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Gerresheimer Equity Research Report – Part 1

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This report is part of a comprehensive equity research report on Gerresheimer AG, a company specializing in pharmaceutical packaging and drug delivery devices. This part of the report examines the macroeconomic environment and market trends and analyses the company's competitive environment. It also analyses the relevant markets and identifies a total addressable market of €31,220 in 2030. In addition, a multiple valuation of the company is performed using a peer group to check the plausibility of the results of the APV valuation performed in the other part of the report. This results in an average share price of €161.70 for the most similar peer companies and €149.30 for all peer companies. Risks and Gerresheimer's ESG activities are also examined. Based on the analyses of both parts of the report, this section also contains a recommendation to buy Gerresheimer shares.

Equity Research, Gerresheimer AG, MedTech, Packaging

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This report is part of the joint report (annexed), developed by Paul Becker and Jan Felix Heinzelmann and should be read has an integral part of it.

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Introduction

This analysis is part of a joint equity research report on the valuation of the shares of Gerresheimer AG, a company that manufactures pharmaceutical packaging and drug delivery devices. The report contains a recommendation based on an in-depth analysis of the company.

The joint report begins with a brief overview of the company, followed by an analysis of the macroeconomic situation and Gerresheimer's market environment, including an assessment of the individual market segments in which the company operates and the relevant competitors. This is followed by a discussion of the current economic situation. The next step is a forecast of sales and profitability as well as other balance sheet and cash flow items based on analyses of the segments and the company's economic environment. Based on these forecasts, a valuation is performed using the APV method, which is checked for plausibility using sensitivity analyses and multiple valuations. After a brief discussion of the relevant risks and ESG factors, the result of the analysis is a BUY recommendation for Gerresheimer shares.

This section makes a significant contribution to the joint report by analyzing Gerresheimer's market and competitive environment and also contains a plausibility assessment using multiples. In addition, this section contains an introductory overview of the company as well as an analysis and assessment of the risks and ESG activities.

The joint report is annexed to this report section.

Company overview

Company description

Gerresheimer AG (hereinafter referred to as "Gerresheimer") is a German manufacturer of packaging solutions and drug delivery devices for the pharma, cosmetics and nutrition industry.

The company was founded in 1864 in Düsseldorf, Germany, where it is still headquartered today. In November 2022, the company employed around 11,000 people and generated sales of €1,817mn in the respective fiscal year. The company is led by Dietmar Siemssen, CEO and head of the Plastics & Devices and Advanced Technologies divisions (on the board since 2018), Chief Financial Officer Dr Bernd Metzner (on the board since 2019), and Dr. Lukas Burkhardt, who is responsible for the Primary Packaging Glass division (on the board since 2018). The Supervisory Board is chaired by ex-CEO Dr Axel Herberg; further information on the members of the Supervisory Board is given in Table 5.

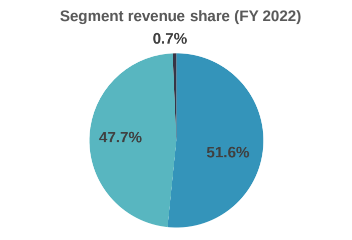


Figure 1: Segment revenue share (FY 2022)
Source: Annual report 2022

The company operates in three segments, namely *Plastics & Devices*, *Primary Packaging Glass* and *Advanced Technologies*.

The Plastics & Devices segment produces and markets drug delivery devices and solutions for customers in the pharmaceutical, biotech, diagnostics and medical technology industries. Products include insulin pens, various types of syringes, inhalers, and devices for personal use such as plastic containers for eye drops or nasal spray, among others. The segment accounted for 51.6% of revenue in fiscal year 2022.

In the Primary Packaging Glass segment Gerresheimer offers its customers bottles and ampoules for pharmaceutical applications, including the storage of vaccines, medications and infusions. For customers in the cosmetics industry, the company offers glass packaging for storing perfumes, skin care products and similar goods. For customers in the food industry, Gerresheimer supplies mainly bottles for liquor and spirits. The segment accounted for 47.7% of revenue in fiscal year 2022.

Gerresheimer's smallest segment is Advanced Technologies (0.7% of sales in the financial year 2022). The segment primarily aims to leverage Gerresheimer's existing expertise in drug delivery systems to develop products and solutions for home drug delivery. For this purpose, products such as autoinjectors and smart inhalers are offered or in development which are intended to enable patients to administer even complex medications by themselves without the supervision of medical professionals. The segment was created through the acquisition of Sensile Medical AG in 2018, when Gerresheimer acquired the Swiss company, which at the time was developing products for the very precise administration of medications. Sensile Medical was integrated into Gerresheimer as the Advanced Technologies segment with the aim of creating a division focused on the development of innovations. Another significant acquisition in this area is the purchase of Respimetrix in 2019, which develops products for inhalation measurement.

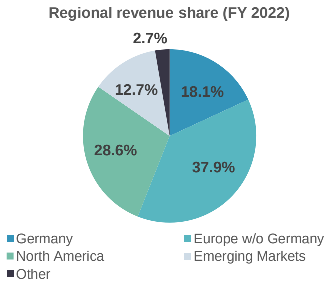


Figure 2: Regional revenue share (FY 2022)
Source: Annual report 2022

Gerresheimer operates as a global company, with operations divided geographically. The economically most important region according to Gerresheimer's containment (based on the customer's registered office) is Europe excluding Germany with 37,9% of sales in the financial year 2022, followed by North America with 28.6%. Customers in Germany contributed 18.1% to total sales in the financial year 2022. In addition, Gerresheimer is active in other markets, with the company designating Brazil, China, India and Mexico as emerging markets. These countries together contributed 12.7% to consolidated revenue in the financial year 2022. The remainder of revenue is generated in other regions.

In addition to its own research efforts, Gerresheimer is also expanding its portfolio through strategic partnerships and acquisitions. In 2022, Gerresheimer acquired a stake in the US company Portal Instruments, which is working on the development of needle-free injection instruments. In the field of pharmaceutical glass, Gerresheimer has entered into a cooperation with the Stevanato Group to develop a uniform standard that will make the products of both companies more attractive to customers.

Gerresheimer aims to evolve from packaging supplier to innovation driver in medical care industry by implementation of "formula G" strategy.

Strategic focus: At the capital markets day 2020, Gerresheimer presented a new strategy for medium-term market positioning called "formula G". In essence, the aim of the new strategic direction is a change from a pure supplier of packaging and medication solutions to an innovation driver in the field of medical care. The Plastics & Devices supported by the Advanced Technologies business unit in particular are to play a key role in this. Through continuous product improvements, the aim is to create greater opportunities for homecare, so that a larger proportion of medications can be administered at home. These more complex drug delivery solutions offer opportunities for Gerresheimer to increase its sales without significantly increasing unit sales. The aim is also to establish the company as an innovation driver, particularly in growth areas such as the fight against diabetes.

This shift allows Gerresheimer to generate a higher revenue share from products which they call "high value solutions", products that are comparably complex and offer higher margin potential to the company. Leveraging these products, Gerresheimer aims to improve their EBITDA margin on a level above 25.0% in the medium term.

Gerresheimer stock

Gerresheimer has been listed on the Frankfurt Stock Exchange again since June 2007, after the company was delisted in 2003 and in the meantime was owned by various financial investors, most recently Blackstone. Since December 2008, the company has been part of the MDAX index, which tracks the performance of the 41st to 90th largest listed companies in Germany.

As of December 15, 2023, the company has 34.54mn shares outstanding, valuing the company with a market capitalization of €3,212mn. In the last 10 years (since December 2013) Gerresheimer shares have gained 70.9%, underperforming in comparison to the MSCI World (117.6%) over the same period. However, it is worth noting the rapid recovery of the Gerresheimer share price in 2020 after the initial stock market slump in March 2020, mainly due to the fact that the company operates in a relatively robust sector and was also able to reallocate production capacity for the manufacture of Covid-19 vaccine vials. After losing the gains made in 2020, the share price reached a low of €50.30 in September 2022, followed by a rapid recovery in 2023, reaching a high of €122.90 in September 2023. Recently, this trend has cooled off, with the stock trading at €93.00 on 15 December 2023.

Currently, the company’s only shareholder with ownership above 10.0% is Goldman Sachs Asset Management with a share of 11.2%, followed by the activist investor Artisan Partners with a share of 5.1%. In total, the 20 largest individual shareholders hold 69.0% of the shares, with the remaining shares held by smaller shareholders. A more detailed list of shareholders can be found in Table 6. Gerresheimer's dividend has been continuously increased since 2013, the last distribution in June 2023 was €1.25 per share, and has thus remained constant since 2021.

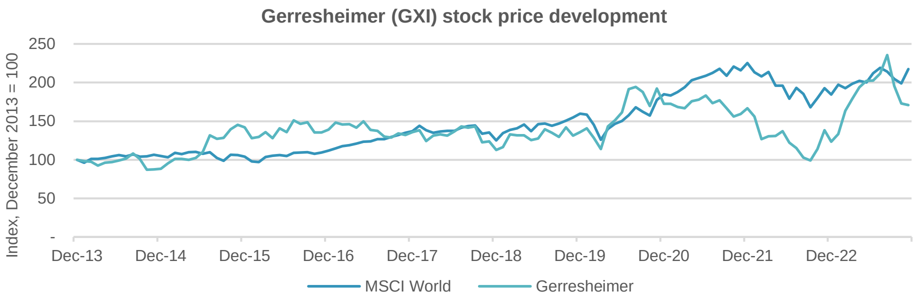


Figure 3: Gerresheimer (GXI) stock price development, Source: Refinitiv

Industry analysis

Macroeconomic environment

We do not see substantial macroeconomic influences on Gerresheimer, due to hedging instruments and the ability to pass on price changes to customers.

In 2020, the Covid-19 pandemic led to a collective collapse in GDP growth worldwide, with declines recorded in many regions. The following year, 2021, saw a strong catch-up effect in many regions. The year 2022 is characterized by a renewed decline in GDP growth, especially in industrialized countries. For 2023, the IMF expects a further flattening of growth in most of the regions relevant for Gerresheimer; in Germany in particular, GDP is expected to decline. In the long term, the IMF forecasts global GDP growth of around 3.0%, with the comparatively weak expected growth of industrialized nations being offset by emerging economies [1].

Geopolitical developments in 2022 and 2023 were significantly influenced by the war in Ukraine. The resulting turmoil, coupled with a general economic downturn, has led to rising inflation worldwide, affecting emerging and industrialized nations alike. The conflict in Ukraine is also having a sensitive impact on global energy prices, as European countries in particular are heavily dependent on Russian gas supplies. Many states are responding by expanding renewable energy sources as well as alternative suppliers of fossil fuels, for example from the Middle East. However, as competition from demanders is fierce here, it can be assumed that world prices for natural gas in particular will remain above the historical average in the short term. However, this does not represent a significant risk for Gerresheimer as the company has, according to the annual report and confirmed by Investor Relations, concluded a longer-term hedge against energy price risks.

Compared to gas prices, crude oil, which drives the global resin prices (an important commodity for plastics production) has had a less turbulent price history in recent years. At the end of 2022, the global price level was around 40.8% above the level in 2018. However, as a large proportion of the oil produced comes from the Middle East, the extent to which the intensification of the conflict in the Gaza Strip will affect the price of oil is an open question, particularly in the short term. However, experts consider this risk to be manageable at the present time, so that the resin price can currently be expected to remain stable in the medium term, not posing a substantial risk to Gerresheimer's operations. In addition, the company has stated that it has been able to pass on price changes to its customers in the past.

Market trend: Lifestyle diseases

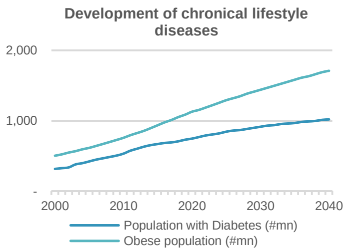


Figure 4: Development of chronical lifestyle diseases
Source: Euromonitor

We believe that Gerresheimer's business activities will be driven by a major trend in the pharmaceutical market over the next few years: The increasing prevalence of lifestyle diseases, which include diabetes and obesity. This trend can be observed worldwide - in 2020 38% of the world's population were overweight, 14% even obese - an increase to 46% and 20% respectively is expected by 2030 [2]. Another disease that has received increasing attention in recent years and decades is diabetes. In the United States, for example, the number of diagnosed cases of diabetes have more than doubled from 11.8mn in 2000 to 24.4mn in 2022. By 2030, there are expected to be around 916mn people with type 2 diabetes worldwide [3].
The spread of these lifestyle diseases can be attributed to two main factors: firstly, the increasing ageing of society, which is particularly noticeable in developed and emerging countries. These developments are particularly pronounced in markets of particular relevance to Gerresheimer, such as Germany (+4.4%p of the population over 65 years of age by 2030), the US (+4.3%p) and China (+5.6%p) [4]. Secondly, rising prosperity, particularly in emerging countries, is leading to a change in lifestyle and thus to an increasing spread of lifestyle diseases, driven by higher sugar consumption, an unhealthy diet and a lack of exercise. For pharmaceutical companies and their suppliers, the rise in these diseases offers attractive growth opportunities, for example through the development of new active ingredients. The current focus is on GLP-1 drugs as potential blockbusters because they can be used to treat both diabetes and obesity. The first GLP-1 drugs are currently available from Novo Nordisk (Ozempic for diabetes and Wegovy for obesity) and Eli Lilly (Mounjaro and Zepbound). We consider this trend to be particularly important for the future of Gerresheimer and therefore pay special attention to it in our analysis of revenue drivers.

Market analysis

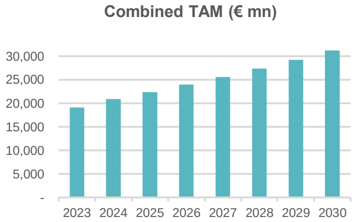


Figure 5: Total addressable market (€ mn)
Source: Market forecasts, own analysis

Gerresheimer is active in various markets thanks to its broadly diversified product portfolio. For the sake of transparency, we present the markets relevant to the company broken down by the segments in which Gerresheimer serves them. According to our estimates, the total addressable market (TAM) for Gerresheimer in 2023 for the focus segments (we include the segments with a pharmaceutical focus and exclude cosmetic glass and food & beverage) amounts to €19,127mn. According to our expectations, this figure will increase by 63.2% to €31,220mn by 2030.

In general, it is difficult to make statements about the concentrations in these markets, as often only the end sellers (who distribute the drug) are known, but not the packaging / device companies and the segments are defined so differently for the various competitors that it is not possible to quantify the cross-market shares independently.

- Plastics & Devices

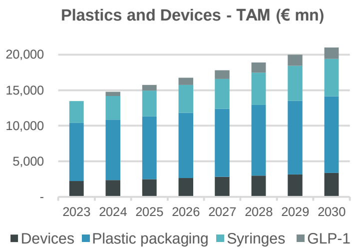


Figure 6: Plastics and Devices - TAM (€ mn)
Source: Market forecasts, own analysis

In this segment, Gerresheimer primarily produces injection pens, inhalers, syringes and pharmaceutical packaging made of plastic. As Gerresheimer also produces syringes for the new GLP-1 drugs, we pay particular attention to this segment due to its importance.

Syringes for GLP-1 medication: As of the valuation date, the biggest trend in the pharmaceutical industry is the so-called GLP-1 active ingredients, which can be used to treat type 2 diabetes and obesity. As a significant market volume is expected for these products over the next decade, they are particularly important in our analysis, as Gerresheimer has secured a significant position in the supply chain for the current manufacturers of the existing products. To reflect this, we assess the revenue from syringes produced for GLP-1 medication separately, as Gerresheimer plans to produce them in addition to existing syringe business. For our analysis, we proceeded in two steps and first estimated the market development for GLP-1 drugs and, in the second step, derived the sales volume achievable for Gerresheimer.

According to our analysis, the market for GLP-1 drugs will have an annual volume of € 47,480mn in 2030 with the TAM for Gerresheimer being €1,764mn.

In the first step to determine the market volume with GLP-1, we determined an expected price trend. In particular, we considered the differences between the US and the rest of the world in 2023. In 2023, approximately 4.5% of diabetes patients will be from the US and 95.5% from the rest of the world [3]. In the US, a monthly dose of Ozempic (Novo Nordisk's GLP-1 product available in 2023) will cost $290 after rebates [5]; in the rest of the world, the average monthly price can be assumed to be $100 [6]. Using a weighted average, this results in annual sales per patient of €1,198. As further market entries are expected over the years, including Eli Lilly's entry in the US and expected products from Pfizer and Roche, we expect an average annual price decline of 10.0% until the price stabilises at €515 by the end of the decade. In the next step, we determine the market volume for diabetes patients based on forecasts for the development of diabetes prevalence and the estimation that 8.3% of diabetes patients worldwide will be treated with a GLP-1 product in 2030. Based on estimates of the number of diabetes patients, we therefore expect 26mn GLP-1 patients in 2024 and 76mn patients in 2030. We also estimate the market volume for GLP-1 in obesity based on projections of the prevalence of obesity, but also taking into account the fact that scientific evidence suggests that only around 1.5% of obese people are actually treated with medication [7]. Based on the currently expected efficacy of GLP-1 in obesity, we expect the drug to be widely used in this area and assume that 35.0% of patients treated for obesity will be using GLP-1 by 2030. As a result, we expect the GLP-1 market for obese patients to reach 2mn patients in 2024 and 7mn patients in 2030.

Overall, we expect a total of 28mn GLP-1 patients in 2024 and 83mn in 2030. In combination with the prices we have calculated, we therefore assume a market volume of €30,587mn in 2024, rising to €47,480mn in 2030, representing a CAGR of 7.6%. This estimate is consistent with recent market reports and analyst estimates but has been independently calculated. The syringe manufacturer is expected to account for between 2.0% and 4.0% (which is a typical revenue share as confirmed to us by Investor Relations) of this market volume, although we expect this figure to rise from 2.0% in 2024 to 4.0% in 2030 as the bargaining power of suppliers increases.

On this basis, we have calculated a TAM of €612mn in 2024, which we expect to rise to €1,764mn in 2030, representing a CAGR of 19.3%. We consider this very high value to be realistic, given the expected strong importance of GLP-1 drugs, whose growth is estimated at 11.0% CAGR over the same period. We consider a lower share of sales of 2.0% to be realistic initially, as we estimate the market to be moderately concentrated with a Herfindahl index of approximately 2,031 (current competitors are West Pharmaceuticals, Schott Pharma, Stevanato and Ypsomed). Given the dual-source approach common in the industry, we expect a price war among syringe manufacturers, especially at the beginning.

Syringes (excl. GLP-1): In the syringe product group, the European market is particularly relevant for Gerresheimer. It is dominated by the market leader Becton, Dickinson and Company (BD) from the US with a market share of around 60%, followed by Gerresheimer, Schott Pharma and Stevanato. The main growth drivers in the market (apart from the GLP-1 syringes already mentioned) are the growing demand for Botox treatments and the increasing prevalence of vaccinations. According to recent studies, the market is expected to be worth €3,082mn in 2023 and is expected to grow at a CAGR of 8.0% to reach €5,282mn by 2030 [8]. The syringe product group is therefore one of the most attractive growth markets for Gerresheimer, especially with the inclusion of GLP-1 syringes.

Devices (Injection pens and inhalers): Current studies put sales of drugs administered via **injection pens** at €39,928mn in 2023 [9]. Injection pens are primarily used in the home care sector, as they are comparatively easy to use compared to syringes. Injection pens are particularly widespread in the treatment of type 2 diabetes for the administration of insulin. In view of the market trends already described, providers of injection pens benefit from the rising prevalence. Since 2017, the market has grown by an average of 6.4% per year. This growth is expected to accelerate slightly over the next decade, as developments such as rising diabetes prevalence and the general trend towards home care, particularly among the elderly, will create a greater need for simple self-medication solutions. Estimates suggest that the market for injection pens will grow by 7.0% annually to a volume of €64,116mn by 2030. As Gerresheimer is only the manufacturer of the pens, and therefore only an interim supplier, this is not the TAM for the company. According to our information from Investor Relations, the revenue share of pen manufacturers in the pharmaceutical sector is between 2.0% and 4.0% of end product sales, so that for Gerresheimer we assume a TAM of €1,198mn in 2023, rising to €1,923mn in 2030. As the pharmaceutical industry is generally very closed and insulin pens are generally sold filled by the drug supplier, it is not possible to identify specific market shares of individual manufacturers. However, important players in the segment alongside Gerresheimer are BD, Wet Pharmaceuticals, Ypsomed, Owen Mumford and Medtronic.

Similarly to injection pens, Gerresheimer also sells **inhalers**, i.e. it only sells the device to pharmaceutical companies, which then distribute the inhaler filled with medication. In 2018, the market for inhalers had a volume of €28,112mn, which has increased by around 4.0% annually to a current market volume of €37,259mn [10]. Market growth is expected to increase slightly to 4.9% per year until 2030, resulting in a volume of €47,912mn in 2030. This additional growth will mainly be driven by the increasing penetration of smart inhalers, which have higher prices. Smart inhalers currently account for a market volume of around €1,499mn, but are expected to grow by 8.6% per year until 2030. The main growth driver in the market for inhalers is the increasing prevalence of asthma in the population, which is partly due to rising air pollution in large cities, particularly a problem in emerging countries. As with injectors, we estimate that around 3.0% of the market for inhalers should be regarded as TAM for the manufacturing companies such as Gerresheimer. This corresponds to a TAM of €1,028mn in 2023 and €1,437mn in 2030. The market for inhalers is even more fragmented than the market for injectors, but here too it is not possible to determine the exact market shares of competitors. Competitors include West Pharmaceuticals, 3M, Philips and Aptar Group.

Overall, we estimate the TAM for Gerresheimer in the devices product group at €2,226mn, whereby we expect it to rise to €3,361mn by 2030, which corresponds to a CAGR of 6.1%.

