

Furthering
a **sustainable**
business and
a more **circular**
economy

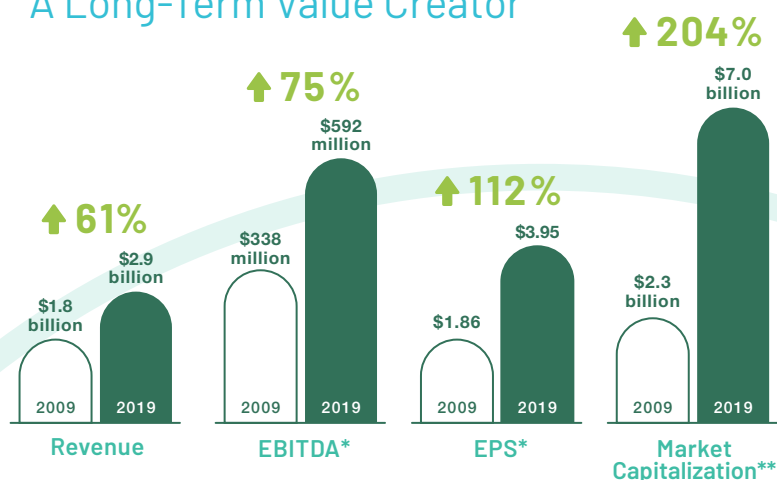
2019

ANNUAL REPORT
FORM 10-K

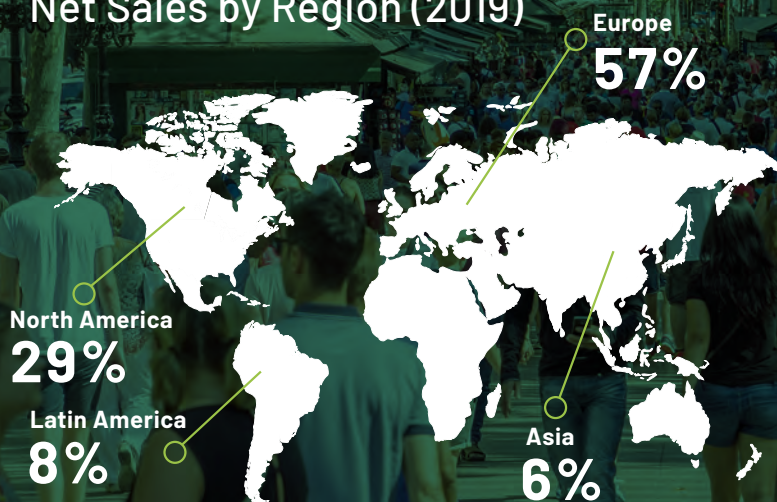


Financial Highlights

A Long-Term Value Creator



Net Sales by Region (2019)



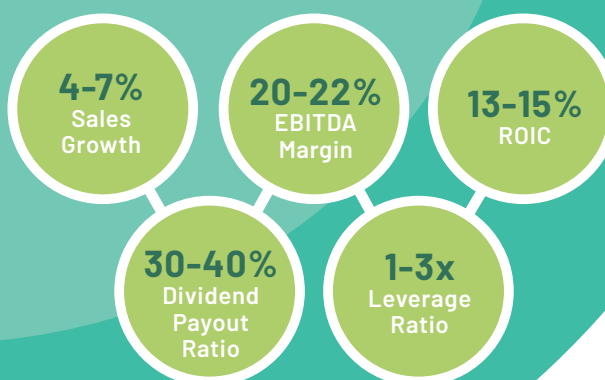
Environment, Social, Governance (ESG) Recognition

- America's Most Responsible Companies 2020 by *Newsweek*
- Number 48 of the Top 100 Most Sustainable Companies in America by *Barron's* for 2020; second year on the list

Strategic Priorities

- Organic Growth
- Talent & Leadership
- Innovation, Operations & Commercial Excellence
- Successful Transformation
- Acquisitions & Partnerships

Long-Term Financial Targets



* Please see 2019 Reconciliation of Non-GAAP Financial Measures under www.investors.aptar.com under Events & Presentations

** As of Dec. 31, 2019, Aptar's market capitalization was approximately \$7.3 Billion

Letter to Shareholders

Dear Shareholders:

2019 was an exciting year for our great company and we are extremely proud to be recognized by two U.S. national publications for our efforts to make Aptar an even more sustainable, truly global and inclusive company. Aptar was named “One of the Top 100 Most Sustainable Companies in America” for 2019 and 2020 by *Barron’s* and one of “America’s Most Responsible Companies” for 2020 by *Newsweek*.

In 2019, we again achieved significantly improved safety performance, grew consolidated core sales by 3% to \$2.9 billion and increased adjusted EBITDA by 8% to \$592 million. During the year, we increased our cash dividend making 2019 our 26th consecutive year of paying increased dividends to shareholders. Including our cash dividends and our share repurchases, we returned approximately \$177 million in value and total shareholder return for 2019, assuming dividends were reinvested, was 24%. We also welcomed several new, innovative companies to the Aptar family. We forged key partnerships that will have a lasting positive impact on our people and on the environment, and launched revolutionary new products that improve the lives of millions of people around the world.

At Aptar, we believe that strong governance and responsible corporate behavior are essential to long-term success and we practice business relationships based on responsibility and accountability in order to protect the long-term mutual interests of all stakeholders. We are pleased to outline our accomplishments in the area of Environment, Social, Governance (ESG) in the section below.

Environment, Social, Governance

Environment

Aptar has a profound respect for the environment that drives our lower energy consumption, landfill-free facilities and sustainable product designs. We advocate for a circular economy in which packaging is reused and recycled. We are pleased to join forces with other businesses and governments committed to changing how we produce, use and reuse plastic through our partnerships with the Ellen MacArthur Foundation’s New Plastics Economy Global Commitment and CE100 Network, and the World Business Council for Sustainable Development.

We also continue to explore opportunities for sustainable resins and we are actively collaborating with our customers on refillable products by supporting several customers’ participation in the circular platform called Loop. In addition, we are an advisor and investor in Loop. This past year we invested in, and partnered with, PureCycle Technologies, to prepare for the introduction of Ultra-Pure Recycled Polypropylene (UPRP) into dispensing applications. Both the Loop and PureCycle Technologies were named “*TIME* 100 Best Inventions for 2019” and we are excited to work together to create a circular economy where plastic is reused and recycled.

We are well positioned to help our customers achieve their own objectives, many of which are to achieve packaging that is 100% recyclable or reusable by 2025. Today we have all-plastic solutions that are recyclable depending on the local recycling program.

Aptar is committed to achieving 10% recycled content by 2025 for our dispensing solutions for the beauty, personal care, home care, food and beverage markets. This is an evolving target due to the limited availability of material suitable for our markets because of regulatory constraints and customer policies. Aptar is actively working to identify and qualify new technologies in this space, such as post-consumer resins and food contact certified recycled resins.

In terms of our facilities, currently 47% of our sites are Landfill Free certified through our internal program, where our reuse and recycling rates are verified by a third party. Compared to 2018, we reduced absolute energy consumption as well as greenhouse gas emissions, and we surpassed our target of 50% of our sites sourcing renewable electricity globally.

Social

This year we made further progress on safety and implemented a behavior-based safety program. In turn, we reduced the Total Recordable Incident Rate (TRIR) by more than 25% and Lost Time Frequency Rate (LTFR) by almost 25% from year-end 2018.

Guided by our core values, we embrace a compassionate workplace that welcomes everyone and actively supports the communities where we live and work. Aptar's Charitable Foundation in the United States continues to recognize the importance of giving back to local communities. Through a Corporate Grant Program and an Employee Matching Gift Program, the Foundation supports eligible 501(c)(3) organizations in our communities with a focus on health and human services, culture and the arts.

We also give back to organizations outside of the United States. We support the Vatsalya Foundation in Mumbai, India, which is a pioneer agency working with street children in Mumbai through its multilevel approach of outreach, child-to-child contact, contact centers and a shelter home. Our leadership team often visits the foundation and the children are invited to visit our local offices for a day filled with fun activities such as a hand painting competition, traditional games and more.

We are also taking steps to lead in gender diversity and equality in the workplace, by enabling a culturally diverse workforce and nurturing an inclusive and welcoming culture. We have joined more than 60 other leading global companies in the Catalyst CEO Champions for Change movement focused on furthering gender equality, diversity and inclusion in the workplace.

Aptar is included in the SPDR® SSGA Gender Diversity Index ETF (SHE), which invests in U.S. large-capitalization companies that rank among the highest in their sector in terms of gender diversity within senior leadership positions.

Having said all of the above, Aptar's greatest impact on social well-being undoubtedly comes through the benefits our products and solutions provide to millions of consumers and patients every day. In small and very meaningful ways, Aptar's products and solutions transform and enhance everyday user experiences around the world and in some cases, even save lives.

Governance

Our Board of Directors is comprised of multicultural, experienced and diverse professionals who come from a wide variety of backgrounds across three continents. With this breadth of diversity, the Board provides experienced oversight that is very relevant to the different end-markets and geographic regions in which we operate and 50% of our Board has been renewed in the past five years.

Today our Board of Directors is comprised of 40% women leaders and all Board Committees are chaired by women. We were proud to be recognized by the Women's Forum of New York as a Corporate Champion for leading the way toward gender balance on corporate boards.

In 2019, we welcomed Isabel Marey-Semper to our Board, who is both a trained scientist and experienced business and transformation leader. Isabel was most recently the Executive Vice President, Communications and Public Affairs and General Manager for L'Oréal. Prior to that, Isabel was the Chief Financial Officer of Groupe PSA (Peugeot Citroën) and has held senior executive roles at the multinational company, Saint-Gobain.

Our strong performance on Environment, Social, and Governance topics has of course greatly contributed to the progress we made on our key Strategic Priorities during the year:

Organic Growth with an Emphasis on High Growth Regions

We achieved a reported sales increase of approximately 3% to \$2.9 billion from \$2.8 billion a year ago. Core sales, which exclude the impacts from changes in currency exchange rates and acquisitions, also increased approximately 3% and we delivered an adjusted EBITDA margin of 21% and grew adjusted EBITDA by 8%.

