

CHEMICALS & MATERIALS

# Quarterly Review



Q3 2023



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## LINCOLN INTERNATIONAL STATEMENT

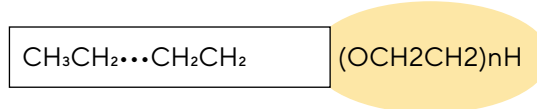
Surfactants are a critical, irreplaceable input to both consumer and industrial applications. Demand will only continue to increase over the years ahead. There is a substantive push towards bio-based surfactant solutions that will continue to outstrip the broader surfactant growth, though it is important to remember that there are critical inputs from petrochemical processing that are still permitted in the regulatory authority accepted definition of wholly bio-based surfactants. For companies that are able to orient around providing bio-based solutions, they will continue to attract interest from the majors. As with many chemical investments, having an integrated operating base and clear go-to-market strategy will help companies from having less than favorable outcomes in the mergers and acquisitions (M&A) market. There is still a role for this growing market to play, particularly for companies looking to diversify downstream from what is typically viewed as upstream oil and gas production to tell a more complete chemicals story. As the personal care markets continue to recover into 2024, we anticipate greater demand and a proper refocusing on the critical role that surfactants play.

# Surfactants

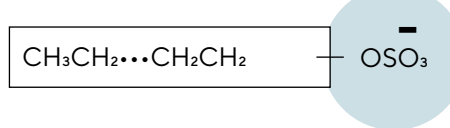
by Lincoln International's Global Chemicals & Materials Team

Surfactants are one of the most critical compounds in the chemical industry and serve a key role in everything from household products to the most demanding industrial application. Given their unique properties, surfactants serve to reduce the surface tension between two solutions or phases (e.g., liquid-liquid, liquid-gas, liquid-solid) and aid in suspending compounds within solutions in which they would otherwise be immiscible with. More technically, they create micelles (self-assembled molecular clusters) in a solution at high concentration or adsorb to the interface between a solution and another phase. Surfactants can be classified between nonionic and ionic surfactants, with ionic surfactants subdivided between anionic surfactants (negatively charged), cationic surfactants (positively charged) and amphoteric surfactants (dual charged – both positive and negative). The charge of ionic surfactants materially affects the underlying properties of the surfactant.

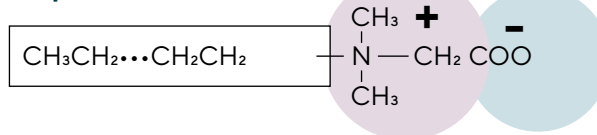
### Nonionic Surfactants



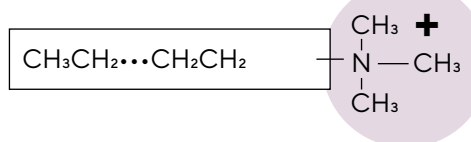
### Anionic Surfactants



### Amphoteric Surfactants



### Cationic Surfactants



Asia Pacific is the largest region for the manufacture of surfactants, followed by North America and then Europe. Ethylene oxide is one of the key inputs for surfactant production and there has been a push from majors, such as Croda, to develop fully bio-based ethylene oxide facilities, which will enable the transition to bio-based solutions without meaningful trade-offs in efficacy. Major surfactant producers include BASF, Clariant, Croda, Dow, Evonik, Indorama, Stepan and Verdant.



## Surfactants (continued)

The two primary feedstock chains for the production of surfactants are petrochemical and renewable sources. For petrochemical processing, this can be done via the polymerization of alkenes (e.g., ethylene, propylene). For renewable sources, this is typically derived from triglycerides from animal fats and vegetable oils. Historically, surfactants were produced from what we classify today as renewable sources before the growth in the petrochemical industry. Even within the bio-based surfactant classification, there is an acceptance that petroleum feedstock is required for a portion of the inputs, to the point that the European Commission accepts 95% of bio-based content in a surfactant as a wholly bio-based surfactant.

Fields of application will differ depending on the surfactant type (e.g., amphoteric, anionic, nonionic) and are typically used in consumer and industrial applications. Consumer segments typically covered include laundry, cleaning and disinfection, cosmetics and the personal hygiene markets. Industrial segments typically covered include agricultural chemicals, oilfield chemicals, industrial and institutional cleaning chemicals, paints and coatings and construction related solutions. Anionic surfactants are typically used in dish cleaners and washing powders – with soap a traditional example of a type of anionic surfactant. Amphoteric surfactants on the other hand are used in personal care products such as shampoos and cosmetics. Cationic surfactants can include quaternary ammonium salts, which are attracted to negatively-charged sites and are frequently used with fabrics as a type of fabric softener.

Surfactants play a critical role in the formulation of products, allowing the desired, active compounds / additives to stay suspended in the bulk medium (e.g., water) until they reach the desired area of effect. There is a supporting narrative around the importance of their input to the end product and growing demand coming out of the temporary slowdown in personal care spending. With a new product angle towards developing bio-based and degradable surfactant solutions, including surfactants produced by modified bacteria, there is meaningful value still remaining in this category.

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## Market Update

The economy exhibited modest growth over the summer, both fueling concerns about a potential recession and nurturing hopes that it might be averted. After two consecutive quarters of contraction, the inflation-adjusted gross domestic product showed positive growth in the third quarter. However, as inflation eroded households' purchasing power and interest rates remained stubbornly high, consumer spending decelerated, resulting in the most significant dip in the housing sector since the early days of the pandemic. While investors remain vigilant, the resilience of the economy caused some of the recession fears to wane by the end of the quarter. Meanwhile, the chemicals sector remains primed to outperform, with Lincoln's Chemicals Index up 9.7% year-to-date, compared to the S&P 500 which is up 19.6% YTD. Maintaining its policy within a 5.25% - 5.50% range, the Federal Reserve indicated the possibility of one more rate increase in 2023 before a prolonged hiatus. External factors such as the recent military conflict in the Middle East could pose new inflationary challenges, potentially undermining economic confidence. This comes at a time when central bankers were growing optimistic about curbing the price hike triggered by both the pandemic and Russia's invasion of Ukraine.

Sources: American Chemistry Council, Bloomberg, Bureau of Economic Analysis, Bureau of Labor Statistics, Federal Reserve Board

Following four months of consecutive declines, chemical producer prices were higher in September, up by 0.2%. Prices were higher for plastic resins, synthetic rubber, manufactured fibers, inorganic chemicals, agricultural chemicals and specialty chemicals. These gains were partially offset by lower prices for bulk petrochemicals and organics, coatings and consumer products. Following seven months of decline, chemical import prices stabilized in September. Chemical export prices also held steady (up just 0.1%). On a Y/Y basis, import prices are down 13.1% and export prices are down 14.9%. Chemical wholesale inventories fell 2.4% in August, following a 0.9% decline in July. Sales of chemicals at the wholesale level increased 1.4%. As a result, the inventories-to-shipments ratio fell from 1.15 in July to 1.11 in August. Inventories were off 14.2% Y/Y while sales were off 6.2% Y/Y.

Positioned upstream within the supply chain, the chemicals sector is expected to witness a rebound in activity ahead of broader improvements in underlying macroeconomic conditions. With over 85% of basic and specialty chemicals consumed by the industrial sector, strong fundamentals driving long-term growth in the sector, particularly in aerospace, energy and electronics, will continue to depend on the chemicals sector for critical innovations and inputs.

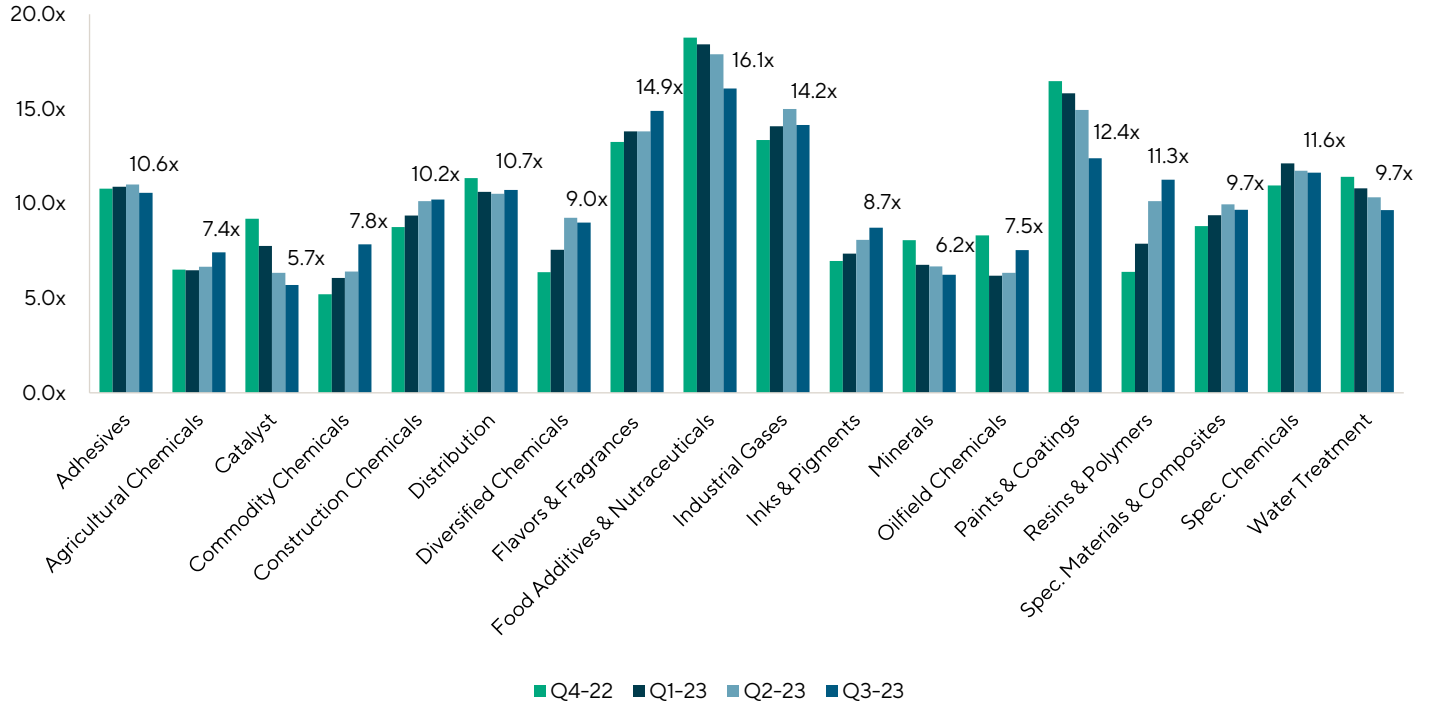
## PUBLIC COMPANY VALUATION STATISTICS AS OF 9/30/23

Sector	Number of Companies	Quarterly Stock Performance	% of 52 Week High	EV / LTM		P / E Multiple	Net Debt / LTM EBITDA	Q3 2023 LTM Growth		Q3 2023 LTM Margin	
				Revenue	EBITDA			Revenue	EBITDA	Gross	EBITDA
Adhesives	4	(3.7%)	83.2%	1.72x	10.6x	24.3x	1.3x	3.9%	9.5%	35.4%	5.5%
Agricultural Chemicals	14	(0.3%)	72.7%	1.55x	7.4x	14.8x	1.9x	5.1%	10.5%	28.7%	21.8%
Catalyst	3	(16.4%)	60.1%	0.96x	5.7x	9.2x	1.2x	3.7%	1.2%	18.0%	15.4%
Commodity Chemicals	13	1.3%	86.5%	1.15x	7.8x	15.5x	2.5x	4.4%	17.1%	21.2%	14.4%
Construction Chemicals	11	2.1%	90.0%	1.85x	10.2x	18.1x	2.3x	4.5%	7.1%	30.6%	16.5%
Distribution	5	(1.8%)	83.8%	1.20x	10.7x	18.2x	2.3x	6.1%	4.9%	20.1%	9.7%
Diversified Chemicals	16	(10.7%)	78.0%	1.05x	9.0x	17.8x	-8.8x	7.3%	24.8%	23.8%	12.7%
Flavors & Fragrances	9	(2.3%)	81.3%	2.69x	14.9x	21.9x	0.9x	4.3%	11.0%	36.4%	14.6%
Food Additives & Nutraceuticals	5	(13.6%)	72.8%	4.59x	16.1x	28.8x	1.8x	6.2%	10.2%	47.4%	28.2%
Industrial Gases	6	(3.0%)	92.3%	3.86x	14.2x	21.3x	1.8x	11.3%	10.8%	37.3%	23.9%
Inks & Pigments	5	1.3%	90.2%	0.63x	8.7x	21.4x	1.7x	5.3%	25.6%	17.7%	6.8%
Minerals	10	(15.6%)	60.3%	1.92x	6.2x	8.1x	1.4x	5.1%	8.3%	39.9%	37.1%
Oilfield Chemicals	4	44.9%	94.0%	1.26x	7.5x	24.5x	1.5x	7.0%	11.5%	24.5%	13.5%
Paints & Coatings	8	(8.0%)	85.5%	2.64x	12.4x	22.5x	1.9x	3.8%	8.4%	35.5%	13.7%
Resins & Polymers	9	(5.5%)	79.0%	1.10x	11.3x	14.3x	-17.3x	6.3%	50.3%	16.0%	9.5%
Spec. Materials & Composites	8	(10.6%)	82.6%	1.50x	9.7x	22.0x	2.6x	5.8%	16.2%	23.7%	13.2%
Spec. Chemicals	10	(5.1%)	77.6%	2.21x	11.6x	19.8x	2.1x	8.1%	17.0%	30.9%	17.9%
Water Treatment	4	(6.9%)	85.2%	1.83x	9.7x	17.9x	2.1x	1.6%	2.4%	26.9%	17.3%
<b>Mean</b>		<b>(3.8%)</b>	<b>79.8%</b>	<b>1.78x</b>	<b>9.9x</b>	<b>17.8x</b>	<b>-0.5x</b>	<b>5.6%</b>	<b>14.9%</b>	<b>28.1%</b>	<b>16.7%</b>

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

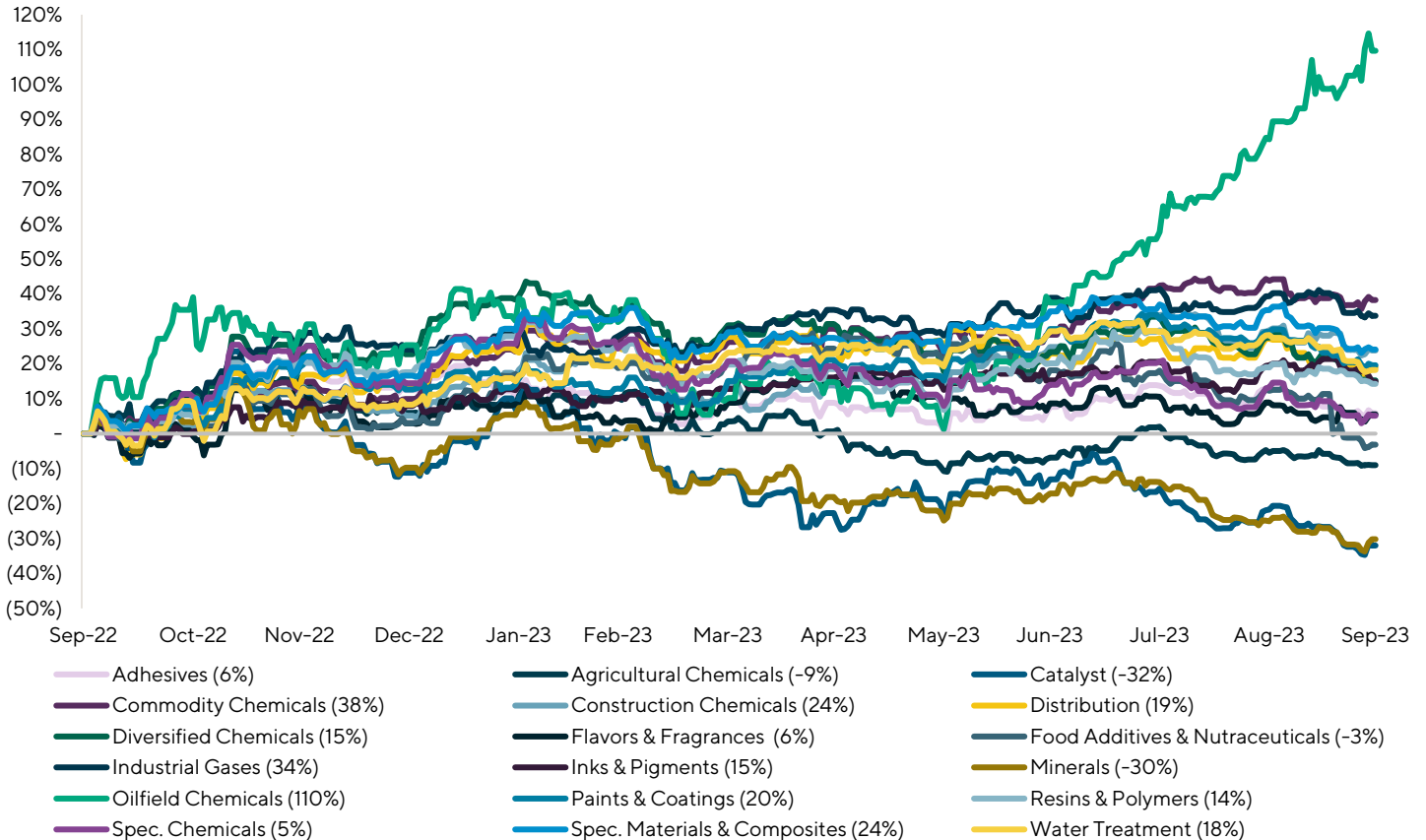
# Chemicals & Materials Market Update

## 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 Q3 2023 M&A TRANSACTIONS

(USD in millions)

Closing Date/ Status	Target	Acquiring Company	Target Location	Acquirer Location	Enterprise Value	EV / LTM		EBITDA Margin
						Revenue	EBITDA	
Announced	Belle Chemical	Arclin	US	US	-	-	-	-
Announced	Strawberry Pipeline and Commercial Portfolio of NIAB	Bayer	UK	Germany	-	-	-	-
Announced	Texas City Operations of Eastman Chemical Company	INEOS	US	UK	\$490	-	-	-
Announced	Glenmark Life Sciences	Nirma	India	India	871	3.22x	10.5x	30.6%
Announced	Baker Transportation	PolyQuest	US	US	-	-	-	-
Announced	Kalium Lakes	Agrimin	US	Australia	-	-	-	-
Announced	Mactra	Akzo Nobel	Brazil	Netherlands	-	-	-	-
Announced	Athabasca Minerals	JMAC Energy Services	Canada	US	20	0.57x	-	-
Announced	Baldocer	Grupo Lamosa	Spain	Mexico	453	-	-	-
Announced	Seiko PMC	The Carlyle Group	Japan	US	233	1.07x	11.1x	9.7%
Announced	Terphane	Oben Holding Group	Brazil	Peru	116	0.76x	7.1x	10.8%
Announced	M. Holland	Ravago	US	Belgium	-	-	-	-
Announced	ONGC	Oil and Natural Gas Corporation	India	India	5,120	2.60x	-	-
Announced	Delrin Business of DuPont	The Jordan Company	Netherlands	US	1,998	-	-	-
Announced	Chemgriit	Brenntag	South Africa	Germany	-	-	-	-
Announced	LRBG Chemicals	Bakelite Synthetics	Canada	US	-	-	-	-
Announced	Chem Masters Del Peru	Sika	Peru	Switzerland	-	-	-	-
Announced	Advanced Color Technologies	Techmer PM	US	US	-	-	-	-
Announced	Qualicaps	Roquette Frères	Japan	France	-	-	-	-
Announced	Chase Corporation	KKR	US	US	1,330	3.39x	13.6x	25.0%
Announced	Attero	Ardian	Netherlands	France	238	-	-	-
Announced	Representaciones de Materias Primas Industriales Limitada	IMCD	Chile	Netherlands	-	-	-	-
Announced	Phytosanitary Products Factory of Bayer	Industrias Químicas del Valles	Spain	Spain	-	-	-	-

Source: Capital IQ, Mergermarket, Pitchbook and company data

## SELECT Q3 2023 M&A TRANSACTIONS (CONT.)

(USD in millions)

Closing Date/ Status	Target	Acquiring Company	Target Location	Acquirer Location	Enterprise Value	EV / LTM		EBITDA Margin
						Revenue	EBITDA	
Announced	TotalEnergies' Stakes in Naphtachimie, Appryl, Gexaro and 3TC	INEOS	France	UK	-	-	-	-
Sep-23	Von Roll	ELANTAS	Switzerland	Germany	\$253	0.95x	8.6x	11.1%
Sep-23	Belle Chemical	Arclin	US	US	-	-	-	-
Sep-23	brocolor LACKFABRIK	Active Capital Company	Germany	Netherlands	-	-	-	-
Sep-23	Somafina	Heartwood Partners	US	US	-	-	-	-
Sep-23	Douglas Products	Brightstar Capital Partners	US	US	-	-	-	-
Sep-23	Tessara	AgroFresh Solutions	South Africa	US	-	-	-	-
Sep-23	Ecopol	SK Capital Partners	Italy	US	-	-	-	-
Sep-23	FloChem	Univar Solutions	Canada	US	-	-	-	-
Sep-23	Catalysts Site of BASF in De Meern	ASC Investment	Netherlands	Germany	-	-	-	-
Aug-23	Stratasys Direct	Lamarjean Group	US	US	-	-	-	-
Aug-23	IADA	Jodima	Spain	Belgium	-	-	-	-
Aug-23	Isolatek	SK Capital Partners	US	US	-	-	-	-
Aug-23	Nippon Paint (India), Berger Nippon Paint Automotive Coatings	Nippon	India	Japan	-	-	-	-
Aug-23	Euronovis	Wellma Group	Italy	Sweden	-	-	-	-
Aug-23	Lotte Chemical's Stake in China Ethylene Oxide JV	Sanjiang Chemical	China	China	-	-	-	-
Aug-23	Ameritape	Sur-Seal	US	US	-	-	-	-
Aug-23	Infection Control Company	MicroCare	US	US	-	-	-	-
Aug-23	Gateway Chemicals	VION Biosciences	US	US	-	-	-	-
Aug-23	Emeraude	Ravago	France	Belgium	-	-	-	-
Aug-23	Custom Lawn Care	HCI Equity Partners	US	US	-	-	-	-
Aug-23	Sachs Chemical	IMCD	US	Netherlands	-	-	-	-
Aug-23	Spectrum Plastics Group	DuPont	US	US	1,750	-	15.6x	-

Source: Capital IQ, Mergermarket, Pitchbook and company data

## SELECT Q3 2023 M&A TRANSACTIONS (CONT.)

(USD in millions)

Closing Date/ Status	Target	Acquiring Company	Target Location	Acquirer Location	Enterprise Value	EV / LTM		EBITDA Margin
						Revenue	EBITDA	
Aug-23	Fence, Railing and Decking Business of CertainTeed	Oldcastle APG	US	US	-	-	-	-
Aug-23	Flavor Specialty Ingredients Business of IFF	Exponent Private Equity	US	UK	\$205	2.05x	-	-
Aug-23	Glycolic Acid Business of Chemours	PureTech Scientific	US	US	137	-	-	-
Jul-23	Pakelo Motor Oil	Alkemia	Italy	Italy	-	-	-	-
Jul-23	UG Plast	Isik Plastik Sanayi	US	Turkey	-	-	-	-
Jul-23	Buckminster Quimica	ADM	Brazil	Brazil	-	-	-	-
Jul-23	Stiphout Industries	LyondellBasell	Netherlands	US	-	-	-	-
Jul-23	Ultrabatch	Koinos Capital	Italy	Italy	-	-	-	-
Jul-23	O&3	IMCD	UK	Netherlands	-	-	-	-
Jul-23	Thiessen Team USA	Sika	US	Switzerland	-	-	-	-
Jul-23	Nitrogen Business of Borealis	Agrofert	Austria	Czech Republic	-	-	-	-
Jul-23	Solus Biotech	Croda	South Korea	UK	271	-	-	-
Jul-23	Solus Biotech	Sustainable Agro Solutions	Spain	Spain	-	-	-	-
Jul-23	Fertiva	K+S Aktiengesellschaft	South Africa	Germany	-	-	-	-

Source: Capital IQ, Mergermarket, Pitchbook and company data



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