Plastic packaging: The market for plastic packaging in which Gerresheimer is active is pharmaceutical plastic bottles. This includes, among other things, cans for storing medicines, which are particularly popular in the US, as well as bottles for nasal sprays and eye drops. According to analysts, this market has a volume of €8,151mn in 2023 and will grow at a rate of around 4.1% to €10,777mn by 2030 [11]. The most important market region is the US. The comparatively low growth is due to the already high level of market saturation, in the case of medicines packaged in plastic, this is mainly due to the comparatively constant growth of over-the-counter medicines. The pressure to innovate in the market is also comparatively low; only factors such as ESG targets of customers can play a role, whereby recycling plays a subordinate role due to the high demands on the purity of the products. Due to the comparatively low cost, the market is very fragmented, although unfortunately no precise data is available on specific market shares.

- Primary Glass Packaging

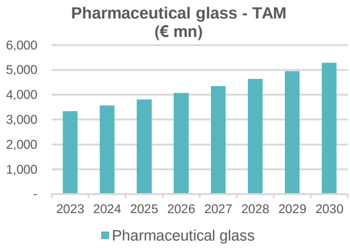


Figure 7: Pharmaceutical glass - TAM (€ mn)
Source: Market forecasts, own analysis

Pharmaceutical glass: Gerresheimer considers itself the market leader in the European market for pharmaceutical glass, followed by Stevanato and Schott Pharma. According to estimates, the market will have a volume of around €3,341mn in 2023 and will grow by 6.8% p.a. to €5,295mn by 2030 [12]. The European market is dominated by vials, which are used to store vaccines and other liquid medicines. The high density of glass makes it the material of choice for packaging drugs that are particularly susceptible to contamination, which is the case for most injectable drugs. The most important trend in the market at the moment is the trend towards so-called ready-to-use (RTU) vials. Conventional vials are sold by the manufacturer to the filler, who then cleans and sterilizes them for filling. RTU vials are sterilized and supplied directly by the manufacturer for direct filling by the customer. Gerresheimer estimates that while currently around 90% of vials are delivered unsterilized, by the end of the decade more than half of the vials supplied will be RTU products. This is particularly attractive for manufacturers because of the higher margins involved.

Cosmetics, food and beverage: In addition to its activities in the pharmaceutical market, Gerresheimer is also engaged as a manufacturer of bottles, jars and flacons for the cosmetics and beverages industry, focusing in particular on jars for lotions and bottles for spirits. The main players in this market are Vidrala, Owens-Illinois, Saint-Gobain and Vitro, with Gerresheimer playing a subordinate role as its competitors focus on these segments, which is not the case for Gerresheimer. According to current estimates, the market for cosmetic glass packaging grew by only 1.2% per year from 2018 to 6,651mn units in 2023, mainly due to a sharp decline in 2020. Over the next few years, growth is expected to recover to 2.5% per year, driven mainly by growth in the luxury market, particularly for perfume bottles. In 2027, analysts expect 7,333mn units to be sold [13].

Analysts estimate that the market for glass spirits bottles is worth €34,059mn in 2023 and will grow at a CAGR of 5.0% over the next few years [14]. The high growth will be driven primarily by increasing alcohol consumption in Asia. Gerresheimer's competitors are comparable to those in the cosmetic glass sector, as most players are active in both segments. Gerresheimer does not have a significant market share in either segment compared with its competitors.

- Advanced Technologies

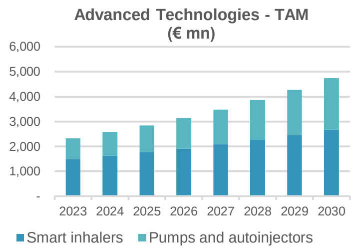


Figure 8: Advanced Technologies - TAM (€ mn)
Source: Market forecasts, own analysis

In this segment, Gerresheimer is currently active in the market for autoinjectors and is planning to enter the market for smart inhalers in 2025.

The market for autoinjectors is estimated to have a volume of €828mn in 2023 and experts expect it to grow at a CAGR of 14.0% [15]. We therefore anticipate a market volume of €2,072mn in 2030. The strong growth is primarily due to the fact that autoinjectors can massively simplify medical self-care, as even complex doses can be administered without the need for medical professionals. Because there is a shortage of medical professionals in many countries, we anticipate a significant increase in demand in this area. Gerresheimer's main competitors in this market are BD, West Pharmaceuticals and Ypsomed.

In 2025, Gerresheimer plans to enter the market for smart inhalers with a product developed in-house. The main advantage of smart inhalers over conventional products is that they can optimally control the dosage for the amount of air inhaled so that COPD patients receive the right therapy. In 2025, experts expect sales of smart inhalers to reach €1,768mn and a growth rate of 8.6% [16]. The market is currently very fragmented with small manufacturers such as Propeller Health, which often cooperate with large pharmaceutical companies and whose only product is the inhaler. On this basis, a number of market entries can still be expected by 2025, and the competitive situation is difficult to assess.

Competition analysis

Dimension	Risk level
Industry rivalry	
Threat of new entrants	
Threat of substitutes	
Bargaining power of suppliers	
Bargaining power of buyers	

Figure 9: Competition analysis - dimensions and risk levels
Source: Own analysis

Due to the mere size of the market for drugs, the market for pharmaceutical packaging and drug delivery devices, which is Gerresheimer's main line of business, is very attractive and competitive. While there are significant players in the market, we generally see a high fragmentation in the market. The competitive environment and potential influences on Gerresheimer's business can be analysed in a Porters 5 forces analysis. An additional SWOT analysis can be found in Figure 40.

Industry rivalry: Due to its various business activities, Gerresheimer is confronted with a large number of competitors. The most important cross-segment competitors and their main areas of focus are discussed below, a comprehensive overview of all peer companies we consider relevant can be found in Figure 39 and Table 9.

Schott Pharma is a German company that was founded in August 2022 as a spin-off of the German Schott AG, bundling its pharmaceutical operations. The company generated sales of €821mn in the 2022 financial year.

Schott Pharma produces syringes, cartridges, vials and ampoules. The company competes with Gerresheimer primarily in product groups such as pharmaceutical packaging and syringes, so Schott Pharma covers a leaner product portfolio than Gerresheimer. This gives Gerresheimer a significant competitive advantage, as the company can serve broader customer groups and in particular has significant activities in growth markets such as drug delivery devices.

West Pharmaceutical Services was founded in the US in 1923 and, like Gerresheimer, focuses primarily on the manufacture of pharmaceutical packaging and drug delivery devices. In 2022 the company generated sales of €2,746mn. The product range includes ampoules, cartridges, syringes and drug delivery devices and is therefore very similar to Gerresheimer's portfolio. The companies have also collaborated in the past, with Gerresheimer licensing a syringe system from West Pharmaceutical in 2017. Like Gerresheimer, West Pharmaceutical is also a manufacturer of components for the injector of Novo Nordisk's obesity drug Wegovy, which experts believe has great sales potential. Gerresheimer also has the advantage over West Pharmaceutical that it covers a broader product range, such as plastic pharmaceutical packaging and packaging solutions for the cosmetics sector.

Becton, Dickinson and Company (BD) is an American manufacturer of medical technology that was founded in 1897 and generated sales of €18,167mn in 2022. The company offers a range of medical devices, including those that overlap with Gerresheimer's product range, primarily syringes and drug delivery devices as well as diagnostic products. However, BD is also active in other segments, including for interventional procedures. In comparison, Gerresheimer offers a much more in-depth and specialized product range in its core segments, particularly in the area of syringes. However, thanks to its significantly greater financial clout, BD has investment opportunities that are not open to Gerresheimer. In general, there is an opportunity for BD to overcome potential entry barriers in business areas in which they are not active yet.

Stevanato Group is an Italian company founded in 1949 with sales of €984mn in 2022. The company focuses on pharmaceutical packaging, mainly glass ampoules and vials, as well as drug delivery devices such as syringes and injectors. The company also has in-house expertise in mechanical engineering, which gives it a competitive advantage in helping customers build their assembly lines. Gerresheimer, on the other hand, cannot offer this kind of integration, but again benefits from a broader product portfolio, making it a more attractive supplier for customers requiring a wide range of packaging and drug delivery solutions. Gerresheimer and Stevanato have agreed to manufacture their vials to the same standard, making it easier for customers to use the same assembly machines for both companies' products. This is expected to give both companies a competitive advantage, as drug manufacturers typically adopt a dual-sourcing approach.

Its broad product portfolio puts Gerresheimer in a favourable market position.

An analysis of Gerresheimer's main competitors across segments shows that some of them have advantages in their specific segments which could pose potential risks for Gerresheimer. Overall, however, we see a significant competitive advantage for Gerresheimer based on its broad product portfolio, an aspect that none of its competitors offer with the exception of BD. **Risk: Moderate to high**

Threat of new entrants: The risk in this dimension varies considerably between the different segments and the products offered in each segment. In the Plastics & Devices segment, the risk is present in the area of plastic packaging, as Gerresheimer primarily offers products for drug doses that are subject to comparatively low innovation pressure. Companies that already have production facilities for plastic packaging in particular could expand here. However, in order to pose a substantial threat to Gerresheimer, the companies would either have to offer better products, which is difficult in this area, or significant price advantages. In the area of devices and syringes, the risk of new entrants is comparatively negligible as market entries require high initial investments in research and production. At the same time, Gerresheimer is very well established on the market and sometimes develops products together with customers (for example a syringe with Novo Nordisk for their diabetes drug Ozempic). As Gerresheimer also drives innovation through its own research and acquisitions such as Portal Instruments, we consider it unlikely that companies will enter the market that will have a lasting impact on Gerresheimer's success. In the Primary Packaging Glass segment, a comparatively low risk is also to be expected in the most important product group of pharmaceutical glass products due to new entrants: even for manufacturers of glass products that have previously been active in other segments such as cosmetics, it is costly to produce pharmaceutical glass, due to the higher requirements for the purity of the products (especially in terms of abrasion), resulting in a much more complex production process. The food & beverage and cosmetics product groups are at greater risk from new entrants, as companies that are already active in one of the two product groups in particular can enter other segments comparatively easily. **Risk: Low to moderate**

Threat of substitutes: Due to its broad product portfolio, Gerresheimer can expect comparatively low risks here. If, for example, it becomes possible to use plastic packaging instead of glass for a product, Gerresheimer can offer this - already proven to medical standards. No significant risk is to be expected in the devices segment either, as drug delivery devices cannot be replaced at the present time and drugs are often approved in combination with the delivery device. According to the current state of research it is not to be expected that the devices will become obsolete or lose importance soon. **Risk: Low**

Bargaining power of suppliers: Thanks to its deeply integrated production chain, Gerresheimer has comparatively few dependencies of single suppliers. A certain risk for Gerresheimer comes from the suppliers of the raw materials that Gerresheimer purchases and on whose products the company is dependent. To minimize this risk, Gerresheimer has diversified its suppliers where possible in order to minimize the impact of negotiation problems with individual suppliers. In addition, the market for raw materials is highly competitive, making it relatively easy to change suppliers if necessary. **Risk: Low to moderate**

Reliability and innovation are necessary to maintain bargaining power with customers.

Bargaining power of buyers: Gerresheimer acts purely as a B2B supplier and therefore sells its products mainly to large companies in the pharmaceutical sector. Due to the existing competition with companies such as Stevanato, customers, especially those with large sales volumes, have a certain negotiating power vis-à-vis Gerresheimer. On the other hand, there are decisive factors that limit the customers' negotiating power: on the one hand, Gerresheimer develops some of its own product solutions in cooperation with its customers, for example with Novo Nordisk, which makes it more difficult for customers to switch suppliers. On the other hand, it is extremely important for customers to have reliable suppliers for their packaging solutions. The costs for packaging are between 2.0% and 4.0% of product sales, depending on the product, so it is risky for customers to risk a considerable loss of sales for a margin increase of between 1.0% and 2.0% if the changeover of suppliers is not successful. **Risk: Moderate**

Multiple Valuation

Our multiple valuation yields an average share price of €161.70 for the most similar peers and €149.30 for the whole peer group.

In order to ensure coverage for all of Gerresheimer's business operations, we have used peer companies representing two different segments. These segments are Plastics & Devices as well as Primary Packaging Glass as shown in Table 8. As the Advanced Technology segment has substantial overlaps with peers in the Plastics & Devices segment and does not yet play a major role within the company, we have not created a separate peer group for this segment. It is important to note that an exact separation of the groups is not possible, as there are overlaps in operations for several peer companies. The categorisation is based on the most important segment in each case. Plastics & Devices includes the companies Aptargroup, Aluflex, Amcor, Berry Global, Becton Dickinson, Insulet, medmix, SCHOTT Pharma, Stevanato, West Pharmaceutical and Ypsomed. All companies are manufacturers of drug delivery systems and plastic packaging. In addition to SCHOTT Pharma, which is based in Germany, Aluflexpack, Amcor, medmix, Stevanato and Ysomed are also based in Europe. The other companies are all based in the US, one of the main markets for pharmaceutical manufacturing. Primary Packaging Glass is represented by the companies Nipro, O-I Glass, Piramal Pharma, Verallia, Vidrala and Zignago. Nipro is a manufacturer of medical devices, pharmaceuticals and instrument products. The company sells glass for pharmaceutical vials and ampoules mainly in Japan while Piramal Pharma is based in India and O-I Glass in the US. Verellia, Vidrala and Zignago are manufacturers of glass from western and southern Europe.

Margins, revenues and rationale behind our considerations are shown in Table 9. The most similar peers contain the competitors identified in the competitive overview which are BD, Stevanato, West Pharma, Schott Pharma, Vidrala, Ypsomed and Aptargroup. These companies are characterised by their business model and their customers being closest to Gerresheimer. We also included Gerresheimer's own multiples.

The multiples we have used in our valuation are Enterprise Value to EBITDA (EV/EBITDA) and Enterprise Value to Sales (EV/Sales) for the last twelve months (LTM) as well as estimates for 2023 as we assume these ratios and estimates to be the most robust ones. We have based our analysis on EBITDA and sales multiples rather than EBIT multiples as they provide a clearer picture of a company's operating performance and valuation as they exclude non-operating items such as interest, tax, depreciation and amortisation, which can vary from company to company. The valuation is based on data as of December 15, 2023. Figure 38 shows the respective ranges for the share price which is a range of 10.0% above and below the mean valuation for each method. Our share price estimate for a certain multiple equals to the averages over all peers and Gerresheimer's own multiples which were also included in the analysis.

The analysis for the most similar peers results in an average valuation of **€161.70** with an average range of €145.53 to €177.87 while the broker consensus results in a price target of €132.14. As the multiple analysis leads to large differences within the results, we only use it to check the plausibility of our APV results and not for our valuation itself.

For transparency reasons, we also calculated the enterprise value to EBIT (EV/EBIT), enterprise value to EBITDA (EV/EBITDA) and enterprise value to sales (EV/Sales) multiples for all peers. Our average range for the share price is between €134.37 and €164.23, as shown in Figure 43. The average total valuation is €149.30.

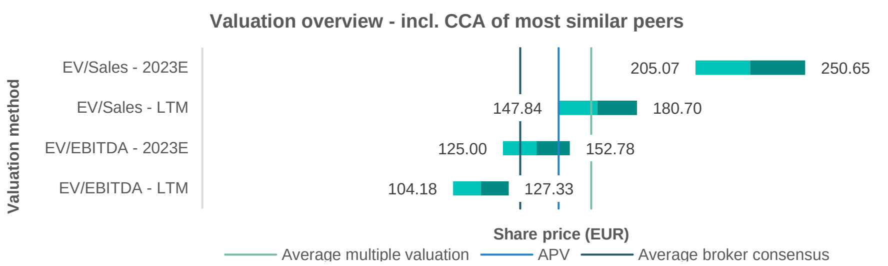


Figure 37: Valuation overview - CCA of most similar peers, Source: Own analysis

Risk and ESG

Measure	Peer group	Gerresheimer
CO2/USDmn revenue	371	222
Renewable energy use ratio	15.3%	14.56%
Accidents/mn working hr.	118	166
Refinitiv governance score	59	61
Refinitiv ESG score	67	68
Sustainalytics score	17.9	19.9

Table 4: ESG analysis
Source: Refinitiv, Morningstar

With regard to its own ESG strategy, Gerresheimer has set itself targets in each pillar. To create sufficient incentives for the Supervisory Board to comply with the ESG targets, their preliminary salary is adjusted using an ESG multiplier based on the achieved targets, which can reduce or increase the salary within a range of 20.0%. The targets pursued are as follows: **Environmental:** the proportion of renewable energy (2022 target of 36.0% and 2022 actual of 35.5%), **Social:** "lost time incident rate per one million working hours" (2022 target of 7.1 and an actual rate of 7.39) and **Governance:** the sustainability ranking from EcoVadis (2022 target rating is a rating of 61.0 and an actual rating of 68.0). To place these results in context, we have used respective data from external sources and compared them with the peer group. Here we see that Gerresheimer is slightly behind its peers in terms of renewable energy use (figures differ from those published by Gerresheimer) but has significantly lower CO2 emissions. The accident rate is well above that of its peers, however, the company is still in line with the market in terms of governance and general Refinitiv ESG ratings. Morningstar (Sustainalytics) gives Gerresheimer a lower rating than its peers, but 19.9 points is still labelled as "low risk" [20]. We therefore see no significant ESG risks, with only the accident rate showing a significant downside position. In addition, Investor Relations has informed us that Gerresheimer can already offer products made of recycled glass and plastic, but this is not necessarily desired by pharma customers because of doubts about their purity. Even the smallest impurities in the packaging can cause serious harm to the patient and thus seriously damage the reputation of the pharma company, which is why recycling does not yet play a role in the pharma packaging industry.

Our assessment of other risk factors is as follows:

Risk type	Description	Economic impact	Probability
ESG	Declining demand from institutional investors in case of bad ESG rating	Medium	Low
Market	Mainly internal competition (please refer to Porters 5 forces analysis)	Medium to high	Low to medium
Macroeconomic	Increase in commodity prices, especially resin that cannot be passed on to customers	Medium to high	Low to medium

Table 5: Risk assessment, source: Own analysis

Due to the stable and non-cyclical market in which Gerresheimer operates, we do not see any significant macroeconomic and market-driven risks other than those already discussed in the market section of the Porters 5 Forces analysis. We therefore perceive no risks that could jeopardise Gerresheimer's business.

Recommendation

Based on our analyses, we see a target price for Gerresheimer of €148.14 on December 31, 2024. Combined with our expected dividend of €1.30 and the current share price of €93.00, this gives a potential upside of 60.7%. In our view, the high upside is particularly justified by the stable foundation provided by the company's activities in non-cyclical markets, combined with significant opportunities, especially from the potential blockbuster drugs with GLP-1 compounds. Gerresheimer is very attractively positioned in its business areas and has particular opportunities in segments with attractive margins, which will improve profitability. We believe that Gerresheimer is also well prepared for the potential risks to which it is exposed and therefore see good opportunities to further improve its market position.

Our recommendation is **BUY**.

We have determined our price target via the APV method and we believe that the results of our relative valuation via multiples confirm our results with a price target of €149.30 for all peer group companies and €161.70 for the most similar ones. We therefore consider our target price to be in a reasonable range, which further supports the robustness of our recommendation.

Appendix

GERRESHEIMER AG

COMPANY REPORT

PHARMACEUTICAL PACKAGING

20 DECEMBER 2023

PAUL BECKER, JAN FELIX HEINZELMANN 53647@novasbe.pt, 53400@novasbe.pt

Getting set for the GLP-1 rally

Stable income streams and a potential blockbuster drug entering the market promise growth for Gerresheimer AG

- Based on our analysis, we issue a **BUY** recommendation for Gerresheimer AG. Our **price target of €148.14** on 31 December 2024 reflects an upside potential of 60.7% (including an expected dividend of €1.30) compared to the current share price of €93.00.

- **Activities in non-cyclical markets** and increasing demand for the medicines for which Gerresheimer manufactures packaging and delivery systems are enabling stable sales growth.

- We see **attractive growth opportunities unfolding from 2024 in the market for GLP-1 drugs** for diabetes and obesity, which are seen as potential new blockbuster drugs and for which Gerresheimer manufactures syringes. The associated growth opportunities are underestimated by the market, in our view.

- Due to the increased focus on high-margin products we expect the **EBITDA margin to increase to 26.6% in 2030** and EBITDA to reach €1,037mn, which, alongside sales growth, is a key driver of enterprise value.

- The **broad product portfolio secures Gerresheimer** a significant competitive advantage and reduces dependence on individual products and customers.

Company description

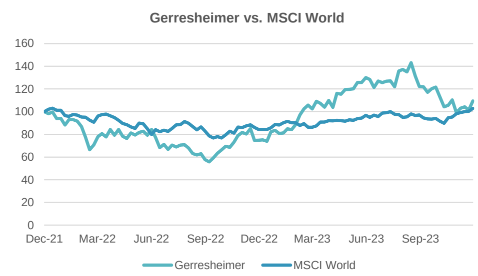
Gerresheimer AG (hereinafter referred to as "Gerresheimer") is a German manufacturer of packaging solutions and drug delivery devices for the pharma, cosmetics and nutrition industry. In November 2022, the company employed around 11,000 people and generated sales of €1,817mn in fiscal year 2022.

Recommendation:	**BUY**
Price Target FY24:	**148.14 €**
Price (as of 20-Dec-23)	**93.00 €**

Source: Refinitiv (GXI)

52-week range (€)	61.15 – 122.90
Market Cap (€m)	3,212
Outstanding Shares (m)	34.54

Source: Refinitiv



Source: Refinitiv

(Values in € millions)	2022	2023E	2024F
Revenues	1,817	2,067	2,370
Revenue growth	*21.3%*	*13.8%*	*14.7%*
EBITDA	359	430	525
EBITDA margin	*19.8%*	*20.8%*	*22.2%*
EBIT	187	233	311
EBIT margin	*10.3%*	*11.3%*	*13.1%*
EPS (€)	3.05	3.63	5.10

Source: Refinitiv, annual report

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Company overview

Company description

Gerresheimer AG (hereinafter referred to as "Gerresheimer") is a German manufacturer of packaging solutions and drug delivery devices for the pharma, cosmetics and nutrition industry.