Our Pharma business had another strong year due to increased demand across each end market. Reported sales reached \$1.1 billion with an increase in core sales of 10%, driven in part by a very active year of new drug delivery launches. The Pharma business' adjusted EBITDA margin was 36%.

Our Beauty + Home business was challenged primarily in the second half of the year, due to inventory reductions by certain customers and general market softness in key categories where we are the leading supplier. This segment's reported sales were \$1.4 billion with a decline in core sales growth by -1%. The adjusted EBITDA margin was 13%.

Lastly, our Food + Beverage segment reported sales of \$416 million and saw core sales growth of 3% despite weak beverage closure volumes and the passing through of lower resin costs to our customers. Food + Beverage's adjusted EBITDA margin was 16%.

Going forward, as part of our emphasis on high growth regions, we will continue to add capabilities and scale in Asia to better serve the more rapidly growing markets there, especially for our beauty business, with the addition of our new partnership with BTY, a leading Chinese manufacturer of high quality, decorative metal components, metal-plastic sub-assemblies, and complete color cosmetics packaging solutions for the beauty industry. We were also pleased to inaugurate our new facility in Guangzhou, China and to continue with the build out and preparation for production in our new facility in Hyderabad, India while adding injection molding capabilities in Thailand. We also opened new sales offices in Dubai and Tokyo, which serve as a central meeting location for our customers in these regions.

Remaining true to our name Aptar (based on the Latin Aptare – to adapt, and prepare), we must adapt to the changes we are seeing and manage our business to ensure long-term value for all stakeholders.

Talent and Leadership with an Added Focus on Diversity and Inclusion

Based on employee feedback from our annual Leadership for Growth Surveys, where we have a 78% participation rate, we have a strong focus on supporting, mentoring, recruiting, and career planning for all of our people to ensure they feel included and can assume a greater number of leadership roles at all levels. We have set, and are working toward, the following diversity goals:

- Women leaders to account for 30% of our leadership team (VP level and above) by 2025
- Aptar's Global Leadership Team, which is comprised of the most senior leaders in each business segment, along with Aptar's Executive Committee and all of their immediate direct reports, will complete Diversity and Inclusion training by the end of 2020

This year we also held the first cross-segment, cross-functional Aptar Innovation Summit in Silicon Valley and opened the first Technical Educational Center in Lincolnton, North Carolina focused on training and retaining manufacturing talent.

On the people front, we promoted Marc Prieur to President of Aptar Beauty + Home and Hedi Tlili to President of Aptar Food + Beverage. Eldon Schaffer has also assumed a new role as Executive Vice President, Strategic Projects and Commercial Excellence.

Innovation, Operations and Commercial Excellence

Excellence in our core functions of Innovation, Operations, and Commercial Excellence is a critical enabler to maintaining our place as a top performer in our industry. We invite you to read about the many highlights from the year.

Innovation

It was an exciting year for our Pharma segment as we achieved the following U.S. FDA approvals for our drug delivery devices:

- Bidose Nasal Spray Device for a breakthrough therapy in the field of depression
- Unidose Powder System for a drug which is intended to treat severe hypoglycemia in people with diabetes. This was Aptar's first combination of a drug delivery device with a solution from Aptar CSP Technologies as the device is protected by an Activ-Polymer™ container.
- Nasal Unidose Device for the first nasal rescue treatment for frequent seizure activity in epilepsy for which Noble International designed a patient onboarding kit with trainer device
- Activ-Blister™ packaging solution developed by Aptar CSP Technologies for oral solid dose drug delivery for an HIV prevention medicine

In Beauty + Home, our colored closures made from 100% post-consumer recycled resin are featured on a line of haircare products for Love, Beauty and Planet. Monat Studio One™ introduced a hairspray that features our twist-to-lock actuator designed to provide protection during e-commerce shipping along with a patented nozzle and two dispensing settings. Our new dual-dispensing pump is featured on a dual serum facial skin care products for Chando by Jala and also on the Plant Gold facial serum by Clarins®. Lastly, we entered into an agreement with

Medspray to facilitate the launch of Dolce, a pump targeted at our fragrance customers helping them to reinvent the fragrance experience with luxury and softness.

Turning to our Food + Beverage segment, the *Washington Post* published an article about Uncle Dougie's BBQ sauce in an inverted squeeze pouch, which features our closure with SimpliSqueeze® valve technology and a built-in tamper evident pull ring fitment. During the year, we were also selected by Nestlé to develop a dispensing closure for the first creamer launch under their Starbucks® brand partnership.

Commercial Excellence/Awards

During the year, our businesses won several industry awards including the “Excellence in Pharma” Award at CPhI for Nanopharm's SmartTrack™ process and also the Industry Innovation Award at Pharmapack for our QuickStart™ Injectables kit.

Aptar Food + Beverage was awarded “Best Closure” during the World Beverage Innovation Awards for our Flip Lid closure, which remains tethered to the bottle throughout its lifecycle, making the closure more likely to be collected and sent through the recycling stream. Our team also achieved three Marking Awards at the Food and Beverage Innovation Forum in China.

Aptar Beauty + Home received the “Formes de Luxe 2019” award for the best innovative dispensing system for the new Avène Solaire Spray, which provides a locking dispensing solution and does not require an overcap.

This year, we will open our first ever Customer Experience Center in Louveciennes, France which will showcase the many innovative products, process and services we offer for the numerous markets we serve. Based on the best practices from the Louveciennes center, we plan to establish similar centers in other regions.

Operational Excellence

Turning to the strategic priority of Operational Excellence, in 2019 we deployed the Six Sigma methodology to reduce variability and rolled out Greenbelt Training across 10 sites in North America and Europe. In 2020, the program will continue involving more employees from three regions (Europe, North America and Latin America) and eventually we will hold our first internal blackbelt training. We also deployed standard Behavior Based Safety and Ergonomics programs within our Environment, Health and Safety Management System globally.

We will continue to create opportunities to accelerate innovation, operational and commercial excellence and will leverage best practices across our businesses.

Successful Transformation

The past year was characterized with a broad and deep set of transformation activities. The operational KPIs at a number of key sites have improved significantly, yet due to the under-absorption from the volume shortfall in Beauty + Home, too few of these operational improvements dropped to the bottom line. In addition, it proved to be a difficult year both for China and across all of Latin America. We have further strengthened and aligned our global and regional talent, increased our customer centricity and commercial focus. We remain committed to bring our transformation initiatives over the finish line with our goal to reach our long-term EBITDA margin target range.

Acquisitions and Partnerships

Acquisitions and Partnerships are a critical part of our growth strategy. During the year, we acquired two leading pharmaceutical services companies - Nanopharm and Gateway Analytical. We also acquired Noble International, a leader in drug delivery training devices (autoinjectors, prefilled syringes, on-body and respiratory devices) and patient onboarding programs.

It is our strategy to expand our Pharma service offerings that support pharmaceutical customers for both small and large molecules, to help them accelerate and de-risk their complex product developments.

Also in the year, we acquired an initial 49% equity interest in BTY, a leading Chinese manufacturer of high quality, decorative metal components, metal-plastic sub-assemblies, and complete color cosmetics packaging solutions for the beauty industry. In February of this year, we entered into a binding agreement to acquire FusionPKG, a leader in high quality, complete prestige airless skin care and color cosmetics packaging solutions that adds an agile concept-to-launch and turnkey capability to Aptar for the North American beauty market. With proven engineering, formulation and go-to-market capabilities for the fast beauty industry, FusionPKG has existing relationships with many global cosmetic and skin care customers as well as many rapidly-growing indie brands.

These strategic investments further strengthen our best in class Pharma business and increase our ability to add to our long-term growth pipeline by adding depth to our service offerings and growing our beauty product portfolio.

Improving and Saving Lives with Innovative Dispensing Systems

In closing, on behalf of the Aptar Board of Directors and the Executive Committee, I would like to thank our employees and partners around the world for their tremendous dedication to the environment, the health and safety of our people, good corporate governance and the on-going financial and volunteer support in the communities where we live and work.

We believe that the lives of people should be enriched from having worked for, and with, Aptar and from using our products. We will continue to bring to life dispensing solutions that transform and enhance everyday user experiences and in some cases, even save lives.

In the short-term, we face unusual demand uncertainties due to the economic impacts from the coronavirus outbreak, however, we are managing our company for the long-term and will continue to focus on providing tangible value to our customers, end consumers and many of the world's leading brands.

Stephan B. Tanda

STEPHAN B. TANDA

President and Chief Executive Officer
February 24, 2020

United States Securities and Exchange Commission
Washington, D.C. 20549

FORM 10-K

- ☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
FOR THE FISCAL YEAR ENDED DECEMBER 31, 2019**
- ☐ **OR**
- ☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

FOR THE TRANSITION PERIOD FROM _____ TO _____

COMMISSION FILE NUMBER 1-11846

Aptar 
AptarGroup, Inc.

DELAWARE

36-3853103

**265 EXCHANGE DRIVE, SUITE 100, CRYSTAL LAKE, ILLINOIS 60014
815-477-0424**

Securities Registered Pursuant to Section 12(b) of the Act:

Title of each class	Trading symbol(s)	Name of each exchange on which registered
Common Stock, \$.01 par value	ATR	New York Stock Exchange

Securities Registered Pursuant to Section 12 (g) of the Act:

NONE

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.

Yes ☒

No ☐

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act.

Yes ☐

No ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15 (d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

Yes ☒

No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files).

Yes ☒

No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See definitions of "large accelerated filer", "accelerated filer", "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer ☒

Accelerated filer ☐

Non-accelerated filer ☐

Smaller reporting
company ☐

Emerging growth
company ☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act).

Yes ☐

No ☒

The aggregate market value of the common stock held by non-affiliates as of June 28, 2019 was \$7,975,902,822.

The number of shares outstanding of common stock, as of February 18, 2020, was 64,054,138 shares.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the definitive Proxy Statement to be delivered to stockholders in connection with the Annual Meeting of Stockholders to be held May 6, 2020 are incorporated by reference into Part III of this report.

