

CHEMICALS & MATERIALS

# Quarterly Review



Q1 2023



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## LINCOLN INTERNATIONAL STATEMENT

A growing push and pull demand for biobased chemical intermediate solutions will drive further mergers and acquisitions (M&A) activity. There is an ever increasing emphasis for more environmental, social and governance (ESG)-friendly solutions which limit the impact to the environment, support health and wellness and balance natural resources usage, underpinning demand for innovation in the chemical intermediates sector. These innovations can help support the ESG narrative or the “specialty” portion of the story (as opposed to “essential”). Additionally, there is the opportunity for aggregation to reach the size that is more attractive for the majors to acquire, as opposed to a partial liquidity event as part of a venture arm. Increasingly, producers are realizing substantive advantages from having production in geographic hubs that are local to end-customers via optimizing lead times, which can further support an aggregation strategy. Ultimately, performance still carries the day when it comes to chemical intermediates, but there is significant opportunity for bio-based solutions as the world and chemical industry accelerates a shift away from fossil fuel dependence.

# Chemical Intermediates: The Backbone of the Sector

by Lincoln International's Global Chemicals & Materials Team

**Chemical intermediates** are a vital sub-sector of the chemicals industry, enabling the production of a wide range of chemicals and materials. They play a critical role in ensuring companies meet sustainable development goals. As the name implies, chemical intermediates are molecules produced through an initial reaction and are later utilized in another process or reaction, resulting in an end-chemical / material. As the foundational building blocks for all manner of chemistries, there is typically less sensitivity to solitary end-product or end-market movements than in other areas of the chemical industry. While there are many ways that the market can be subdivided, it can be helpful to separate between (i) reagents, (ii) reactants, (iii) solvents and (iv) protective groups.

The majority of the global chemical intermediate production occurs in the Asia Pacific (APAC) region, with the APAC share expected to only continue to grow, driven by substantial investments coming online in China (e.g., Saudi Aramco’s \$10B complex at Panjin) and India (e.g., Indian Oil’s \$7 billion complex at Paradip) over the next decade. Key feedstock for chemical intermediates include ammonia, naphtha and natural gas. Major players include:



**Reagents** are inputs that are utilized to facilitate, or limit, a chemical reaction. Reagents include widely utilized chemicals, such as caustic potash, caustic soda, chlorine dioxide, sodium carbonate and sorbic acid, among others. There are also the named reagents such as Collin’s reagent, Fehling’s reagent, Fenton’s reagent, Grignard reagent and Millon’s reagent. As an example, Grignard reagents are utilized in organic chemistry to facilitate the creation of new carbon-carbon bonds, with significant use cases in pharmaceutical and agrochemical synthesis. Fenton’s reagent, on the other hand, is utilized as a catalyst to oxidize contaminants via an advanced oxidization process, with applications including wastewater treatment and remediation.

**Reactants** are chemical intermediates which are consumed in a secondary reaction process to synthesize a new desired end-product (i.e., it is a building block of the synthesized molecule). Chemical intermediate reactants cover a wide range of chemistries and are utilized in the production of numerous downstream end-products, including coatings, plastics, textiles, cleaning agents, pharmaceuticals and agrochemicals. For the chemical majors, much of the reactants they produced are consumed in downstream processes, often in interconnected facilities (e.g., BASF internally consumes approximately 35% of the chemical intermediates it produces).

## Chemical Intermediates: The Backbone of the Sector (continued)

**Solvents** serve to dissolve, suspend, or extract solutes while preserving the underlying chemical characteristics. The use cases for solvents include material separation, material transportation, material application (e.g., paints and coatings), reaction facilitation and cleaning. At a basic level, water is a solvent, while salt is a solute. Solvents can be categorized broadly into two categories, polar and non-polar, and include acetate esters, alcohols, chlorinated chemicals and ketones. Within these they can be classed between conventional and organic, with increasing trends for organic, bio-solvents that are non-toxic and ecofriendly. The differing chemistries can help provide desired attributes – for example, while ethanol is utilized in perfumes and essences, methanol is typically utilized for inks and adhesives. From an application standpoint, solvents can help with temperature resilience, durability and expedite the drying process for paints and coatings.

