MOODY'S INVESTORS SERVICE

CREDIT OPINION

29 September 2023

Update

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RATINGS

	S.A.

Domicile	Paris, France
Long Term Rating	A2
Туре	LT Issuer Rating - Dom Curr
Outlook	Stable

Please see the <u>ratings section</u> at the end of this report for more information. The ratings and outlook shown reflect information as of the publication date.

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Americas	1-212-553-1653
Asia Pacific	852-3551-3077
Japan	81-3-5408-4100
EMEA	44-20-7772-5454

Air Liquide S.A.

Update following publication of Q2 2023 results

Summary

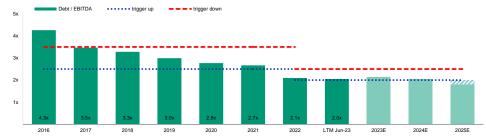
Exhibit 1

<u>Air Liquide S.A.</u>'s (Air Liquide, A2 stable) rating reflects its leading position in the concentrated industrial gas market, with a high degree of revenue visibility provided by long-term take-or-pay contracts in its large industry business unit that contain cost pass-through clauses; a high network density, also supporting its industrial merchant business unit; a highly regulated market environment for its healthcare business; and growth opportunities arising from energy transition, including carbon capture. The rating also benefits from its exposure across diverse customers, industries and geographies, as well as solid and stable profitability levels. Nevertheless, the company remains exposed to the cyclicality of its customers, as Air Liquide supplies sectors such as chemicals and steel producers, and high capital investments and dividends weigh on free cash flow.

As of June 2023 Air Liquide's order backlog was around ≤ 3.5 billion, which once fully ramped up will contribute around ≤ 1.2 billion of annual sales. We expect that Air Liquide's capital expenditures will remain elevated over the next 18 months as the company executes its order backlog, resulting in Moody's adjusted FCF remaining at close to breakeven levels in 2023 and 2024.

Air Liquide's financial policy, characterized by a balanced allocation of cash and a commitment to an "A range" rating, also supports its credit quality. The company has delivered sustained de-leveraging since the acquisition of Airgas in 2016, with leverage of 2.0x as of the last twelve months (LTM) period to 30 June 2023 compared to above 4.0x in 2016, and we expect Moody's adjusted gross debt-to-EBITDA at or moderately below 2.0x in the next 18 months. A continued improvement of Air Liquide's Moody's adjusted RCF/debt towards 35% by 2025 will position the company strongly within the A2 rating category.

Air Liquide's Moody's adjusted gross leverage positions it strongly within the A2 rating triggers



Upwards and downwards triggers were reset in 2022 following the ratings upgrade of Air Liquide. Source: Moody's Investors Service and Moody's projections for 2023E, 2024E, and 2025E.

Credit strengths

- Global leader in industrial gas market, underpinned by scale, regional network density and strong customer relationships »
- Long-term contracts and balanced geographic and end-market diversifications provide revenue visibility and resilience »
- Solid and resilient profitability »
- Large exposure to markets like home healthcare and electronics segments, which provide organic growth potential »

Credit challenges

- Capital intensity and generous dividend policy constrain free cash flow (FCF) generation »
- High investment needs to capture growth opportunities related to carbon transition »

Rating outlook

The stable outlook reflects the expectation that Air Liquide's credit metrics will remain well within the requirements for the A2 rating. The stable outlook also reflects the expectation that the company will take appropriate measures to protect its credit quality and rating in case of broader based macroeconomic downturn impacting its earnings and cashflow generation.

Factors that could lead to an upgrade

We could consider upgrading the rating if Air Liquide adjusted financial leverage would be sustained below 2.0x, retained cash flow-» to-debt sustained above 35% (RCF/Debt), and if the company would publicly commit to a higher rating.

Factors that could lead to a downgrade

» We could consider downgrading Air Liquide's rating with leverage above 2.5x on a sustainable basis and RCF / net debt below 25% through the cycle. Any indications that its financial policy would become less conservative would also be negative for the rating.

Key indicators

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Air	Liquide	S.A.

USD million	Dec-18	Dec-19	Dec-20	Dec-21	Dec-22	LTM Jun-23
Revenue	24,812	24,540	23,381	27,609	31,548	31,111
Net Property Plant and Equipment	23,194	23,653	24,432	25,582	25,184	25,811
EBITDA Margin %	26.1%	26.8%	28.6%	26.4%	25.6%	26.5%
EBIT / Avg. Assets	8.0%	8.4%	8.4%	8.7%	10.5%	10.6%
Debt / EBITDA	3.3x	3.0x	2.8x	2.7x	2.1x	2.0x
RCF / Debt	16.3%	18.9%	19.9%	21.6%	27.9%	28.4%
EBITDA / Interest Expense	9.9x	11.1x	12.0x	15.4x	14.9x	15.9x

All ratios are based on 'Adjusted' financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations. Source: Moody's Financial Metrics™

Profile

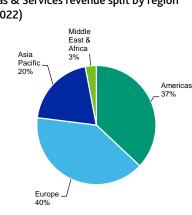
Headquartered in Paris, France, Air Liquide is a world leader in gas, technologies and services for industries and healthcare, generating €29.9 billion revenue in 2022. The company employs about 67,100 people across 73 countries. After the merger of its two main competitors, Linde plc (A2 stable) and Praxair, Air Liquide is currently the second-largest company in the industrial gas market.

This publication does not announce a credit rating action. For any credit ratings referenced in this publication, please see the issuer/deal page on https://ratings.moodys.com for the most updated credit rating action information and rating history.

Exhibit 3 Exhibit 4 Exhibit 5 Revenue split by business unit (2022) Gas & Services global revenue split by Gas & Services revenue split by region business lines (2022) (2022)Global Markets Engineering & Eletronics Construction 9% Asia Technologies 2% 3% Pacific 3% Healthcare 20% 14% Industrial Merchant 40%







Source: Company's 2022 annual report

Source: Company's 2022 annual report

Source: Company's 2022 annual report

The company divides its operations into three business units: Gas and Services (G&S), which is the main unit (95% of 2022 sales), supplying industrial gases and related services; Engineering and Construction (E&C), which designs and constructs industrial gas production units (2%); and Global Markets and Technologies (GM&T), which delivers technological solutions to support the new markets of energy transition, maritime logistics and deep tech (3%). Through a truly global footprint, the group's G&S sales are well balanced across the world's main manufacturing regions, with the Americas accounting for 37% of sales, Europe 40%, Asia-Pacific 20% and the Middle East and Africa 3%.

Air Liquide is listed on the Paris stock market, and its market capitalization as of mid of September 2023 was about €85 billion.

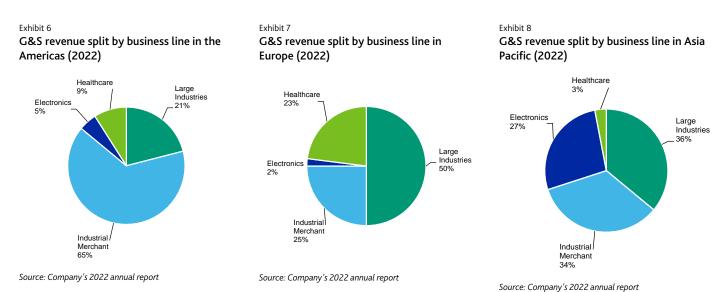
Detailed credit considerations

Nature of contracts in Large Industries segment provides revenue visibility and resilient earnings

Air Liquide's resilient business profile with a diversified geographic footprint and revenues well spread across different end-markets, long-term cost indexed take-or-pay contracts in its Large Industries segment, and its leading position in the industrial gas segment of the chemical industry, contribute to its strong credit quality. We expect these defensive characteristics to support resilient EBITDA and cash generation. Even in the current challenging macro environment characterized by cost inflation and elevated energy prices, the industrial gas sector has performed strongly relative to the rest of the chemical industry.

Air Liquide's presence in the Large Industries segment, which contributed around 37% to the 2022 G&S revenues, provides a high degree of visibility into profit and cash generation. Air gases are mainly obtained by the separation of air into its main components, oxygen and nitrogen, through air separation units, a process that is energy and capital intensive. This segment predominantly serves customers in the refining, metals and chemical industries through on-site plants and pipeline networks. Because of the high capital intensity of the Large Industries business, supply contracts are generally closed for 15 years. The contracts contain a minimum take-or-pay level, and prices are indexed on electricity and natural gas prices. Air Liquide also operates more than 9,700 kilometers (km) of pipelines in the most gas-intensive manufacturing basins, such as the US Gulf Coast and the Rotterdam area, allowing the company to provide a reliable and cost-efficient service to customers.

The group's natural gas consumption mainly stems from the operation of steam methane reformers to provide its customers with syntheses gas, carbon monoxide and oxogas and hydrogen, and from cogeneration units to produce electricity and steam. Air Liquide disclosed that around 55% of the 2022 revenues of the Large Industries segment were related to hydrogen, carbon monoxide as well as cogeneration. This also includes sales of hydrogen from electrolysis. The <u>risk of a rationing of natural gas has receded in Europe</u> thanks to high gas storage levels in the region, which limits the risk of potential disruptions for Air Liquide's European steam methane reformers.



Industrial Merchant, Healthcare and Electronics segments provide additional diversification

The absence of long-term cost indexed take-or-pay contracts in the Industrial Merchant segment makes it more vulnerable to lower profits due to cost inflation and a weakening macro environment compared to the Large Industries and electronic business. However, so far Air Liquide has been able to address the steep increase in energy costs by meaningful price increases while preserving volumes. For example, in Q2 2023, the company was able to increase prices in the Industrial Merchant business by 8.6% (14.4% price increase in Q2 2022) even in the context of decreasing energy prices. Also, Air Liquide's dense distribution and production network to some degree constitutes a barrier to market entrance because distribution usually only takes place within a 250-km radius around the production site.

The company's Industrial Merchant business serves a broad range of industries and customers (40% of G&S' 2022 revenue). The Industrial Merchant business mainly relies on gas supply from the Large Industries business unit. Supply modes range from on-site facilities and bulk deliveries to packaged gases in the form of cylinders. Around 25% of revenue of the Industrial Merchant business is generated from rental income and another 25% from sales to industries that can be considered defensive, such as the pharmaceutical and food and beverage sectors. Around 95% of the customer base in this segment is small customers who favor simplicity, flexibility and quality of service.

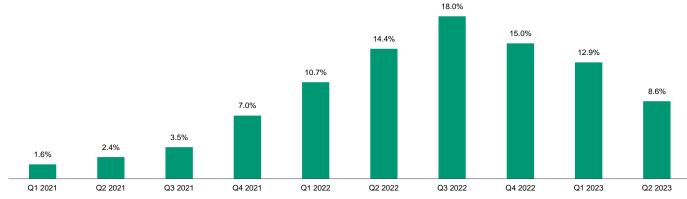


Exhibit 9

Sustained growth in the Industrial Merchant's pricing in particular since the rise of inflation

Source: Company information

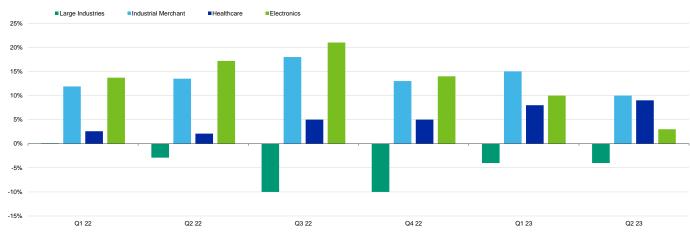
Apart from gases for the industrial and technology sectors, Air Liquide also operates in the healthcare sector. Air Liquide's Healthcare division supplies medical gases (oxygen, nitrous oxides and xenon) to around 15,000 hospitals and clinics, and comprehensive treatments to 1.9 million home healthcare patients suffering from chronic diseases. Medical gases are treated as drugs and thus constitute a highly regulated market, demanding health authorities' approval. The hospitals and clinics segment is experiencing pricing pressure in developed economies as healthcare systems look to curb spending. However, the home healthcare segment has positive fundamentals, in both advanced and developing economies, as patient care is increasingly shifting from hospitals to homes. An aging population and an increasing rate of chronic diseases are also growth factors in this sector.

Air Liquide's Electronics unit serves the semiconductor, flat panel display and photovoltaic markets. Around 42% of 2022 revenue in its electronics unit was generated by carrier gases, where deliveries are usually based on long-term gas supply agreements. The electronics business has grown strongly over the last couple of years; in 2022, it generated revenue of around €2.6 billion, compared with €830 million in 2003.

While contributing only a combined 5% of the company's total revenue, the E&C and GM&T business units are strategically important for Air Liquide. E&C provides crucial engineering support to internal gas projects. Building gas units for third-party customers can also lead to supply contracts for large industry operations. As E&C orders depend on customers' long-term investment decisions, revenue in that business unit is more volatile. The GM&T business unit is focused on maritime logistics, scientific exploration (aerospace) and the development of renewable fuels, such as hydrogen and biogas for which technology is a major differentiator.

Sustained comparable revenue growth in 2022 and H1 2023 in challenging environment, growing investment backlog supports future growth

Air Liquide has experienced strong comparable sales growth of 7.0% and 4.9% in 2022 and the first half of 2023, respectively, despite the challenging operating environment characterized by high energy prices, strong inflation, strain on supply chains and the conflict in <u>Ukraine</u> (Ca stable) which resulted in the deconsolidation of the company's activities in Russia on September 1st, 2022. In the Large Industries segment, weak demand in particular in Europe, where sharp increases in energy prices had a significant negative impact on volumes from certain industries, including the chemicals sector, hurt the company which reported a fall in its Large Industries' comparable sales growth of -6.6% and -3.6% in 2022 and H1 2023, respectively. However the negative trend in Large Industries was more than offset by growth in the remaining segments, Industrial Merchant, Electronics and Healthcare. The Industrial Merchant comparable sales growth was 14.2% and 12.1% in 2022 and H1 2023, respectively, mainly driven by a high price effect and growing volumes demonstrating Air Liquide's favourable pricing power.



Comparable sales growth of Gas & Services business segments on a quarter-on-quarter basis

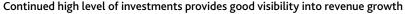
Source: Company information

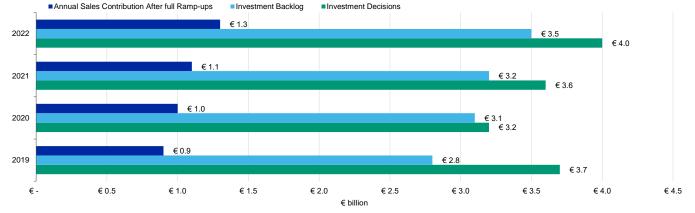
Exhibit 10

Air Liquide's investment decisions reached €4.0 billion in 2022 (€3.6 billion in 2021), which typically are spread over two to three years. During the first half of 2023, investment decisions continued to be at a high level of €1.8 billion - flat compared to the same period last year, supporting an investment backlog of €3.5 billion compared to €3.0 billion at the end of H1 2022. This backlog will translate into

€1.2 billion of annual sales after it is fully ramped up. The breakdown of the investment backlog is balanced between Large Industries and Electronics.

Exhibit 11





Source: Company's 2019, 2020, 2021 and 2022 full-year result presentations

We understand that Air Liquide's investment decisions are subject to a thorough process of evaluating risks associated with a given decision, including counterparty risks, asset quality, the location of the customer site and contract clauses, among others. The composition of Air Liquide's investment backlog has shifted towards projects related to energy transition (accounting for 40% of 12-month portfolio of investment opportunities as of H1 2023) and the electronics industry, which indicates potential favourable growth prospects. In the context of its ADVANCE strategy program the company aims at further accelerating its investment decisions to an accumulated \in 16 billion in the 2022 to 2025 period, which is expected to support a compounded annual revenue growth rate of 5%-6% over the same period. In the context of the ADVANCE program the company also confirmed its ambitions to invest \in 8 billion in the field of low-carbon and renewable hydrogen and to triple its sales from \in 2 billion to \in 6 billion before 2035. In addition, in 2030 the electrolysis capacities in operation or under construction will reach 3 GW. Air Liquide's carbon capture and storage projects in particular are showing positive momentum.

High capital expenditures will continue to burden FCF, continued focus on cost discipline to support EBITDA generation

Given the company's fairly high investment backlog, we expect that capital expenditure including maintenance capital spending will strongly increase towards \in 4.0 billion in 2023 from \in 3.4 billion in 2022 and increase further towards \in 4.5 billion in 2024. Hence, we forecast FCF generation to be close to break even or moderately positive in 2023 and 2024. However, in the context of a cash balance as of the end of the first half of 2023 of around \in 1.7 billion and large cash flow from operations, we believe that this high level of capital spending can be accommodated from internal sources. We also assume that the company may allocate some of the excess cash generation to debt reduction while continuously expanding its dividend payments.

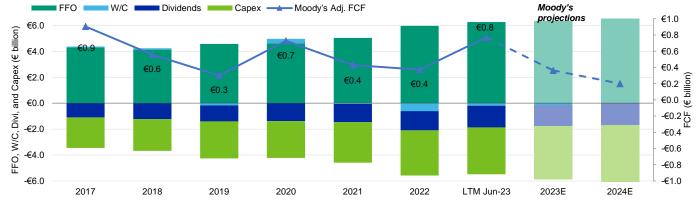
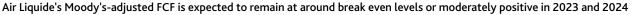


Exhibit 12



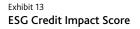
Source: Moody's Financial Metrics™ and Moody's estimates for 2023 and 2024

Despite the high inflation environment including elevated energy prices, Air Liquide has preserved a high Moody's adjusted EBITDA margin at above 25% in 2022 and the first half of 2023 supporting the current rating. The company's Operating Income Recurring on Sales excluding energy pass-through impact (OIR margin as reported by the company) improved by 70 basis points (bps) and 80 bps in 2022 and H1 2023, respectively. This margin improvement was driven by price increases and the realization of efficiencies which amounted to ≤ 206 million in H1 2023, up 23.6% compared to the same period last year and in line with the annual target of more than ≤ 400 million. In the context of its ADVANCE program, the company has reiterated its focus on improving profitability, following the successful completion of its previous NEOS efficiency program. The company now targets around ≤ 400 million of efficiency per year resulting in cumulative cost savings of ≤ 1.6 billion for the period of 2022 until 2025. However, Air Liquide's profitability level remains weaker than Linde's which has a comparable business profile and we believe there is thus further margin for improvement over the coming years.

In addition to contributions from the investment backlog, we expect that the company's continued focus on profitability will support its efforts to maintain a low leverage at or slightly below 2.0x over the coming 18 months, with additional scope for deleveraging if excess cash on balance sheet would be deployed towards debt reduction. The projected leverage ratio of Air Liquide will thus be at the lower end of thresholds set for the A2 rating category, and we expect that the company's adjusted RCF/Debt will continue improving over the next two years to well above 30% compared to the upper RCF/Debt threshold of 35% set for the rating category. A material weakening of the macro environment or event risks with regards to the availability of natural gas in Europe constitute a downside to this view, but we expect that Air Liquide's performance in such a scenario would continue to be resilient relative to other chemical peers.

ESG considerations

Air Liquide S.A.'s ESG Credit Impact Score is Positive CIS-1

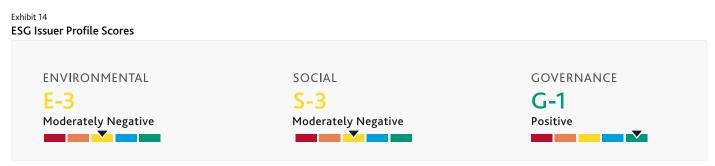




For an issuer scored CIS-1 (Positive), its ESG attributes are overall considered as having a positive impact on the rating. The overall positive influence from its ESG attributes on the rating is material.

Source: Moody's Investors Service

ESG considerations have a positive impact on Air Liquide's rating. This reflects Air Liquide's strong governance and financial policy, which to some degree mitigate the company's highly negative exposure to environmental and social risks. The company's involvement in various green and blue hydrogen projects and in carbon capture initiatives to a limited degree balance environmental and social risks.



Source: Moody's Investors Service

Environmental

Air Liquide's exposure to environmental risks stems from greenhouse gas emissions which are mainly related to the production of hydrogen and electric power through cogeneration units. Its air separation units consume high amounts of energy. However, contractual cost pass through in the company's large industries segment to some degree mitigates exposure to increasing energy prices and CO2 prices, and increasing order backlog for projects related to energy transition somewhat mitigates its high exposure to carbon transition risk.

Social

Air Liquide's exposure to social risks mainly stems from the health and safety risks of the industry and relatively frequent fatal accidents in the industrial gas sector. Air Liquide's ambition to contribute towards decarbonization by the involvement in various green and blue hydrogen projects as well as facilitating decarbonization initiatives of its customers and providing carbon capture services is reflected in the demographic and societal trends issuer profile sub-score of 2.

Governance

Air Liquide's governance is positive. The company has a track record of adhering to its conservative financial policy and is committed to maintain an "A-range" rating. Management has demonstrated a track record of achieving its financial targets including reducing leverage over several years from an elevated level following the acquisition of Airgas in 2016. In 2022, the company executed the separation of the CEO and Chairman of the supervisory board roles which were previously held by one person.

ESG Issuer Profile Scores and Credit Impact Scores for the rated entity/transaction are available on Moodys.com. In order to view the latest scores, please click <u>here</u> to go to the landing page for the entity/transaction on MDC and view the ESG Scores section.

Liquidity analysis

Air Liquide's liquidity profile is strong. As of 30 June 2023, the company had around €1.7 billion of cash and cash equivalents on its balance sheet. Furthermore, the company has access to an undrawn €2.5 billion syndicated revolving credit facility and close to €1.2 billion of other credit lines. In combination with expected adjusted funds from operations (FFO) generation of €6.1 billion to €6.3 billion in 2023, these sources should be more than sufficient to cover capital expenditures estimated to be around €3.5 billion to €4.0 billion, debt maturities, dividend payments and working capital swings.

Rating methodology and scorecard factors

The principal methodology used in these ratings was Chemical Industry published in June 2022. Please see the Rating Methodologies page on www.moodys.com for a copy of this methodology. The scorecard-indicated outcome as per the forward view indicates an A2 outcome, in line with the assigned A2 rating.

Exhibit 15

Scorecard factors for Air Liquide S.A.

Air Liquide S.A. Chemical Industry Scorecard [1][2]	Curre LTM June			Moody's 12-18 Month Forward View As of September 2023 [3]		
Factor 1 : Scale (15%)	Measure	Score	Measure	Score		
a) Revenue (USD Billion)	\$31.5	A	\$31 - \$33	А		
b) PP&E (net) (USD Billion)	\$25.8	Aa	\$24 - \$26	Aa		
Factor 2 : Business Profile (25%)						
a) Business Profile	Aa	Aa	Aa	Aa		
Factor 3 : Profitability (10%)						
a) EBITDA Margin	26.5%	A	26% - 27%	А		
b) ROA (Return on Average Assets)	10.6%	Ва	10% - 11%	Ва		
Factor 4 : Leverage & Coverage (30%)						
a) Debt / EBITDA	2.0x	Baa	1.9x - 2.1x	Ваа		
b) RCF / Debt	28.4%	Baa	28% - 29%	Baa		
c) EBITDA / Interest Expense	15.9x	A	14.0x - 15.0x	Baa		
Factor 5 : Financial Policy (20%)						
a) Financial Policy	А	A	A	А		
Rating:						
a) Scorecard-Indicated Outcome		A2		A2		
b) Actual Rating Assigned				A2		

[1] All ratios are based on 'Adjusted' financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations. [2] As of 06/30/2023. [3] This represents Moody's forward view, not the view of the issuer, and unless noted in the text, does not incorporate significant acquisitions and divestitures. *Source: Moody's Financial Metrics* Mody's *estimates*

Ratings

Exhibit 16

Category	Moody's Rating
AIR LIQUIDE S.A.	
Outlook	Stable
Issuer Rating -Dom Curr	A2
Senior Unsecured -Dom Curr	A2
Commercial Paper -Dom Curr	P-1
ST Issuer Rating -Dom Curr	P-1
AIR LIQUIDE FINANCE	
Outlook	Stable
Bkd Senior Unsecured	A2
Bkd Commercial Paper -Dom Curr	P-1
AIR LIQUIDE U.S. LLC	
Outlook	Stable
Bkd Commercial Paper	P-1
Sourco: Moodu's Investors Sonvice	

Source: Moody's Investors Service

Appendix

Exhibit 17

Moody's-Adjusted Debt Reconciliation for Air Liquide S.A.^{[1][2]}

		FYE	FYE	FYE	FYE	LTM
(in USD million)		Dec-19	Dec-20	Dec-21	Dec-22	Jun-23
As Reported Total Debt		16,535	16,626	15,870	14,357	14,759
	Pensions	1,897	1,909	1,529	1,071	1,095
	Securitization	1,272	1,300	1,587	1,673	1,710
Moody's Adjusted Total Debt		19,704	19,835	18,986	17,101	17,564

[1] All figures are calculated using Moody's estimates and standard adjustments. [2] Periods are Financial Year-End unless indicated. LTM = Last Twelve Months. Source: Moody's Financial Metrics TM

Exhibit 18

Moody's-Adjusted EBITDA Reconciliation for Air Liquide S.A.^{[1][2]}

	FYE	FYE	FYE	FYE	LTM
(in USD million)	Dec-19	Dec-20	Dec-21	Dec-22	Jun-23
As Reported EBITDA	6,385	6,943	7,234	7,519	7,976
Unusual Items - Income Statement	177	(252)	42	497	188
Pensions	(2)	(5)	(1)	(4)	10
Securitization	12	0	4	53	62
Non-Standard Adjustments	(1)	0	0	0	0
Moody's Adjusted EBITDA	6,572	6,686	7,279	8,064	8,236

[1] All figures are calculated using Moody's estimates and standard adjustments.

[2] Periods are Financial Year-End unless indicated. LTM = Last Twelve Months.

Source: Moody's Financial Metrics TM

Exhibit 19

Peer Comparison^{[1][2]}

	Air Liquide S.A. A2 Stable				Linde plc A2 Stable			Air Products and Chemicals, Inc. A2 Stable		
	FYE	FYE	LTM	FYE	FYE	LTM	FYE	FYE	LTM	
(in USD million)	Dec-21	Dec-22	Jun-23	Dec-21	Dec-22	Jun-23	Sep-21	Sep-22	Jun-23	
Revenue	27,609	31,548	31,111	30,793	33,364	33,093	10,323	12,699	12,979	
EBITDA	7,279	8,064	8,236	10,424	11,200	11,764	3,978	4,283	4,593	
Total Debt	18,986	17,101	17,564	17,056	19,482	19,058	8,495	8,523	10,270	
Cash & Cash Equivalents	2,384	1,875	1,868	2,823	5,436	3,357	4,469	2,711	1,638	
EBITDA margin %	26.4%	25.6%	26.5%	33.9%	33.6%	35.5%	38.5%	33.7%	35.4%	
ROA - EBIT / Average Assets	8.7%	10.5%	10.6%	8.7%	10.2%	10.6%	9.9%	10.6%	10.9%	
EBITDA / Interest Expense	15.4x	14.9x	15.9x	40.0x	32.9x	29.6x	20.7x	22.2x	20.2x	
Debt / EBITDA	2.7x	2.1x	2.0x	1.6x	1.7x	1.6x	2.1x	2.0x	2.2x	
RCF / Debt	21.6%	27.9%	28.4%	38.6%	35.5%	38.2%	24.9%	22.9%	22.7%	

[1] All figures & ratios calculated using Moody's estimates & standard adjustments.
[2] FYE = Financial Year-End. LTM = Last Twelve Months. RUR* = Ratings under Review, where UPG = for upgrade and DNG = for downgrade.

Source: Moody's Financial MetricsTM

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