FORM 10-K

For the Year Ended December 31, 2019

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PART I

ITEM 1. BUSINESS

WHO ARE WE AND WHAT DO WE DO

Aptar is a leading global supplier of a broad range of innovative dispensing, sealing, active packaging solutions and services for the beauty, personal care, home care, prescription drug, consumer health care, injectables, active packaging, food and beverage markets. Aptar uses insights, design, engineering and science to create innovative packaging technologies that build brand value for its customers, and, in turn, make a meaningful difference in the lives, looks, health and homes of people around the world. Aptar is headquartered in Crystal Lake, Illinois and has approximately 14,000 dedicated employees in 20 different countries. For more information, visit www.aptar.com.

Our business was started in the late 1940's, manufacturing and selling aerosol valves in the United States, and has grown primarily through acquisitions and internal expansion. We were incorporated in Delaware in 1992. In this report, we may refer to AptarGroup, Inc. and its subsidiaries as "AptarGroup", "Aptar" or the "Company".

We have manufacturing facilities located throughout the world including North America, Europe, Asia and South America. We have approximately 7,000 customers with no single customer or group of affiliated customers accounting for greater than 6% of our 2019 Net Sales.

Consumers' preference for convenience and product differentiation through packaging design and function are important to our customers and they have converted many of their packages from non-dispensing formats to dispensing systems that offer enhanced shelf appeal, convenience, cleanliness and accuracy of dosage.

While we offer a wide variety of dispensing, sealing and active packaging solutions, our primary products are dispensing pumps, closures, aerosol valves and elastomeric primary packaging components.

Dispensing pumps are finger-actuated dispensing systems that dispense a spray or lotion from non-pressurized containers. The style of pump used depends largely on the nature of the product being dispensed, from small, fine mist pumps used with perfume and pharmaceutical products to lotion pumps for more viscous formulas.

Closures are primarily dispensing closures but to a lesser degree can include non-dispensing closures. Dispensing closures are plastic caps that allow a product to be dispensed without removing the cap.

Aerosol valves dispense product from pressurized containers. The majority of the aerosol valves that we sell are continuous spray valves, with the balance being metered dose valves.

We also manufacture and sell elastomeric primary packaging components. These components are used in the injectables market. Products include stoppers for infusion, antibiotic, lyophilization and diagnostic vials. Our elastomeric components also include pre-filled syringe components, such as plungers, needle shields, tip caps and cartridges, as well as dropper bulbs and syringe plungers.

During 2018 and 2019, we acquired several companies to strengthen and broaden our portfolio, including the business combinations of the following entities:

- October 2019 – Noble International Holdings, Inc., Genia Medical, Inc. and JBCB Holdings, LLC (collectively referred to as "Noble") for cash paid at close of approximately \$62.3 million (net of \$1.6 million of cash acquired) and contingent consideration liability due to sellers related to earn-out.
- June 2019 – Nanopharm Ltd. ("Nanopharm") for cash paid at close of approximately \$38.1 million (net of \$1.8 million of cash acquired).
- May 2019 – Gateway Analytical LLC ("Gateway") for cash paid at close of approximately \$7.0 million and \$3.0 million contingent consideration liability due to sellers related to earn-out.
- August 2018 – CSP Technologies S.à r.l. ("CSP Technologies") for cash paid at close of approximately \$553.5 million.
- May 2018 – Reboul SAS ("Reboul") for cash paid at close of approximately \$3.6 million (net of \$112 thousand of cash acquired).

During August 2019 we completed the asset acquisition of Bapco Closures Holdings Limited ("Bapco") for \$3.8 million (net of \$2.9 million of cash acquired) and we also invested an aggregate amount of \$3.5 million in two preferred equity investments in sustainability companies Loop and PureCycle Technologies ("PureCycle"). In addition, during January 2020, we acquired 49% of the equity interests in three related companies: Suzhou Hsing Kwang, Suqian Hsing Kwang and Suzhou BTY, (collectively referred to as "BTY"). Refer to Note 20- Acquisitions in Item 8 – Consolidated Financial Statements and Supplementary Data for further details on acquisition activities.

AVAILABLE INFORMATION

Our periodic and current reports, and any amendments to those reports, are available, free of charge, through a link on the Investors page of our website (www.aptar.com), as soon as reasonably practicable after the material is electronically filed with, or furnished to, the Securities and Exchange Commission ("SEC"). These filings are also available to the public over the Internet at the SEC's website (<http://www.sec.gov>).

Also posted on our website are the charters for our Audit, Management Development and Compensation, Governance and Executive Committees, our Governance Principles, our Code of Business Conduct & Ethics, our Director Independence Standards and our Conflict Minerals Statement. Within the time period required by the SEC and the New York Stock Exchange ("NYSE"), we will post on our website any amendment or waiver to the Code of Business Conduct & Ethics applicable to any executive officer or director. The information provided on our website is not part of this report and is therefore not incorporated herein by reference.

OUR STRATEGY

We seek to enhance our position as a leading global provider of innovative packaging dispensing, sealing, active packaging solutions and services and deliver increased value to our customers and stockholders through strategic focus and execution in the following areas:

- (i) **Successful Transformation:** To strengthen our performance and deepen our position as a true market shaper, we continually evaluate our business. In late 2017, we launched a comprehensive business transformation plan within our Beauty + Home segment and for key corporate support functions including Finance, Human Resources, Information Systems and Purchasing.
- (ii) **Focus on Organic Growth:** We are focused on accelerating our top line growth with added emphasis on high growth economies. Accordingly, we are creating empowered, regional, cross-functional profit and loss ("P&L") teams who are fully accountable to drive profitable growth.
- (iii) **Excellence in Core Business Functions:** We have established three pillars of functional excellence to ensure we perform at best in class levels in the core functions of any manufacturing business, namely "innovate," "produce" and "sell," and that our business teams are supported in the areas of Innovation, Operations and Commercial Excellence.
- (iv) **Focus on Talent and Leadership:** Execution of our strategy requires a talented, motivated, diverse, international team. We have a focused talent acquisition and development strategy to ensure our teams have the right skills to execute our strategy.
- (v) **Partnerships and Acquisitions:** We will continue to focus on growing the Company through appropriate business acquisition opportunities as well as developing partnerships to expand the scope of our technologies, geographic presence and product offerings.

Facilitating the execution of our strategy are our core values, which dictate how we interact internally and externally with our employees, customers, suppliers and all stakeholders.

DESCRIPTION OF OUR REPORTING SEGMENTS

INFORMATION ABOUT SEGMENTS

Our organizational structure consists of three market-focused business segments: Beauty + Home, Pharma and Food + Beverage. This is a strategic structure which allows us to be more closely aligned with our customers and the markets in which they operate. We primarily sell our products and services through our own sales force to beauty, personal care, home care, pharmaceutical, food and beverage marketers. To a limited extent, we use independent representatives and distributors to increase our reach to smaller customers and export markets.

Operations that sell dispensing systems and sealing solutions primarily to the beauty, personal care and home care markets form the Beauty + Home segment. Operations that sell dispensing systems and sealing solutions and services to the prescription drug, consumer health care, injectables and active packaging markets form the Pharma segment. Operations that sell dispensing systems and sealing solutions to the food and beverage markets form the Food + Beverage segment. Each of these three business segments is described more fully below.

BEAUTY + HOME

The Beauty + Home segment is our largest segment in terms of net sales and total assets representing 47% and 39% of our Net Sales and Total Assets, respectively, in 2019. The Beauty + Home segment primarily sells pumps, closures, aerosol valves, accessories and sealing solutions to the personal care and home care markets and pumps and decorative components to the beauty market. We believe we are a leading supplier for the majority of the products we sell primarily to the beauty and personal care markets.

Beauty. Sales to the beauty market accounted for approximately 51% of the segment's total net sales in 2019. The beauty market requires a broad range of spray and lotion pumps, closures, elastomeric flow-control components and sampling dispensing systems to meet functional as well as aesthetic requirements. A considerable amount of research, time and coordination with our customers is required to qualify a pump for use with their products. Within the market, we expect the use of pumps to continue to increase, particularly in the cosmetics and sampling sectors. In the cosmetic sector, packaging for certain products such as natural and organic cosmetics and anti-aging lotions continue to provide us with growth opportunities. We are a leading provider of packaging solutions for prestige and mass market fragrance products. Our cosmetic lotion pumps, airless dispensing systems, lotion sampling devices and decorative capabilities along with our focus on color cosmetics including lip stick and lip gloss products will also provide growth opportunities. We see continued growth opportunities in Latin America and significant opportunities for growth in the sale of our products for cosmetic skin care and color cosmetic applications in Asia.

Personal Care. Sales to the personal care market accounted for approximately 42% of the segment's total net sales in 2019 and primarily included sales of fine mist spray pumps, lotion pumps, closures, elastomeric flow-control components and continuous spray aerosol valves. Personal care spray pump applications include hair care, body care and sun care products. Typical lotion pump applications include skin moisturizers, hand sanitizers and soap. Personal care closures applications include shampoos and conditioners. Personal care continuous spray aerosol valve applications include hair care products, deodorants, shaving creams and sun care products. Our research and development teams continue to design unique accessories that increase the value of our continuous spray aerosol valve offerings.

Home Care. Sales to the home care market accounted for approximately 7% of the segment's total net sales in 2019 and primarily included sales of continuous or metered dose spray aerosol valves, closures and to a lesser degree spray and lotion pumps. Applications for continuous spray valves include disinfectants, spray paints, insecticides and automotive products. Metered dose valves are used for air fresheners. Closure applications include liquid detergents, automotive products and household cleansers. Spray and lotion pump applications primarily include household, insect repellent and industrial cleaners.

PHARMA

The Pharma segment is our second largest segment in terms of net sales and total assets, accounting for 38% and 40% of our Net Sales and Total Assets, respectively, in 2019. We believe we are a leading supplier of pumps and metered dose inhaler valves ("MDIs") to the pharmaceutical market worldwide and we are an important supplier of elastomer for injectable primary packaging components worldwide. Characteristics of this market include (i) governmental regulation of our pharmaceutical customers, (ii) contaminant-controlled manufacturing environments and (iii) a significant amount of time and research from initially working with pharmaceutical companies at the molecular development stage of a medication through the eventual distribution to the market. We have clean-room manufacturing facilities in Argentina, China, France, Germany, India, Switzerland and the United States. We believe that providing an alternative to traditional medication forms such as pills with value-added, convenient dispensing systems will continue to offer opportunities for our business. In addition, we believe there are opportunities for growth in the over-the-counter and generic pharmaceutical categories.