**Protective groups** are used during synthesis to temporarily limit the reactivity of a target functional group to prevent interference with the desired reaction. They allow for selective reactions to take place, while being removable after the desired synthesis occurs when the protection is no longer needed. Protective groups include acetals, benzyl ethers, carbamate, esters, ketals and silyls. Protective groups can also be categorized by the functional group they are protecting, with functional groups including alcohols, amines and ketones. Particularly in working with organic compounds, there can be parts that would not otherwise survive the reaction, which is where protective groups help in facilitating multi-stage organic synthesis. Applications frequently include pharmaceuticals (e.g., drugs, vaccines), though they are utilized in a broad range of industries that require precise control of chemical reactions in driving to a final product.

Earlier this year, the U.S. White House released targets to achieve 30% of U.S. chemical demand from biomanufacturing pathways by 2043, which it views as foundational to achieving net zero goals. There are substantive advances still available for bioenergy crops such as camelina, pine and poplar that have not had the same level of selective breeding performed as on maize and sorghum, presenting opportunities to optimize usage and residue yield. Chemical intermediates have an important role to play in this, as new biochemical and biomanufacturing processes will help to efficiently convert starting materials into chemical intermediates for downstream use in a cost effective manner.

**From the M&A lens**, there is significant demand for bio-based chemical intermediates and an opportunity for smaller and more mid-sized companies, who specialize in a handful of areas, to serve as part of an ESG-catalyst story for one of the majors. Opportunities to help these companies to further commercialize the salesforce can drive meaningful growth under private equity ownership as well. The addition or enhancement of product development and quality control labs can also help to increase the level of specialization and differentiation. Optimizing facility management and asset utilizations is critical to driving the bottom line and another significant avenue for value-add from seasoned operating partners. For smaller companies, there may not be perfect visibility into precise end-markets and so marrying the quantitative view with management's best qualitative overlay is often deployed. A shift in positioning towards more favored end-markets, such as pharmaceuticals or portions of the agricultural chemicals market, can also help further strengthen the equity case.

*From the M&A lens, there is significant demand for bio-based chemical intermediates and an opportunity for smaller and more mid-sized companies, who specialize in a handful of areas, to serve as part of an ESG-catalyst story for one of the majors.*



## Market Update

During Q1 2023, investor concern shifted from persistent inflation to a bank liquidity crisis. Over the course of 30 days in March, Silicon Valley Bank folded, Signature Bank collapsed, First Republic Bank received a \$30 billion backstop and UBS agreed to acquire Credit Suisse in an emergency deal. In response, the Federal Reserve worked to instill confidence in the resiliency of the U.S. banking system, however, there could still be significant regulatory and supervisory changes for related financial institutions. Despite widespread turbulence, the S&P500 gained 7.0% in Q1, boosted by a recovery in the technology sector, while Lincoln's Chemicals Index rose 6.8% in the quarter. Despite persistent inflation and historically low unemployment, investors are optimistic that most of the Federal Reserve's rate hikes are in the rearview after the consumer price index rose 5% in March, the smallest annual increase since June 2021.

After a robust jobs report in January, March jobs numbers showed the lowest monthly gain since December 2020, signaling the labor market may be cooling off. Headline industrial production was up 0.4% in March, following a 0.2% gain in February and a 0.9% gain in January. Chemical production was down 2.5% year-over-year in Q1, with bulk petrochemicals and organics and basic chemicals sectors leading the decline. Chemical producer prices increased by 3.8% year-over-year in Q1, as higher prices for inorganic chemicals, coatings and consumer product chemicals outweighed lower prices for plastic resins and synthetic rubber.

Despite improving supply chain conditions during 2H 2022, chemical manufacturers reported that logistics challenges continue to be disruptive for the U.S. chemical industry and the broader economy, leading to higher shipping rates and increased inventory levels. More frequent and severe weather events, aging supply chain infrastructure and increased geopolitical tensions all pose significant challenges to the global supply chain, especially for the chemicals sector. Looking ahead, chemical companies will look to balance costs and their carbon footprint, while managing resiliency in their supply chains.

