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CREDIT OPINION
23 October 2023

Update

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RATINGS

MAHLE GmbH

Domicile	Stuttgart, Germany
Long Term Rating	Ba2
Type	LT Corporate Family Ratings
Outlook	Negative

Please see the ratings section 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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MAHLE GmbH

Update, following affirmation at Ba2

Summary

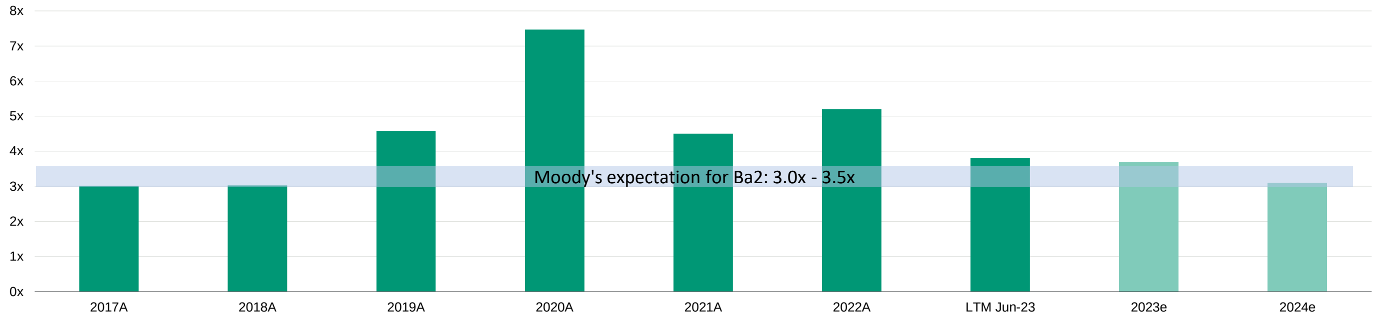
MAHLE GmbH (MAHLE)'s Ba2 Corporate Family Rating (CFR) reflects as positives the company's (1) size & scale as one of the world's 25 largest tier 1 automotive parts suppliers, with annual revenues of €12.4 billion in 2022 and a well-diversified Original Equipment Manufacturer (OEM) customer base, (2) top 3 market position in its main product categories of engine systems and components, filtration and engine peripherals and thermal management, (3) positive strategic alignment with a dual strategy to address the disruptive automotive industry trend of electrification by using cash flow generated in the internal combustion engines (ICE) business to further broaden and grow its exposure to electric vehicle platforms and products that are not dependent on the powertrain (4) conservative financial policy, as reflected in a history of relatively low financial leverage and modest shareholder distributions, and (5) good liquidity profile.

The rating reflects as negatives the company's (1) exposure to the cyclicality of automotive production, which has passed its peak in 2018 and is expected to return to previous peak levels only at around mid-decade, (2) relatively low margins, given the highly competitive sector environment, limited ability to timely and completely pass-on higher production cost, and weak free cash flow generation over the last few years, (3) high investment needs into R&D and capex to make the product portfolio more independent from ICEs, (4) challenges related to carbon transition, given the high dependency on products for internal combustion engines, at a time where automakers have accelerated their electrification targets, and (5) credit metrics (especially EBITA margins, debt/EBITDA and free cash flows), which are currently weakly positioned compared to Moody's requirements for the Ba2 rating category but expected to improve within the next 12-18 months.

The rating reflects the potential of MAHLE to further strengthen and consolidate its position in the ICE-related business. While the business faces secular demand decline, we believe that managing it to cost competitiveness will allow the group to generate significant funds that can be invested into other businesses so that the relative share of the ICE-related business will materially shrink over time. Considering the still significant challenges for a broader adoption of pure electric vehicles, related to, amongst other things, consumer preferences, charging infrastructure and range, we believe that the demand decline for such products will be in the low single digit percentages per year and hence manageable for MAHLE.

This report was republished on 30 October 2023 with a corrected description of the corporate strategy on page 5.

Exhibit 1
MAHLE's Moody's adjusted Debt / EBITDA is expected to be in a range of 3x - 3.5x over the next 12-18 months



Source: Company data, Moody's estimates

Credit strengths

- » Leading position as one of the world's 25 largest tier 1 automotive parts supplier
- » Positive strategic alignment to address the disruptive trend of electrification and strengthen the position in mature product segments
- » Conservative financial policy and good liquidity

Credit challenges

- » Exposure to the cyclicality of automotive production
- » Low profit margins, limited ability to timely and completely pass-on higher production cost
- » High investment needs to reduce historically high reliance on ICE technologies

Rating outlook

MAHLE's rating remains weakly positioned at this point. The negative outlook reflects challenges to achieve EBITA margins (Moody's adjusted) of at least 3% within the next 12-18 months. It also reflects challenges to generate positive free cash flows, which are, in addition to asset disposals, needed to reduce leverage to levels that are more comfortable within the range of 3.0x-3.5x debt/EBITDA (Moody's adjusted), which Moody's expects for the Ba2.

Factors that could lead to an upgrade

- » Debt/EBITDA (Moody's adjusted) below 3.0x,
- » EBITA margins (Moody's adjusted) above 5%,
- » Retained cash flow (RCF) / net debt (Moody's adjusted) of more than 20%, and
- » Reduced exposure to products used for internal combustion engines only, including plug-in hybrids.

Factors that could lead to a downgrade

- » Debt/EBITDA (Moody's adjusted) failed to improve to below 3.5x
- » EBITA margins (Moody's adjusted) failed to reach 3% at least,
- » Retained cash flow (RCF) / net debt (Moody's adjusted) below 15%, or

» Liquidity weakened.

Key indicators

Exhibit 2

EUR Billions	Dec-18	Dec-19	Dec-20	Dec-21	Dec-22	LTM (Jun-23)	2023e	2024e
Revenue	12.6	12.0	9.8	10.9	12.4	13.1	12.75 - 13.0	13.0 - 13.5
EBITA Margin %	4.0%	1.6%	-0.9%	2.1%	1.0%	3.1%	2.8% - 3.1%	2.9% - 3.2%
Debt / EBITDA	3.0x	4.6x	7.5x	4.5x	5.2x	3.8x	3.25x - 3.75x	3.0x - 3.5x
EBITA / Interest Expense	4.2x	1.9x	-0.9x	1.9x	0.4x	1.5x	1.7x - 2.2x	2.0x - 2.5x
RCF / Net Debt	24.3%	16.4%	26.1%	20.3%	1.2%	10.2%	20% - 25%	25% - 30%

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

MAHLE GmbH, headquartered in Stuttgart, Germany, is one of the top 25 global automotive parts suppliers. MAHLE's three main business segments are Thermal management (36% of 2022 sales), Engine Systems and Components (21%) and Filtration and Engine Peripherals (16%). In 2022, MAHLE generated revenues of around €12.4 billion. MAHLE, which employed around 72.000 employees and produced in around 152 locations worldwide in 2022, is owned by the MAHLE Foundation. The company owns a 70% stake in the MAHLE Metal Leve S.A., which is publicly listed in Brazil.

Detailed credit considerations

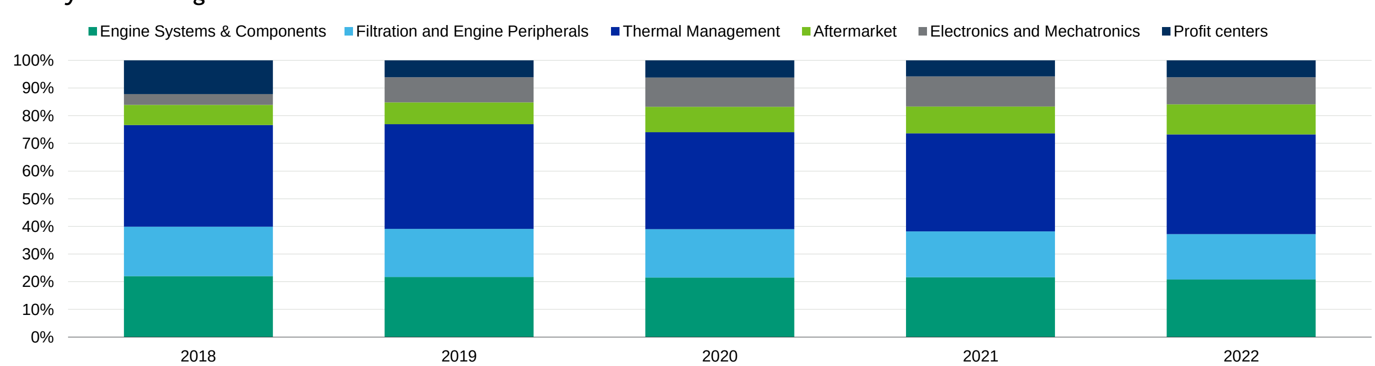
Leading position as one of the world's 25 largest tier 1 automotive parts supplier

With annual revenues of €12.4 billion (2022), MAHLE is one of the world's 25 largest automotive parts suppliers. MAHLE's product portfolio is diversified into 29 main product categories for light vehicles and trucks. In 23 of these product categories, MAHLE ranks among the top three players, according to its own calculations.

The main business units are Engine Systems and Components (e.g., pistons, bearings and camshafts; 21% of 2022 revenues), Filtration and Engine Peripherals (e.g., oil and fuel filters, air intake modules and filters; 16% of revenues), and Thermal Management (e.g. air condition and engine cooling modules; 36% of revenues). The company also has two minor units, Electronics and Mechatronics (10% of revenues) and Aftermarket (11% of revenues).

MAHLE's main competitors are in the areas of (i) engine systems and components Tenneco Inc. (B2 stable) and Rheinmetall AG (Baa2 stable, especially pistons and bearings), (ii) filtration and engine peripherals Mann + Hummel and Denso Corporation (Denso, A2 stable) and (iii) thermal management Denso and Valeo S.A. (Baa3 negative).

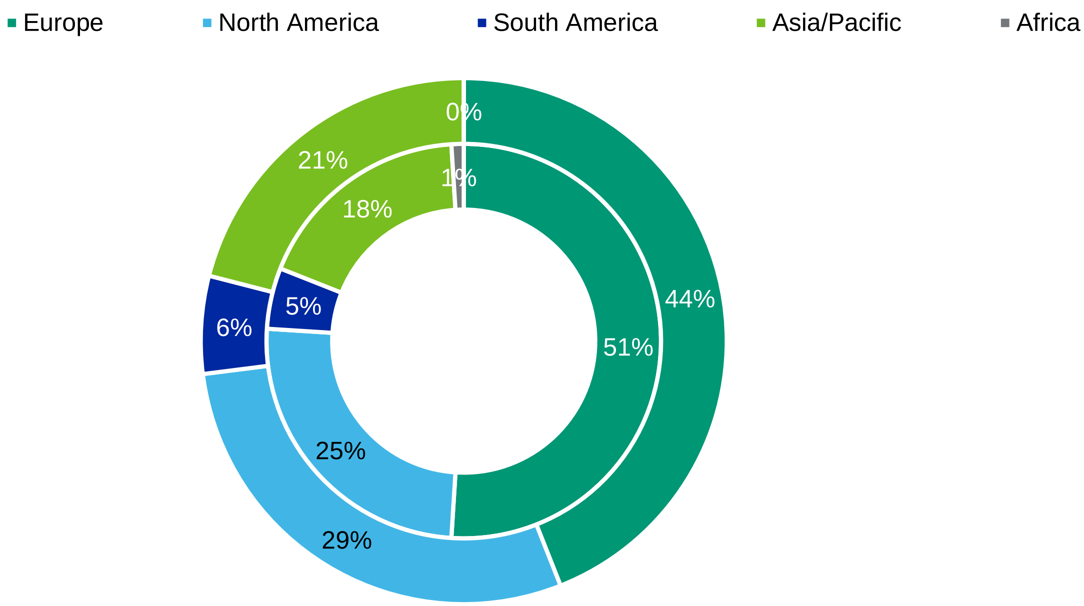
Exhibit 3
Sales by business segment from 2018 to 2022



Source: Company Annual Report

MAHLE is a global player, with 152 production facilities and 12 major R&D centers around the world. Its revenues are well diversified to all major regions of the world, with around 44% coming from Europe and 29% from North America. MAHLE also generates a sizeable part of its revenues in the APAC region (21%), which has shown a stronger volume development compared to the more mature markets in Europe and North America. Like most of its European peers, however, MAHLE's exposure to APAC lags behind the region's share in global light vehicle sales (approximately 52% in 2022, according to Moody's calculations).

Exhibit 4
Sales by geography 2022 (outside circle) vs. 2015 (inside circle)
Sales split by manufacturing country



Source: Company Annual Report

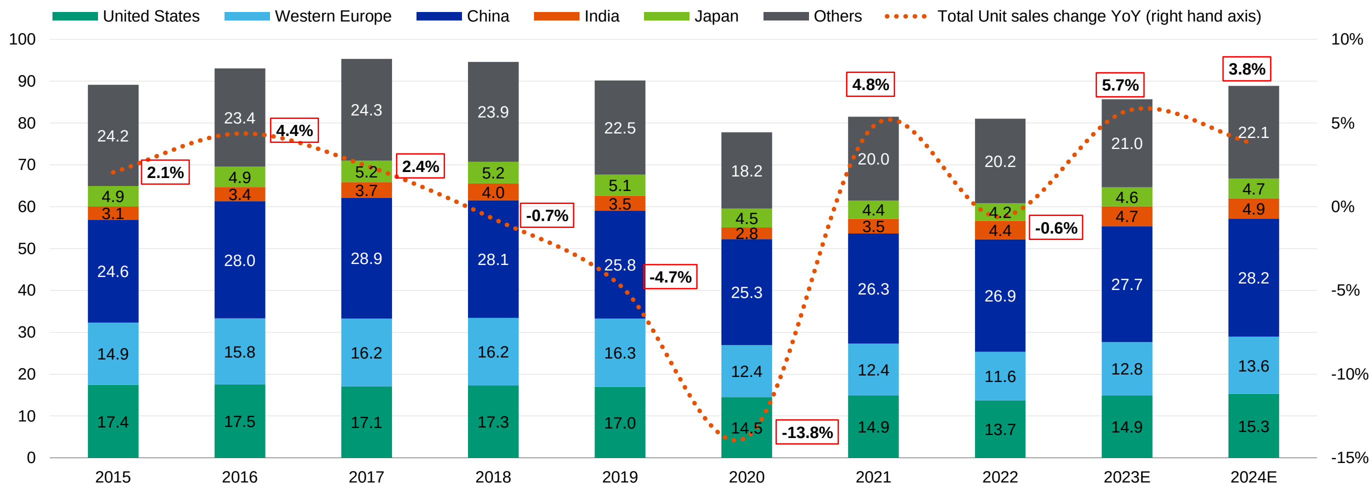
MAHLE's customer base comprises of a well-diversified group of highly rated global automotive manufacturers (OEMs). The 10 largest customers account for only 50% of the group's revenues, with only one accounting for more than 10%. Moreover, MAHLE's nine largest customers are all rated investment grade at Moody's.

Exposure to the cyclicality of automotive production

MAHLE, like most global auto suppliers, has a strong reliance on the production rates of light vehicles by OEMs and thus is exposed to the high cyclicality of the global automotive industry. After several years of continuous growth since the beginning of the decade, global light vehicle sales peaked at around 95 million units in 2017-18. In 2019, global light vehicle sales declined by around 5% to around 90 million units, driven mainly by an 8% decline in China. Global light vehicle sales plummeted 14% in 2020 because of the pandemic and recovered by only around 5% in 2021, as production was constrained by a global shortage of semiconductors. In 2022, global sales declined again by less than 1%, driven by soft demand in US and Europe in the context of elevated inflations and uncertain consumer sentiments, while partially compensated by APAC, namely China and India.

Moody's forecasts 2.5% G-20 real GDP growth for 2023 and 2.1% for 2024, suffering from central banks' restrictive policy and China's growth challenges (see Global Macro Outlook 2023-24 [August 2023 update]). For the auto sector, although Moody's forecasts higher growth in 2023 and 2024 as supply chain issues are easing, unit sales will still remain well below the pre-pandemic level, see our Global Automotive Industry Outlook, published in June 2023).

Exhibit 5
Recovery of global auto market in 2023 and 2024
Our projections for global light vehicle unit sales (in million units)



Source: ACEA, CAAM, LMC, and Moody's estimates

Despite this cyclicality, we expect MAHLE to nevertheless outperform the market by around 1% over time, reflecting its strong positioning in conventional combustion technologies and its growing product portfolio in the area of electric drive systems and power electronics.

Corporate strategy helps address challenges of automotive industry

MAHLE is highly exposed to the automotive industry megatrend of carbon transition and electrification. Around 40% of MAHLE's revenues related to light vehicles in 2022 were dependent on internal combustion engine (ICE) related products. As a result of increasing environmental standards and stricter carbon regulation worldwide, the share of ICE in global light vehicles will gradually decline over the next years, with full and plug-in hybrid electric vehicles and battery electric vehicles gaining rapidly in market share.

In our report Electrification momentum is strong, automakers must invest to stay competitive, published April 2023, we forecast that the share of BEVs will approach about a third of global light vehicle sales in 2030 and around half by 2035, compared with only 10% in 2022. In Europe, MAHLE's largest region, we expect the share of BEVs to grow to even 85-90% by 2035, from around 13% in 2022. This expectation is driven by regulation in the EU and the UK, which aim to transition to zero emission vehicles. Trends in the bus and truck markets, where MAHLE generates approximately 20% of revenues, are similar, although the carbon transition will take longer and diesel will represent the majority of vehicle sales at least until end of decade.

To address the challenge of electrification, MAHLE has established the strategy MAHLE 2030+, which aims to strengthen its position in the three strategic fields: 1) Thermal management: MAHLE aims to remain a leader in thermal solutions, driving energy efficiency and cabin comfort, 2) Electrification: MAHLE will invest in its product portfolio in the area of highly efficient electric powertrain solutions, and 3) ICE: MAHLE aims to continue with advanced technologies for clean ICEs at competitive costs. As a result of the development of new technologies, MAHLE aims to reduce its dependency on ICE-related light vehicle sales gradually towards 25% in 2030. This shift will be supported by substantially higher content per vehicle for plug-in hybrid electric vehicles and for BEVs, compared to a conventional ICE powered vehicles.

Relatively low margins, given a highly competitive sector environment

MAHLEs operating profit margins (Moody's adjusted EBITA) amounted to around 4% during 2016-18, a relatively low level, which is illustrative of the highly competitive automotive industry environment, and high investments (R&D and capex) needed to manage the automotive industry transformation, especially in terms of carbon transition. The low margin level is, however, largely in line with the overall sector.

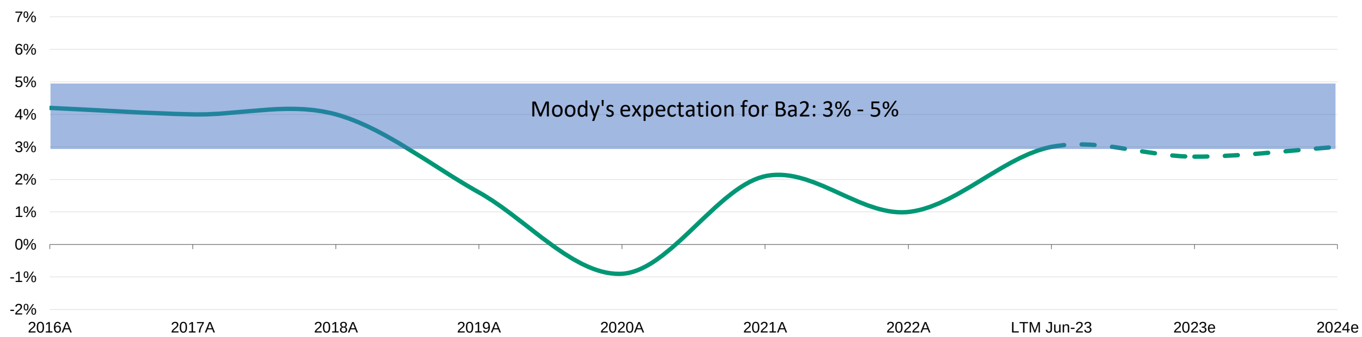
MAHLE’s margin turned slightly negative in 2020, as a result of the pandemic and a drop in global light vehicle production of around 15%. To address this challenge, MAHLE has implemented a €200 million long-term cash savings program in 2020, equivalent to around 2% of group revenues. The restructuring expenses were charged in 2020 and contributed to the negative margin. The restructuring measures contributed to the margin improvement in 2021, but headwinds such as increased cost for raw materials, logistics and energy of around €300 million (2.8% of revenues), which could not be passed on to OEM customers immediately, and overall still low volumes left margins at low levels of around 2%. In 2022, where volumes remained flat, MAHLE's margins continued to suffer from higher cost for materials, freight and energy, especially in the Thermal Management division. In addition, upfront investments in the Electronics and Mechatronics division continued.

In the first six months of 2023, MAHLE’s revenues increased by 12% to €6.6 billion, achieving a company-defined EBITDA margin of 6.1%, a considerable improvement versus the first half of 2022 (2.1%). The improvement was driven by higher volumes (including around 10% higher global light vehicle production) and the pass-on of higher production cost to its customers. Margins remained, however, constrained by weak profitability in the thermal management division as well as negative one-offs and high upfront cost in the Electronics and Mechatronics division. On a Moody’s adjusted basis, MAHLE’s EBITA margin in the last twelve months to June 2023 improved to 3%, which marks the very low end of Moody’s expectations for a Ba2 rating.

We expect that global light vehicle sales will continue to recover, while the company should be able to pass through cost increases. Given the highly competitive sector environment and ongoing high upfront cost in the Electronics and Mechatronics division, we expect, however, that MAHLE's margins will remain at modest levels or around 3% through 2024.

Exhibit 6

MAHLE's EBITA margins have suffered from the pandemic and are expected to stabilize at low levels



Source: Company data, Moody's estimates

Conservative financial policy, despite recent increase in leverage

MAHLE has maintained good liquidity (which was important to manage materially negative free cash flow generation in the first half of 2022 and 2023) and modest shareholder distributions. At the end of June 2023, MAHLE's debt (Moody's adjusted, including pension provisions) amounted to €3.4 billion, which leads to a debt/EBITDA (Moody's adjusted) of 3.8x. Negative free cash flow generation, in particular due to working capital expansion, contributed to debt and leverage metrics in the first half of 2023. Continued operating improvements and a release of working capital in the second half of 2023 should bring MAHLE’s leverage closer to the level of 3.5x, which Moody’s considers as a maximum for the Ba2.

We consider MAHLE's financial policy, which includes a declared net debt/EBITDA target of below 2x (company defined), as well as the very low shareholder distributions to the MAHLE Foundation as conservative. Given its ownership structure, however, the company has no access to equity capital markets and therefore limited ability to manage its leverage in line with its target at times of weak operating profitability.

The company is also working on asset disposals to de-lever its balance sheet. These include the sale of MAHLE’s 50% stake in the BHTC joint venture, which was announced on October 2nd, and which Moody’s expect to improve leverage by around 0.2x. On October 8th, MAHLE Metal Leve, which is publicly listed in Brazil and 70% owned by MAHLE, announced that it is evaluating the feasibility of a primary and/or secondary offering of shares in Brazil. A partial sale of MAHLE’s stake in this subsidiary could further de-lever MAHLE’s balance sheet. Moody's therefore expects that disposal proceeds will reduce MAHLE's leverage to levels well in line with the range of 3.0x-3.5%, which is commensurate with the Ba2.

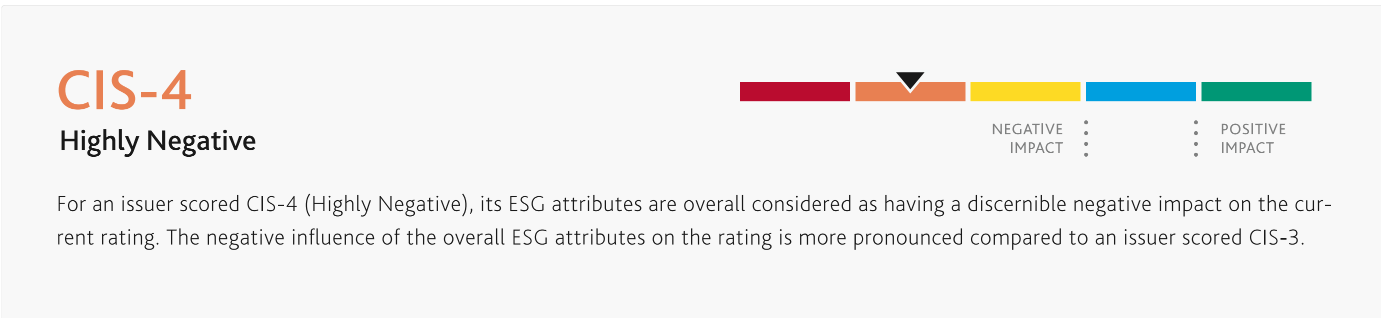
Structural considerations

MAHLE's Ba2 senior unsecured instrument rating recognizes trade claims and pension provisions at the level of operating subsidiaries which are in aggregate material in size and have higher seniority in the debt structure of MAHLE. The debt has nonetheless not been notched as a reflection of the investment-grade debt structure of the group, and its good liquidity. We might, however, introduce a notching if MAHLE's CFR were to be downgraded below the Ba2 level.

ESG considerations

MAHLE GmbH's ESG Credit Impact Score is Highly Negative CIS-4

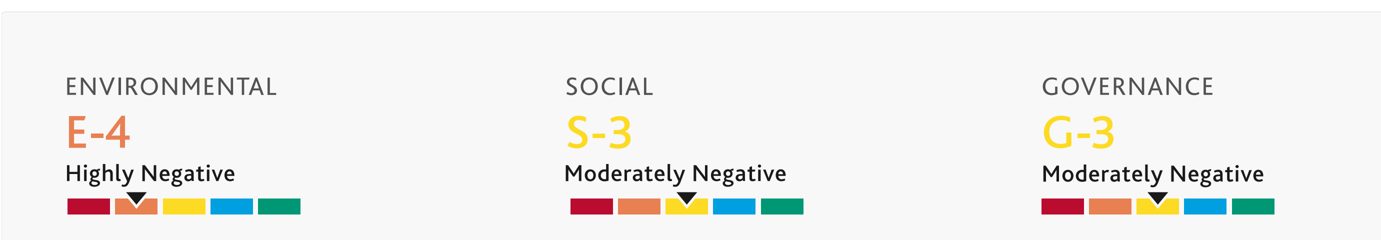
Exhibit 7
ESG Credit Impact Score



Source: Moody's Investors Service

MAHLE's **CIS-4** indicates that the rating is lower than it would have been if ESG risk exposures did not exist. This is driven by the company's product portfolio, which has a high share of products for internal combustion engines (ICE), exposing the company to carbon transition risks. In most other E, S and G risk categories, MAHLE is exposed to moderately negative or just neutral-to-low risks.

Exhibit 8
ESG Issuer Profile Scores



Source: Moody's Investors Service

Environmental

MAHLE's **E-4** is driven by carbon transition risks. Around 40% of MAHLE's revenues come from ICE technologies for light vehicles. MAHLE's dual strategy addresses this risk, but we note that the carbon transition process will require high investments into R&D and capex. By contrast, the exposure of MAHLE's manufacturing processes to waste and pollution, water management, natural capital and physical climate risks is relatively low.

Social

MAHLE's **S-3** is in line with the overall automotive parts suppliers sector. In terms of human capital, we note that around two thirds of its employees are being employed in Europe and North America, where retention of skilled manufacturing workforce is typically easier than in developing countries. MAHLE is also exposed to health & safety risks. This is exemplified by the global coronavirus outbreak and its negative impact on global light vehicle production and consumer demand. Cost related to stricter health & safety requirements will also weigh somewhat on operating efficiency.

Governance

MAHLE's **G-3** is supported by the company's prudent financial strategy and risk management, including the net leverage target of below 2x, a conservative M&A policy and moderate shareholder distributions. The company is owned by a foundation, which guarantees a long-term stable ownership structure. Voting rights lie with MABEG, an independent shareholders' committee comprising of external industry experts. Dividend payments to the foundation are relatively moderate, allowing MAHLE to retain most of the cash generated and invest it into future technologies. However, a negative aspect is the lack of access to equity capital markets. The company also has established an organizational structure, which is appropriate for its size and complexity. MAHLE has a highly experienced management team. The company's management's credibility and track record have, however, suffered from recent fluctuation at the CEO and CFO levels. Some weaknesses also relate to MAHLE's financial reporting, which is less detailed compared to its publicly listed peers, as well as limited disclosure in terms of management compensation design.

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 here to go to the landing page for the entity/transaction on MDC and view the ESG Scores section.

Liquidity analysis

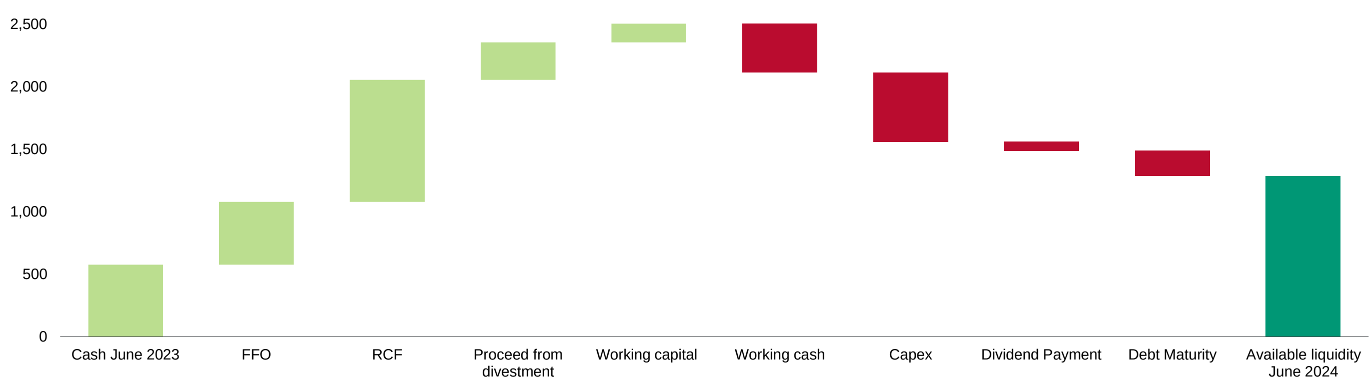
We considers MAHLE's liquidity position to be good. The company's main sources of liquidity include (1) cash on balance of €577 million (as of June 2023) and (2) Moody's estimate of annual funds from operations of more than €500 million. The company also has a €1.8 billion revolving credit facility (RCF), of which €1.5 billion have been extended to mature in mid-2025. The remainder will mature in July 2024 already. Around €0.5 billion was drawn, so the available RCF available for the next six quarters amounts to €1.0 billion. With this, MAHLE's liquidity sources over the next 12 months amount to approximately €2.1 billion under the stressed assumption of no access to capital markets. We also expect upcoming proceeds from asset disposals, which have been signed already.

These liquidity sources comfortably exceed liquidity uses of around €1.2 billion, mainly comprising of capital spending, which Moody's expects at around €550 million, and around €200 million short-term debt maturities to June 2024. Uses of liquidity further include Moody's working cash assumption of €360 million and dividend payments to own and minority shareholders.

Exhibit 9

MAHLE's liquidity is good

Liquidity sources and uses over the next four quarters to June 2024, according to Moody's liquidity stress case



Source: Moody's calculation

Rating methodology and scorecard factors

The actual rating assigned of Ba2 is one notch above the scorecard-indicated outcome, based on financial metrics for the last twelve months ending June 2023.

Our 12-18-months forward-view anticipates some improvements in cash flows and leverage. This leads to a one notch higher scorecard-indicated outcome of Ba2, which is in line with the actual rating assigned.

Exhibit 10

Rating Factors

MAHLE GmbH

Automotive Supplier Industry Scorecard [1][2]	Current LTM 6/30/2023		Moody's 12-18 Month Forward View As of 10/18/2023 [3]	
Factor 1 : Scale (10%)	**Measure**	**Score**	**Measure**	**Score**
a) Revenue (USD Billion)	$13.8	Baa	$14 - $14.5	Baa
Factor 2 : Business Profile (15%)				
a) Business Profile	Ba	Ba	Ba	Ba
Factor 3 : Profitability and Efficiency (25%)				
a) EBITA Margin	3.1%	Caa	2.9% - 3.2%	Caa
b) Expected Free Cash Flow Stability	Ba	Ba	Ba	Ba
Factor 4 : Leverage and Coverage (30%)				
a) Debt / EBITDA	3.8x	B	3x - 3.5x	Ba
b) EBITA / Interest Expense	1.5x	B	2x - 2.5x	B
c) Retained Cash Flow / Net Debt	10.2%	B	25% - 30%	Ba
Factor 5 : Financial Policy (20%)				
a) Financial Policy	Baa	Baa	Baa	Baa
Rating:				
a) Scorecard-Indicated Outcome		Ba3		Ba2
b) Actual Rating Assigned				Ba2

(1) All ratios are based on 'Adjusted financial data and incorporate Moody's Global Standard Adjustments for Non-financial Corporations
(2) As of 6/30/2023, Source: Moody's Financial Metrics
(3) This represents Moody's forward view; not the view of the issuer; and unless otherwise noted in the text, does not incorporate significant acquisitions and divestitures
Source: Moody's Financial Metrics and Moody's Investors Service estimates

Ratings

Exhibit 11

Category	Moody's Rating
MAHLE GMBH	
Outlook	Negative
Corporate Family Rating	Ba2
Senior Unsecured -Dom Curr	Ba2

Source: Moody's Investors Service

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Asia Pacific	852-3551-3077
Japan	81-3-5408-4100
EMEA	44-20-7772-5454

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