Prescription Drug. Sales to the prescription drug market accounted for approximately 50% of the segment's total net sales in 2019. Pumps sold to the prescription drug market deliver medications nasally, orally or topically. Currently the majority of our pumps sold are for nasal allergy treatments. Sales of pumps to deliver prescription allergy medicine that is now available over-the-counter remains part of our prescription drug division. This could provide us with growth opportunities as the movement to over-the-counter availability allows consumers easier access to these types of treatments. Our nasal pumps and unit dose and bidose devices are also used to deliver pain management products. Potential opportunities for providing alternatives to traditional pill and injectable dosage forms of medication include pump dispensing systems for vaccines, cold and flu treatments, central nervous systems applications and hormone replacement therapies.

MDIs are used for dispensing precise amounts of aerosolized medication. This technology allows medication to be broken up into very fine particles, which enables the drug to be delivered typically via the pulmonary system. Currently the majority of our MDIs sold are used for respiratory ailments such as asthma and COPD (chronic obstructive pulmonary disease).

We continue to develop new dispensing systems and accessories in this segment. For example, we provide single dose delivery devices suitable for central nervous system applications. While we expect that these types of new products will come to market in the future, it is difficult to estimate when, as the rigors of pharmaceutical regulations affect the timing of product introductions by our pharmaceutical customers that use our dispensing systems.

Consumer Health Care. Sales to the consumer health care market accounted for approximately 24% of the segment's total net sales in 2019. Applications for this market are similar to the prescription market; however, these applications are sold over-the-counter without a prescription. Typical consumer health care spray pump applications include nasal decongestants, nasal salines and cough and cold applications. Typical consumer health care valve applications include nasal saline using our bag-on valve technology. We have developed a multi dose ophthalmic dispensing device suitable for unpreserved formulations. This technology is successfully marketed in Europe, North America and Latin America and is under development for other markets both for over-the-counter and prescription applications. Other products sold to this market include airless pump systems for dermal drug delivery applications. We have recently seen a trend to more child resistant and senior-friendly packaging solutions and have developed products to meet these market needs.

Injectables. Sales to the injectables market accounted for approximately 16% of the segment's total net sales in 2019. Injectables are elastomeric primary packaging components for injectable drug delivery. Injectable products offered include stoppers for vials and pre-filled syringe components, such as plungers, needle shields, tip caps and components for cartridges. Our recent investment in this business allows us to market coated stoppers which better preserve the contents of the vial and adds value to our customers and the consumer. Pharmaceutical applications for this market include vaccines, anti-thrombotic, small molecules and biologics.

Active Packaging. Active packaging is a new technology for Aptar since the CSP Technologies Acquisition in the third quarter of 2018. Sales of active packaging products accounted for approximately 10% of the segment's total net sales in 2019. Through proprietary material science expertise, we deliver active packaging solutions such as desiccant material to enhance the shelf life and effectiveness of diagnostic and solid dose products.

FOOD + BEVERAGE

The Food + Beverage segment is our smallest segment in terms of net sales and total assets, representing 15% of our Net Sales and Total Assets in 2019, but has been experiencing strong product growth over recent years. We primarily sell dispensing closures and, to a lesser degree, non-dispensing closures, elastomeric flow control components, spray pumps and aerosol valves.

Sales of dispensing closures have grown as consumers worldwide have demonstrated a preference for a package utilizing the convenience of a dispensing closure. At the same time, consumer marketers are trying to differentiate their products by incorporating performance enhancing features such as bonded aluminum liners to plastic, flow-control and no-drip dispensing, inverted packaging and directional flow to make packages simpler to use, cleaner and more appealing to consumers. We also have a number of product solutions that address the increased use of flexible packaging formats.

Food. Sales to the food market accounted for approximately 68% of the segment's total net sales in 2019 and primarily include sales of dispensing closures and elastomeric flow-control components. To a lesser degree we also sell non-dispensing closures, continuous spray aerosol valves and spray pumps to this market. Applications for dispensing closures include sauces, condiments, infant nutrition and other food products. Applications for continuous spray aerosol valves include cooking sprays. Spray pump applications primarily include butter sprays. With the completion of the CSP Technologies Acquisition in the third quarter of 2018, we have started to sell and further develop packaging solutions to the food service market to enhance the shelf life of those products.

Beverage. Sales to the beverage market accounted for approximately 32% of the segment's total net sales in 2019 and primarily include sales of dispensing closures and elastomeric flow-control components. Sales of dispensing closures to the beverage market have increased significantly over the last several years as we continue to see an increase of interest from marketers using dispensing closures for their products. Examples of beverage products currently utilizing dispensing closures include bottled water, sport and energy drinks, juices and concentrated water flavorings.

GENERAL BUSINESS INFORMATION

RESEARCH AND DEVELOPMENT

Our commitment to innovation, one of our competitive strengths, has resulted in an emphasis on research and development directed toward developing affordable, new, innovative packaging delivery solutions and adapting existing products for new markets or customer requirements. In certain cases, our customers share in the research and development expenses of customer initiated projects. Occasionally, we acquire or license from third parties technologies or products that are in various stages of development.

PATENTS AND TRADEMARKS

We customarily seek patent and trademark protection for our products and brands. We own and currently have numerous applications pending for patents and trademarks in many regions of the world. In addition, certain of our products are produced under patent licenses granted by third parties. We believe that we possess certain technical capabilities in making our products that make it difficult for a competitor to duplicate. While valuable to our overall product portfolio, sales of any one individually patented product are not considered material to any specific segment or to our consolidated results.

TECHNOLOGY

We have technical expertise regarding injection molding, robotics, clean-room facilities and high-speed assembly. We also have expertise regarding the formulation and finishing of elastomer and silicone components. In addition, we offer a variety of sterilization options for elastomeric components and active packaging technology based on proprietary material science expertise. Pumps and aerosol valves require the assembly of several different plastic, metal and rubber components using high-speed equipment. When molding dispensing closures, or plastic components to be used in pump or aerosol valve products, we use advanced plastic injection molding technology, including large cavitation plastic injection molds. We are able to mold within tolerances as small as one one-thousandth of an inch and we assemble products in a high-speed, cost-effective manner. We are experts in molding liquid silicone that is used in certain dispensing closures as well as rubber gasket formulation and production primarily for the prescription drug and consumer health care markets. We also provide analytical expertise within our pharma service technology businesses.

MANUFACTURING AND SOURCING

The majority of our worldwide production is located outside of the United States. Our philosophy is to produce as much as possible in the region where it will be sold. In order to augment capacity and to maximize internal capacity utilization (particularly for plastic injection molding), we use subcontractors to supply certain plastic, metal and rubber components. Certain suppliers of these components have unique technical abilities that make us dependent on them, particularly for aerosol valve and pump production. The principal raw materials used in our production are plastic resins, silicone, rubber and certain metal products. We believe an adequate supply of such raw materials is available from existing and alternative sources. We attempt to offset cost increases through improving productivity and developing new, higher margin solutions and increasing selling prices, as allowed by market conditions or contractual commitments. We source certain materials, especially some resins and rubber components for our pharmaceutical segment, from a single source. Significant delays in receiving these components or discontinuance of an approved raw material would require us to seek alternative sources, which could result in higher costs as well as impact our ability to supply products in the short-term.

BACKLOG

Our sales are primarily made pursuant to standard purchase orders for delivery of products. While most orders placed with us are ready for delivery within 120 days, we continue to experience a trend towards shorter lead times requested by our customers. Some customers place blanket orders, which extend beyond this delivery period. However, deliveries against purchase orders are subject to change, and only a small portion of the order backlog is noncancelable. The dollar amount associated with the noncancelable portion is not material. Therefore, we do not believe that backlog as of any particular date is an accurate indicator of future results.

CUSTOMERS

We have approximately 7,000 customers with no single customer or group of affiliated customers accounting for greater than 6% of 2019 Net Sales. A consolidation of our customer base has been occurring and this trend is expected to continue. A concentration of customers presents opportunities for increasing sales due to the breadth of our product line, our international presence and our long-term relationships with certain customers. However, consolidation of our customers could lead to pricing pressures, concentration of credit risk and fewer opportunities to introduce new products to the market.

INTERNATIONAL BUSINESS

We are geographically diverse with manufacturing and sales operations in Asia, Europe, Latin America (including Mexico) and North America. Europe is our largest region in terms of sales, where sales for the years ended December 31, 2019 and 2018 were approximately 57% and 59%, respectively, of our consolidated sales. Asia and Latin America when aggregated represented approximately 14% and 15% of our consolidated sales for the years ended December 31, 2019 and 2018, respectively. Export sales from the United States were \$170.0 million and \$171.7 million in 2019 and 2018, respectively. We are a net exporter of goods from the U.S. and Europe and a net importer of goods to the Asian and Latin American regions.

FOREIGN CURRENCY

Because of our international presence, movements in exchange rates have a significant impact on the translation of the financial statements of our foreign subsidiaries. Our primary foreign exchange exposure is to the euro, but we have foreign exchange exposure to the Chinese yuan, Brazilian real, Mexican peso, Swiss franc and other Asian, European and South American currencies. A strengthening U.S. dollar relative to foreign currencies has a dilutive translation effect on our financial statements. Conversely, a weakening U.S. dollar has an additive effect. We manage our exposures to foreign exchange principally with forward exchange contracts to economically hedge recorded transactions and firm purchase and sales commitments denominated in foreign currencies.

During the quarter ended June 30, 2018, we concluded that Argentina has become a highly inflationary economy primarily based on published estimates, which indicate that Argentina's three-year cumulative inflation rate has exceeded 100%. Beginning July 1, 2018, we applied highly inflationary accounting for our Argentinian subsidiaries. We have changed the functional currency from the Argentinian peso to the U.S. dollar.

WORKING CAPITAL PRACTICES

Collection and payment periods tend to be longer for our operations located outside the United States due to local business practices. We have also seen an increasing trend in pressure from certain customers to lengthen their payment terms. As the majority of our products are made to order, we have not needed to keep significant amounts of finished goods inventory to meet customer requirements. However, some of our contracts specify an amount of finished goods safety stock we are required to maintain.