### LINCOLN INTERNATIONAL TRANSACTION HIGHLIGHT:

## H.I.G. Capital has sold Elekeiroz to Oswaldo Cruz Química

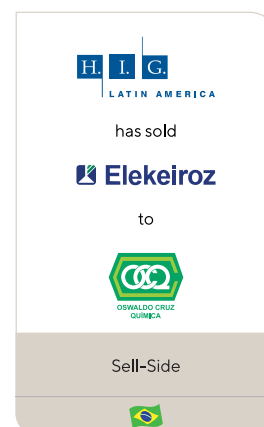
Elekeiroz is the market leader of chemical intermediates in Latin America, standing out as one of the most recognized players in the Brazilian chemicals industry. The company is the sole producer of oxo derivatives in South America as well as the largest plasticizer producer in Brazil. Elekeiroz delivers its products to diverse end-markets, including paint and coatings, apparel, footwear, construction, food, agriculture and others.

H.I.G. Capital, a leading global private equity firm, has sold their shares in Elekeiroz to Oswaldo Cruz Química, the largest producer of resins and raw materials for many important sectors of the economy. Lincoln International acted as financial advisor to H.I.G. Latin America in this transaction, supporting the sellers in all aspects of the deal.

"We are pleased to have advised H.I.G. in this outstanding successful exit, executed with impeccable timing. This transaction reinforces Lincoln's position in Brazil as one of the leading investment banking advisors in the chemicals space and further strengthen our relationship with H.I.G. on a global basis. Elekeiroz is one of the most traditional Brazilian chemical industries with more than 125 years of existence and is a strategic partner to many of its clients... We are sure the business will thrive under Oswaldo Cruz Química's ownership."

**Luiz Recchia**

**Managing Director in Lincoln's São Paulo office**



Sources: American Chemistry Council, The U.S. Bureau of Economic Analysis, U.S. Bureau of Labor Statistics, CNBC, Deloitte, Schroders.

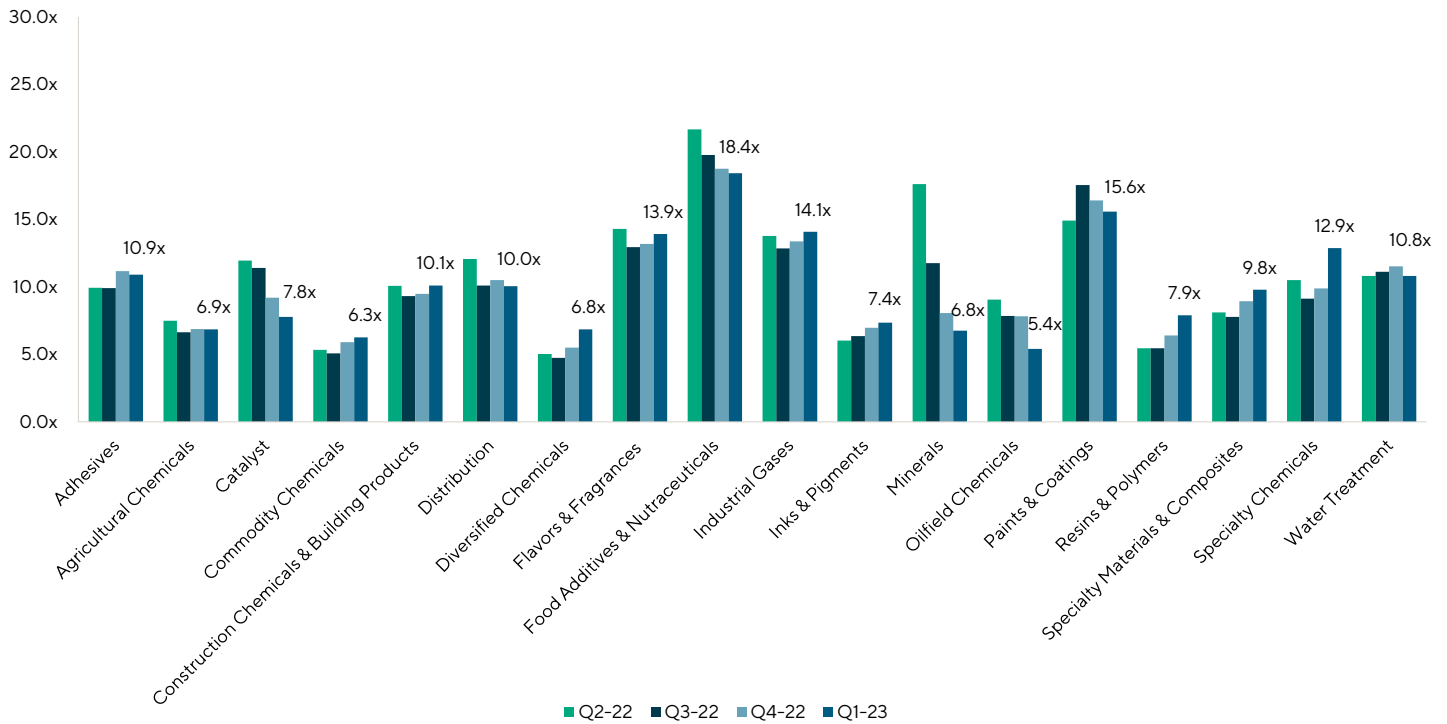
## PUBLIC COMPANY VALUATION STATISTICS AS OF 3/31/23

Sector	Number of Companies	Quarterly Stock Performance	% of 52 Week High	EV / LTM		P / E Multiple	Net Debt / LTM EBITDA	Q3 2022 LTM Growth		Q3 2022 LTM Margin	
				Revenue	EBITDA			Revenue	EBITDA	Gross	EBITDA
Adhesives	4	(1.3%)	84.6%	1.72x	10.9x	19.4x	2.2x	3.9%	9.2%	34.4%	15.0%
Agricultural Chemicals	13	(0.5%)	75.6%	1.51x	6.9x	14.0x	1.6x	1.3%	2.3%	31.1%	23.8%
Catalyst	3	(3.3%)	71.5%	1.49x	7.8x	11.9x	1.1x	4.5%	3.8%	19.2%	16.6%
Commodity Chemicals	18	9.3%	78.0%	0.97x	6.3x	11.7x	2.4x	3.2%	20.1%	20.5%	14.7%
Construction Chemicals	12	12.7%	84.7%	1.93x	10.1x	17.6x	1.9x	3.9%	6.5%	30.8%	17.1%
Distribution	6	10.6%	92.3%	1.01x	10.0x	14.3x	2.1x	2.4%	(2.7%)	20.4%	9.6%
Diversified Chemicals	15	4.6%	80.3%	0.97x	6.8x	13.3x	2.4x	1.4%	15.1%	24.6%	15.1%
Flavors & Fragrances	10	(1.5%)	78.6%	2.76x	13.9x	20.7x	0.8x	5.3%	10.8%	40.0%	17.9%
Food Additives & Nutraceuticals	5	11.3%	82.1%	5.42x	18.4x	28.2x	1.6x	6.6%	11.2%	48.2%	28.3%
Industrial Gases	6	12.5%	92.7%	3.65x	14.1x	20.8x	1.7x	9.9%	10.0%	36.2%	23.3%
Inks & Pigments	5	4.6%	90.7%	0.60x	7.4x	11.8x	1.7x	3.9%	7.2%	16.8%	5.1%
Minerals	10	(1.4%)	61.9%	2.36x	6.8x	8.5x	1.2x	5.4%	15.9%	41.9%	39.3%
Oilfield Chemicals	3	(11.2%)	68.7%	0.72x	5.4x	7.4x	2.4x	6.4%	12.8%	21.1%	9.7%
Paints & Coatings	9	6.5%	87.0%	2.57x	15.6x	29.4x	2.6x	4.4%	12.2%	34.2%	12.1%
Resins & Polymers	9	3.0%	80.2%	1.02x	7.9x	12.5x	3.0x	3.8%	29.5%	18.5%	12.0%
Spec. Materials & Composites	11	7.1%	81.4%	1.53x	9.8x	16.3x	2.9x	5.0%	9.0%	25.1%	13.6%
Spec. Chemicals	13	11.6%	78.8%	2.06x	12.9x	16.1x	3.9x	6.7%	(7.8%)	27.1%	16.5%
Water Treatment	4	14.7%	91.6%	2.00x	10.8x	20.6x	2.1x	2.3%	4.1%	26.7%	16.5%
<b>Mean</b>		<b>5.7%</b>	<b>79.9%</b>	<b>1.78x</b>	<b>9.6x</b>	<b>15.7x</b>	<b>2.2x</b>	<b>4.0%</b>	<b>10.0%</b>	<b>28.3%</b>	<b>17.4%</b>

Source: Capital IQ, Thomson ONE, American Chemistry Council, Wall Street research and company data

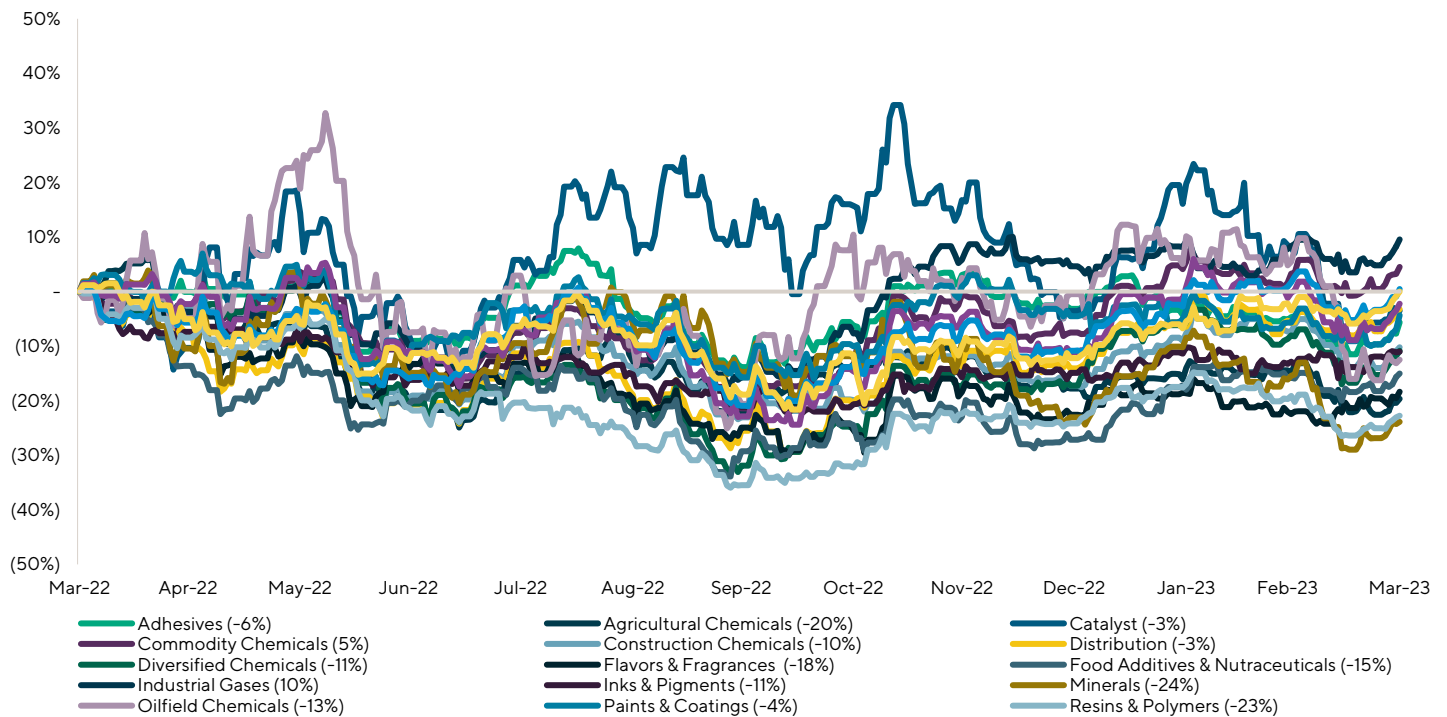
# Chemicals & Materials Market Update

## ENTERPRISE VALUE / LTM EBITDA



Note: The above multiples are based on the mean for the past four quarters for each corresponding sub-sector

## 1-YEAR STOCK PERFORMANCE BY CHEMICALS SUB-SECTOR



Note: Calculated based on an average of publicly traded companies in the sector

## SELECT Q1 2023 M&A TRANSACTIONS

(\$ in millions)

Closing Date/ Status	Target	Acquiring Company	Acquirer Location	Acquirer Location	Enterprise Value	EV / LTM		EBITDA
						Revenue	EBITDA	Margin
Announced	Admixtures Business of MBCC Group	Cinven	Germany	UK	-	-	-	-
Announced	Advachem	Gruppo Saviola	Belgium	Italy	-	-	-	-
Announced	Aik Moh Paints & Chemicals	Brenntag	Singapore	Germany	-	-	-	-
Announced	Ammonia Production Facility of Incitec Pivot	CF Industries Holdings	U.S.	U.S.	\$1,675	-	-	-
Announced	Bozzetto Group	Aimia	Italy	Canada	244	1.02x	7.1x	14.4%
Announced	Chemically Recycled BHET and PET Business of Shuye	SK Chemicals	China	South Korea	98	-	-	-
Announced	CPS Chemical Oil-Tech	IMCD	South Africa	Netherlands	-	-	-	-
Announced	Cromo Quimica	Lavoro	Brazil	Brazil	-	-	-	-
Announced	Diversey	Solenis	U.S.	U.S.	4,516	1.63x	14.6x	11.2%
Announced	Essential Metals	Tianqi Lithium Energy Australia	Australia	Australia	88	-	-	-
Announced	Fertilizer Business of Industrial Commodities Holdings	K+S Aktiengesellschaft	South Africa	Germany	-	-	-	-
Announced	Flavor Specialty Ingredients Business of IFF	Exponent Private Equity	U.S.	UK	220	2.20x	-	-
Announced	Hanmee Entec	Toray Advanced Materials	South Korea	Japan	-	-	-	-
Announced	Hasa	Wind Point Advisors	U.S.	U.S.	-	-	-	-
Announced	Kale Kimya Kimyevi Maddeler Sanayi Ve Ticaret	Univar	Turkey	U.S.	-	-	-	-
Announced	Lidorr Elements	Azelis	Israel	Belgium	-	-	-	-
Announced	Mepol Group	LyondellBasell	Italy	U.S.	-	-	-	-
Announced	N.P.T.	DuluxGroup	Italy	Australia	-	-	-	-
Announced	SCF Natural	Krajowa Grupa Spozywca	Poland	Poland	-	-	-	-
Announced	SER Group	HeidelbergCement	Germany	Germany	-	-	-	-
Announced	Sichuan Zhengdakai New Materials	Wankai New Materials	China	China	51	-	-	-
Announced	Silvateam	InvestIndustrial	Brazil	UK	-	-	-	-
Announced	Skamol	Etex	Denmark	Belgium	-	-	-	-

Source: Capital IQ, Mergermarket, Pitchbook and company data

## SELECT Q1 2023 M&A TRANSACTIONS (CONT.)

(\$ in millions)

Closing Date/ Status	Target	Acquiring Company	Acquirer Location	Acquirer Location	Enterprise Value	EV / LTM		EBITDA
						Revenue	EBITDA	Margin
Announced	Solus Biotech	Croda	South Korea	UK	\$278	8.29x	-	-
Announced	Thai Eurocode	Toyo Ink	Thailand	Thailand	-	-	-	-
Announced	U.P. Twiga Fiberglass	Saint-Gobain	India	France	48	-	-	-
Announced	Univar	Apollo Global Management	U.S.	U.S.	8,112	0.71x	7.3x	9.7%
Announced	VitalForce	Grupo Lwart	Brazil	Brazil	-	-	-	-
Mar-23	RusVinyl	SIBUR	Russia	Russia	923	-	-	-
Mar-23	Pure Planet Science & Technology	Hasa	U.S.	U.S.	-	-	-	-
Mar-23	UAC Advance Polymer & Chemicals	Icap-Sira	Thailand	Italy	-	-	-	-
Mar-23	Elekeiroz	Oswaldo Cruz Química Indústria E Comércio	Brazil	Brazil	-	-	-	-
Mar-23	Bron Tapes	Rotunda Capital Partners	U.S.	U.S.	-	-	-	-
Mar-23	ICP Industrial	Stahl	U.S.	Netherlands	205	1.46x	-	-
Mar-23	Straight Goods Glyphosate Business of Corteva	Albaugh	U.S.	Mexico	-	-	-	-
Mar-23	The Stoller Group	Corteva	U.S.	U.S.	1,129	-	-	-
Mar-23	Airnov France	Colorcon	France	U.S.	-	-	-	-
Mar-23	Centauri Technologies	Aurorium Holdings	U.S.	U.S.	-	-	-	-
Mar-23	FBSciences	Valent BioSciences	U.S.	U.S.	-	-	-	-
Mar-23	Global Products Business of Valvoline	Saudi Aramco	U.S.	Saudi Arabia	2,650	1.47x	-	-
Feb-23	Orange Chemicals	IMCD UK	UK	UK	-	-	-	-
Feb-23	Textile Effects Business of Huntsman	Archroma	U.S.	Switzerland	718	0.93x	7.6x	12.2%
Feb-23	Innocore Sales & Marketing	Hopesco Brands Group	Canada	U.S.	-	-	-	-
Feb-23	Refinery Specialties	Imperative Chemical Partners	U.S.	U.S.	-	-	-	-
Feb-23	Certain Operating Assets of SGL Composites	Tex Tech	U.S.	U.S.	-	-	-	-
Feb-23	Reitech Corporation	Vivify Specialty Ingredients	U.S.	U.S.	-	-	-	-

Source: Capital IQ, Mergermarket, Pitchbook and company data



## SELECT Q1 2023 M&A TRANSACTIONS (CONT.)

(\$ in millions)

Closing Date/ Status	Target	Acquiring Company	Acquirer Location	Acquirer Location	Enterprise Value	EV / LTM		EBITDA Margin
						Revenue	EBITDA	
Feb-23	Stera Chemicals	Oqema	Romania	Germany	-	-	-	-
Feb-23	Certain Operating Assets of Grand Invest	Solenis	Peru	U.S.	-	-	-	-
Feb-23	Tramico	Soudal	France	Belgium	-	-	-	-
Jan-23	RHD Polymer & Chemicals	R.E. Carroll	U.S.	U.S.	-	-	-	-
Jan-23	MIP-Agro	Rovensa	Chile	Portugal	-	-	-	-
Jan-23	American Bio-Systems	AMGUARD Environmental Technologies	U.S.	U.S.	-	-	-	-
Jan-23	Can-Do National Tape	Zone Enterprises	U.S.	U.S.	-	-	-	-
Jan-23	Glass Chemicals	Calibre Scientific	Spain	U.S.	-	-	-	-
Jan-23	Lotte Chemical Pakistan	Lucky Core Industries	Pakistan	Pakistan	-	-	-	-
Jan-23	Agrivida	Novus International	U.S.	U.S.	-	-	-	-
Jan-23	Smoky Light	Azelis	Netherlands	Belgium	-	-	-	-
Jan-23	Profile Xtrusions	Vytron Corporation	U.S.	U.S.	-	-	-	-
Jan-23	Global Modified and Synthetic Acid Business of Fluid Energy Group	Dorf Ketal FZE	Canada	United Arab Emirates	-	-	-	-
Jan-23	NexAir	Praxair Distribution	U.S.	U.S.	-	-	-	-
Jan-23	Adob	Nouryon	Poland	Netherlands	-	-	-	-
Jan-23	Aspen Air	Iwatani	U.S.	Japan	-	-	-	-
Jan-23	Matchem	Saint-Gobain	Brazil	France	-	-	-	-
Jan-23	Taulman3D	Braskem	U.S.	U.S.	-	-	-	-
Jan-23	Febex	Prayon	Switzerland	Belgium	-	-	-	-
Jan-23	Chemical Business of Mecaro	Merck	South Korea	Germany	\$112	-	-	-
Jan-23	Rosier	Yildirim Holding	Belgium	Turkey	117	0.45x	-	-

Source: Capital IQ, Mergermarket, Pitchbook and company data

# About Lincoln International

We are trusted investment banking advisors to business owners and senior executives of leading private equity firms and their portfolio companies and to public and privately held companies around the world. Our services include mergers and acquisitions advisory, private funds and capital markets advisory, and valuations and fairness opinions. As one tightly integrated team of more than 850 employees in more than 20 offices in 15 countries, we offer an unobstructed perspective on the global private capital markets, backed by superb execution and a deep commitment to client success. With extensive industry knowledge and relationships, timely market intelligence and strategic insights, we forge deep, productive client relationships that endure for decades. Connect with us to learn more at [www.lincolninternational.com](http://www.lincolninternational.com).

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