The company was founded in 1864 in Düsseldorf, Germany, where it is still headquartered today. In November 2022, the company employed around 11,000 people and generated sales of €1,817mn in the respective fiscal year. The company is led by Dietmar Siemssen, CEO and head of the Plastics & Devices and Advanced Technologies divisions (on the board since 2018), Chief Financial Officer Dr Bernd Metzner (on the board since 2019), and Dr. Lukas Burkhardt, who is responsible for the Primary Packaging Glass division (on the board since 2018). The Supervisory Board is chaired by ex-CEO Dr Axel Herberg; further information on the members of the Supervisory Board is given in Table 6.

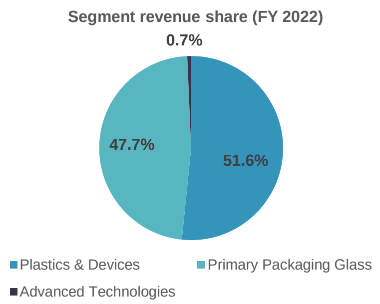

Figure 1: Segment revenue share (FY 2022)
Source: Annual report 2022

The company operates in three segments, namely *Plastics & Devices*, *Primary Packaging Glass* and *Advanced Technologies*.

The Plastics & Devices segment produces and markets drug delivery devices and solutions for customers in the pharmaceutical, biotech, diagnostics and medical technology industries. Products include insulin pens, various types of syringes, inhalers, and devices for personal use such as plastic containers for eye drops or nasal spray, among others. The segment accounted for 51.6% of revenue in fiscal year 2022.

In the Primary Packaging Glass segment Gerresheimer offers its customers bottles and ampoules for pharmaceutical applications, including the storage of vaccines, medications and infusions. For customers in the cosmetics industry, the company offers glass packaging for storing perfumes, skin care products and similar goods. For customers in the food industry, Gerresheimer supplies mainly bottles for liquor and spirits. The segment accounted for 47.7% of revenue in fiscal year 2022.

Gerresheimer's smallest segment is Advanced Technologies (0.7% of sales in the financial year 2022). The segment primarily aims to leverage Gerresheimer's existing expertise in drug delivery systems to develop products and solutions for home drug delivery. For this purpose, products such as autoinjectors and smart inhalers are offered or in development which are intended to enable patients to administer even complex medications by themselves without the supervision of medical professionals. The segment was created through the acquisition of Sensile Medical AG in 2018, when Gerresheimer acquired the Swiss company, which at the time was developing products for the very precise administration of medications. Sensile Medical was integrated into Gerresheimer as the Advanced Technologies segment with the aim of creating a division focused on the development of innovations. Another significant acquisition in this area is the purchase of Respimetrix in 2019, which develops products for inhalation measurement.

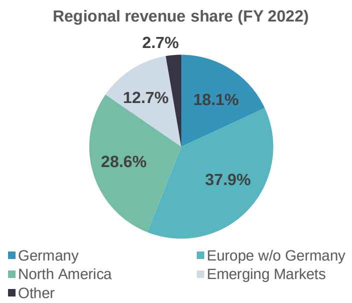

Figure 2: Regional revenue share (FY 2022)
Source: Annual report 2022

Gerresheimer operates as a global company, with operations divided geographically. The economically most important region according to Gerresheimer's containment (based on the customer's registered office) is Europe excluding Germany with 37.9% of sales in the financial year 2022, followed by North America with 28.6%. Customers in Germany contributed 18.1% to total sales in the financial year 2022. In addition, Gerresheimer is active in other markets, with the company designating Brazil, China, India and Mexico as emerging markets. These countries together contributed 12.7% to consolidated revenue in the financial year 2022. The remainder of revenue is generated in other regions.

In addition to its own research efforts, Gerresheimer is also expanding its portfolio through strategic partnerships and acquisitions. In 2022, Gerresheimer acquired a stake in the US company Portal Instruments, which is working on the development of needle-free injection instruments. In the field of pharmaceutical glass, Gerresheimer has entered into a cooperation with the Stevanato Group to develop a uniform standard that will make the products of both companies more attractive to customers.

Gerresheimer aims to evolve from packaging supplier to innovation driver in medical care industry by implementation of "formula G" strategy.

Strategic focus: At the capital markets day 2020, Gerresheimer presented a new strategy for medium-term market positioning called "formula G". In essence, the aim of the new strategic direction is a change from a pure supplier of packaging and medication solutions to an innovation driver in the field of medical care. The Plastics & Devices supported by the Advanced Technologies business unit in particular are to play a key role in this. Through continuous product improvements, the aim is to create greater opportunities for homecare, so that a larger proportion of medications can be administered at home. These more complex drug delivery solutions offer opportunities for Gerresheimer to increase its sales without significantly increasing unit sales. The aim is also to establish the company as an innovation driver, particularly in growth areas such as the fight against diabetes.
This shift allows Gerresheimer to generate a higher revenue share from products which they call "high value solutions", products that are comparably complex and offer higher margin potential to the company. Leveraging these products, Gerresheimer aims to improve their EBITDA margin on a level above 25.0% in the medium term.

Gerresheimer stock

Gerresheimer has been listed on the Frankfurt Stock Exchange again since June 2007, after the company was delisted in 2003 and in the meantime was owned by various financial investors, most recently Blackstone. Since December 2008, the company has been part of the MDAX index, which tracks the performance of the 41st to 90th largest listed companies in Germany.

As of December 15, 2023, the company has 34.54mn shares outstanding, valuing the company with a market capitalization of €3,212mn. In the last 10 years (since December 2013) Gerresheimer shares have gained 70.9%, underperforming in comparison to the MSCI World (117.6%) over the same period. However, it is worth noting the rapid recovery of the Gerresheimer share price in 2020 after the initial stock market slump in March 2020, mainly due to the fact that the company operates in a relatively robust sector and was also able to reallocate production capacity for the manufacture of Covid-19 vaccine vials. After losing the gains made in 2020, the share price reached a low of €50.30 in September 2022, followed by a rapid recovery in 2023, reaching a high of €122.90 in September 2023. Recently, this trend has cooled off, with the stock trading at €93.00 on 15 December 2023.

Currently, the company's only shareholder with ownership above 10.0% is Goldman Sachs Asset Management with a share of 11.2%, followed by the activist investor Artisan Partners with a share of 5.1%. In total, the 20 largest individual shareholders hold 69.0% of the shares, with the remaining shares held by smaller shareholders. A more detailed list of shareholders can be found in Table 7. Gerresheimer's dividend has been continuously increased since 2013, the last distribution in June 2023 was €1.25 per share, and has thus remained constant since 2021.

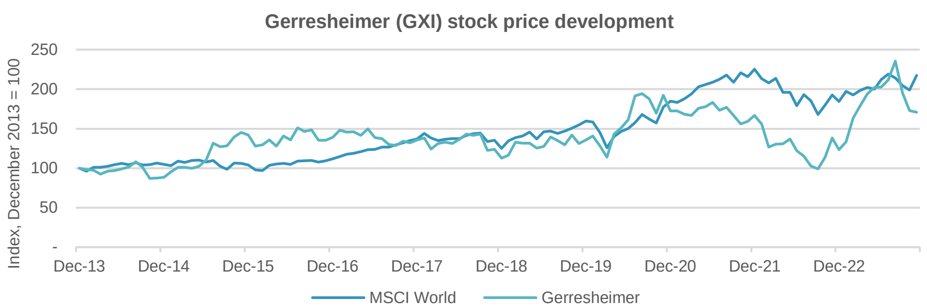

Figure 3: Gerresheimer (GXI) stock price development, Source: Refinitiv

Industry analysis

Macroeconomic environment

We do not see substantial macroeconomic influences on Gerresheimer, due to hedging instruments and the ability to pass on price changes to customers.

In 2020, the Covid-19 pandemic led to a collective collapse in GDP growth worldwide, with declines recorded in many regions. The following year, 2021, saw a strong catch-up effect in many regions. The year 2022 is characterized by a renewed decline in GDP growth, especially in industrialized countries. For 2023, the IMF expects a further flattening of growth in most of the regions relevant for Gerresheimer; in Germany in particular, GDP is expected to decline. In the long term, the IMF forecasts global GDP growth of around 3.0%, with the comparatively weak expected growth of industrialized nations being offset by emerging economies [1].

Geopolitical developments in 2022 and 2023 were significantly influenced by the war in Ukraine. The resulting turmoil, coupled with a general economic downturn, has led to rising inflation worldwide, affecting emerging and industrialized nations alike. The conflict in Ukraine is also having a sensitive impact on global energy prices, as European countries in particular are heavily dependent on Russian gas supplies. Many states are responding by expanding renewable energy sources as well as alternative suppliers of fossil fuels, for example from the Middle East. However, as competition from demanders is fierce here, it can be assumed that world prices for natural gas in particular will remain above the historical average in the short term. However, this does not represent a significant risk for Gerresheimer as the company has, according to the annual report and confirmed by Investor Relations, concluded a longer-term hedge against energy price risks.

Compared to gas prices, crude oil, which drives the global resin prices (an important commodity for plastics production) has had a less turbulent price history in recent years. At the end of 2022, the global price level was around 40.8% above the level in 2018. However, as a large proportion of the oil produced comes from the Middle East, the extent to which the intensification of the conflict in the Gaza Strip will affect the price of oil is an open question, particularly in the short term. However, experts consider this risk to be manageable at the present time, so that the resin price can currently be expected to remain stable in the medium term, not posing a substantial risk to Gerresheimer’s operations. In addition, the company has stated that it has been able to pass on price changes to its customers in the past.

Market trend: Lifestyle diseases

We believe that Gerresheimer's business activities will be driven by a major trend

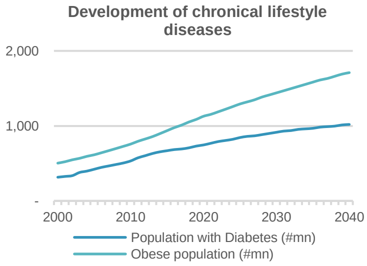

Figure 4: Development of chronical lifestyle diseases
Source: Euromonitor

in the pharmaceutical market over the next few years: The increasing prevalence of lifestyle diseases, which include diabetes and obesity. This trend can be observed worldwide - in 2020 38% of the world's population were overweight, 14% even obese - an increase to 46% and 20% respectively is expected by 2030 [2]. Another disease that has received increasing attention in recent years and decades is diabetes. In the United States, for example, the number of diagnosed cases of diabetes have more than doubled from 11.8mn in 2000 to 24.4mn in 2022. By 2030, there are expected to be around 916mn people with type 2 diabetes worldwide [3].

The spread of these lifestyle diseases can be attributed to two main factors: firstly, the increasing ageing of society, which is particularly noticeable in developed and emerging countries. These developments are particularly pronounced in markets of particular relevance to Gerresheimer, such as Germany (+4.4%p of the population over 65 years of age by 2030), the US (+4.3%p) and China (+5.6%p) [4]. Secondly, rising prosperity, particularly in emerging countries, is leading to a change in lifestyle and thus to an increasing spread of lifestyle diseases, driven by higher sugar consumption, an unhealthy diet and a lack of exercise. For pharmaceutical companies and their suppliers, the rise in these diseases offers attractive growth opportunities, for example through the development of new active ingredients. The current focus is on GLP-1 drugs as potential blockbusters because they can be used to treat both diabetes and obesity. The first GLP-1 drugs are currently available from Novo Nordisk (Ozempic for diabetes and Wegovy for obesity) and Eli Lilly (Mounjaro and Zepbound). We consider this trend to be particularly important for the future of Gerresheimer and therefore pay special attention to it in our analysis of revenue drivers.

Market analysis

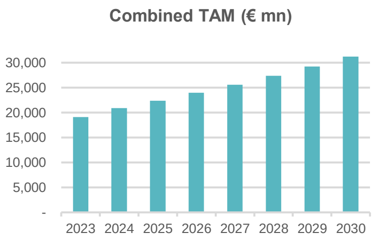

Figure 5: Total addressable market (€ mn)
Source: Market forecasts, own analysis

Gerresheimer is active in various markets thanks to its broadly diversified product portfolio. For the sake of transparency, we present the markets relevant to the company broken down by the segments in which Gerresheimer serves them. According to our estimates, the total addressable market (TAM) for Gerresheimer in 2023 for the focus segments (we include the segments with a pharmaceutical focus and exclude cosmetic glass and food & beverage) amounts to €19,127mn. According to our expectations, this figure will increase by 63.2% to €31,220mn by 2030.

In general, it is difficult to make statements about the concentrations in these markets, as often only the end sellers (who distribute the drug) are known, but not the packaging / device companies and the segments are defined so differently for the various competitors that it is not possible to quantify the cross-market shares independently.

- Plastics & Devices

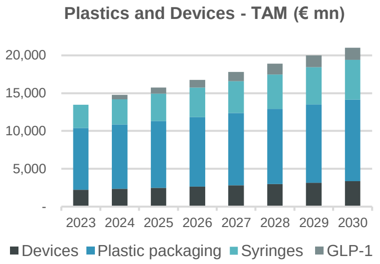

Figure 6: Plastics and Devices - TAM (€ mn)
Source: Market forecasts, own analysis

In this segment, Gerresheimer primarily produces injection pens, inhalers, syringes and pharmaceutical packaging made of plastic. As Gerresheimer also produces syringes for the new GLP-1 drugs, we pay particular attention to this segment due to its importance.

Syringes for GLP-1 medication: As of the valuation date, the biggest trend in the pharmaceutical industry is the so-called GLP-1 active ingredients, which can be used to treat type 2 diabetes and obesity. As a significant market volume is expected for these products over the next decade, they are particularly important in our analysis, as Gerresheimer has secured a significant position in the supply chain for the current manufacturers of the existing products. To reflect this, we assess the revenue from syringes produced for GLP-1 medication separately, as Gerresheimer plans to produce them in addition to existing syringe business. For our analysis, we proceeded in two steps and first estimated the market development for GLP-1 drugs and, in the second step, derived the sales volume achievable for Gerresheimer.

According to our analysis, the market for GLP-1 drugs will have an annual volume of € 47,480mn in 2030 with the TAM for Gerresheimer being €1,764mn.

In the first step to determine the market volume with GLP-1, we determined an expected price trend. In particular, we considered the differences between the US and the rest of the world in 2023. In 2023, approximately 4.5% of diabetes patients will be from the US and 95.5% from the rest of the world [3]. In the US, a monthly dose of Ozempic (Novo Nordisk's GLP-1 product available in 2023) will cost $290 after rebates [5]; in the rest of the world, the average monthly price can be assumed to be $100 [6]. Using a weighted average, this results in annual sales per patient of €1,198. As further market entries are expected over the years, including Eli Lilly's entry in the US and expected products from Pfizer and Roche, we expect an average annual price decline of 10.0% until the price stabilises at €515 by the end of the decade. In the next step, we determine the market volume for diabetes patients based on forecasts for the development of diabetes prevalence and the estimation that 8.3% of diabetes patients worldwide will be treated with a GLP-1 product in 2030. Based on estimates of the number of diabetes patients, we therefore expect 26mn GLP-1 patients in 2024 and 76mn patients in 2030. We also estimate the market volume for GLP-1 in obesity based on projections of the prevalence of obesity, but also taking into account the fact that scientific evidence suggests that only around 1.5% of obese people are actually treated with medication [7]. Based on the currently expected efficacy of GLP-1 in obesity, we expect the drug to be widely used in this area and assume that 35.0% of patients treated for obesity will be using GLP-1 by 2030. As a result, we expect the GLP-1 market for obese patients to reach 2mn patients in 2024 and 7mn patients in 2030.

Overall, we expect a total of 28mn GLP-1 patients in 2024 and 83mn in 2030. In combination with the prices we have calculated, we therefore assume a market volume of €30,587mn in 2024, rising to €47,480mn in 2030, representing a CAGR of 7.6%. This estimate is consistent with recent market reports and analyst estimates but has been independently calculated. The syringe manufacturer is expected to account for between 2.0% and 4.0% (which is a typical revenue share as confirmed to us by Investor Relations) of this market volume, although we expect this figure to rise from 2.0% in 2024 to 4.0% in 2030 as the bargaining power of suppliers increases. On this basis, we have calculated a TAM of €612mn in 2024, which we expect to rise to €1,764mn in 2030, representing a CAGR of 19.3%. We consider this very high value to be realistic, given the expected strong importance of GLP-1 drugs, whose growth is estimated at 11.0% CAGR over the same period. We consider a lower share of sales of 2.0% to be realistic initially, as we estimate the market to be moderately concentrated with a Herfindahl index of approximately 2,031 (current competitors are West Pharmaceuticals, Schott Pharma, Stevanato and Ypsomed). Given the dual-source approach common in the industry, we expect a price war among syringe manufacturers, especially at the beginning.

Syringes (excl. GLP-1): In the syringe product group, the European market is particularly relevant for Gerresheimer. It is dominated by the market leader Becton, Dickinson and Company (BD) from the US with a market share of around 60%, followed by Gerresheimer, Schott Pharma and Stevanato. The main growth drivers in the market (apart from the GLP-1 syringes already mentioned) are the growing demand for Botox treatments and the increasing prevalence of vaccinations. According to recent studies, the market is expected to be worth €3,082mn in 2023 and is expected to grow at a CAGR of 8.0% to reach €5,282mn by 2030 [8]. The syringe product group is therefore one of the most attractive growth markets for Gerresheimer, especially with the inclusion of GLP-1 syringes.

Devices (Injection pens and inhalers): Current studies put sales of drugs administered via **injection pens** at €39,928mn in 2023 [9]. Injection pens are primarily used in the home care sector, as they are comparatively easy to use compared to syringes. Injection pens are particularly widespread in the treatment of type 2 diabetes for the administration of insulin. In view of the market trends already described, providers of injection pens benefit from the rising prevalence. Since 2017, the market has grown by an average of 6.4% per year. This growth is expected to accelerate slightly over the next decade, as developments such as rising diabetes prevalence and the general trend towards home care, particularly among the elderly, will create a greater need for simple self-medication solutions. Estimates suggest that the market for injection pens will grow by 7.0% annually to a volume of €64,116mn by 2030. As Gerresheimer is only the manufacturer of the pens, and therefore only an interim supplier, this is not the TAM for the company. According to our information from Investor Relations, the revenue share of pen manufacturers in the pharmaceutical sector is between 2.0% and 4.0% of end product sales, so that for Gerresheimer we assume a TAM of €1,198mn in 2023, rising to €1,923mn in 2030. As the pharmaceutical industry is generally very closed and insulin pens are generally sold filled by the drug supplier, it is not possible to identify specific market shares of individual manufacturers. However, important players in the segment alongside Gerresheimer are BD, Wet Pharmaceuticals, Ypsomed, Owen Mumford and Medtronic.

Similarly to injection pens, Gerresheimer also sells **inhalers**, i.e. it only sells the device to pharmaceutical companies, which then distribute the inhaler filled with medication. In 2018, the market for inhalers had a volume of €28,112mn, which has increased by around 4.0% annually to a current market volume of €37,259mn [10]. Market growth is expected to increase slightly to 4.9% per year until 2030, resulting in a volume of €47,912mn in 2030. This additional growth will mainly be driven by the increasing penetration of smart inhalers, which have higher prices. Smart inhalers currently account for a market volume of around €1,499mn, but are expected to grow by 8.6% per year until 2030. The main growth driver in the market for inhalers is the increasing prevalence of asthma in the population, which is partly due to rising air pollution in large cities, particularly a problem in emerging countries. As with injectors, we estimate that around 3.0% of the market for inhalers should be regarded as TAM for the manufacturing companies such as Gerresheimer. This corresponds to a TAM of €1,028mn in 2023 and €1,437mn in 2030. The market for inhalers is even more fragmented than the market for injectors, but here too it is not possible to determine the exact market shares of competitors. Competitors include West Pharmaceuticals, 3M, Philips and Aptar Group.

Overall, we estimate the TAM for Gerresheimer in the devices product group at €2,226mn, whereby we expect it to rise to €3,361mn by 2030, which corresponds to a CAGR of 6.1%.

Plastic packaging: The market for plastic packaging in which Gerresheimer is active is pharmaceutical plastic bottles. This includes, among other things, cans for storing medicines, which are particularly popular in the US, as well as bottles for nasal sprays and eye drops. According to analysts, this market has a volume of €8,151mn in 2023 and will grow at a rate of around 4.1% to €10,777mn by 2030 [11]. The most important market region is the US. The comparatively low growth is due to the already high level of market saturation, in the case of medicines packaged in plastic, this is mainly due to the comparatively constant growth of over-the-counter medicines. The pressure to innovate in the market is also comparatively low; only factors such as ESG targets of customers can play a role, whereby recycling plays a subordinate role due to the high demands on the purity of the products. Due to the comparatively low cost, the market is very fragmented, although unfortunately no precise data is available on specific market shares.

- Primary Glass Packaging

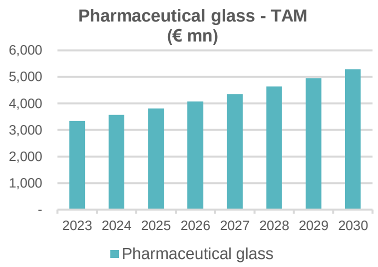

Figure 7: Pharmaceutical glass - TAM (€ mn)
Source: Market forecasts, own analysis

Pharmaceutical glass: Gerresheimer considers itself the market leader in the European market for pharmaceutical glass, followed by Stevanato and Schott Pharma. According to estimates, the market will have a volume of around €3,341mn in 2023 and will grow by 6.8% p.a. to €5,295mn by 2030 [12]. The European market is dominated by vials, which are used to store vaccines and other liquid medicines. The high density of glass makes it the material of choice for packaging drugs that are particularly susceptible to contamination, which is the case for most injectable drugs. The most important trend in the market at the moment is the trend towards so-called ready-to-use (RTU) vials. Conventional vials are sold by the manufacturer to the filler, who then cleans and sterilizes them for filling. RTU vials are sterilized and supplied directly by the manufacturer for direct filling by the customer. Gerresheimer estimates that while currently around 90% of vials are delivered unsterilized, by the end of the decade more than half of the vials supplied will be RTU products. This is particularly attractive for manufacturers because of the higher margins involved.

Cosmetics, food and beverage: In addition to its activities in the pharmaceutical market, Gerresheimer is also engaged as a manufacturer of bottles, jars and flacons for the cosmetics and beverages industry, focusing in particular on jars for lotions and bottles for spirits. The main players in this market are Vidrala, Owens-Illinois, Saint-Gobain and Vitro, with Gerresheimer playing a subordinate role as its competitors focus on these segments, which is not the case for Gerresheimer. According to current estimates, the market for cosmetic glass packaging grew by only 1.2% per year from 2018 to 6,651mn units in 2023, mainly due to a sharp decline in 2020. Over the next few years, growth is expected to recover to 2.5% per year, driven mainly by growth in the luxury market, particularly for perfume bottles. In 2027, analysts expect 7,333mn units to be sold [13].
Analysts estimate that the market for glass spirits bottles is worth €34,059mn in 2023 and will grow at a CAGR of 5.0% over the next few years [14]. The high growth will be driven primarily by increasing alcohol consumption in Asia.

Gerresheimer's competitors are comparable to those in the cosmetic glass sector, as most players are active in both segments. Gerresheimer does not have a significant market share in either segment compared with its competitors.

- Advanced Technologies

In this segment, Gerresheimer is currently active in the market for autoinjectors and is planning to enter the market for smart inhalers in 2025.

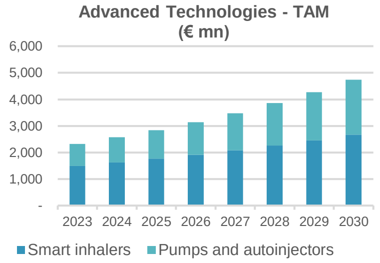

Figure 8: Advanced Technologies - TAM (€ mn)
Source: Market forecasts, own analysis

The market for autoinjectors is estimated to have a volume of €828mn in 2023 and experts expect it to grow at a CAGR of 14.0% [15]. We therefore anticipate a market volume of €2,072mn in 2030. The strong growth is primarily due to the fact that autoinjectors can massively simplify medical self-care, as even complex doses can be administered without the need for medical professionals. Because there is a shortage of medical professionals in many countries, we anticipate a significant increase in demand in this area. Gerresheimer's main competitors in this market are BD, West Pharmaceuticals and Ypsomed.

In 2025, Gerresheimer plans to enter the market for smart inhalers with a product developed in-house. The main advantage of smart inhalers over conventional products is that they can optimally control the dosage for the amount of air inhaled so that COPD patients receive the right therapy. In 2025, experts expect sales of smart inhalers to reach €1,768mn and a growth rate of 8.6% [16]. The market is currently very fragmented with small manufacturers such as Propeller Health, which often cooperate with large pharmaceutical companies and whose only product is the inhaler. On this basis, a number of market entries can still be expected by 2025, and the competitive situation is difficult to assess.

Competition analysis

Dimension	Risk level
Industry rivalry	
Threat of new entrants	
Threat of substitutes	
Bargaining power of suppliers	
Bargaining power of buyers	

Figure 9: Competition analysis - dimensions and risk levels
Source: Own analysis

Due to the mere size of the market for drugs, the market for pharmaceutical packaging and drug delivery devices, which is Gerresheimer's main line of business, is very attractive and competitive. While there are significant players in the market, we generally see a high fragmentation in the market. The competitive environment and potential influences on Gerresheimer's business can be analysed in a Porters 5 forces analysis. An additional SWOT analysis can be found in Figure 39.

Industry rivalry: Due to its various business activities, Gerresheimer is confronted with a large number of competitors. The most important cross-segment competitors and their main areas of focus are discussed below, a comprehensive overview of all peer companies we consider relevant can be found in Figure 38 and Table 10.

Schott Pharma is a German company that was founded in August 2022 as a

spin-off of the German Schott AG, bundling its pharmaceutical operations. The company generated sales of €821mn in the 2022 financial year.
Schott Pharma produces syringes, cartridges, vials and ampoules. The company competes with Gerresheimer primarily in product groups such as pharmaceutical packaging and syringes, so Schott Pharma covers a leaner product portfolio than Gerresheimer. This gives Gerresheimer a significant competitive advantage, as the company can serve broader customer groups and in particular has significant activities in growth markets such as drug delivery devices.

West Pharmaceutical Services was founded in the US in 1923 and, like Gerresheimer, focuses primarily on the manufacture of pharmaceutical packaging and drug delivery devices. In 2022 the company generated sales of €2,746mn. The product range includes ampoules, cartridges, syringes and drug delivery devices and is therefore very similar to Gerresheimer's portfolio. The companies have also collaborated in the past, with Gerresheimer licensing a syringe system from West Pharmaceutical in 2017. Like Gerresheimer, West Pharmaceutical is also a manufacturer of components for the injector of Novo Nordisk's obesity drug Wegovy, which experts believe has great sales potential. Gerresheimer also has the advantage over West Pharmaceutical that it covers a broader product range, such as plastic pharmaceutical packaging and packaging solutions for the cosmetics sector.

Becton, Dickinson and Company (BD) is an American manufacturer of medical technology that was founded in 1897 and generated sales of €18,167mn in 2022. The company offers a range of medical devices, including those that overlap with Gerresheimer's product range, primarily syringes and drug delivery devices as well as diagnostic products. However, BD is also active in other segments, including for interventional procedures. In comparison, Gerresheimer offers a much more in-depth and specialized product range in its core segments, particularly in the area of syringes. However, thanks to its significantly greater financial clout, BD has investment opportunities that are not open to Gerresheimer. In general, there is an opportunity for BD to overcome potential entry barriers in business areas in which they are not active yet.

Stevanato Group is an Italian company founded in 1949 with sales of €984mn in 2022. The company focuses on pharmaceutical packaging, mainly glass ampoules and vials, as well as drug delivery devices such as syringes and injectors. The company also has in-house expertise in mechanical engineering, which gives it a competitive advantage in helping customers build their assembly lines. Gerresheimer, on the other hand, cannot offer this kind of integration, but again benefits from a broader product portfolio, making it a more attractive supplier for customers requiring a wide range of packaging and drug delivery solutions.

Gerresheimer and Stevanato have agreed to manufacture their vials to the same standard, making it easier for customers to use the same assembly machines for both companies' products. This is expected to give both companies a competitive advantage, as drug manufacturers typically adopt a dual-sourcing approach.

Its broad product portfolio puts Gerresheimer in a favourable market position.

An analysis of Gerresheimer's main competitors across segments shows that some of them have advantages in their specific segments which could pose potential risks for Gerresheimer. Overall, however, we see a significant competitive advantage for Gerresheimer based on its broad product portfolio, an aspect that none of its competitors offer with the exception of BD. **Risk: Moderate to high**

Threat of new entrants: The risk in this dimension varies considerably between the different segments and the products offered in each segment. In the Plastics & Devices segment, the risk is present in the area of plastic packaging, as Gerresheimer primarily offers products for drug doses that are subject to comparatively low innovation pressure. Companies that already have production facilities for plastic packaging in particular could expand here. However, in order to pose a substantial threat to Gerresheimer, the companies would either have to offer better products, which is difficult in this area, or significant price advantages. In the area of devices and syringes, the risk of new entrants is comparatively negligible as market entries require high initial investments in research and production. At the same time, Gerresheimer is very well established on the market and sometimes develops products together with customers (for example a syringe with Novo Nordisk for their diabetes drug Ozempic). As Gerresheimer also drives innovation through its own research and acquisitions such as Portal Instruments, we consider it unlikely that companies will enter the market that will have a lasting impact on Gerresheimer's success. In the Primary Packaging Glass segment, a comparatively low risk is also to be expected in the most important product group of pharmaceutical glass products due to new entrants: even for manufacturers of glass products that have previously been active in other segments such as cosmetics, it is costly to produce pharmaceutical glass, due to the higher requirements for the purity of the products (especially in terms of abrasion), resulting in a much more complex production process. The food & beverage and cosmetics product groups are at greater risk from new entrants, as companies that are already active in one of the two product groups in particular can enter other segments comparatively easily. **Risk: Low to moderate**

Threat of substitutes: Due to its broad product portfolio, Gerresheimer can expect comparatively low risks here. If, for example, it becomes possible to use plastic packaging instead of glass for a product, Gerresheimer can offer this - already proven to medical standards. No significant risk is to be expected in the devices segment either, as drug delivery devices cannot be replaced at the present time and drugs are often approved in combination with the delivery device. According to the current state of research it is not to be expected that the devices will become obsolete or lose importance soon. **Risk: Low**

Bargaining power of suppliers: Thanks to its deeply integrated production chain, Gerresheimer has comparatively few dependencies of single suppliers. A certain risk for Gerresheimer comes from the suppliers of the raw materials that Gerresheimer purchases and on whose products the company is dependent. To minimize this risk, Gerresheimer has diversified its suppliers where possible in order to minimize the impact of negotiation problems with individual suppliers. In addition, the market for raw materials is highly competitive, making it relatively easy to change suppliers if necessary. **Risk: Low to moderate**

Reliability and innovation are necessary to maintain bargaining power with customers.

Bargaining power of buyers: Gerresheimer acts purely as a B2B supplier and therefore sells its products mainly to large companies in the pharmaceutical sector. Due to the existing competition with companies such as Stevanato, customers, especially those with large sales volumes, have a certain negotiating power vis-à-vis Gerresheimer. On the other hand, there are decisive factors that limit the customers' negotiating power: on the one hand, Gerresheimer develops some of its own product solutions in cooperation with its customers, for example with Novo Nordisk, which makes it more difficult for customers to switch suppliers. On the other hand, it is extremely important for customers to have reliable suppliers for their packaging solutions. The costs for packaging are between 2.0% and 4.0% of product sales, depending on the product, so it is risky for customers to risk a considerable loss of sales for a margin increase of between 1.0% and 2.0% if the changeover of suppliers is not successful. **Risk: Moderate**

Current financial performance

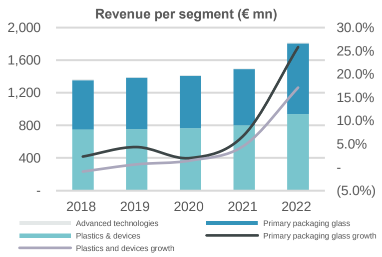

Figure 10: Revenue per segment and growth
Source: Annual reports 2018 - 2022

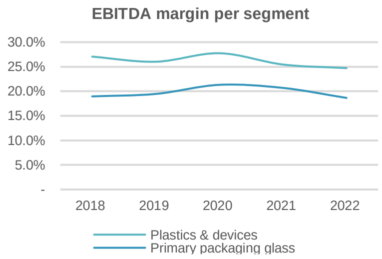

Figure 11: EBITDA margin per segment
Source: Annual reports 2018 - 2022

As a company that is mainly active in the non-cyclical pharmaceutical sector, Gerresheimer has had comparatively few problems with its economic situation during the coronavirus pandemic. In particular, the production of ampoules for vaccines has provided a stable economic basis in 2021. However, sales growth has consistently been in the single-digit range (between 1.4% to 5.6%) since 2019 and only reached a significant outlier of 21.3% in 2022. The majority of the increase in sales in 2022 was due to increases in sourcing and material prices being passed on to customers, as well as increased demand for complex and therefore more expensive products in all segments. Plastics & Devices is Gerresheimer's largest segment, having grown from €750mn to €938mn over the last five years, corresponding to a CAGR of 5.8%, while the Primary Packaging glass segment grew by 9.4% over the same period, rising from €605mn to €867mn. The Advanced Technology segment was newly established in 2018 and has not yet recorded any relevant sales. Revenue amounted to €13mn in 2018 and €12mn in 2022. However, this segment was also set back by the customer cancellation of an order for micro pumps in 2019, resulting in total revenue of €17.3mn being cancelled.

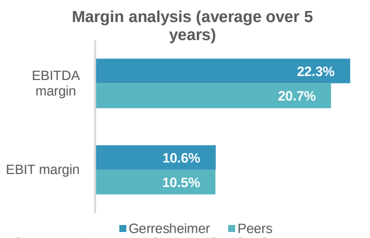

Figure 13: Margin analysis (average over 5 years)
Source: Own analysis

In contrast to sales growth, profitability has remained relatively stable. At 19.8% in 2022, the EBITDA margin has decreased by 0.4%p compared to 2021. However, with a margin range of 19.8% to 28.5% and an average margin of 22.3% over the last five years, it can be said that Gerresheimer has been consistently profitable and outperforms its peers (peer average margin of 20.1% over the last five years). Within the two relevant segments (Plastics & Devices and Primary Packaging Glass), the EBITDA margin has fluctuated slightly in recent years, but has remained fairly constant overall. In the Plastics & Devices segment, the margin fell slightly by 2.4%p and in the Primary Packaging Glass segment only marginally by 0.4%p over the last five years. Plastics & Devices has a higher profitability (average margin of 26.2%) compared to the Glass segment (average margin of 19.8%), which is due to higher product margins in the devices products. In contrast, the margin in the Advanced Technologies segment is still highly volatile and has been clearly negative for the last years. This is due to the fact that the segment is still very new and developing. The overall EBIT margin has fallen from 10.5% to 10.3% in 2022. In previous years, the margin was in the range of 9.1% to 11.0%, which corresponds to an average of 10.6%. In terms of EBIT, Gerresheimer is very close to its peers, which have an average EBIT margin of 10.5% in the same period. An analysis at segment level is not possible due to a lack of information. Regarding profitability, the ROIC can also be considered, which has been between 5.3% and 6.2% in recent years, with an average value of 5.7%.

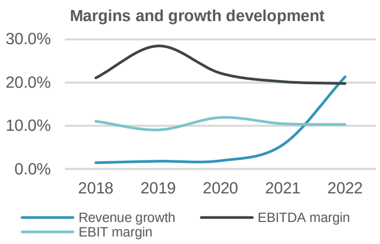

Figure 14: Margins and growth development
Source: Annual reports 2018 - 2022

The relatively high historical free cash flow in 2019 is an exception and due to the reclassification of promissory notes, which increased other current liabilities. In 2020 and 2021, free cash flows are negative as the change in other current liabilities disappears in 2020 and investments in PP&E increase significantly from 2021 onwards. The sharp decrease in 2022 is partly due to an investment of €129.0mn in derivatives to hedge possible energy price developments which we consider non-recurring and increased investments in the expansion of production sites.

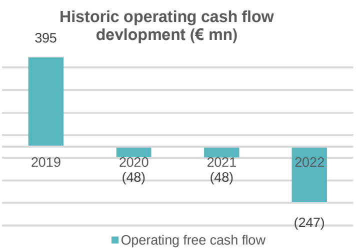

Figure 12: Historic operating cash flow development (€ mn)
Source: Own analysis

As a consequence of the time when Gerresheimer was owned by a private equity fund, the company continues to carry a comparatively high debt burden. The book value debt to equity ratio in 2022 was 0.96x, which already represents a significant improvement compared to the two previous years (1.17x and 1.10x). The ratio of debt to EBITDA, which Gerresheimer uses to manage its debt, was

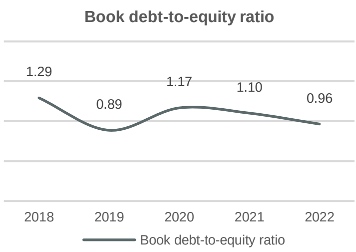

Figure 15: Book debt-to-equity ratio
Source: Own analysis

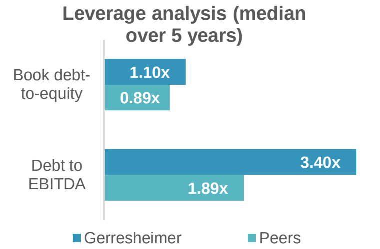

Figure 16: Leverage analysis (median over 5 years)
Source: Own analysis

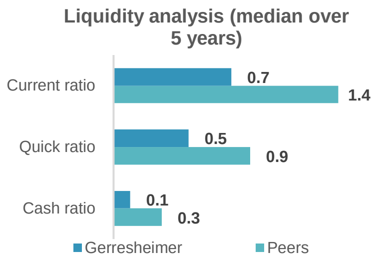

Figure 17: Liquidity analysis (median over 5 years)
Source: Own analysis

3.4x in 2022. We discuss this in more detail in the capital structure section. Compared to the peer group, the book value debt to equity ratio is within a reasonable range, as the median of the peer group is 0.89x, although Gerresheimer's debt to EBITDA ratio is well above the peer group median of 1.89x. In view of Gerresheimer's stated goal of reducing debt in relation to EBITDA, there is thus no warning signal, especially as the 2020 interest coverage ratio of 6.7x is not significantly below the peer group median value of 8.4x. When analyzing liquidity, it is noticeable that Gerresheimer's performance is somewhat below average of its peer group. The median of the cash, quick and current ratios have been smaller in comparison with the peers over the last five years, which could indicate possible future difficulties regarding repayment of current liabilities.

For 2023, we expect Gerresheimer’s revenue to grow by 13.8%, with growth of 11.6% year-on-year in the first three quarters, and a slight improvement of 1.0%p in the EBITDA margin.

Business forecast and key drivers

Revenue forecast

Gerresheimer's revenue streams are divided into three different segments: Advanced Technologies, Plastics & Devices and Primary Packaging Glass. While the Advanced Technologies segment only plays a subordinate role, the two important streams can be subdivided even further. As sales data is only published at segment level, but very different product groups are manufactured in the segments, we approached the Investor Relations department with a request for further information based on our understanding of the different product groups within the segments. We have based our analysis on information on the share of sales of the individual product groups below segment level, as shown in Figure 40.

We estimate revenue to reach €3,901mn in 2030.

The result of our analysis is a growth expectation in sales from €1,817mn in 2022 to €3,901mn in 2030, reflecting a CAGR of 9.5%, with sales growth slowing to 5.4% by the end of the forecast period.

We see the quality of our forecast confirmed in the sales forecast for 2023: As figures for the first three quarters had already been published by the report date, we calculated sales for the year as a whole on the basis of a factor that sales in the first three quarters have historically had on the year as a whole in order to check the plausibility of our forecast based on our analyses. Here, we find the deviation of only 1.4% confirming the preciseness of our estimates.

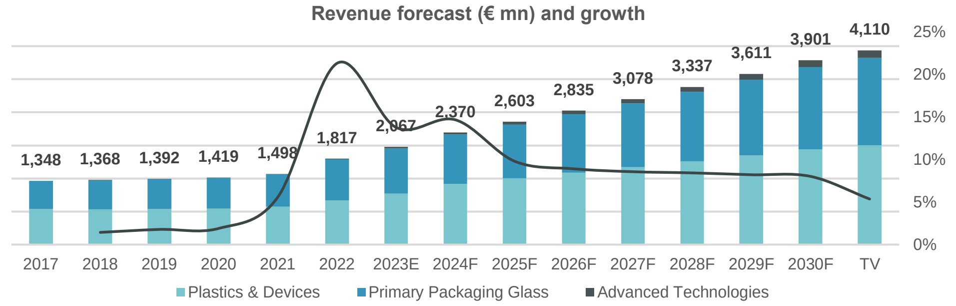

Figure 18: Revenue forecast (€ mn) and growth, Source: Own analysis

Based on our forecast, we see a slowdown compared to the high sales growth in 2022, with high growth being achieved in 2024 in particular due to GLP-1. In the following years, we see a decline in growth to a sustainable level of less than 10.0% per year.

Gerresheimer claims to capture 25% of GLP-1 packaging market, unfolding revenue potential between €153mn (2024) and €441mn (2030) annually.

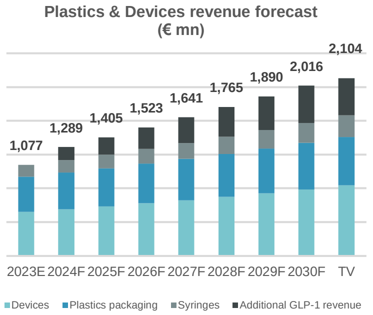

Figure 19: Plastics and Devices revenue forecast (€ mn)
Source: Own analysis

Plastics and Devices - GLP-1 syringes: In order to understand Gerresheimer's role in the market for GLP-1 drugs, we interviewed a manager from the Investor Relations department who explained the company's positioning to us. Through long-term contracts with Novo Nordisk and Eli Lilly, whereby a special syringe has even been developed in cooperation with Novo Nordisk, Gerresheimer holds a market share of 25.0% for the products currently and soon to be launched. As Gerresheimer plays a pioneering role in the packaging of GLP-1 products in this way, we expect the company to be able to maintain this market share in the long term, as it is also an attractive partner for new market participants. According to the company representative, Gerresheimer's achievable share of the drug revenue is in the usual industry range of 2.0%-4.0%, whereby we expect an upward trend from the lower end of the range as the pharmaceutical companies lose negotiating power as market concentration decreases towards the end of the decade. Based on these insights and our analysis of the GLP-1 market size, we estimate the revenue from GLP-1 syringes to grow from €153mn in 2024 to €441mn in 2030.

Plastic and Devices - Syringes: BD is by far the largest player in the international market for syringes with a market share of 60%, with Gerresheimer still among the market participants with a substantial market share. Based on market volume estimates, we estimate Gerresheimer's market share at 4.5% in 2023. In our analysis, we have considered the subgroup of syringes for GLP-1 drugs separately and forecast the greatest growth in the syringe product group. As these products will account for a large proportion of production capacity in the future, we do not expect Gerresheimer to be able to substantially expand its market share in the area of syringes for other drugs and expect growth in line with the market. Based on this, we anticipate a sales volume of €237mn in 2030, which corresponds to a CAGR of 8.0%. Including the syringes for GLP-1 medication in this calculation results in a combined CAGR of 14.4%, which makes these product groups the most important growth driver for Gerresheimer.

Plastic and Devices - Devices: In terms of sales volume, the devices sub-segment was the second most important in the group in 2022, accounting for 25.0% of total sales. In this area, Gerresheimer primarily manufactures inhalers and injectors, including for diabetes and asthma patients. We expect this area to continue to be very important in terms of sales volume in the future, albeit declining compared to other areas; in 2030, we still expect it to account for 20.2% of total sales. We assume that Gerresheimer will maintain its current implied share of 23.4% in the market for inhalers and injectors (in 2030 with a volume of €3,361mn), but will not expand it significantly. We see two main drivers for this: Firstly, the proportion of diabetes patients who rely on injectors will decrease with the growth of GLP-1 drugs, as these are administered with syringes. Secondly, improved products such as smart inhalers and autoinjectors are being developed in the Advanced Technology segment, which will take market share away from the solutions currently in use. For 2030, we estimate a sales potential of €787mn.

Plastic and Devices - Plastic packaging: In this sub-segment, drug cans and containers are produced, with the US being an important target market for Gerresheimer. According to our estimates, based on a market size of €8,151mn in 2023, Gerresheimer has a market share of around 5.1% here. Due to Gerresheimer's substantial importance in this comparatively fragmented market segment, we assume that the company will be able to defend its market share in the future. Competition in this sub-segment is comparatively fierce, as hardly any innovations are possible, and high investments are comparatively unattractive due to low margins. For this reason, we do not expect Gerresheimer to make any efforts to significantly expand its market share. We expect sales growth in line with the market of 4.1% by 2030, resulting in sales of €552mn this year.

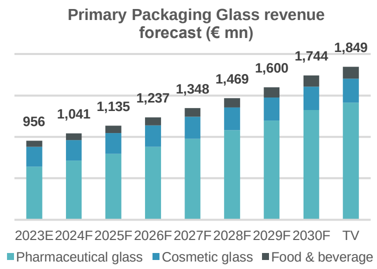

Figure 20: Primary Packaging Glass revnue forecast (€ mn)
Source: Own analysis

Primary Packaging Glass - Pharmaceutical glass: The product group with the highest sales in 2022 was products from the pharmaceutical glass segment with a sales volume of €581mn, representing a 32.0% share of company sales. Gerresheimer captures a large share of the market, particularly in Europe, where it is the market leader with a share of 19.1%. The main competitors are Schott Pharma AG and the Stevanato Group, with the latter in particular taking center stage. Gerresheimer and Stevanato have developed a common standard for vials (for use in vaccines, for example), which both companies use. As it is essential for customers in the pharmaceutical sector to rely on several suppliers for the delivery of product packaging to secure the supply chain stability, it therefore makes sense to purchase products from Stevanato and Gerresheimer in order to fill both on the same production line. As Gerresheimer is already a market leader with a corresponding reputation in the market and it is becoming even more attractive for companies to choose Gerresheimer as a supplier for vials, we assume that Gerresheimer's position in the market will continue to improve. Accordingly, we expect the market share to increase to 25.0% by 2030. Based on this, we expect sales of €1,324mn in 2030.

Primary Packaging Glass - Cosmetic glass: Glass packaging for the cosmetics industry (primarily jars for creams and flacons for perfume) contributed 12.0% of the company's sales in 2022 with sales of around €218mn. We do not see cosmetic glass as a core product of Gerresheimer and therefore do not expect the company to make any major efforts to gain significant market share, especially as the business is not as high-margin as other areas of business. On the other hand, the company will continue to pursue the business as it offers the opportunity to participate in the growth of the luxury products market. The market for glass packaging for beauty products is expected to grow by 2.4%-2.5% p.a. over the next few years. As we assume a relatively constant market share, we expect Gerresheimer's sales in this sub-segment to grow at the same rate and therefore expect sales to increase to €284mn in 2030.

Food and beverage glass products expected to deliver steady 7.8% of Primary Packaging Glass revenue by utilizing furnace overcapacities.

Primary Packaging Glass - Food and beverage: Historically, the production of glass containers for the food and beverage industry has formed the basis of Gerresheimer's business model. It was not until the 1990s that a strategic shift towards pharmaceutical products took place; today, products from the food and beverage group only play a subordinate role. Essentially, these products are used to utilize free-standing capacities. The operation of furnaces for glass processing is very energy-intensive, especially the heating, so that it makes no economic sense to ever let the furnaces cool down. Instead, they are operated around the clock all year round. As the production of core products does not require the entire capacity, Gerresheimer uses products from the food and beverage industry to utilize idle times to generate revenue.

In 2022, these products accounted for 7.8% of sales in the Primary Packaging Glass segment. As Gerresheimer does not plan to expand in the food and beverage business, but on the other hand it is necessary to maintain slight overcapacities and the permanent operation of the furnaces is unavoidable, we assume that this share will remain relatively constant. On this basis, we expect sales of €135mn in this product group in 2030.

Advanced Technologies: In this segment, Gerresheimer develops innovative solutions for patient care based on the products of other segments. In 2023, the segment's only revenue-generating product is an autoinjector that enables controlled drug delivery without human intervention. We expect the autoinjector to generate sales of €35mn in 2023, which corresponds to a market share of 4.2%.

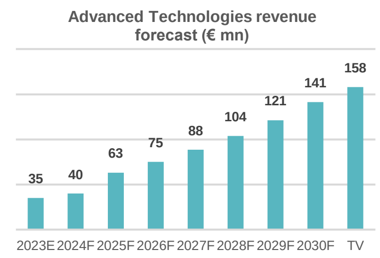

Figure 21: Advanced Technologies revenue forecast (€ mn)
Source: Own analysis

Due to the high pressure to innovate in the market, we conservatively do not anticipate an increase in market share, but expect growth in line with the market, which corresponds to 14.0%.

Gerresheimer is also planning to launch a smart inhaler in the Advanced Technologies segment in 2025, which will be able to analyze a patient's state of health from the air they breathe. Due to the great uncertainty associated with this market entry, we conservatively expect Gerresheimer to achieve a market share of 1.0% in the €1,768mn market in 2025 and to expand this to 2.0% by 2030, which corresponds to a sales volume of €53mn in 2030. Overall, we estimate that the Advanced Technologies segment will reach sales of €141mn in 2030.

Margin development

The forecast of Gerresheimer's profitability is comparatively complex due to the company's reporting structure, as only cost of revenue and selling and general administrative expenses are published at corporate and only revenue and EBITDA at segment level. As the diversity of the segments and sub-segments requires the highest possible granularity, we develop our margin expectations at this level based on analyses of the sub-segments and competitors.

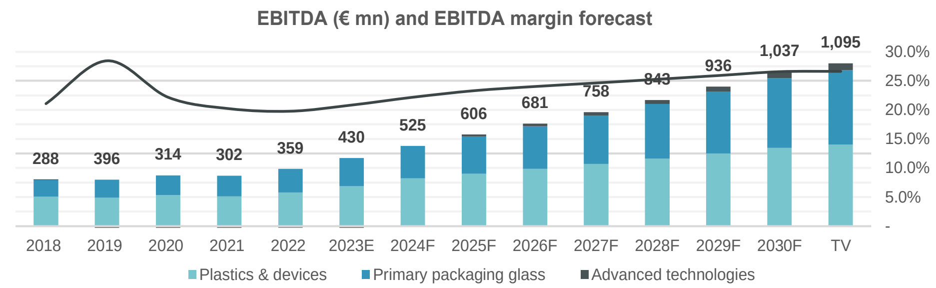

Figure 22: EBITDA (€ mn) and EBITDA margin forecast, Source: Own analysis

As part of its strategic realignment, the company has set an EBITDA margin of 25.0% as its medium-term target, which we believe is very realistic based on our analyses. According to our expectations, this target will be achieved in 2028 and we expect the margin to stabilize at 26.6% in the long term. The growth in the EBITDA margin is primarily driven by a focus on products that enable a higher margin, the so-called "high value solutions". According to our analyses, we consider EBITDA of €1,037mn to be realistic for 2030, which reflects a CAGR of 13.4% from 2023. We also assume a constant amount of adjustments made to EBITDA on group level, mainly due to consolidation, as they were present in the past. This is why the group margin is slightly below the average of the segment margins.

Plastics & Devices: Historically, the Plastics & Devices segment has the highest EBITDA margin in the company, at 24.7% in 2022. Due to the further shift to-

We expect the Plastics & Devices EBITDA margin to increase from 25.6% in 2023 to 26.7% in 2030.

wards the aforementioned high value solutions, we expect further growth here. The individual product groups in the segment contribute differently here. We have no knowledge of Gerresheimer's margin for the devices product group; here we have based our analysis on Embecta, a spin-off from BD that only manufactures insulin pumps, which has an EBITDA margin of 29.6%. For syringes, we have used the corresponding segment margin of BD, which is the market leader in the syringe segment and operates with an EBITDA margin of 25.1%. We consider both figures to be plausible in light of Gerresheimer's statement that it operates with an EBITDA margin of between 25.0% and 30.0% for high value solutions, which includes these product groups. The syringes for GLP-1 drugs are even more attractive in terms of margins than conventional syringes; we expect the EBITDA margin to grow from 25.0% in 2024 to 30.0% in 2030, a figure that Gerresheimer's Investor Relations department has classified as realistic. In mathematical terms, this results in a margin of 20.6% for the plastic packaging product group, which we consider plausible given the lower degree of complexity. The margin is therefore still higher than the margins we calculated for glass packaging for food & beverages, which we also consider plausible as the pharmaceutical sector generally has higher margins and plastic packaging is also easier to manufacture than comparable products made of glass.

Due to the shift in sales towards high-margin products within the segment, this results in a slight increase in the EBITDA margin for Plastics & Devices from 25.6% in 2023 to 26.7% in 2030, with the segment already operating above the company's margin target.

We expect the Primary Packaging Glass EBITDA margin to increase from 20.2% in 2023 to 27.6% in 2030.

Primary Packaging Glass: We have estimated the margins of the two product groups cosmetics and food and beverage by comparing the margins of relevant competitors. We used a margin of 20.1%, which corresponds to that of the market leader Vidrala. We consider this margin to be plausible, as these products have comparatively low levels of complexity, which is generally associated with lower margins. We do not expect the margins for either product group to improve in line with our forecast, as they are not the focus of Gerresheimer. We therefore expect a constant margin of 20.1% for cosmetic glass and food and beverage over the entire forecast period.

The focus in the Primary Packaging Glass segment is clearly on products from the pharmaceutical glass sector, with vials, which are used for vaccines for example, playing the main role. In 2023, this will result in a margin of 20.3%, although we expect significant improvements in the coming years. As already mentioned, a joint standard has been created with Stevanato for vials, which is expected to boost sales. Stevanato currently has an advantage over Gerresheimer in the area of vials, as the company already sells a significantly larger proportion of ready-to-use (RTU) vials. For the packaging companies, this has the advantage that a larger part of the value chain remains with them and this is linked to higher margins. Stevanato currently achieves an EBITDA margin of 25.3% thanks to the higher proportion of RTU, and we expect Gerresheimer to reach this level in 2026. As it is currently expected that the RTU share will comprise a large part of vial production in the long term, we expect the margin to increase further and reach a sustainable level of 30.0% in 2030.

The increase in the margin for pharmaceutical glass is the driver of the EBITDA margin development that we expect in the Primary Packaging Glass segment. From 20.2% in 2023, we anticipate a significant increase in the margin to 27.6% in 2030.

For the Advanced Technologies department, we expect an EBITDA margin of 30.0% in 2030.

Advanced Technologies: Forecasting the margin for the Advanced Technologies segment is particularly difficult as there is currently only one product on the market that is not yet generating positive EBITDA and the second product will not be launched until 2025. As the products in this area are generally very high-margin products (according to Gerresheimer, individual EBITDA margins at product level range up to 50.0%), it can be assumed that the margin will develop very positively as the product portfolio grows. We therefore expect the segment margin for the year of the product launch of the smart inhaler in 2025 to be at the level of the company's EBITDA margin, which corresponds to 23.3% in this year. We expect significant growth in the following years as soon as the products become established on the market. We do not expect the 50.0% mentioned by Gerresheimer managers at segment level, as significant funds will continue to be invested in the research and development of further products. We therefore assume that the segment's margin will increase to 30.0% by 2030 and stabilize at this level.

PP&E and capital expenditures

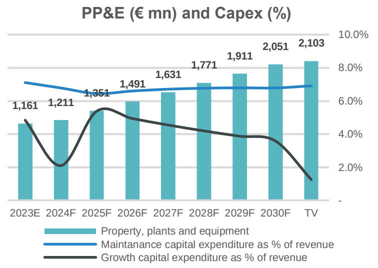

Figure 23: PP&E (€ mn) and Capex (%) development
Source: Own analysis

A key driver of the balance sheet forecast is the development of property, plant and equipment (PP&E), which has grown at a compound annual growth rate of 14.3% over the last five years. The main driver of PP&E is capital expenditure. Between 2018 and 2022, total capital expenditure as a percentage of sales was between 8.4% to 13.6%. In our analysis, we divide investments in PP&E into maintenance and growth capital expenditure. Our forecast for growth capital expenditure is based on Gerresheimer's publications and statements by the Investor Relations team. The outlook is built on the current growth projects, which include the expansion of the plant in Queretaro, Mexico, and the production sites in the US until 2024. These investments are mainly to increase capacity for production of ready-to-fill syringes related to GLP-1 in the North American market as stated in Gerresheimer's press releases in August 2022 [17] and November 2023 [18]. Based on the data available for Mexico and the US, we assume similar growth investments for Gerresheimer's other production sites in Germany, North Macedonia, Belgium, the Czech Republic and Brazil from 2025 onwards, as we assume that Gerresheimer also plans to expand its capacities there. Typical investments amount to around €100mn over a five-year period, which corresponds to an annual investment of €20mn per site. These assumptions are also in line with the information from the Investor Relations team, which states that Gerresheimer is not planning any greenfield expansions in the future but is working on expanding the existing facilities. In the terminal value, we assume that the growth of PP&E is in line with the overall growth of the company, which we derive from RONIC and the retention rate, resulting in a growth of 2.5% or a share of sales of 1.3%, which we consider to be a robust and fair assumption given that this long-term growth rate is a result of the detailed forecast.

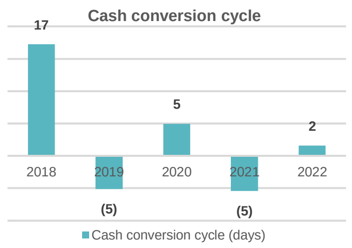

Figure 24: Cash Conversion Cycle

Net working capital

The Cash Conversion Cycle (CCC) measures the time a company needs to circulate cash through the entire business cycle a small CCC is advantageous in terms of liquidity and risk reduction. In recent years, Gerresheimer's CCC has been very low or even negative in some cases (between 17 and (5)), as shown in the chart. This gives us reason to assume that the company is managing NWC well and that there is no reason to change its strategy.

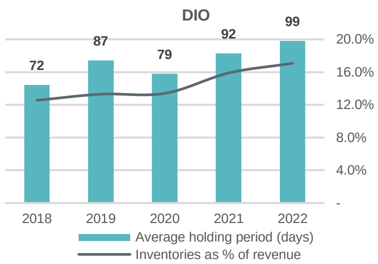

Figure 25: Days inventory outstanding
Source: Own analysis

Inventories have grown at a CAGR of 16.0% over the last few years and the days inventory outstanding (DIO) based on cost of sales has ranged between 72 and 99 days over the last five years. Expressed as a percentage of sales, this results in a ratio of 12.5% to 17.1%. As we do not forecast cost of sales for the future due to the lack of information mentioned previously, we base our forecast on the development of sales. Comparing this approach with the historical development of DIO, it appears to be a reasonable alternative to a DIO based forecast, as inventories as a percentage of sales have followed a similar pattern to DIO in the past. We therefore consider an average share of 14.4% of sales to be realistic for our forecast, since this figure is based on historical data.

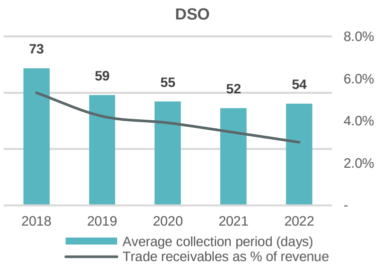

Figure 26: Days sales outstanding
Source: Own analysis

Trade receivables have been relatively stable over the last five financial years with a CAGR of (0.3%) and are forecasted based on the average days sales outstanding (DSO), which has been between 52 and 73 days in recent years. In the forecast, we assume an average DSO of 59 days until steady state, which is slightly higher than in the last three years and therefore represents a rather conservative approach.

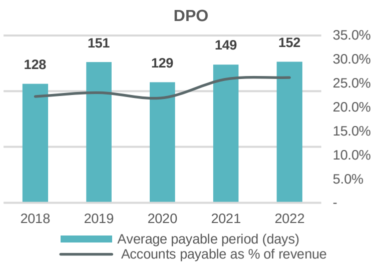

Figure 27: Days payables outstanding
Source: Own analysis

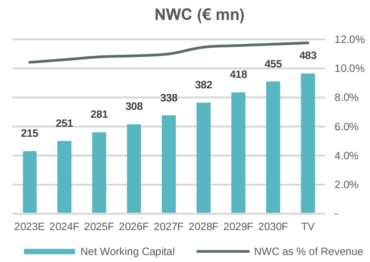

Figure 28: Net working capital (€ mn)
Source: Own analysis

Trade payables have increased at an annual growth rate of 11.8% in recent years and the days payables outstanding (DPO) based on the cost of sales has been between 128 and 152 days in the last five financial years. Due to the information lack aforementioned, we also base our forecast on the development of sales. Historically, the share of payables fluctuated in line with DPOs and amounted to around 21.9% to 26.2% of sales revenue. We consider an average sales share of 23.8% to be realistic for our forecast, as this figure reflects actual historical development.

Intangible assets

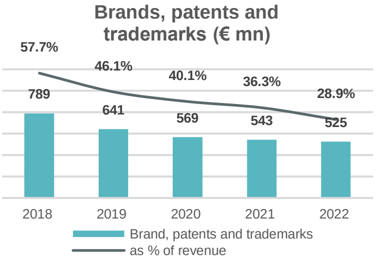

Figure 29: Brands, patents and trademarks (€ mn)
Source: Annual reports 2018-2022

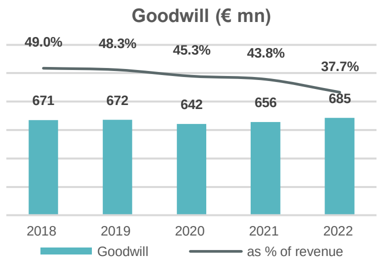

Figure 30: Goodwill (€ mn)
Source: Annual reports 2018-2022

Historically, brands, patents and trademarks have constantly decreased both in absolute terms and as a percentage of sales and will amount to 28.9% of sales in 2022. One possible assumption for the future would be a further reduction in this number, following the historical trend, but this would not be in line with our assumptions as we see considerable potential for brands and patents, especially in the growing Advanced Technologies segment, as this segment is based on internally developed products and standards. We have therefore chosen to base our forecast on the sales share of 28.9%, which includes the latest developments and takes growth into account, particularly in the GAT segment. Goodwill always had a similar value in recent years, and we therefore assume that this will remain the case and continue to apply the 2022 value of €685mn. We believe this is appropriate as we assume Gerresheimer to achieve its growth through organic growth by increasing its capacity and not by acquiring other companies.

Operating free cash flow development

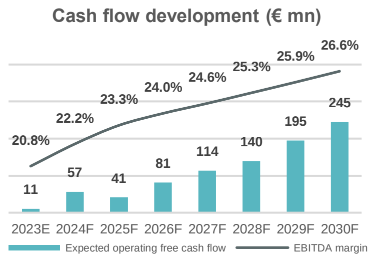

Figure 31: Cash flow development (€ mn)
Source: Own analysis

The expected operating free cash flows develop as shown in the graph on the left. We do not expect a negative free cash flow from 2023 onwards, because additional investments in the energy hedge will no longer be necessary. However, as Gerresheimer still needs to invest in the expansion of its production capacity, its cash flows are only moderate in the short term. Thereafter, however, we expect the company to benefit from this increased capacity and the EBITDA margin improvement which will be achieved through efficient production processes and a shift to more sophisticated products providing higher EBITDA margins. As future cash flows are heavily dependent on the production capacity built up today and in the coming years, we believe that our approach is justified. In addition, the announcements regarding the expansion of production capacity in Mexico and the US in relation to GLP-1 support our assumptions of the capacity expansions. In the steady state we assume lower investments in production capacity and therefore an increase of cash flows.

In our valuation, we adjust the operating free cash flows for the annualised probability of default 0.2% based on Moody's analyses for BBB rated companies between 1983 and 2022 and the loss given default of 37.8% and corresponding recovery rate of 62.2%. The loss given default is based on Moody's analyses of recovery rates for loans and bonds of companies in the container, packaging & glass industry between 1983 and 2022 [19].

Capital structure

We expect an adjustment process from debt being 3.4x EBITDA in 2022 to 2.5x in 2030.

Gerresheimer's past as a private equity-owned company is still partly reflected in the company's comparatively high level of debt. The ratio of net financial liabilities to EBITDA is used as a key performance indicator. Since 2018, this ratio has been between 3.2x and 4.0x (with the exception of 2019). The strategy paper "formula G", which Gerresheimer presented in 2020 included measures to reduce the debt burden in addition to strategic measures for business alignment, so that a reduction in the debt to EBITDA ratio over the forecast period seems plausible. This is also shown by the development since 2021, when the book debt to equity ratio fell from 1.18 to 0.99 and debt to EBITDA ratio from 3.7x to 3.4x. Gerresheimer aims for a debt to EBITDA ratio of 2.5x. Given the positive development of EBITDA in recent years, we consider this target to be fundamentally plausible and expect the ratio to stabilize at this level from 2027 onwards, remaining constant at 2.5x. In the terminal value, we assume that the debt to enterprise value ratio remains constant at 30.8%, which it reached in 2030.

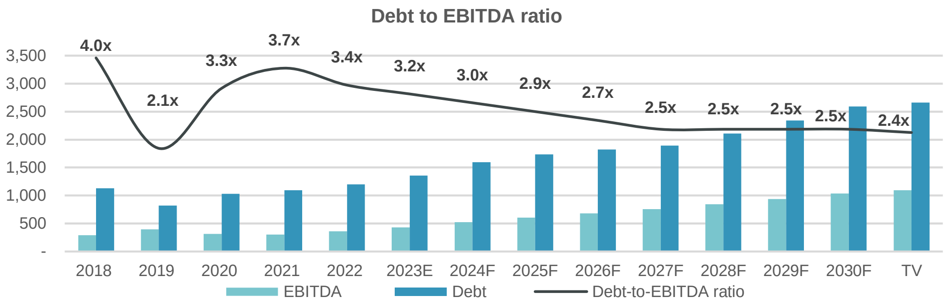

Figure 32: Debt to EBITDA ratio, Source: Own analysis

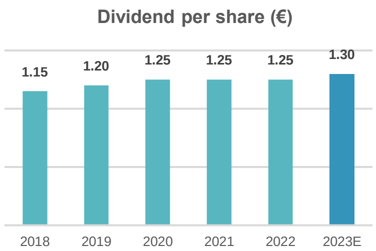

Figure 33: Dividend per share (€) Source: Annual shareholders' meeting 2023, Own analysis

In the past (since 2018) Gerresheimer has pursued a dividend policy which, according to our calculations, pays out between 28.1% and 46.7% of the attributable income to the shareholders, most recently €1.25 for the years 2020 to 2022. At the same time, if the dividend has been increased, the increase amounted to €0.05 per share. As we expect net income to increase in 2023, we also expect the dividend to increase after three years of stability. Based on historical payout logic, we expect a dividend of €1.30 for 2023, to be paid in June 2024.

Valuation

Since we assume that Gerresheimer's capital structure will continue to shift in the coming years as a result of the reduction in EBITDA leverage, we use a variant of the cash flow-based enterprise methods, the adjusted present value (APV) method, as the main instrument for valuing the company. In order to make a meaningful assessment of the company's development, our forecast includes a relatively long detailed planning period from 2023 to 2030. From 2031, we expect the company's growth rate (terminal value growth) to be stable at 2.5%, calculated on the basis of the RONIC and the retention rate resulting from our forecast. This rate is in line with expected long term nominal economic growth. To calculate the enterprise value, the operating free cash flows and interest tax shields are discounted with the rates reflecting the different corresponding risks, and the value of the non-operating assets is added. The equity value is calculated by deducting the net financial debt from this enterprise value. The valuation date is December 31, 2024.

Cost of capital

Cost of equity

Cost of equity	2023	TV
Risk free rate	2.0%	2.0%
Debt/Equity	29.9%	44.5%
Debt beta	0.31	0.31
Equity beta (unlevered)	0.84	0.84
Equity beta (levered)	1.00	1.08
Market risk premium	6.3%	6.3%
Cost of equity	**8.3%**	**8.8%**

Table 1: Cost of equity
Source: Own analysis

We use the Capital Asset Pricing Model (CAPM) to determine the cost of equity. To determine the equity beta, we calculate a regression of the return on Gerresheimer shares on the MSCI World Index, which we use as a benchmark. As is common practice, we use monthly data points over a five-year period. We unlever the resulting equity beta using the current leverage ratio and relever it according to our estimated target ratios in the respective year to reflect the risk implied in the capital structure in our beta estimate. Our estimates for the target leverage ratio are based on our assumptions that Gerresheimer further reduces the company's debt burden in relation to its EBITDA. We therefore assume that the ratio of debt to EBITDA (based on our calculated EBITDA) will decrease from 3.4x in 2022 to around 2.5x in 2027 and remain stable at this level (2.4x in steady state). This corresponds to debt to enterprise value ratios between 23.0% to 30.8% between 2023 and 2030.

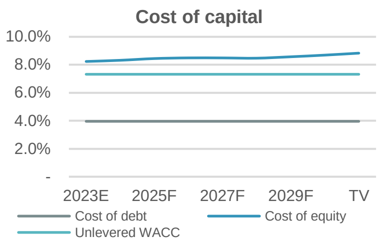

Figure 34: Cost of capital
Source: Own analysis

Our analysis yields an equity beta of between 1.00 and 1.08 until 2030 and an equity beta of 1.08 in the terminal value phase starting in 2031. To check the plausibility of our findings, we compare the results of our regression with the equity betas of the peer group companies used in our multiple valuation approach. After relevering the peer group betas to our assumed target leverage ratio, we obtain equity betas between 0.81 and 0.91 in the period between 2022 and 2030

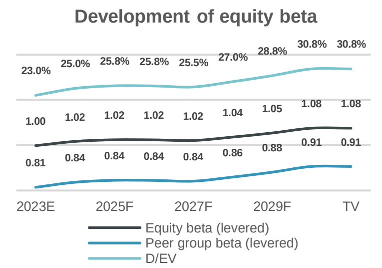

Figure 35: Developement of equity beta
Source: Own analysis

and a steady state beta of 0.91. These values support our recommendation in that they lead to a lower cost of capital, implying an even higher share price. As an approximation of the risk-free rate, we use the current yield on 10-year German government bonds, which is 2.0%. We have calculated the market's excess return as the historical median of the MSCI World Index over the last twenty years, which is 5.7%. Taking these factors into account, we calculated cost of equity to be between 8.3% and 8.8% from 2023 to 2030, stabilising at 8.8% from 2030 onwards. Uncertainty in the derivation of the CAPM factors, such as the determination of the equity beta, is taken into account in a sensitivity analysis.

- Cost of debt

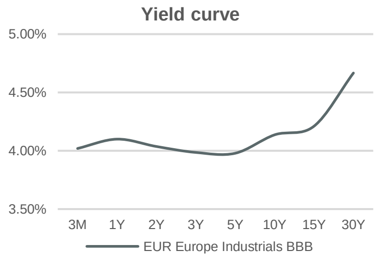

Figure 36: Yield curve
Source: Bloomberg

We have calculated the cost of debt based on the credit ratings of our peer group companies. We have chosen this approach as neither Gerresheimer nor its peer companies have any listed bonds outstanding and there are currently no ratings available for Gerresheimer itself. Our analysis yielded a rating of BBB. Using this rating, the yield on a ten-year BBB-rated European industrial bond is 4.1%. To avoid double counting for the possibility of default that is already included in the cash flow calculation we have adjusted this rate for the annualised ten-year probability of default for companies with the same rating (0.2%) and the average loss given default for companies with the same rating (37.8%). The resulting cost of debt is 4.0%.

- Weighted average cost of capital

Cost of capital	2023	TV
D/EV	23.0%	30.8%
Debt/Equity	29.9%	44.5%
Equity beta (unlevered)	0.84	0.84
Debt beta	0.31	0.31
Equity beta (levered)	1.00	1.08
Peer group beta (levered)	0.81	0.91
Cost of equity	8.3%	8.8%
Cost of debt	4.0%	4.0%
Unlevered WACC	**7.3%**	**7.3%**

Table 2: Cost of capital
Source: Own analysis

As we use the APV method, we calculate the unlevered WACC to use it for discount rates. As this method does not include a tax shield in the calculation, the value is independent of fluctuating debt ratios, resulting in a constant unlevered WACC of 7.3% over all periods.

Share price determination and sensitivity analysis

As of 31 December 2024	€ mn
Value of discounted cash flows	5,960.66
Value of interest tax shield	608.43
Value of non-operating assets	(189.71)
Enterprise Value	**6,379.39**
Value of net financial debt	(1,128.19)
Value of minority interest	(134.45)
Shareholder's equity value	**5,116.75**
Total shares outstanding (mn)	34.54
Price per share (€)	**148.14**

Table 3: Share price determination
Source: Own analysis

In the APV method, we distinguish between the operating free cash flow, which we discount using the unlevered cost of capital, and the interest tax shield, which is based on a statutory 29.0% tax rate (consists of corporate tax rate, solidarity surcharge and average business tax rate as stated in Gerresheimer's annual report 2022). Due to the tax shield's lower risks, we discount the cash flows associated with it until 2030 using the cost of debt. In the terminal value, when we determine the debt as a share of the EV, we consider the tax shield to carry the same risk as the company's operations and therefore discount the tax shield using the weighted cost of capital. The sum of all future discounted cash flows plus the book value of net non-operating assets equals the enterprise value in the respective period. As the end of the financial year falls on November 30, 2024 and the valuation date is December 31, 2024, we have included an adjustment factor of approx. 91.5%, which excludes the pro rata cash flows for December 2024. We have also reduced the discount period for fiscal year 2024/2025 accordingly. Based on the cost of capital and the default-adjusted cash flows and taking into account the net value of non-operating assets of €(190mn) and the present value of the interest tax shield of €608mn, the application of the APV method results in an enterprise value of €6,379mn at the valuation date of 31 December 2024.

Our price target for Gerresheimer is €148.14.

We have calculated the value of the minority interest, which consists of two production sites for pharmaceutical glass in China, using the estimated sales of both companies for 2024 and average estimated sales multiple for 2024 (1.5x) for the peer group of "Primary Packaging Glass". The value of net debt is based on the debt financing cash flow discounted using the cost of debt. Taking into account the value of net debt of €1,128mn and value of minority interest of €134mn, we estimate the expected equity value at €5,117mn. This value is allocated to the 34.5mn outstanding shares, resulting in a target price of **€148.14** as of December 31, 2024.

The sensitivity analysis yields a median share price of €147.43.

However, as various variables have a substantial impact on the calculated enterprise value and are themselves subject to certain volatility, we carry out a sensitivity analysis in order to understand the impact on the price target we have determined. We examine the impact of equity beta, cost of debt and MSCI world excess return on the share price by applying a Monte Carlo simulation. Regarding the equity beta, we analyse the standard deviation of the regression on which it is based. For cost of debt, we analyse the difference between a bond rated BBB and a bond rated BBB-, as we believe that Gerresheimer falls into one of these ratings, with the corresponding deviation being 0.3%. We have set the standard deviation for the MSCI World excess return at 0.5%, as this gives a range of 5.8% to 6.8%, which is common in practice. The results of the sensitivity analysis (Figure 41) show a median share price of €147.43 and a mean of €161.82 with a standard deviation of 43.5%. The results are relatively close to the share price of €148.14 we have calculated as the target price. We believe that the simulation takes into account all significant uncertainties and therefore see the result as a confirmation of our analysis.

Multiple valuation

Our multiple valuation yields an average share price of €161.70 for the most similar peers and €149.30 for the whole peer group.

In order to ensure coverage for all of Gerresheimer's business operations, we have used peer companies representing two different segments. These segments are Plastics & Devices as well as Primary Packaging Glass as shown in Table 9. As the Advanced Technology segment has substantial overlaps with peers in the Plastics & Devices segment and does not yet play a major role within the company, we have not created a separate peer group for this segment. It is important to note that an exact separation of the groups is not possible, as there are overlaps in operations for several peer companies. The categorisation is based on the most important segment in each case. Plastics & Devices includes the companies Aptargroup, Aluflex, Amcor, Berry Global, Becton Dickinson, Insulet, medmix, SCHOTT Pharma, Stevanato, West Pharmaceutical and Ypsomed. All companies are manufacturers of drug delivery systems and plastic packaging. In addition to SCHOTT Pharma, which is based in Germany, Aluflexpack, Amcor, medmix, Stevanato and Ysomed are also based in Europe. The other companies are all based in the US, one of the main markets for pharmaceutical manufacturing. Primary Packaging Glass is represented by the companies Nipro, O-I Glass, Piramal Pharma, Verallia, Vidrala and Zignago. Nipro is a manufacturer of medical devices, pharmaceuticals and instrument products. The company sells glass for pharmaceutical vials and ampoules mainly in Japan while Piramal Pharma is based in India and O-I Glass in the US. Verellia, Vidrala and Zignago are manufacturers of glass from western and southern Europe.

Margins, revenues and rationale behind our considerations are shown in Table 10. The most similar peers contain the competitors identified in the competitive overview which are BD, Stevanato, West Pharma, Schott Pharma, Vidrala, Ypsomed and Aptargroup. These companies are characterised by their business model and their customers being closest to Gerresheimer. We also included Gerresheimer's own multiples.

The multiples we have used in our valuation are Enterprise Value to EBITDA (EV/EBITDA) and Enterprise Value to Sales (EV/Sales) for the last twelve months (LTM) as well as estimates for 2023 as we assume these ratios and estimates to be the most robust ones. We have based our analysis on EBITDA and sales multiples rather than EBIT multiples as they provide a clearer picture of a company's operating performance and valuation as they exclude non-operating items such as interest, tax, depreciation and amortisation, which can vary from company to company. The valuation is based on data as of December 15, 2023. Figure 37 shows the respective ranges for the share price which is a range of 10.0% above and below the mean valuation for each method. Our share price estimate for a certain multiple equals to the averages over all peers and Gerresheimer's own multiples which were also included in the analysis.

The analysis for the most similar peers results in an average valuation of **€161.70** with an average range of €145.53 to €177.87 while the broker consensus results in a price target of €132.14. As the multiple analysis leads to large differences within the results, we only use it to check the plausibility of our APV results and not for our valuation itself.

For transparency reasons, we also calculated the enterprise value to EBIT (EV/EBIT), enterprise value to EBITDA (EV/EBITDA) and enterprise value to sales (EV/Sales) multiples for all peers. Our average range for the share price is between €134.37 and €164.23, as shown in Figure 42. The average total valuation is €149.30.

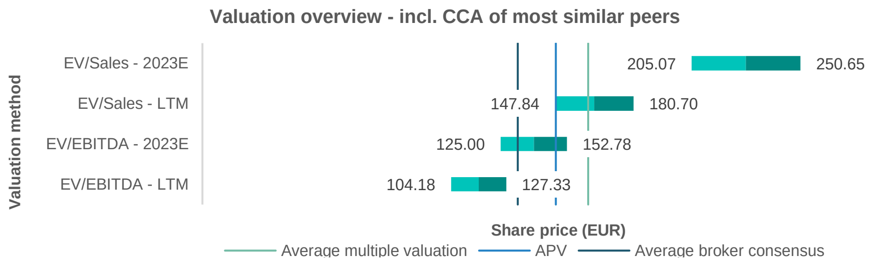

Figure 37: Valuation overview - CCA of most similar peers, Source: Own analysis

Risk and ESG

Measure	Peer group	Gerresheimer
CO2/USDmn revenue	371	222
Renewable energy use ratio	15.3%	14.56%
Accidents/mn working hr.	118	166
Refinitiv governance score	59	61
Refinitiv ESG score	67	68
Sustainalytics score	17.9	19.9

Table 4: ESG analysis
Source: Refinitiv, Morningstar

With regard to its own ESG strategy, Gerresheimer has set itself targets in each pillar. To create sufficient incentives for the Supervisory Board to comply with the ESG targets, their preliminary salary is adjusted using an ESG multiplier based on the achieved targets, which can reduce or increase the salary within a range of 20.0%. The targets pursued are as follows: **Environmental:** the proportion of renewable energy (2022 target of 36.0% and 2022 actual of 35.5%), **Social:** “lost time incident rate per one million working hours” (2022 target of 7.1 and an actual rate of 7.39) and **Governance:** the sustainability ranking from EcoVadis (2022 target rating is a rating of 61.0 and an actual rating of 68.0). To place these results in context, we have used respective data from external sources and compared them with the peer group. Here we see that Gerresheimer is slightly behind its peers in terms of renewable energy use (figures differ from those published by Gerresheimer) but has significantly lower CO2 emissions. The accident rate is well above that of its peers, however, the company is still in line with the market in terms of governance and general Refinitiv ESG ratings. Morningstar (Sustainalytics) gives Gerresheimer a lower rating than its peers, but 19.9 points is still labelled as "low risk" [20]. We therefore see no significant ESG risks, with only the accident rate showing a significant downside position. In addition, Investor Relations has informed us that Gerresheimer can already offer products made of recycled glass and plastic, but this is not necessarily desired by pharma customers because of doubts about their purity. Even the smallest impurities in the packaging can cause serious harm to the patient and thus seriously damage the reputation of the pharma company, which is why recycling does not yet play a role in the pharma packaging industry.

Our assessment of other risk factors is as follows:

Risk type	Description	Economic impact	Probability
ESG	Declining demand from institutional investors in case of bad ESG rating	Medium	Low
Market	Mainly internal competition (please refer to Porters 5 forces analysis)	Medium to high	Low to medium
Macroeconomic	Increase in commodity prices, especially resin that cannot be passed on to customers	Medium to high	Low to medium

Table 5: Risk assessment, source: Own analysis

Due to the stable and non-cyclical market in which Gerresheimer operates, we do not see any significant macroeconomic and market-driven risks other than those already discussed in the market section of the Porters 5 Forces analysis. We therefore perceive no risks that could jeopardise Gerresheimer's business.

Recommendation

Based on our analyses, we see a target price for Gerresheimer of €148.14 on December 31, 2024. Combined with our expected dividend of €1.30 and the current share price of €93.00, this gives a potential upside of 60.7%. In our view, the high upside is particularly justified by the stable foundation provided by the company's activities in non-cyclical markets, combined with significant opportunities, especially from the potential blockbuster drugs with GLP-1 compounds. Gerresheimer is very attractively positioned in its business areas and has particular opportunities in segments with attractive margins, which will improve profitability. We believe that Gerresheimer is also well prepared for the potential risks to which it is exposed and therefore see good opportunities to further improve its market position.

Our recommendation is **BUY**.

We have determined our price target via the APV method and we believe that the results of our relative valuation via multiples confirm our results with a price target of €149.30 for all peer group companies and €161.70 for the most similar ones. We therefore consider our target price to be in a reasonable range, which further supports the robustness of our recommendation.

Appendix

Supervisory Board overview

Name	Age	Role	Role start	Committee(s)	Independence
Dr Axel Herberg	65	Chairman of the Board	April 2015 (Board Member since June 2010	Presiding, Audit, Nomination, Mediation	Officially yes, but was CEO of Gerresheimer prior to joining the board
Francesco Grioli	50	Deputy Chairman of the Board	December 2011	Presiding, Audit, Mediation	Yes, he is IG BCE union representative
Andrea Abt	63	Member of the Board	April 20215	Audit, Nomination	Yes, various management positions in companies like Siemens
Dr Karin Dorrepaal	62	Member of the Board	April 2012	Mediation	Yes, worked as consultant and is now member of multiple boards
Prof Dr Annette Koehler	56	Member of the Board	June 2022	Audit	Yes, was accounting professor at University of Duisburg-Essen
Dr Peter Noe	66	Member of the Board	June 2012	Presiding	Yes, was BoM member at Hochtief AG
Udo Vetter	68	Member of the Board	May 2007	Nomination	Yes, he was a manager in the pharma industry
Robert Froehler	63	Member of the Board	June 2022	/	No, he is employed at Gerresheimer since 1979 and member of the worker's council
Marlies Mergenthal	37	Member of the Board	June 2022	/	Yes, she works at IG BCE union and is repsonsible for Gerresheimer's plant in Lohr
Markus Rocholz	53	Member of the Board	April 2012	Presiding, Audit	No, he is employed at Gerresheimer since 1987 and Chairman of the worker's council
Paul Schilling	53	Member of the Board	April 2017	Mediation	No, he is employed at Gerresheimer since 2002 and member of the worker's council
Katja Schnitzler	41	Member of the Board	April 2017	Audit	No, she is employed at Gerresheimer since 2008 and leads the group's HR

Table 6: Supervisory Board overview
Source: Company website

Ownership overview

Investor	% of shares	Value in €	Investor type	Location
Goldman Sachs Asset Management International	11.19%	317.69	Investment Advisor	UK
Artisan Partners Limited Partnership	5.06%	172.63	Investment Advisor	US
AllianceBernstein L.P.	4.54%	98.47	Investment Advisor/Hedge Fund	US
Fidelity Management & Research Company LLC	4.19%	125.56	Investment Advisor	US
BlackRock Institutional Trust Company, N.A.	3.76%	133.65	Investment Advisor	US
UBS Asset Management (Deutschland) GmbH	3.46%	102.37	Investment Advisor	Germany
Deka Investment GmbH	3.40%	102.08	Investment Advisor/Hedge Fund	Germany
Lazard Asset Management, L.L.C.	3.13%	112.76	Investment Advisor/Hedge Fund	US
MFS Investment Management	2.98%	87.90	Investment Advisor/Hedge Fund	US
Schroder Investment Management Ltd. (SIM)	2.96%	106.63	Investment Advisor/Hedge Fund	UK
The Vanguard Group, Inc.	2.89%	86.56	Investment Advisor/Hedge Fund	US
Water Street Capital, Inc.	2.82%	68.40	Hedge Fund	US
Norges Bank Investment Management (NBIM)	2.63%	63.75	Sovereign Wealth Fund	Norway
APG Asset Management N.V.	2.62%	63.51	Pension Fund	Netherlands
Neuberger Berman, LLC	2.49%	60.39	Investment Advisor/Hedge Fund	US
DWS Investment GmbH	2.48%	72.34	Investment Advisor/Hedge Fund	Germany
Morgan Stanley Investment Management Inc. (US)	2.22%	53.75	Investment Advisor/Hedge Fund	US
Dimensional Fund Advisors, L.P.	2.05%	61.62	Investment Advisor/Hedge Fund	US
Fidelity International	1.84%	55.78	Investment Advisor	UK

Table 7: Ownership structure
Source: Refinitiv

Competition overview

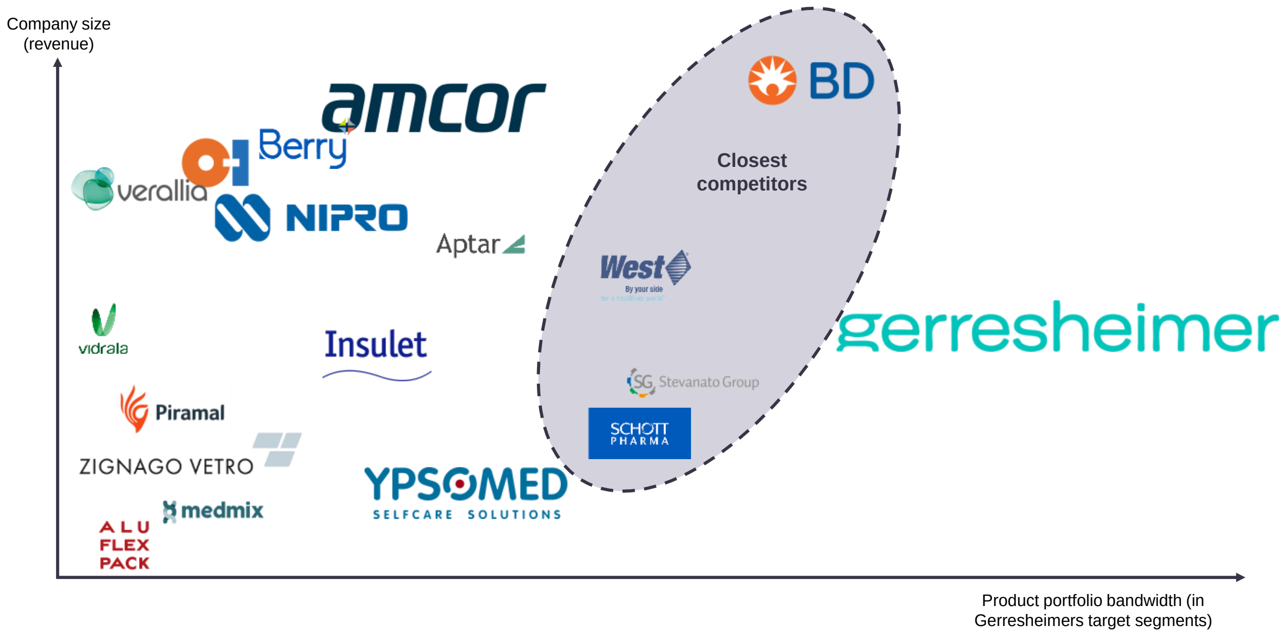

Figure 38: Competition overview
Source: Annual reports, own analysis

SWOT analysis

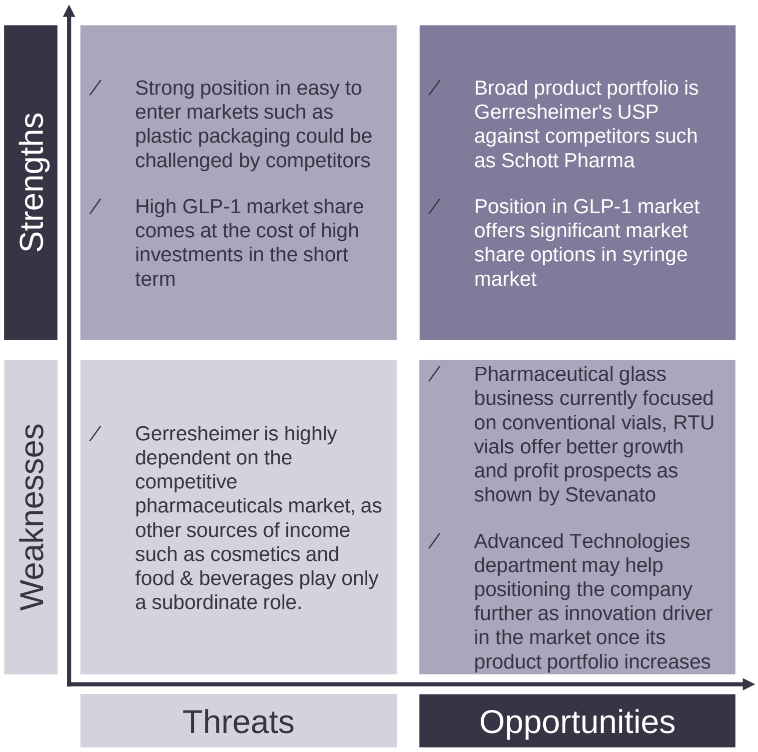

Figure 39: SWOT analysis
Source: Own analysis

Revenue segmentation

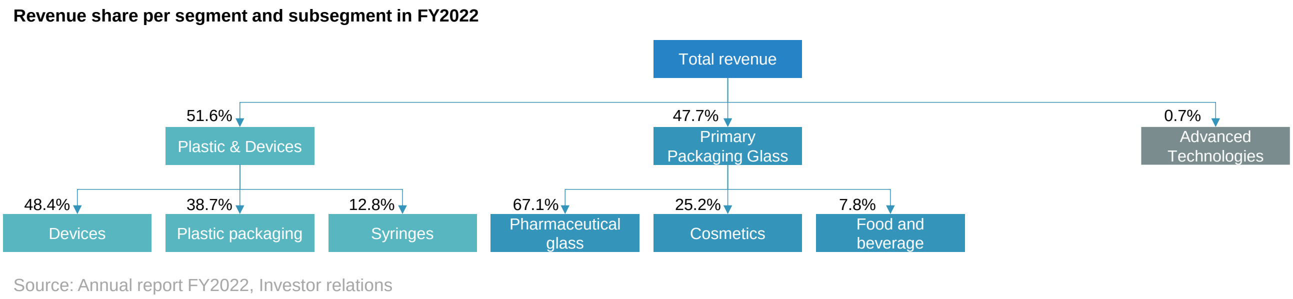

Figure 40: Revenue segmentation
Source: Investor Relations

APV model

€ mn	2022	2023E	2024F	2025F	2026F	2027F	2028F	2029F	2030F	TV
			Detailed planning period							
Operating free cash flow - base case	(247)	11	57	41	81	114	140	195	245	388
Operating free cash flow - default case	n/m	7	35	26	51	71	87	121	152	242
Expected operating free cash flow	(247)	11	57	41	81	114	140	195	245	388
FY 2025 adjustment factor				91.5%						
Unlevered cost of capital	7.3%	7.3%	7.3%	7.3%	7.3%	7.3%	7.3%	7.3%	7.3%	7.3%
Value of discounted cash flows	5,235	5,607	5,961	6,321	6,702	7,078	7,456	7,807	8,133	8,340
Interest tax shield	8	14	16	18	20	21	22	24	27	30
Value of interest tax shield	555	582	608	614	618	622	624	625	623	668
Value of non-operating assets	(118)	(159)	(190)	(214)	(236)	(260)	(286)	(313)	(342)	(362)
Enterprise value at the end of each period	**5,672**	**6,030**	**6,379**	**6,720**	**7,083**	**7,440**	**7,795**	**8,119**	**8,414**	**8,646**
Debt financing cash flow (excl. Interest tax shield and minority interest)		114	188	75	24	(1)	140	150	163	(28)
Cost of debt	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Value of net financial debt		**(905)**	**(1,128)**	**(1,237)**	**(1,310)**	**(1,361)**	**(1,555)**	**(1,767)**	**(1,999)**	**(2,050)**
Minority interest cash flow		(4)	(4)	(5)	(5)	(6)	(6)	(6)	(7)	(7)
Value of minority interest			**(134)**							
Value of net financial debt and other claims		**(905)**	**(1,263)**	**(1,237)**	**(1,310)**	**(1,361)**	**(1,555)**	**(1,767)**	**(1,999)**	**(2,050)**
Shareholder's equity value at the end of each period		**5,125**	**5,117**	**5,483**	**5,773**	**6,079**	**6,240**	**6,352**	**6,415**	**6,597**

Total shares outstanding (mn)	34.54
Price per share as of 31 December 2024 (€)	**148.14**

Table 8: APV model
Source: Own analysis

Monte Carlo simulation

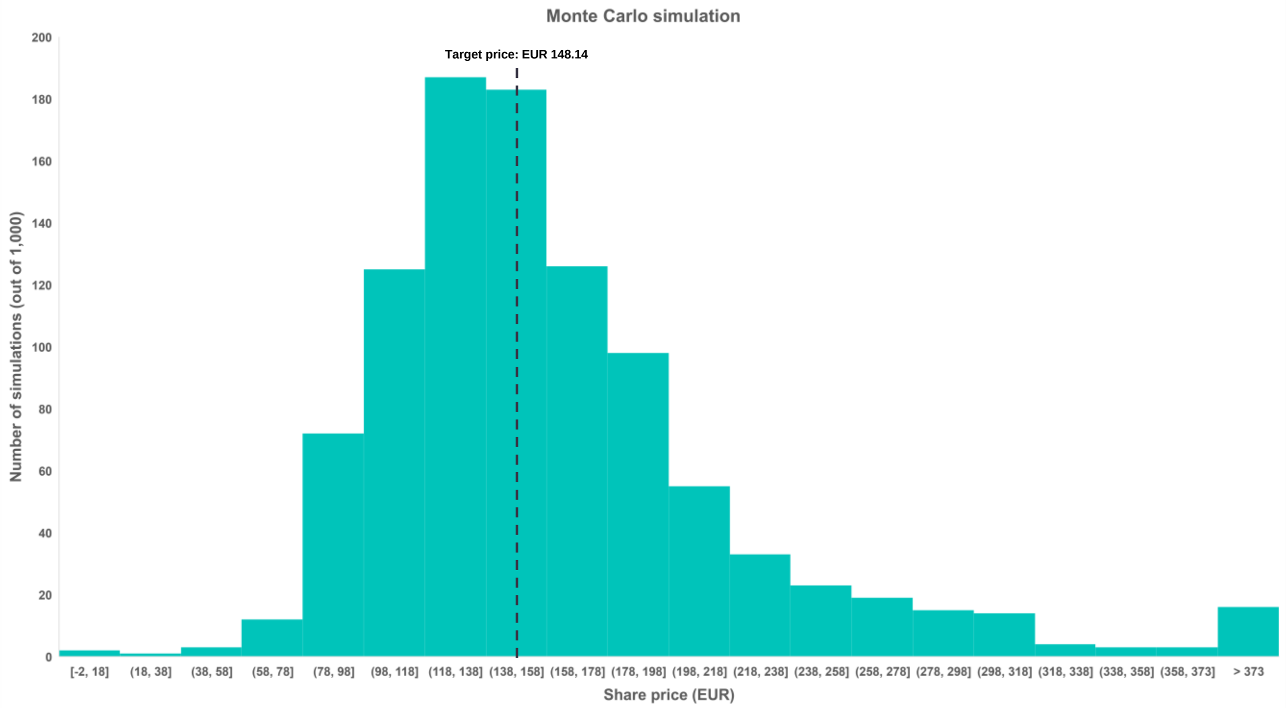

Figure 41: Monte Carlo simulation
Source: Own analysis

Multiple overview – Table

	Company	EV (EUR mn)	EV/EBIT - LTM	EV/EBIT - 2023E	EV/EBIT - 2024E	EV/EBIT - 2025E	EV/EBITDA - LTM	EV/EBITDA - 2023E	EV/EBITDA - 2024E	EV/EBITDA - 2025E	EV/Sales - LTM	EV/Sales - 2023E	EV/Sales - 2024E	EV/Sales - 2025E
Plastics & devices	Becton Dickinson	84,632	17.98x	20.00x	18.13x	17.89x	14.57x	16.00x	14.72x	13.14x	4.75x	4.54x	4.29x	4.01x
	Insulet Corp	19,831	168.71x	134.90x	98.51x	72.23x	80.73x	83.31x	63.16x	49.88x	13.74x	13.22x	11.01x	9.29x
	West Pharma	15,640	24.51x	23.80x	20.91x	18.36x	20.56x	19.82x	17.62x	15.46x	5.77x	5.59x	5.13x	4.78x
	Aptargroup	7,688	n/a	18.94x	17.11x	15.62x	12.30x	12.19x	11.30x	10.66x	2.41x	2.39x	2.29x	2.18x
	Stevanato	5,367	25.61x	25.31x	22.62x	19.89x	18.83x	18.20x	15.76x	13.89x	5.08x	4.91x	4.40x	3.96x
	Ypsomed	2,781	n/a	22.21x	16.64x	14.78x	n/a	12.78x	10.18x	9.46x	n/a	4.43x	3.83x	3.48x
	SCHOTT Pharma	5,078	n/a	27.67x	25.32x	20.20x	n/a	21.42x	19.03x	15.42x	n/a	5.71x	5.18x	4.45x
	Medmix AG	892	n/a	17.67x	12.55x	9.96x	n/a	8.52x	6.86x	5.83x	n/a	1.69x	1.56x	1.44x
	Amcor PLC	19,071	13.07x	13.37x	12.63x	12.25x	10.38x	10.30x	9.85x	9.57x	1.43x	1.45x	1.39x	1.36x
	Berry Global	14,275	12.64x	11.46x	10.88x	10.37x	7.60x	7.46x	7.22x	6.95x	1.23x	1.24x	1.21x	1.19x
	Aluflexpack AG	415	n/a	19.13x	14.82x	11.48x	n/a	8.34x	7.15x	6.08x	n/a	1.06x	0.97x	0.88x
Primary packaging glass	O-I Glass Inc	6,190	6.95x	7.04x	7.45x	7.26x	4.66x	4.66x	4.80x	4.79x	0.94x	0.93x	0.93x	0.90x
	Verallia SA	5,368	n/a	6.73x	7.03x	6.90x	4.77x	4.70x	4.81x	4.76x	1.37x	1.35x	1.39x	1.35x
	Nipro Corp	4,997	n/a	n/a	n/a	n/a	n/a	9.49x	8.91x	8.47x	1.32x	1.36x	1.29x	1.22x
	Vidrala SA	2,593	n/a	9.00x	9.29x	8.73x	6.07x	6.69x	6.80x	6.46x	1.70x	1.70x	1.77x	1.72x
	Zignago Vetro	1,488	9.11x	10.05x	11.85x	11.27x	6.38x	6.86x	7.61x	7.41x	2.06x	2.02x	2.10x	2.06x
	Piramal Pharma	1,472	n/a	27.54x	18.16x	11.51x	n/a	11.00x	8.75x	6.90x	n/a	1.59x	1.40x	1.21x
	Average		**34.82x**	**24.09x**	**19.73x**	**16.35x**	**16.27x**	**14.99x**	**12.86x**	**11.18x**	**3.35x**	**3.16x**	**2.87x**	**2.60x**
	Gerresheimer	**3,339**	**n/a**	**14.88x**	**12.18x**	**10.07x**	**8.40x**	**8.04x**	**6.99x**	**6.01x**	**1.69x**	**1.66x**	**1.51x**	**1.37x**

Table 9: Multiple overview
Source: Refinitiv, Own analysis

Peer overview – Table

	Company	Country	Rationale	EBIT margin (5 years avg)	EBITDA margin (5 years avg)
Plastics & devices	Becton Dickinson	USA	Becton, Dickinson and Company (BD) offers a range of medical products, some of which overlap with Gerresheimer's product range, mainly syringes and drug delivery devices as well as diagnostic products. BD is a major competitor and is therefore included in the peer group.	12.4%	24.7%
	Insulet Corp	USA	Insulet manufactures and sells the Omnipod System, a continuous insulin delivery system for people with insulin-dependent diabetes. This is comparable to Gerresheimer's GLP-1 related packaging. It's excluded from the main peers due to very high multiples.	7.2%	12.0%
	West Pharma	USA	West Pharmaceutical Services focuses primarily on the manufacture of pharmaceutical packaging and drug delivery devices. As a major competitor, West Pharma is one of the most comparable companies.	21.7%	26.6%
	Aptargroup	USA	Aptargroup develops and manufactures a range of drug delivery solutions and active packaging.	12.6%	19.6%
	Stevanato	Italy	Stevanato focuses on pharmaceutical packaging, mainly glass ampoules and vials, as well as drug delivery devices such as syringes and injectors. The company even has a partnership with Gerresheimer, making it one of its main competitors.	n/a	n/a
	Ypsomed	Switzerland	Ypsomed manufactures injection pens for pharmaceutical and biotechnology companies. The company is particularly comparable because it manufactures pens for the treatment of diabetes.	7.1%	20.7%
	SCHOTT Pharma	Germany	Schott Pharma manufactures syringes, cartridges, vials and ampoules. It competes with Gerresheimer mainly in product groups such as pharmaceutical packaging and syringes and therefore one of the most similar peers.	n/a	n/a
	Medmix AG	Switzerland	Medmix is a producer of pharmaceutical delivery devices for the dosage and application of medication. However, the company is mainly active in the dental industry and thus not one of the most similar peers.	11.7%	22.3%
	Amcor PLC	Switzerland	Amcor designs and manufactures packaging for, among others, food, beverage, pharmaceutical, medical and personal care products. The company is active in too many other industries and thus not one of the most similar peers.	10.2%	14.4%
	Berry Global	USA	Berry Global creates packaging products. The Health, Hygiene & Specialties segment primarily consists of healthcare, hygiene, specialties, and tapes. The company is active in too many other industries and thus not one of the most similar peers.	9.6%	16.0%
	Aluflexpack AG	Switzerland	Aluflexpack is a packaging company specialized in flexible packaging for a range of industries including food and pharmaceuticals. The company is active in too many other industries and thus not one of the most similar peers.	6.0%	13.8%
Primary packaging glass	O-I Glass Inc	USA	O-I Glass is a manufacturer of glass container products for various industries. The company is active in too many other industries and thus not one of the most similar peers.	9.3%	16.1%
	Verallia SA	France	Verallia is a manufacturer of glass packaging. Verallia is not a major competitor, as it focuses more on food and beverages.	15.7%	26.4%
	Nipro Corp	Japan	Nipro's medical segment involves in medical devices for injection and infusion, and diabetes in Japan and overseas markets. The Pharma Packaging segment sells vials as medical glass in Japan. The geographic focus is different compared to Gerresheimer, so it is not one of the main peers.	4.9%	14.1%
	Vidrala SA	Spain	Vidrala manufactures glass packaging and containers. Vidrala is a major competitor in the glass segment and is therefore included in the peer group.	17.4%	25.5%
	Zignago Vetro	Italy	Zignago is a manufacturer of glass packaging for food, beverages, perfumes and more. The company is active in too many other industries and thus not one of the most similar peers.	12.7%	24.4%
	Piramal Pharma	India	Piramal's glass segment manufactures glass for pharmaceutical companies, among other things, but as the company has many other segments, it is not part of the closer peer group.	n/a	n/a
	Gerresheimer	**Germany**	Gerresheimer is a German manufacturer of packaging solutions and drug delivery devices for the pharma, cosmetics and nutrition industry.	**10.5%**	**20.7%**

Table 10: Peer overview
Source: Refinitiv, Own analysis

Broker consensus – Table

Contributor	Target Price (€)	Recommendation	Review Date
Undisclosed	120.00	2–OVERWEIGHT	04-Dec-2023
HAUCK AUFHAEUSER INVESTMENT BANKING	115.00	3–HOLD	18-Oct-2023
Undisclosed	120.00	1–BUY	18-Dec-2023
KEYBANC CAPITAL MARKETS INC.	200.00	2–OVERWEIGHT	05-Oct-2023
SRH ALSTERRESEARCH AG	125.00	2–BUY	23-Nov-2023
Undisclosed	119.00	1–BUY	05-Oct-2023
Undisclosed	139.60	2–OVERWEIGHT	05-Dec-2023
EQUI.TS	118.50	2–BUY	09-Oct-2023
Average	**132.14**		

Table 11: Broker consensus
Source: Refinitiv

Multiple overview – Football field

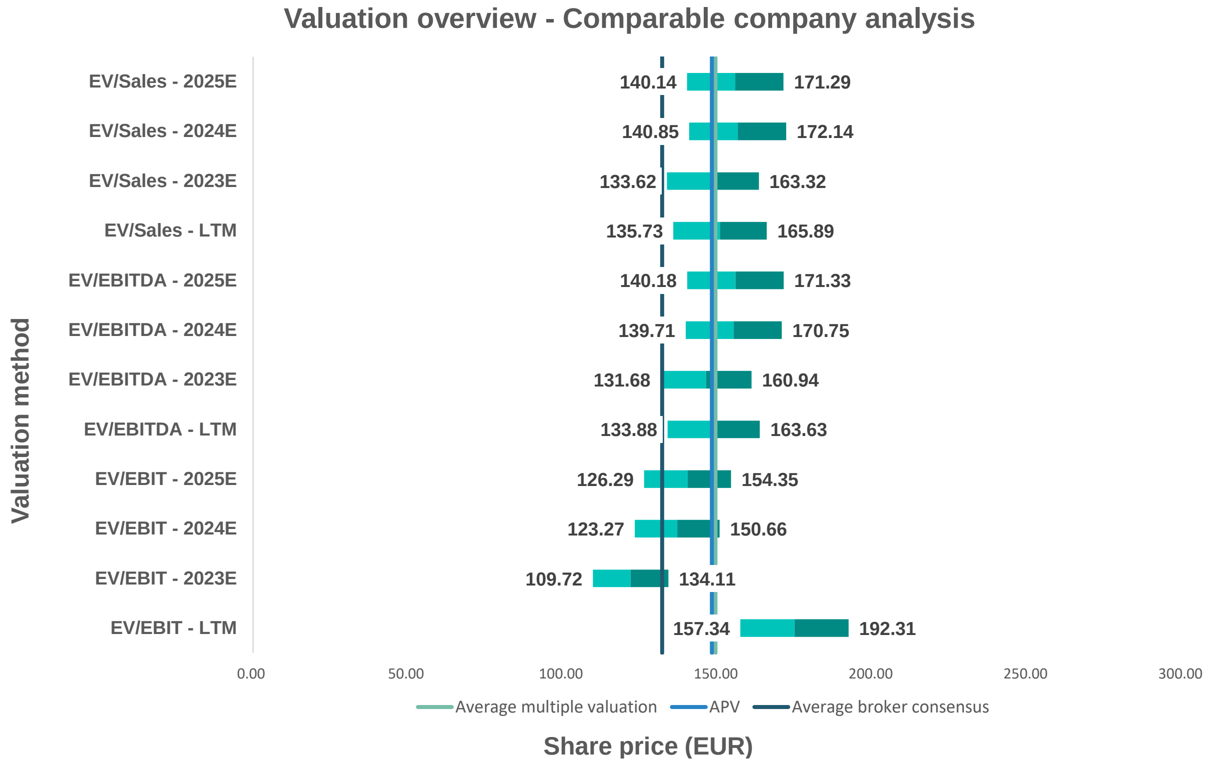

Figure 42: Multiple overview – Football field
Source: Own analysis

Financial Statements

Reformulated income statement

€mn	2018	2019	2020	2021	2022	2023E	2024F	2025F	2026F	2027F	2028F	2029F	2030F	TV
						Detailed planning period								
Total revenue	1,368	1,392	1,419	1,498	1,817	2,067	2,370	2,603	2,835	3,078	3,337	3,611	3,901	4,110
Plastics & devices	750	754	765	801	938	1,077	1,289	1,405	1,523	1,641	1,765	1,890	2,016	2,104
Primary packaging glass	605	631	644	689	867	956	1,041	1,135	1,237	1,348	1,469	1,600	1,744	1,849
Advanced technologies	13	6	9	8	12	35	40	63	75	88	104	121	141	158
Cost of operating revenue	(868)	(774)	(878)	(950)	(1,145)	n/m	n/m	n/m	n/m	n/m	n/m	n/m	n/m	n/m
D&A related to COGS	(100)	(230)	(103)	(106)	(125)	n/m	n/m	n/m	n/m	n/m	n/m	n/m	n/m	n/m
Gross profit	**500**	**618**	**541**	**548**	**672**	**n/m**	**n/m**	**n/m**	**n/m**	**n/m**	**n/m**	**n/m**	**n/m**	**n/m**
Selling, general and administrative expenses	(224)	(237)	(241)	(257)	(324)	n/m	n/m	n/m	n/m	n/m	n/m	n/m	n/m	n/m
D&A related to SG&A	(37)	(40)	(42)	(40)	(47)	n/m	n/m	n/m	n/m	n/m	n/m	n/m	n/m	n/m
Other operating expenses / income	12	15	14	12	11	n/m	n/m	n/m	n/m	n/m	n/m	n/m	n/m	n/m
Implied operating costs (incl. SG&A, COGS and other expenses)						(1,637)	(1,845)	(1,996)	(2,154)	(2,320)	(2,494)	(2,675)	(2,864)	(3,015)
EBITDA before special items	**288**	**396**	**314**	**302**	**359**	**430**	**525**	**606**	**681**	**758**	**843**	**936**	**1,037**	**1,095**
Depreciation and amortization	(137)	(270)	(146)	(145)	(172)	(198)	(215)	(224)	(247)	(269)	(291)	(314)	(336)	(358)
Operating income before special items	**151**	**126**	**169**	**157**	**187**	**233**	**311**	**382**	**435**	**489**	**552**	**622**	**701**	**737**
Gain from asset sales	(0)	3	9	6	0	-	-	-	-	-	-	-	-	-
Operating income after special items	**151**	**129**	**178**	**163**	**188**	**233**	**311**	**382**	**435**	**489**	**552**	**622**	**701**	**737**
Taxes on operating income	(42)	(20)	(60)	(52)	(51)	(68)	(90)	(111)	(126)	(142)	(160)	(181)	(203)	(214)
Operating income after tax (NOPLAT)	**109**	**109**	**119**	**111**	**136**	**165**	**221**	**271**	**309**	**348**	**392**	**442**	**498**	**523**
Equity earnings	0	0	0	-	-	-	-	-	-	-	-	-	-	-
Other non-operating income	4	0	-	-	-	-	-	-	-	-	-	-	-	-
Other non-recurring income	(15)	(5)	(20)	(15)	(18)	(7)	-	-	-	-	-	-	-	-
Non-operating income before taxes	**(11)**	**(5)**	**(20)**	**(15)**	**(18)**	**(7)**	-	-	-	-	-	-	-	-
Taxes on non-operating income	3	1	7	5	5	2	-	-	-	-	-	-	-	-
Non-operating income after taxes	**(8)**	**(5)**	**(14)**	**(10)**	**(13)**	**(5)**	-	-	-	-	-	-	-	-
NPLAT	**101**	**104**	**105**	**101**	**123**	**161**	**221**	**271**	**309**	**348**	**392**	**442**	**498**	**523**
Interest income	2	3	1	1	2	4	2	2	2	2	2	2	2	2
Non-interest financial income	(5)	(4)	(3)	(1)	(3)	0	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Interest expenses	(30)	(25)	(21)	(21)	(28)	(49)	(55)	(63)	(69)	(72)	(75)	(83)	(92)	(102)
Financial result before taxes	**(32)**	**(26)**	**(23)**	**(20)**	**(29)**	**(45)**	**(56)**	**(64)**	**(70)**	**(73)**	**(76)**	**(84)**	**(94)**	**(104)**
Tax shield	8	4	7	7	8	14	16	18	20	21	22	24	27	30
Minority interests	(2)	(2)	(1)	(3)	(6)	(4)	(4)	(5)	(5)	(6)	(6)	(6)	(7)	(7)
Financial result after taxes	**(26)**	**(24)**	**(17)**	**(17)**	**(27)**	**(35)**	**(44)**	**(51)**	**(55)**	**(58)**	**(60)**	**(67)**	**(74)**	**(81)**
Gain from extraordinary activities	53	-	-	-	-	-	-	-	-	-	-	-	-	-
Net income attributable to shareholders	**128**	**81**	**88**	**84**	**96**	**125**	**176**	**220**	**254**	**290**	**332**	**375**	**424**	**442**

Table 12: Reformulated income statement
Source: Own analysis

Reformulated cash flow statement

€mn	2018	2019	2020	2021	2022	2023E	2024F	2025F	2026F	2027F	2028F	2029F	2030F	TV
						Detailed planning period								
Operating income after special items	151	129	178	163	188	233	311	382	435	489	552	622	701	737
Less taxes on operating income	(42)	(20)	(60)	(52)	(51)	(68)	(90)	(111)	(126)	(142)	(160)	(181)	(203)	(214)
Plus depreciation and amortization	137	270	146	145	172	198	215	224	247	269	291	314	336	358
Operating gross cash flow	**246**	**379**	**264**	**257**	**308**	**363**	**435**	**496**	**555**	**616**	**683**	**756**	**834**	**881**
Less change in net operating current assets	n/a	200	(193)	(1)	(45)	(12)	(36)	(30)	(27)	(30)	(44)	(35)	(37)	(28)
Less investments in PP&E and intangibles	n/a	(202)	(124)	(301)	(357)	(359)	(365)	(442)	(464)	(490)	(519)	(546)	(574)	(481)
Less change in other operating assets	n/a	17	5	(3)	(153)	19	23	17	17	18	19	20	22	16
Total investments	**n/a**	**16**	**(312)**	**(305)**	**(555)**	**(352)**	**(379)**	**(454)**	**(474)**	**(503)**	**(544)**	**(561)**	**(589)**	**(493)**
Operating free cash flow	**n/a**	**395**	**(48)**	**(48)**	**(247)**	**11**	**57**	**41**	**81**	**114**	**140**	**195**	**245**	**388**
Non-operating income	(11)	(5)	(20)	(15)	(18)	(7)	-	-	-	-	-	-	-	-
Less taxes on non-operating income	3	1	7	5	5	2	-	-	-	-	-	-	-	-
Less change in non-operating assets	n/a	(30)	(3)	(19)	24	41	30	24	23	24	26	27	29	20
Non-operating free cash flow	**n/a**	**(34)**	**(16)**	**(30)**	**11**	**36**	**30**	**24**	**23**	**24**	**26**	**27**	**29**	**20**
Free cash flow to firm	**n/a**	**360**	**(64)**	**(77)**	**(236)**	**47**	**87**	**65**	**104**	**137**	**165**	**222**	**274**	**408**
Net financial profit after taxes	(26)	(24)	(17)	(17)	(27)	(35)	(44)	(51)	(55)	(58)	(60)	(67)	(74)	(81)
Change in net financial debt and other claims	n/a	(308)	210	68	110	159	244	139	93	72	216	235	256	75
Debt financing cash flow	**n/a**	**(332)**	**193**	**51**	**83**	**124**	**199**	**88**	**38**	**15**	**156**	**168**	**183**	**(6)**
Equity financing cash flow	**n/a**	**(28)**	**(129)**	**26**	**153**	**(171)**	**(286)**	**(154)**	**(142)**	**(152)**	**(321)**	**(390)**	**(457)**	**(402)**
Financing cash flow	**n/a**	**(360)**	**64**	**77**	**236**	**(47)**	**(87)**	**(65)**	**(104)**	**(137)**	**(165)**	**(222)**	**(274)**	**(408)**

Table 13: Reformulated cash flow statement
Source: Own analysis

Reformulated balance sheet

						Detailed planning period								
€mn	**2018**	**2019**	**2020**	**2021**	**2022**	**2023E**	**2024F**	**2025F**	**2026F**	**2027F**	**2028F**	**2029F**	**2030F**	**TV**
Working Cash	68	70	71	75	91	103	119	130	142	154	167	181	195	206
Trade receivables	274	224	215	212	270	332	381	418	455	494	536	580	627	660
Other receivables	16	21	27	39	35	16	21	27	39	35	38	43	47	52
Inventories	171	185	190	238	311	299	342	376	410	445	482	522	564	594
Current prepaid expenses	5	5	5	5	6	7	8	9	9	10	11	12	13	14
Other current assets	4	6	5	24	35	19	22	24	26	29	31	34	36	38
Operating current assets	**538**	**510**	**514**	**593**	**747**	**776**	**892**	**984**	**1,082**	**1,167**	**1,265**	**1,371**	**1,482**	**1,563**
Trade accounts payable and accruals	304	321	311	387	476	493	573	635	706	760	814	885	959	1,012
Other current liabilities	70	225	45	48	68	68	68	68	68	68	68	68	68	68
Operating current liabilities	**374**	**546**	**356**	**435**	**544**	**561**	**641**	**703**	**774**	**828**	**882**	**953**	**1,027**	**1,080**
Net operating current assets	**165**	**(36)**	**158**	**158**	**203**	**215**	**251**	**281**	**308**	**338**	**382**	**418**	**455**	**483**
Non-current receivables	3	1	1	1	1	3	1	1	1	1	2	2	3	3
Property, plant and equipment	621	702	763	904	1,061	1,161	1,211	1,351	1,491	1,631	1,771	1,911	2,051	2,103
Net research and development cost	25	21	38	54	70	56	64	70	77	83	90	97	105	111
Brand, patents and trademarks	789	641	569	543	525	598	685	753	820	890	965	1,044	1,128	1,189
Other intangible assets	21	23	25	35	37	39	44	49	53	57	62	67	73	77
Goodwill	671	672	642	656	685	685	685	685	685	685	685	685	685	685
Fixed assets	**2,129**	**2,061**	**2,039**	**2,194**	**2,379**	**2,541**	**2,691**	**2,908**	**3,126**	**3,347**	**3,575**	**3,807**	**4,045**	**4,167**
Current derivative financial instruments	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Non-current derivative financial instruments	-	-	-	7	129	129	129	129	129	129	129	129	129	129
Other non-current assets	25	22	17	10	10	10	10	10	10	10	10	10	10	10
Other operating assets	**25**	**22**	**18**	**17**	**140**	**140**	**140**	**140**	**140**	**140**	**140**	**140**	**140**	**140**
Current derivative financial liabilities	1	1	-	-	-	-	-	-	-	-	-	-	-	-
Non-current derivative financial liabilities	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Non-current trade accounts payable	0	0	0	1	-	-	-	-	-	-	-	-	-	-
Other non-current liabilities	153	168	170	165	135	154	177	194	211	229	249	269	291	306
Other operating liabilities	**154**	**169**	**170**	**165**	**135**	**154**	**177**	**194**	**211**	**229**	**249**	**269**	**291**	**306**
Net other operating assets	**(130)**	**(147)**	**(152)**	**(148)**	**4**	**(14)**	**(37)**	**(54)**	**(72)**	**(90)**	**(109)**	**(129)**	**(151)**	**(167)**
Operating invested capital	**2,164**	**1,878**	**2,045**	**2,204**	**2,587**	**2,741**	**2,905**	**3,135**	**3,362**	**3,596**	**3,849**	**4,096**	**4,348**	**4,484**
Current loans	2	0	-	-	-	-	-	-	-	-	-	-	-	-
Current income tax receivables	18	18	19	24	41	33	37	41	45	48	53	57	61	65
Current assets held for sale	1	-	-	0	-	-	-	-	-	-	-	-	-	-
Non-current investments	5	13	9	8	25	25	25	25	25	25	25	25	25	25
Investments in associates, joint ventures and subsidiaries	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Non-current loans	0	0	0	1	1	1	1	1	1	1	1	1	1	1
Non-operating assets	**26**	**32**	**29**	**34**	**66**	**58**	**63**	**66**	**70**	**74**	**78**	**82**	**87**	**90**
Current income tax payables	5	6	11	12	22	17	23	28	32	35	40	45	51	53
Deferred tax and investment tax credits	168	142	131	116	163	200	230	252	275	298	324	350	378	399
Non-operating liabilities	**173**	**148**	**143**	**128**	**185**	**217**	**252**	**280**	**306**	**334**	**364**	**395**	**429**	**452**
Net non-operating assets	**(146)**	**(117)**	**(114)**	**(95)**	**(118)**	**(159)**	**(190)**	**(214)**	**(236)**	**(260)**	**(286)**	**(313)**	**(342)**	**(362)**
Total funds invested	**2,018**	**1,762**	**1,931**	**2,109**	**2,468**	**2,582**	**2,715**	**2,921**	**3,126**	**3,336**	**3,563**	**3,783**	**4,006**	**4,122**
Short-term debt and current portion of long-term debt	388	338	210	438	536	608	701	761	801	832	925	1,027	1,138	1,169
Long-term debt	751	498	838	695	685	778	897	974	1,025	1,064	1,183	1,313	1,455	1,496
Financial debt	**1,140**	**836**	**1,048**	**1,134**	**1,221**	**1,386**	**1,598**	**1,735**	**1,826**	**1,895**	**2,109**	**2,340**	**2,593**	**2,665**
Excess cash	12	16	17	39	22	30	-	-	-	-	-	-	-	-
Net debt	**1,128**	**820**	**1,031**	**1,095**	**1,199**	**1,356**	**1,598**	**1,735**	**1,826**	**1,895**	**2,109**	**2,340**	**2,593**	**2,665**
Minority interest	17	16	16	21	26	29	31	33	36	38	41	45	48	52
Net debt and other claims	**1,145**	**837**	**1,047**	**1,115**	**1,226**	**1,385**	**1,629**	**1,768**	**1,861**	**1,934**	**2,150**	**2,385**	**2,641**	**2,717**
Shareholder's equity	**873**	**925**	**884**	**994**	**1,243**	**1,197**	**1,087**	**1,153**	**1,265**	**1,402**	**1,413**	**1,398**	**1,365**	**1,405**
Total funds reconcilation	**2,018**	**1,762**	**1,931**	**2,109**	**2,468**	**2,582**	**2,715**	**2,921**	**3,126**	**3,336**	**3,563**	**3,783**	**4,006**	**4,122**

Table 14: Reformulated balance sheet
Source: Own analysis

References

[1] International Monetary Fund, "World Economic Outlook Database". Accessed via https://www.imf.org/en/Publications/WEO/weo-database/2023/October/weo-report?a=1&c=001,&s=NGDP_RPCH,&sy=2021&ey=2028&ssm=0&scsm=1&scc=0&ssd=1&ssc=0&sic=0&sort=country&ds=.&br=1 on December 19, 2023.

[2] Statista, "Obesity worldwide". Accessed via https://www-statista-com.eu1.proxy.openathens.net/study/109409/obesity-worldwide/ on December 19, 2023.

[3] Euromonitor, "Diabetes prevalence in World". Accessed via https://www.portal.euromonitor.com/?CXFSKxWl1xQXd1DyyexiZdG%2fO948quNHYyU5qGnu6Mxk%2bNqisX5Sjw%3d%3d on December 19, 2023.

[4] Euromonitor, "Population aged 65+ in all countries". Accessed via https://www.portal.euromonitor.com/?fHOARsbU2xM4J3uVMtc1mODE9bisW%2bwehT7mIYyykWsX9RzIv81fnQ%3d%3d on December 19, 2023.

[5] Ippolito, Benedic N. and Levy, Joseph F., "Estimating the Cost of New Treatments for Diabetes and Obesity". Accessed via https://www.aei.org/wp-content/uploads/2023/09/Estimating-the-Cost-of-New-Treatments-for-Diabetes-and-Obesity.pdf?x91208 on December 19, 2023.

[6] Health System Tracker, "How do prices of drugs for weight loss in the U.S. compare to peer nations' prices?". Accessed via https://www.healthsystemtracker.org/brief/prices-of-drugs-for-weight-loss-in-the-us-and-peer-nations/#List%20prices%20of%20drugs%20used%20for%20weight%20loss%20in%20the%20U.S.%20and%20peer%20nations on December 19, 2023.

[7] Roser, Pia, Bajaj, Simar S. and Stanford, Fatima Cody, "International lack of equity in modern obesity therapy. the critical need for change in health policy". Accessed via https://www.nature.com/articles/s41366-022-01176-2 on December 19, 2023.

[8] Market Data Forecast, "Europe Syringes Market". Accessed via https://www.marketdataforecast.com/market-reports/europe-syringes-market on December 19, 2023.

[9] Future Market Insights, "Injection Pen Market". Accessed via https://www.futuremarketinsights.com/reports/injection-pen-market on December 19, 2023.

[10] Future Market Insights, "Respiratory Inhaler Devices Market". Accessed via https://www.futuremarketinsights.com/reports/respiratory-inhaler-devices-market on December 19, 2023.

[11] Mordor Intelligence, "Pharmaceutical Plastic Bottle Market Size". Accessed via https://www.mordorintelligence.com/industry-reports/pharmaceutical-plastic-bottles-market on December 19, 2023.

[12] Grand View Research, "Europe Pharmaceutical Glass Packaging Market Size Report, 2030". Accessed via https://www.grandviewresearch.com/industry-analysis/europe-pharmaceutical-glass-packaging-market-report on December 19, 2023.

[13] Euromonitor, "Beauty and personal care packaging in World". Accessed via https://www.portal.euromonitor.com/?UVLXAOmQuOB7cQA5iTSan15vOMWutM24aNbxkePrfqdzVxG2S7Owug%3d%3d on December 19, 2023.

[14] The Insight Partners, "Spirit Glass Packaging Market Growth Report – Share and Outlook 2028". Accessed via https://www.theinsightpartners.com/reports/spirit-glass-packaging-market on December 19, 2023.

[15] Markets and Markets, "Autoinjectors Market". Accessed via https://www.marketsandmarkets.com/Market-Reports/autoinjector-market-173991724.html on December 19, 2023.

[16] Global Market Insights, "Smart Inhalers Market". Accessed via https://www.gminsights.com/industry-analysis/smart-inhalers-market on December 19, 2023.

[17] Gerresheimer corporate news, "Gerresheimer invests up to 94 million Dollar in US production facility". Accessed via https://www.gerresheimer.com/en/company/newsroom/corporate-news/detail/gerresheimer-invests-up-to-94-million-dollar-in-us-production-facility on December 19, 2023.

[18] Gerresheimer corporate news, “Groundbreaking ceremony for plant expansion in Querétaro, Mexico“. Accessed via https://www.gerresheimer.com/en/company/newsroom/corporate-news/detail/groundbreaking-ceremony-for-plant-expansion-in-queretaro-mexico on December 19, 2023.

[19] Moody's Investors Service, “Default Trends – Global: Annual default study: Corporate default rate will rise in 2023 and peak in early 2024”. Accessed via moodys.com on December 19, 2023.

[20] Morningstar Sustainalytics, “Company ESG Risk Ratings”. Accessed via https://www.sustainalytics.com/esg-rating/gerresheimer-ag/1008022464 on December 19, 2023.

If not listed here, our analysis was based on Gerresheimer’s annual reports and Investor Relations statements, Refinitiv or own analysis.

Disclosures and Disclaimers

Report Recommendations

Buy	Expected total return (including expected capital gains and expected dividend yield) of more than 10% over a 12-month period.
Hold	Expected total return (including expected capital gains and expected dividend yield) between 0% and 10% over a 12-month period.
Sell	Expected negative total return (including expected capital gains and expected dividend yield) over a 12-month period.

This report was prepared by Paul Becker and Jan Felix Heinzelmann, Master in Finance students of Nova School of Business and Economics ("Nova SBE"), within the context of the Field Lab – Equity Research.

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