To the extent our financial position allows and there is a clear financial benefit, we from time-to-time benefit from early payment discounts with some suppliers. We are also lengthening the payment terms with our suppliers to be in line with customer trends. While we have offered third party alternatives for our suppliers to receive payments sooner, we have not utilized these offerings from our customers as the economic conditions currently are not beneficial for us.

EMPLOYEE AND LABOR RELATIONS

AptarGroup has approximately 14,000 full-time employees. Of the full-time employees, approximately 8,700 are located in Europe, 2,900 are located in Asia and South America and the remaining 2,400 are located in North America. The majority of our European and Latin American employees are covered by collective bargaining arrangements made at either the local or national level in their respective countries and approximately 100 of the North American employees are covered by a collective bargaining agreement. Termination of employees at certain of our international operations could be costly due to local regulations regarding severance benefits. There were no material work stoppages in 2019 and management considers our employee relations to be satisfactory.

COMPETITION

All of the markets in which we operate are highly competitive and we continue to experience price competition in all product lines and markets. Competitors include privately and publicly held entities that range from regional to international companies. We expect the market for our products to remain competitive, as consolidation among our competitors is increasing in the current economic climate. We believe our competitive advantages are consistent high levels of innovation, quality and service, geographic diversity, financial strength and stability and breadth of products and services. Our manufacturing strength lies in the ability to mold complex plastic components and formulate and finish elastomer and silicone components in a cost-effective manner and to assemble products at high speeds. Our business is somewhat capital intensive and it is becoming more important to our customers that we have global manufacturing capabilities. Both of these serve as barriers to entry for new competitors wanting to enter our business. Furthermore, within our Pharma business, increasing regulatory hurdles present a barrier for new competitors to enter the market.

While we have experienced some competition in Europe, Latin America and the United States from low cost Asian suppliers, particularly in the low-end beauty and personal care market, this has not been significant. Although using low cost Asian suppliers may have a cost advantage, some customers prefer local suppliers citing better quality, better customer service and shorter lead times. We have also recently reduced our carbon footprint due to shorter supply chain networks being utilized, which we see as a competitive advantage.

ENVIRONMENT

Our manufacturing operations primarily involve plastic injection molding, automated assembly processes, elastomer and silicone formulation and finishing and, to a limited degree, metal anodization and vacuum metallization of plastic components. Historically, the environmental impact of these processes has been minimal, and we believe we meet current environmental standards in all material respects. To date, our manufacturing operations have not been significantly affected by environmental laws and regulations relating to the environment.

Recently there is increased interest and awareness from consumers, and from our customers, in environmentally sustainable products, especially through the sourcing of sustainable materials. We are focused on reducing our environmental impacts through product life cycle assessments, sustainable material trials, operational eco-efficiency initiatives and renewable energy sourcing. We have teams dedicated to designing for sustainability by providing products that improve recyclability and use less material. Aptar has launched products and components in North America and Europe made with post-consumer recycled resins (PCR) and continues to explore additional opportunities for alternative resins and recyclable products.

We are actively collaborating with our customers on reliable products by supporting our customers' participation in the circular e-commerce platform called "Loop," in addition to being an investor in Loop ourselves. We also invested in and partnered with PureCycle, to prepare for the introduction of Ultra-Pure Recycled Polypropylene (UPRP) into dispensing applications.

Connecting with other companies through organizations like Ellen MacArthur Foundation's New Plastics Economy and the World Business Council for Sustainable Development (WBCSD) provides an invaluable opportunity to share best practices and work on larger projects with aligned objectives towards a more circular economy.

Future regulations on environmental matters regarding recycling or material inputs could impact our business.

GOVERNMENT REGULATION

Certain of our products are directly or indirectly affected by government regulation. The European Union has adopted a circular economy package. The package maps out a series of actions planned over several years. Some actions have resulted in regulations aimed to reduce marine litter, increase plastic recycling rates, prohibit single-use plastic packaging and introduce new taxes in relation to the end-of-life management of packaging. In parts of the United States, regulations require food and beverage companies to tether plastic caps to ensure the caps stay with the package, thus improving the likelihood the caps will enter the recycling stream. The potential exists for these types of regulations to expand worldwide. We have established an innovation team that focuses on designing for and converting into more sustainable options like post-consumer recycled resin and Food and Drug Administration approved resin alternatives. We are designing for sustainability by providing products that improve recyclability and use less material, and we offer multiple tethered options. We are also partnering with global and regional thought leaders to drive a more circular economy.

Demand for aerosol and pump packaging is also affected by government regulations regarding the release of volatile organic compounds ("VOCs") into the atmosphere. Europe and the United States have regulations that require the reduction in the amount of VOCs that can be released into the atmosphere and the potential exists for this type of regulation to expand worldwide. These regulations required certain of our customers to reformulate certain aerosol and pump products, which may have affected the demand for such products. We own patents and have developed systems to function with alternative propellant and product formulations.

Future government regulations could include healthcare cost containment policies. For example, reviews by various governments to determine the number of drugs, or prices thereof, that will be paid by their insurance systems could affect future sales of our pharmaceutical customers' products and thus adversely impact our sales to these customers. Such regulation could adversely affect prices of and demand for our pharmaceutical products. We believe that the focus on the cost effectiveness of the use of medications as compared to surgery and hospitalization provides us with an opportunity to expand sales to the pharmaceutical market.

INFORMATION ABOUT OUR EXECUTIVE OFFICERS

Our executive officers as of February 24, 2020 are as follows:

Name	Age	Position with the Company
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Stephan Tanda	54	President and Chief Executive Officer
Mr. Tanda has been President and Chief Executive Officer since February 2017. Prior to this, Mr. Tanda was an Executive Managing Board Director at Royal DSM NV, a leading global supplier of ingredients and material solutions for the food, dietary supplement, personal care, medical device, automotive, paint, electronic and bio-material markets, from March 2007 to January 2017.		
Robert Kuhn	57	Executive Vice President, Chief Financial Officer and Secretary
Mr. Kuhn has been Executive Vice President and Chief Financial Officer since September 2008. Mr. Kuhn has been Secretary since June 2011.		
Eldon Schaffer	54	Executive Vice President, Strategic Projects and Commercial Excellence
Mr. Schaffer has been Executive Vice President of Strategic Projects and Commercial Excellence since December 2019. Prior to this, Mr. Schaffer was President of Aptar Beauty + Home from January 2016 to December 2019, President of Aptar Food + Beverage from 2012 to 2015 and President of Aptar Beauty + Home North America from 2010 to 2011.		
Marc Prieur	54	President, Aptar Beauty + Home
Mr. Prieur has been President of Aptar Beauty + Home since December 2019. Prior to this, Mr. Prieur was President of Aptar Food + Beverage from September 2018 to November 2019, VP of Aptar Operational Excellence from June 2017 to August 2018, President EMEA Sales & Operations – Consumer Health Care from June 2013 to June 2017 and President of our Pharma business in Asia from June 2008 to June 2013.		
Hedi Tiili	45	President, Aptar Food + Beverage
Mr. Tiili has been President of Aptar Food + Beverage since December 2019. Prior to this, Mr. Tiili was President of Aptar EMEA Beauty + Home from June 2018 to November 2019 and President of Aptar EMEA Food + Beverage from May 2016 to May 2018. Prior to joining Aptar, Mr. Tiili held leadership positions at our packaging solutions peers Albéa and Sonoco. He was a Cluster Deputy Manager in Albéa Group from September 2014 to March 2016, Country General Manager in Sonoco from April 2013 to June 2014 and European Sales and Marketing Director from September 2011 to March 2013 in Sonoco.		
Gael Touya	50	President, Aptar Pharma
Mr. Touya has been President of Aptar Pharma since September 2018. Prior to this, Mr. Touya was President of Aptar Food + Beverage from 2016 to August 2018, President of Aptar Food + Beverage Europe from 2012 to 2015 and Business Development Vice President Skin Care and Color Cosmetics from 2010 to 2011.		
Xiangwei Gong	50	President, Aptar Asia
Ms. Gong has been President of Aptar Asia since October 2018. Prior to this, Ms. Gong held various leadership positions at Royal DSM for over 22 years. She was President of DSM Hydrocolloids from 2014 to 2018, President Asia of DSM Food Specialties from 2011 to 2014, Vice President of Channel Marketing from 2008 to 2011 and Vice President of Personal Care in DSM North America from 2005 to 2008.		
Shiela Vinczeller	56	Chief Human Resources Officer
Ms. Vinczeller has been Chief Human Resources Officer since November 2018. Prior to this, Ms. Vinczeller spent 12 years in Human Resources leadership roles at International Paper, one of the world's leading producers of fiber-based packaging, pulp and paper.		

There were no arrangements or understandings between any of the executive officers and any other person(s) pursuant to which such officers were elected.

ITEM 1A. RISK FACTORS

Set forth below and elsewhere in this report and in other documents we file with the Securities and Exchange Commission are risks and uncertainties that could cause our actual results or other events to materially differ from the results or events contemplated by the forward-looking statements contained in this report and in other documents we file with the Securities and Exchange Commission. Additional risks and uncertainties not presently known to us, or that we currently deem immaterial, may also impair our business operations. You should carefully consider the following factors in addition to other information contained in this Form 10-K before purchasing any shares of our common stock.

If there is deterioration in economic conditions in a particular region or market, our business and operating results could be materially adversely impacted. Due to our strong balance sheet, diverse product offerings, various end-markets served, and our broad geographic presence, we believe we are well positioned to withstand slowness in any one particular region or market. However, economic uncertainties affect businesses such as ours in a number of ways, making it difficult to accurately forecast and plan our future business activities. A tightening of credit in financial markets or other factors may lead consumers and businesses to postpone spending, which may cause our customers to cancel, decrease or delay their existing and future orders with us. In addition, financial difficulties experienced by our suppliers, customers or distributors could result in product delays, increased accounts receivable defaults, inventory or supply challenges and pricing pressures. An interruption in supply may also impact our ability to meet customer demands. Consumer demand for our customers' products and shifting consumer preferences are unpredictable and could have a negative impact on our customers and our customers' demand for our products.

We face strong global competition and our market share could decline. All of the markets in which we operate are highly competitive and we continue to experience price competition in all product lines and segments. Competitors include privately and publicly held entities that range from regional to international companies. We expect the market for our products to remain competitive, as consolidation among our competitors is increasing in the current economic climate. If we are unable to compete successfully, our market share may decline, which could materially adversely affect our results of operations and financial condition.

Geopolitical conditions, including trade disputes and direct or indirect acts of war or terrorism, could have a material adverse effect on our operations and financial results. Our operations could be disrupted by geopolitical conditions such as Brexit, trade disputes, international boycotts and sanctions, acts of war, terrorist activity or other similar events. Such events could make it difficult, impossible or more expensive to manufacture or deliver products to our customers, receive production materials from our suppliers, or perform critical functions, all of which could adversely affect our business globally or in certain regions. In addition, our customers may export their finished products using our dispensing devices that were sold in other regions and an adverse geopolitical event may impact the sales of our customers' products and thus indirectly negatively impact the demand for our dispensing solutions. However, our business is well-diversified across nine end markets and many geographies as we produce in seventeen countries and while we do face some risk related to specific trade policies, we believe our diverse business model, coupled with our diverse and global customer base, allow some protection from dependency on any one geographic region, country or even trade route.

We have foreign currency translation and transaction risks that may materially adversely affect our operating results. A majority of our operations are located outside of the United States. Because of this, movements in exchange rates may have an impact on the translation of the financial statements of our foreign entities. Our primary foreign exchange exposure is to the euro, but we have foreign exchange exposure to the Chinese yuan, Brazilian real, Mexican peso, Swiss franc, and other Asian, European and South American currencies. A strengthening U.S. dollar relative to foreign currencies has a dilutive translation effect on our financial statements. Conversely, a weakening U.S. dollar has an additive translation effect. In some cases, we sell products denominated in a currency different from the currency in which the related costs are incurred. We manage our exposures to foreign exchange principally with forward exchange contracts to economically hedge certain transactions and firm purchase and sales commitments denominated in foreign currencies. The volatility of currency exchange rates may materially affect our operating results.

Government regulation on environmental matters regarding recycling or environmental sustainability policies could impact our business. Future government regulations mandating the use or limitations of certain materials could impact our manufacturing processes or the technologies we use forcing faster development and adoption of alternative materials or assets used in the production of our products.

Future government regulations of healthcare cost containment policies may impact our pharmaceutical sales. Review by governments of the number of drugs and prices thereof that will be paid by their insurance systems could affect future sales to the pharmaceutical industry and thereby adversely affect prices of and demand for our pharmaceutical products.

Consolidation of customer base could impact our business. We believe mergers and acquisitions within our customer base create opportunities for increasing sales due to the breadth of our product line, our international presence and our long-term relationships with certain customers. However, consolidation of our customers could lead to pricing pressures, concentration of credit risk and fewer opportunities to introduce new products to the market.

If our expansion initiatives are unsuccessful, our operating results and reputation may suffer. We are expanding our operations in a number of geographies and markets, including facilities expansions in Latin America and Asia, and market expansions such as active packaging. Expansion of our operations require a significant amount of time and attention from our senior management and/or capital investment. These activities present considerable challenges and risks, including the general economic and political conditions in the markets that we enter, attracting, training and retaining qualified and talented employees, infrastructure disruptions, fluctuations in currency exchange rates, the imposition of restrictions by governmental authorities, compliance with current, new and changing governmental laws and regulations and the cost of such compliance activities. If any of our expansion efforts are unsuccessful, our operating results and reputation may suffer.

The success or failure of our customers' products, particularly in the pharmaceutical market, may materially affect our operating results and financial condition. In the pharmaceutical market, the proprietary nature of our customers' products and the success or failure of their products in the market using our dispensing systems may have a material impact on our operating results and financial condition. We may potentially work for years on modifying our dispensing device to work in conjunction with a customer's drug formulation. If the customer's pharmaceutical product is not approved by regulatory bodies or it is not successful on the market, the associated costs may not be recovered.

Higher raw material costs and other inputs and an inability to increase our selling prices may materially adversely affect our operating results and financial condition. The cost of raw materials and other inputs (particularly plastic resin, rubber, metal, anodization costs and transportation and energy costs) are volatile and susceptible to rapid and substantial changes due to factors beyond our control, such as changing economic conditions, currency fluctuations, weather conditions, political unrest and instability in energy-producing nations, and supply and demand pressures. Raw material costs may increase in the coming years and, although we have generally been able to increase selling prices to cover increased costs, future market conditions may prevent us from passing these increased costs on to our customers through timely price increases. In addition, we may not be able to improve productivity or realize savings from our cost reduction programs sufficiently enough to offset the impact of increased raw material costs. As a result, higher raw material costs could result in declining margins and operating results.

In difficult market conditions, our fixed costs structure combined with potentially lower revenues may negatively impact our results. Our business is characterized by relatively high fixed costs and, notwithstanding our utilization of third-party manufacturing capacity, most of our production requirements are met by our own manufacturing facilities. In difficult environments, we are generally faced with a decline in the utilization rates of our manufacturing facilities due to decreases in product demand. During such periods, our plants may not operate at full capacity and the costs associated with this excess capacity are charged directly to cost of sales. Difficult market conditions in the future may adversely affect our utilization rates and consequently our future gross margins, and this, in turn, could have a material negative impact on our business, financial condition and results of operations.

If our unionized employees were to engage in a strike or other work stoppage, our business, operating results and financial position could be materially adversely affected. The majority of our European and Latin American employees are covered by collective bargaining arrangements made either at the local or national level in their respective countries and approximately 100 of our North American employees are covered by a collective bargaining agreement. Although we believe that our relations with our employees are satisfactory, no assurance can be given that this will continue. If disputes with our unions arise, or if our unionized workers engage in a strike or other work stoppage, we could incur higher labor costs or experience a significant disruption of operations, which could have a material adverse effect on our business, operating results and financial position.

Single sourced materials and manufacturing sites could adversely impact our ability to deliver product. We source certain materials, especially some resins and rubber components for our pharmaceutical segment, from a single source. Any disruption in the supply of these materials could adversely impact our ability to deliver product to our customers. Similarly, we have certain components and products that are manufactured at a single location or from a single machine or mold. Any disruption to the manufacturing process could also adversely impact our ability to deliver product to our customers.

If we were to incur a significant product liability claim above our current insurance coverage, our business, operating results and financial condition could be materially adversely affected. The failure of our devices to operate as intended may result in a product liability claim against us. We believe we maintain adequate levels of product liability insurance coverage. A product liability claim in excess of our insurance coverage or not covered by existing insurance may materially adversely affect our business, operating results and financial condition.

Increased cybersecurity threats could pose a risk to our operations. Increased global information security threats and more sophisticated, targeted computer crime pose a risk to the confidentiality, availability and integrity of our data, operations and infrastructure, as well as the data of our customers. We continue to assess potential threats and make investments seeking to reduce the risk of these threats by employing a number of security measures, including employee training, comprehensive monitoring of our networks and systems, ensuring strong data protection standards are in place, and safeguarding our critical information assets. We also periodically test our systems for vulnerabilities and regularly rely on third parties to conduct such tests. To date, we have seen no material impact on our business or operations from these threats; however, we cannot guarantee that our security efforts will prevent unauthorized access or loss of functionality to our or our third-party providers' systems. Even with these mitigations, our information systems remain potentially vulnerable to sophisticated cybersecurity threats. Depending on their nature and scope, such threats could potentially lead to the compromise of confidential information, improper use of our systems and networks, manipulation and destruction of data, production downtimes and operational disruptions, which in turn could adversely affect our reputation, competitiveness and results of operations.

If our integration of acquisitions are unsuccessful, our operating results and reputation in the investment community may suffer. We continue to pursue growth through acquisitions, including the recent Noble, Nanopharm, Gateway, CSP Technologies and Reboul acquisitions. If our integration efforts, including unlocking synergies, are unsuccessful we may not realize the full potential of the acquisitions and as a result our financial performance may suffer.

We have approximately \$763.5 million in recorded goodwill at December 31, 2019, and changes in future business conditions could cause this asset to become impaired, requiring write-downs that would reduce our operating income. We evaluate the recoverability of goodwill amounts annually, or more frequently when evidence of potential impairment exists. The impairment test is based on several factors requiring judgment. A decrease in expected reporting unit cash flows or changes in market conditions may indicate potential impairment of recorded goodwill and, as a result, our operating results could be materially adversely affected. See "Critical Accounting Estimates" in Part II, Item 7 for additional information.

We are subject to tax regulations in the many jurisdictions in which we operate, and changes in tax regulations could materially impact our results. Future changes in tax laws or in the interpretation of tax laws in jurisdictions where we have significant operations could materially impact our provision for income taxes, the amount of taxes payable and our deferred tax asset and liability balances.

We are currently implementing a business transformation plan, with the main objective to return our Beauty + Home segment to historical growth and profit margins. Certain elements of this transformation plan can be disruptive to our business and our employees if we do not manage the change properly. Furthermore, the transformation plan may take longer to complete than currently expected, may be more costly to complete than currently expected and may not be successful in returning Beauty + Home to historical growth and profit margins. Any such effects could materially adversely impact our business.

We may be adversely affected by changes in the method of determining the London Interbank Offered Rate ("LIBOR") or other Interbank Rates (IBORs) for our variable rate loans, derivative contracts and other financial assets and liabilities. We have loans, derivative contracts and other financial instruments which are directly or indirectly dependent on LIBOR to establish their interest rate and/or value. The U.K. Financial Conduct Authority announced in 2017 that it would no longer compel banks to submit rates for the calculation of LIBOR after 2021. It is not possible to predict whether banks will continue to provide LIBOR submissions to the administrator of LIBOR, whether LIBOR rates will cease to be published or supported before or after 2021 or whether any additional reforms to LIBOR may be enacted in the United Kingdom or elsewhere. It is expected that a transition away from the widespread use of LIBOR to alternative rates is likely to occur during the next couple years. The transition from LIBOR may cause us to incur increased costs and additional risk. Uncertainty as to the nature of alternative reference rates and as to potential changes in or other reforms to LIBOR may adversely affect LIBOR rates and the value of LIBOR-based loans originated prior to 2021. If LIBOR rates are no longer available, any successor or replacement interest rates may perform differently, which may affect our net interest expense, change our market risk profile and require changes to our risk, pricing and hedging strategies. We will continue our impact assessment and monitor regulatory developments during the transition period.

Ownership by Certain Significant Stockholders. Currently, Aptar has four institutional stockholders who each own between 6% and 11% of our outstanding common stock. None of these stockholders have direct representation on our Board of Directors. If one of these stockholders decides to sell significant volumes of our stock, this could put downward pressure on the price of the stock.

We have significant international sales and operations and face risks related to health epidemics which could adversely affect our business and results of operations. Our business and operations could be materially and adversely affected by the effects of a widespread outbreak of a contagious disease, including the recent outbreak of the respiratory illness caused by a coronavirus strain first identified in Wuhan, Hubei Province, China, or any other outbreak of contagious diseases, and other adverse public health developments. These effects could include disruptions or restrictions on our employees' ability to travel, as well as temporary closures of our facilities or the facilities of our customers, suppliers, or other vendors in our supply chain. We have restricted travel to China by our employees and have instituted facilities closures in line with instructions from the local authorities as a response to the coronavirus epidemic. Approximately 4% of our Net Sales in 2019 were related to Chinese operations and any disruption of our supply chain or customers could adversely impact our business and results of operations, as our multinational customers export their products to China or sell via travel retail channels. Accordingly, the coronavirus could result in a reduction in demand from our customers outside of China and adversely impact our European and North American sales. Although we do not source a significant amount of products or components from China, the indirect impact of our suppliers who may be sourcing raw materials via China is unknown at this time. As such, we are conducting a supply chain analysis by region to determine if any disruptions could occur. We will also communicate with customers as needed regarding any significant changes to our supply chain should they become evident, though at this time, we don't anticipate any significant disruptions.

ITEM 1B. UNRESOLVED STAFF COMMENTS

We have no unresolved comments from the SEC.

ITEM 2. PROPERTIES

We lease or own our principal offices and manufacturing facilities. None of the owned principal properties is subject to a lien or other encumbrance material to our operations. We believe that existing operating leases will be renegotiated as they expire, will be acquired through purchase options or that suitable alternative properties will be leased on acceptable terms. We consider the condition and extent of utilization of our manufacturing facilities and other properties to be generally good, and the capacity of our plants to be adequate for the needs of our business. The locations of our principal manufacturing facilities, by country, are set forth below:

ARGENTINA

Berazategui (1 & 2)
Tortuguitas (1 & 3)

BRAZIL

Bahia (1)
Cajamar (1)
Maringá Paraná (1 & 3)
Jundiaí (1)

CHINA

Guangzhou (1, 2 & 3)
Suzhou (1, 2 & 3)

COLOMBIA

Cali (1)

CZECH REPUBLIC

Ckyne (1 & 3)

FRANCE

Annecy (1 & 2)
Brecey (2)
Charleval (1 & 2)
Granville (2)
Le Neubourg (1)
Le Vaudreuil (2)
Niederbronn-les-Bains (2)
Oyonnax (1)
Poincy (1 & 3)
Verneuil Sur Avre (1)

GERMANY

Böhringen (1 & 2)
Dortmund (1)
Eigeltingen (2)
Freyung (1 & 3)
Menden (1)
Villingen-Schwenningen (1 & 2)

INDIA

Hyderabad (1 & 3)
Mumbai (2)

IRELAND

Ballinasloe, County Galway (1)

ITALY

Manoppello (1)
San Giovanni Teatino (Chieti) (1 & 3)

MEXICO

Queretaro (1 & 3)

RUSSIA

Vladimir (1 & 3)

SPAIN

Madrid (1)
Torello (1 & 3)

SWITZERLAND

Mezzovico (2)

THAILAND

Chonburi (1)

UNITED KINGDOM

Leeds, England (1 & 3)

UNITED STATES

Atlanta, Georgia (3)
Auburn, Alabama (2 & 3)
Cary, Illinois (1, 2 & 3)
Congers, New York (2)
Eatontown, New Jersey (1 & 2)
Lincolnton, North Carolina (3)
McHenry, Illinois (1 & 2)
Midland, Michigan (1 & 3)
Mukwonago, Wisconsin (1, 2 & 3)
Stratford, Connecticut (1)
Torrington, Connecticut (1)
Watertown, Connecticut (1)

-
- (1) Locations of facilities manufacturing for the Beauty + Home segment.
(2) Locations of facilities manufacturing for the Pharma segment.
(3) Locations of facilities manufacturing for the Food + Beverage segment.

We also have sales personnel in countries other than those listed above. Our corporate office is located in Crystal Lake, Illinois. We also have service facilities and corporate offices in addition to those listed above.

ITEM 3. LEGAL PROCEEDINGS

In the normal course of business, we are subject to a number of lawsuits and claims both actual and potential in nature. While management believes the resolution of these claims and lawsuits will not have a material adverse effect on our financial position or results of operations or cash flows, claims and legal proceedings are subject to inherent uncertainties, and unfavorable outcomes could occur that could include amounts in excess of any accruals which management has established. Were such unfavorable final outcomes to occur, it is possible that they could have a material adverse effect on our financial position, results of operations and cash flows.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

MARKET FOR REGISTRANT'S COMMON EQUITY

Our Common Stock is traded on the New York Stock Exchange under the symbol "ATR". As of February 18, 2020, there were approximately 190 holders of record of our Common Stock. A substantially greater number of holders of our Common Stock are "street name" or beneficial holders, whose shares of record are held by banks, brokers, and other financial institutions.

DIVIDENDS

On January 29, 2020, our Board of Directors declared a quarterly cash dividend of \$0.36 per share of Common Stock, which was paid on February 19, 2020 to stockholders of record as of January 29, 2020. While we expect to continue to pay a regular quarterly dividend of \$0.36 per share in 2020, the timing, declaration, amount and payment of any future cash dividends are at the discretion of the Board of Directors and will depend on our available cash, working capital, financial condition, results of operations, capital requirements, covenants in our credit facility, applicable law and other factors that our Board of Directors considers relevant.

RECENT SALES OF UNREGISTERED SECURITIES

Certain French employees are eligible to participate in the FCP Aptar Savings Plan (the "Plan"). An independent agent purchases shares of Common Stock available under the Plan for cash on the open market and we do not issue shares. We do not receive any proceeds from the purchase of Common Stock under the Plan. The agent under the Plan is Banque Nationale de Paris Paribas Fund Services. No underwriters are used under the Plan. All shares are sold in reliance upon the exemption from registration under the Securities Act of 1933 provided by Regulation S promulgated under that Act. During the quarter ended December 31, 2019, the Plan purchased 4,993 shares of our Common Stock on behalf of the participants at an average price of \$112.16 per share, for an aggregate amount of \$560 thousand, and sold 350 shares of our Common Stock on behalf of the participants at an average price of \$114.32 per share, for an aggregate amount of \$40 thousand. At December 31, 2019, the Plan owned 90,193 shares of our Common Stock.

ISSUER PURCHASES OF EQUITY SECURITIES

On April 18, 2019, we announced a share repurchase authorization of up to \$350 million of Common Stock. This authorization replaces previous authorizations and has no expiration date. We may repurchase shares through the open market, privately negotiated transactions or other programs, subject to market conditions.

We spent \$31.6 million to repurchase approximately 286 thousand shares during the fourth quarter of 2019.

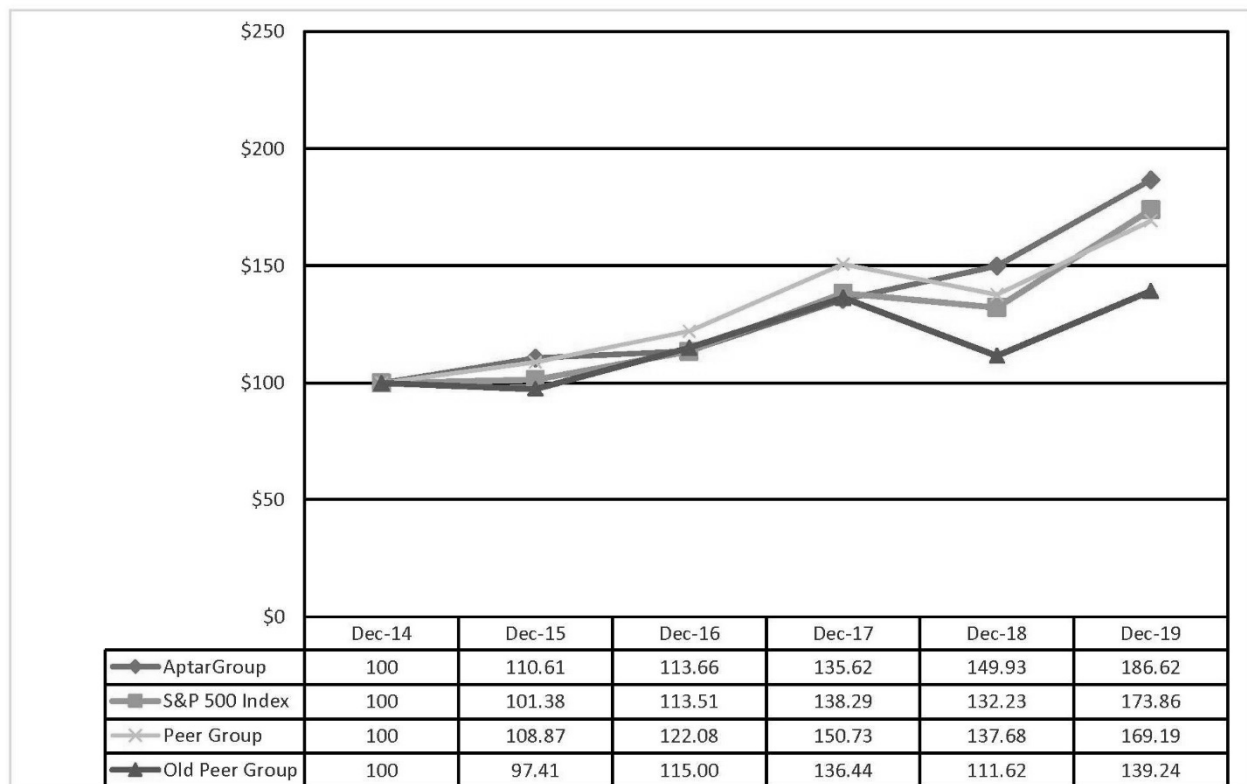
The following table summarizes our purchases of securities for the quarter ended December 31, 2019:

Period	Total Number Of Shares Purchased	Average Price Paid Per Share	Total Number Of Shares Purchased as Part Of Publicly Announced Plans Or Programs	Dollar Value Of Shares that May Yet be Purchased Under The Plans or Programs (in millions)
10/1 – 10/31/19	8,600	\$ 118.73	8,600	\$ 309.1
11/1 – 11/30/19	219,335	110.14	219,335	284.9
12/1 – 12/31/19	57,601	111.90	57,601	278.5
Total	285,536	\$ 110.75	285,536	\$ 278.5

SHARE PERFORMANCE

The following graph shows a five year comparison of the cumulative total stockholder return on our Common Stock as compared to the cumulative total return of the Standard & Poor's 500 Composite Stock Price Index and to an index of peer group companies we selected. In 2019, we changed our peer group to align with the compensation peer group used by our Management Development and Compensation Committee which includes companies that align more closely with our current business structure. The companies included in the new peer group are: Albemarle Corporation, Ashland Global Holdings Inc., Berry Global Group, Inc., Catalent, Inc., CCL Industries Inc., Hill-Rom Holdings, Inc., ICU Medical, Inc., Ingredion Inc., International Flavors & Fragrances, Inc., McCormick & Company, Inc., Sealed Air Corporation, Sensient Technologies Corporation, Silgan Holdings, Inc., Sonoco Products Company, Stericycle, Inc., STERIS plc, Teleflex Inc. and West Pharmaceutical Services, Inc. The companies included in our old peer group are: Berry Global Group, Inc., Crown Holdings, Inc., Graphic Packaging Holding Company, Greif Inc., H.B. Fuller Company, International Flavors & Fragrances, Inc., Owen's Illinois, Inc., Packaging Corporation of America, PH Glatfelter Company., Rayonier Inc., Sealed Air Corporation, Sensient Technologies Corporation, Silgan Holdings, Inc., Sonoco Products Company, Stepan Company, TriMas Corporation and West Pharmaceutical Services Inc.

Comparison of 5 Year Cumulative Stockholder Returns



The graph and other information furnished in the section titled "Share Performance" under this Part II, Item 5 of this Form 10-K shall not be deemed to be "soliciting" material or to be "filed" with the Securities and Exchange Commission or subject to Regulation 14A or 14C, or to the liabilities of Section 18 of the Securities Exchange Act of 1934, as amended.

ITEM 6. SELECTED FINANCIAL DATA

FIVE YEAR SUMMARY OF SELECTED FINANCIAL DATA

Dollars in millions, except per share data

Years Ended December 31,	2019	2018	2017	2016	2015
Statement of Income Data:					
Net Sales	\$ 2,859.7	\$ 2,764.8	\$ 2,469.3	\$ 2,330.9	\$ 2,317.1
Cost of sales (exclusive of depreciation and amortization shown below) (1)	1,818.4	1,813.0	1,603.1	1,496.2	1,499.0
% of Net Sales	63.6 %	65.6 %	64.9 %	64.2 %	64.7 %
Selling, research & development and administrative	454.6	430.0	387.4	366.3	349.1
% of Net Sales	15.9 %	15.6 %	15.7 %	15.7 %	15.1 %
Depreciation and amortization	194.6	171.7	153.1	154.8	138.9
% of Net Sales	6.8 %	6.2 %	6.2 %	6.6 %	6.0 %
Restructuring initiatives	20.5	63.8	2.2	—	—
% of Net Sales	0.7 %	2.3 %	0.1 %	— %	— %
Operating Income	371.7	286.3	323.5	313.7	330.2
% of Net Sales	13.0 %	10.3 %	13.1 %	13.5 %	14.2 %
Net Income	242.2	194.8	220.0	205.6	199.3
% of Net Sales	8.5 %	7.0 %	8.9 %	8.8 %	8.6 %
Net Income Attributable to AptarGroup, Inc.	242.2	194.7	220.0	205.6	199.3
% of Net Sales	8.5 %	7.0 %	8.9 %	8.8 %	8.6 %
Net Income Attributable to AptarGroup, Inc. per Common Share:					
Basic	3.81	3.12	3.52	3.27	3.19
Diluted	3.66	3.00	3.41	3.17	3.09
Balance Sheet and Other Data:					
Capital Expenditures	\$ 242.3	\$ 211.3	\$ 156.6	\$ 129.0	\$ 149.3
Total Assets	3,562.1	3,377.7	3,137.8	2,606.8	2,437.0
Long-Term Obligations	1,085.5	1,126.0	1,191.1	772.7	760.8
Net Debt (2)	953.7	1,028.1	544.7	480.3	298.1
Total Stockholders' Equity	1,572.3	1,422.9	1,312.0	1,174.2	1,149.7
Capital Expenditures % of Net Sales	8.5 %	7.6 %	6.3 %	5.5 %	6.4 %
Interest Bearing Debt to Total Capitalization (3)	43.2 %	47.6 %	48.9 %	44.6 %	41.6 %
Net Debt to Net Capital (4)	37.8 %	41.9 %	29.3 %	29.0 %	20.6 %
Cash Dividends Declared per Common Share	1.42	1.32	1.28	1.22	1.14

(1) Cost of sales includes \$7.4 million reduction in expense for 2015 due to a change in accounting method relating to our inventory accounting methods.

(2) Net Debt is interest bearing debt less cash and cash equivalents.

(3) Total Capitalization is Total Stockholders' Equity plus Interest Bearing Debt.

(4) Net Capital is Total Stockholders' Equity plus Net Debt. Net Debt to Net Capital is a non-U.S. GAAP financial measure. See the reconciliation of non-U.S. GAAP measures starting on page 22.

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

(Dollars in thousands, except per share amounts or as otherwise indicated)

The objective of the following Management's Discussion and Analysis of Financial Condition and Results of Operations ("MD&A") is to help the reader understand the financial performance of AptarGroup, Inc. MD&A is presented in eight sections: Overview, Results of Operations, Liquidity and Capital Resources, Off-Balance Sheet Arrangements, Overview of Contractual Obligations, Recently Issued Accounting Pronouncements, Critical Accounting Estimates, Operations Outlook and Forward-Looking Statements. MD&A should be read in conjunction with our Consolidated Financial Statements and accompanying Notes to Consolidated Financial Statements contained elsewhere in this Annual Report on Form 10-K.

In MD&A, "we," "our," "us," "AptarGroup," "AptarGroup, Inc.," "Aptar" and the "Company" refer to AptarGroup, Inc. and its consolidated subsidiaries.

OVERVIEW

GENERAL

Aptar is a leading global supplier of a broad range of innovative dispensing, sealing, active packaging solutions and services for the beauty, personal care, home care, prescription drug, consumer health care, injectables, active packaging, food and beverage markets. We use insights, design, engineering and science to create innovative packaging technologies that build brand value for our customers, and, in turn, make a meaningful difference in the lives, looks, health and homes of people around the world.

In addition to the information presented herein that conforms to accounting principles generally accepted in the United States of America ("U.S. GAAP"), we also present certain financial information that does not conform to U.S. GAAP, which are referred to as non-U.S. GAAP financial measures. Management may assess our financial results both on a U.S. GAAP basis and on a non-U.S. GAAP basis. We believe it is useful to present these non-U.S. GAAP financial measures because they allow for a better period over period comparison of operating results by removing the impact of items that, in management's view, do not reflect Aptar's core operating performance. These non-U.S. GAAP financial measures should not be considered in isolation or as a substitute for U.S. GAAP financial results, but should be read in conjunction with the audited consolidated statements of income and other information presented herein. Investors are cautioned against placing undue reliance on these non-U.S. GAAP measures. Further, investors are urged to review and consider carefully the adjustments made by management to the most directly comparable U.S. GAAP financial measure to arrive at these non-U.S. GAAP financial measures. See the reconciliation of non-U.S. GAAP measures starting on page 22.

For the year ended December 31, 2019, reported sales increased 3% to \$2.86 billion from \$2.76 billion a year ago. Core sales, excluding the positive impact from changes in currency exchange rates and acquisition effects, increased approximately 3%. A reconciliation of core sales growth to reported net sales growth, the most directly comparable U.S. GAAP measure, can be found on page 18. During 2019, top line growth in our Pharma and Food + Beverage segments compensated for lower sales in our Beauty + Home segment due to softness in our personal care market. Excluding a gain on sale of investment in 2018 of \$6.5 million, all three segments showed improvement in adjusted EBITDA margins resulting from core sales growth across the majority of our markets, acquisitions we made in 2018 and 2019 and the positive impact of our transformation activities.

2019 HIGHLIGHTS

- Reported sales increased 3%. Core sales, excluding currency and acquisition effects, also grew 3%.
- Reported net income increased 24%. Adjusted EBITDA, excluding among other things restructuring expenses, acquisition costs and purchase accounting adjustments related to acquired inventory and backlog, increased 8% and our adjusted EBITDA margin was 21% in 2019 compared to 20% a year ago.
- Net cash provided by operations increased to \$514.5 million in 2019 compared to \$313.6 million in 2018.
- Free cash flow, which reflects net cash provided by operations less capital expenditures, increased to \$272.2 million in 2019 compared to \$102.4 million in 2018.
- Acquired strategic technologies and capabilities (Noble, Bapco, Nanopharm and Gateway) to continue expanding our product and service offerings.
- 2019 was our 26th consecutive year of paying an increased dividend.
- Named one of the "Top 100 Most Sustainable U.S. Companies" by Barron's and one of "America's Most Responsible Companies 2020" by Newsweek.

RESULTS OF OPERATIONS

The following table sets forth the consolidated statements of income and the related percentages of net sales for the periods indicated. Refer to Item 7 – Management's Discussion and Analysis of Financial Condition and Results of Operations in Part II of our Annual Report on Form 10-K for the fiscal year ended December 31, 2018 for additional information regarding Results of Operations for the year ended December 31, 2018 as compared to the year ended December 31, 2017. