	9.4x	26.8x	18.4x	45.7x	30.0x	0.4x
Mean			76%	(7%)	1.6%			34.0%	7.4%			7.3x	21.3x	16.4x	36.0x	26.8x	0.3x
Median			76%	(7%)	1.6%			34.0%	7.4%			7.3x	21.3x	16.4x	36.0x	26.8x	0.3x

Advanced Materials and Chemicals

Trading Comparables

Industrial Gas

Company	Local Currency	Local Price as of 31-Oct-2023	% of 52 week high	Price Return YTD	Dividend Yield	Sales 2023E	EBITDA 2023E	EBITDA Margin 2023E	Sales CAGR 2022A-2024E	Equity Value	Enterprise Value	EV/Sales 2023E	EV/EBITDA 2023E	2024E	Price/Earnings 2023E	2024E	Net Leverage 2023E
Industrial Gas																	
Linde	USD	382.16	97%	17%	1.3%	32,821	12,145	37.0%	1.7%	187,232	202,681	6.2x	16.7x	15.8x	27.3x	25.0x	1.2x
L'Air Liquide	EUR	161.68	96%	22%	2.0%	29,757	8,079	27.1%	(0.7%)	89,650	101,462	3.4x	12.6x	11.7x	24.9x	22.9x	1.5x
Air Products and Chemicals	USD	282.44	86%	(8%)	2.5%	12,949	4,850	37.5%	4.7%	63,106	67,323	5.2x	13.9x	12.5x	23.9x	21.4x	1.5x
Mean			93%	10%	1.9%			33.9%	1.9%			4.9x	14.4x	13.3x	25.4x	23.1x	1.4x
Median			96%	17%	2.0%			37.0%	1.7%			5.2x	13.9x	12.5x	24.9x	22.9x	1.5x

Lithium

Company	Local Currency	Local Price as of 31-Oct-2023	% of 52 week high	Price Return YTD	Dividend Yield	Sales 2023E	EBITDA 2023E	EBITDA Margin 2023E	Sales CAGR 2022A-2024E	Equity Value	Enterprise Value	EV/Sales 2023E	EV/EBITDA 2023E	2024E	Price/Earnings 2023E	2024E	Net Leverage 2023E
Lithium																	
Albemarle	USD	126.78	38%	(42%)	1.2%	10,244	3,950	38.6%	13.8%	14,949	16,070	1.6x	4.1x	5.1x	4.9x	6.5x	0.5x
Livent	USD	14.59	41%	(27%)	n.a.	1,045	559	53.5%	23.3%	3,044	3,119	3.0x	5.6x	5.2x	7.1x	7.0x	0.1x
Lithium Americas	CAD	9.31	55%	#N/A	n.a.	118	2	1.7%	n.m.	1,073	561	4.7x	n.m.	5.2x	n.m.	41.8x	n.m.
Piedmont Lithium	USD	27.47	36%	(38%)	n.a.	143	94	65.4%	n.m.	533	320	2.2x	3.4x	1.3x	7.0x	2.6x	(0.9x)
Lithium Power	AUD	0.53	85%	19%	n.a.	n.a.	(2)	n.m.	n.m.	213	206	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.
Mean			51%	NA	1.2%			39.8%	18.5%			2.9x	4.4x	4.2x	6.3x	14.5x	0.7x
Median			41%	NA	1.2%			46.0%	18.5%			2.6x	4.1x	5.1x	7.0x	6.7x	0.3x

Multi-Industrial

Company	Local Currency	Local Price as of 31-Oct-2023	% of 52 week high	Price Return YTD	Dividend Yield	Sales 2023E	EBITDA 2023E	EBITDA Margin 2023E	Sales CAGR 2022A-2024E	Equity Value	Enterprise Value	EV/Sales 2023E	EV/EBITDA 2023E	2024E	Price/Earnings 2023E	2024E	Net Leverage 2023E
Multi Industrial																	
Honeywell	USD	183.26	83%	(14%)	2.3%	36,934	9,589	26.0%	4.8%	121,778	134,485	3.6x	14.0x	13.1x	20.0x	18.4x	1.3x
Merck	EUR	142.35	70%	(21%)	1.5%	22,447	6,188	27.6%	(0.1%)	65,690	75,164	3.3x	12.1x	11.3x	16.6x	15.3x	1.6x
Illinois Tool Works	USD	224.12	85%	2%	2.4%	16,147	4,456	27.6%	1.9%	67,777	74,306	4.6x	16.7x	16.1x	23.0x	22.1x	1.5x
3M	USD	90.95	68%	(24%)	6.8%	31,536	8,192	26.0%	(2.6%)	50,506	61,365	1.9x	7.5x	7.0x	10.0x	9.3x	1.3x
Parker-Hannifin	USD	368.91	86%	27%	1.5%	19,476	4,523	23.2%	8.0%	48,262	58,425	3.0x	12.9x	12.0x	16.7x	15.5x	2.3x
DuPont	USD	72.88	93%	6%	2.0%	12,444	2,982	24.0%	0.8%	33,714	37,716	3.0x	12.6x	11.4x	21.1x	17.4x	1.4x
Mean			81%	(4%)	2.7%			25.7%	2.1%			3.3x	12.7x	11.8x	17.9x	16.3x	1.6x
Median			84%	(6%)	2.1%			26.0%	1.3%			3.2x	12.8x	11.7x	18.4x	16.4x	1.5x

Specialty

Company	Local Currency	Local Price as of 31-Oct-2023	% of 52 week high	Price Return YTD	Dividend Yield	Sales 2023E	EBITDA 2023E	EBITDA Margin 2023E	Sales CAGR 2022A-2024E	Equity Value	Enterprise Value	EV/Sales 2023E	EV/EBITDA 2023E	2024E	Price/Earnings 2023E	2024E	Net Leverage 2023E
Specialty																	
Ecolab	USD	167.74	88%	15%	1.3%	15,407	3,048	19.8%	6.8%	48,014	55,647	3.6x	18.3x	16.4x	32.7x	27.7x	2.5x
EMS-CHEMIE	CHF	620.00	77%	(1%)	3.2%	2,451	642	26.2%	(1.6%)	15,935	15,297	6.2x	23.8x	21.1x	31.6x	28.2x	(1.1x)
Hexcel	USD	61.92	78%	5%	0.8%	1,805	361	20.0%	12.7%	5,280	5,885	3.3x	16.3x	13.7x	32.7x	24.8x	1.8x
NewMarket	USD	482.15	98%	55%	n.a.	n.a.	n.a.	n.m.	n.m.	4,640	5,317	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.
Avient	USD	31.62	71%	(6%)	2.4%	3,258	524	16.1%	0.4%	2,899	4,562	1.4x	8.7x	7.9x	13.1x	11.0x	3.1x
Balchem	USD	116.24	81%	(5%)	n.a.	929	234	25.1%	2.2%	3,769	4,069	4.4x	17.4x	16.8x	28.7x	28.7x	1.3x
Ingevity	USD	40.28	44%	(43%)	n.a.	1,682	399	23.7%	3.0%	1,479	2,736	1.6x	6.9x	6.3x	10.3x	8.3x	3.4x
Minerals Technologies	USD	54.06	73%	(11%)	0.4%	2,158	371	17.2%	1.6%	1,769	2,566	1.2x	6.9x	6.5x	10.4x	9.2x	2.1x
Innospec	USD	98.00	84%	(5%)	1.4%	1,969	218	11.1%	1.7%	2,504	2,341	1.2x	10.7x	9.1x	17.0x	14.3x	(0.8x)
Stepan	USD	74.80	65%	(30%)	2.0%	2,329	186	8.0%	(6.0%)	1,686	2,235	1.0x	12.0x	8.4x	33.2x	19.6x	2.9x
Koppers	USD	36.57	87%	30%	n.a.	2,128	253	11.9%	4.9%	811	1,673	0.8x	6.6x	6.1x	8.2x	7.7x	3.4x
Ecovyst	USD	9.20	74%	4%	n.a.	707	265	37.5%	(3.8%)	1,107	1,511	2.1x	5.7x	5.2x	11.1x	8.4x	3.2x
Perimeter Solutions	USD	3.20	28%	(65%)	n.a.	313	95	30.4%	9.9%	494	1,138	3.6x	12.0x	6.7x	n.m.	14.5x	6.8x
Elementis	GBP	1.18	91%	(2%)	1.6%	711	144	20.2%	(0.5%)	843	1,083	1.5x	7.5x	6.9x	13.5x	11.3x	2.0x
Mean			68%	(11%)	1.6%			20.6%	2.6%			2.5x	12.1x	10.4x	20.8x	16.9x	2.4x
Median			76%	(5%)	1.4%			19.9%	2.0%			1.9x	11.4x	8.2x	17.0x	14.4x	2.7x

Synthetic Biology

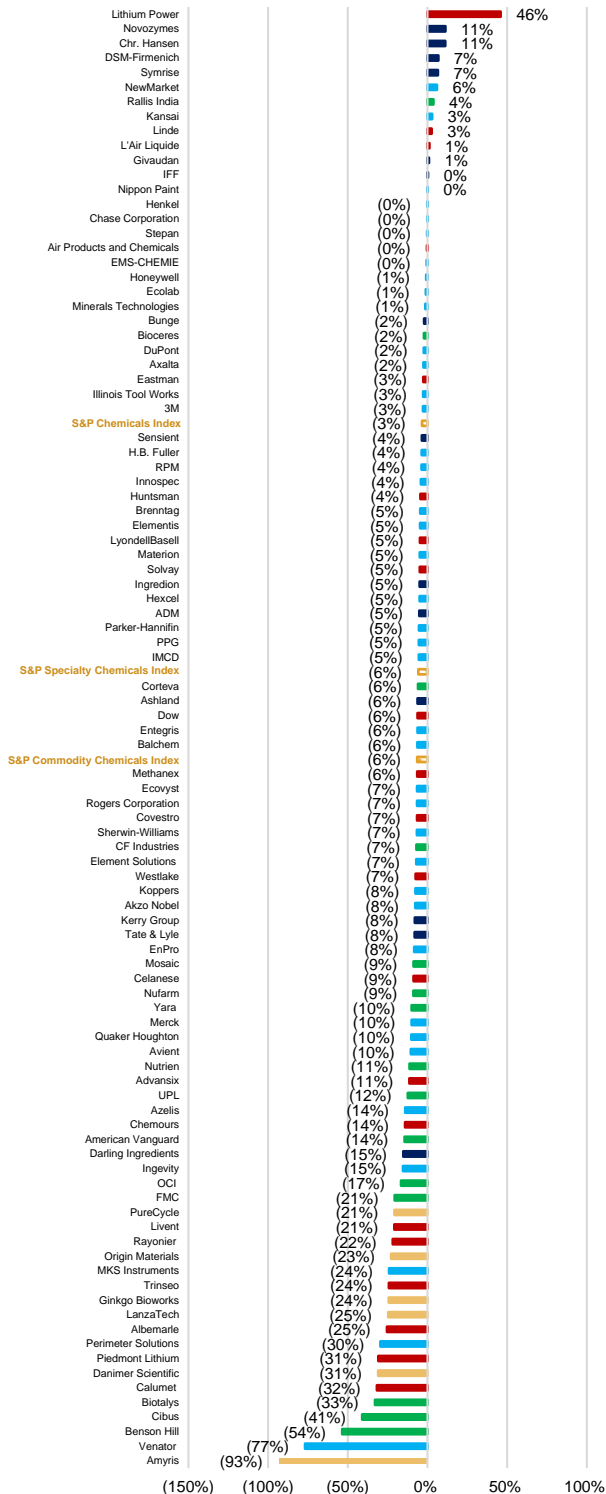
Company	Local Currency	Local Price as of 31-Oct-2023	% of 52 week high	Price Return YTD	Dividend Yield	Sales 2023E	EBITDA 2023E	EBITDA Margin 2023E	Sales CAGR 2022A-2024E	Equity Value	Enterprise Value	EV/Sales 2023E	EV/EBITDA 2023E	2024E	Price/Earnings 2023E	2024E	Net Leverage 2023E
SynBio																	
Ginkgo Bioworks	USD	1.37	47%	(19%)	n.a.	264	(559)	n.m.	(14.4%)	3,167	2,038	7.7x	n.m.	n.m.	n.m.	n.m.	2.0x
Amryt	USD	0.00	0%	(100%)	n.a.	488	(180)	n.m.	40.2%	2	944	1.9x	n.m.	n.m.	n.m.	n.m.	(5.2x)
LanzaTech	USD	3.52	33%	(65%)	n.a.	83	(85)	n.m.	116.6%	749	578	7.0x	n.m.	n.m.	n.m.	n.m.	1.9x
Mean			26%	(61%)	NA			NA	47.5%			5.5x	NA	NA	NA	NA	(0.4x)
Median			33%	(65%)	NA			NA	40.2%			7.0x	NA	NA	NA	NA	1.9x

Appendix

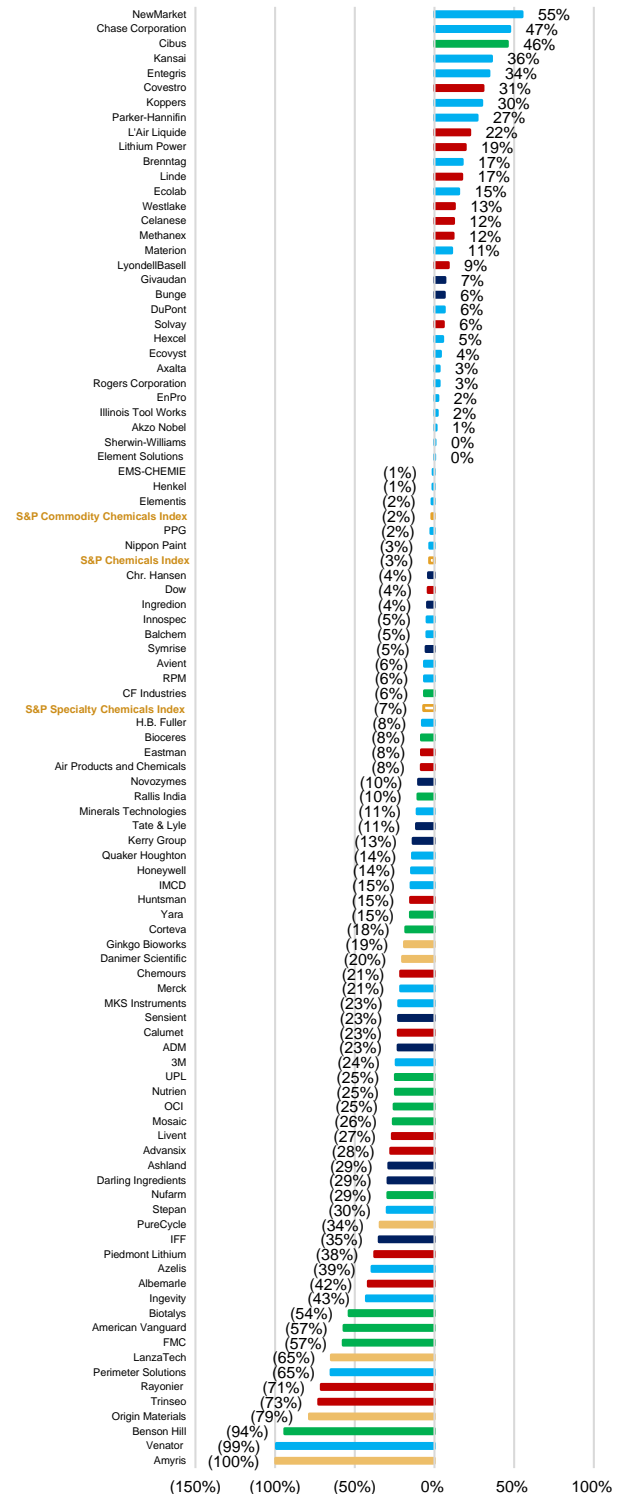
Advanced Materials and Chemicals

Share Price Performance

1 Month



Year-to-Date



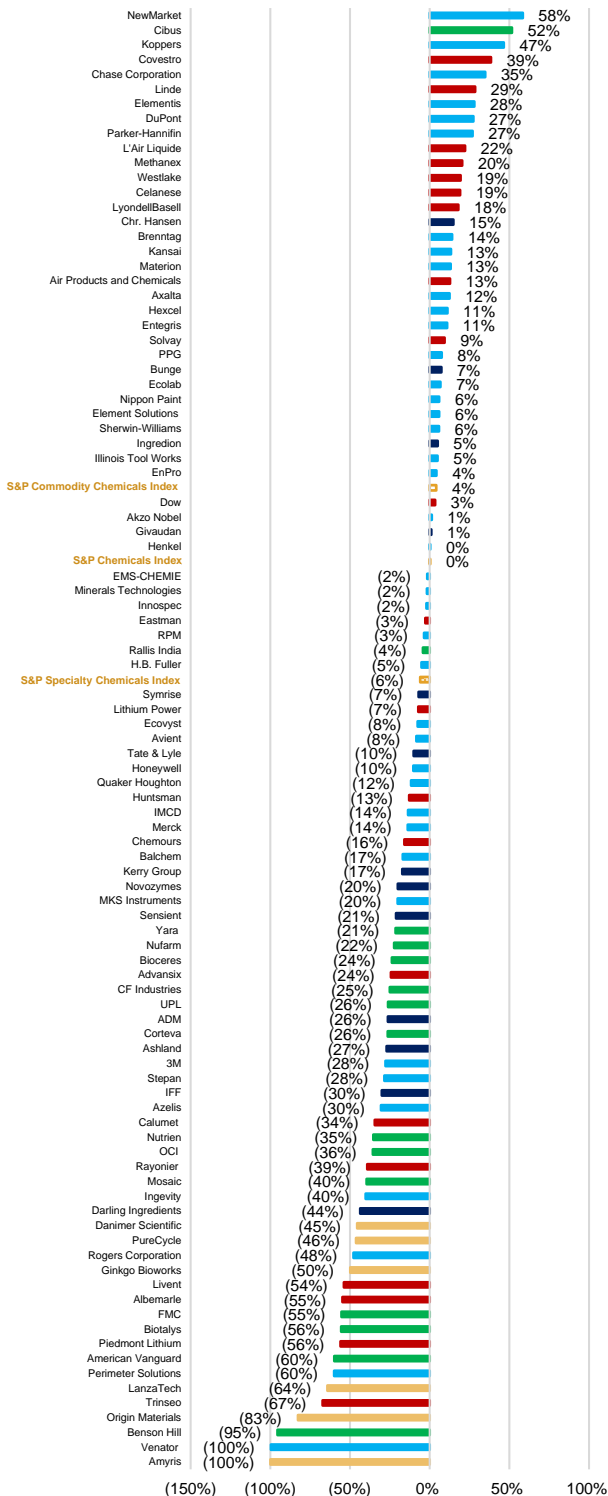
● Agriculture Chemicals ● Commodity & Diversified ● Chemicals Technology ● Ingredients ● Specialties ● Indices

Source: Factset as of October 31st, 2023, third-party providers.

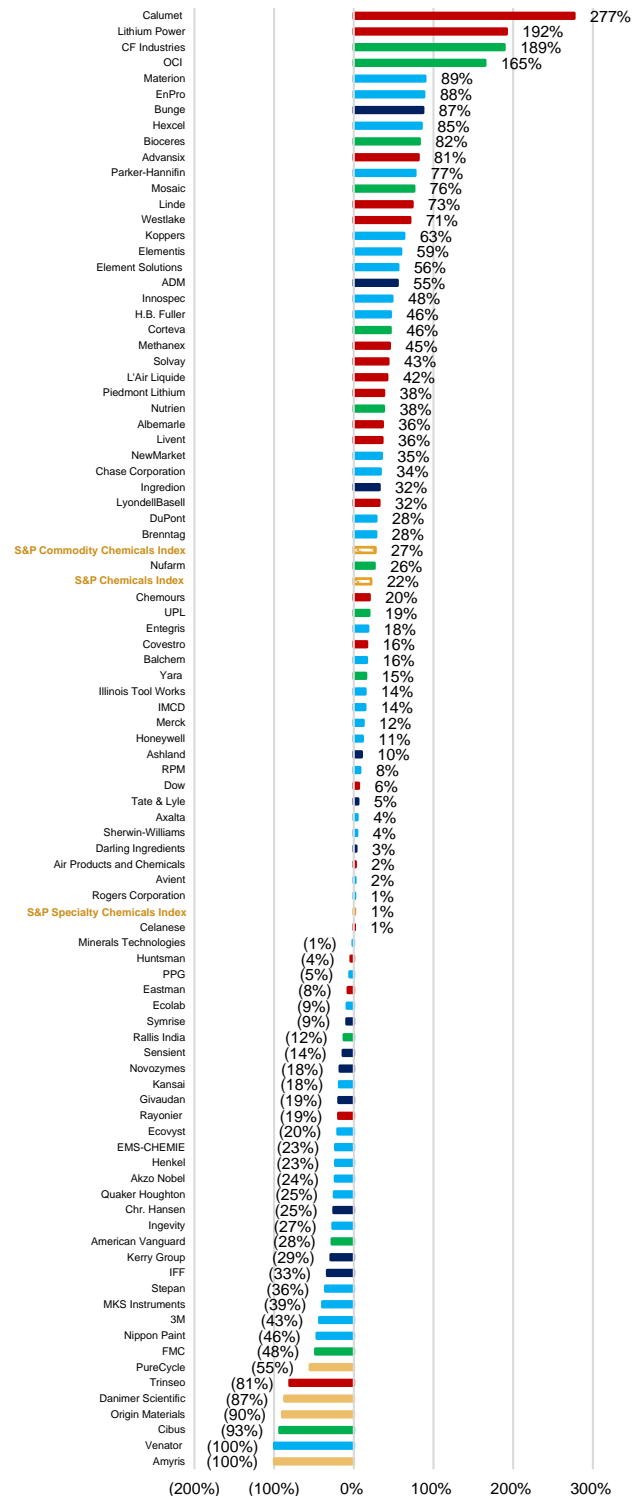
Advanced Materials and Chemicals

Share Price Performance

1 Year



3 Years



● Agriculture Chemicals ● Commodity & Diversified ● Chemicals Technology ● Ingredients ● Specialties ● Indices

Source: Factset as of October 31st, 2023, third-party providers.

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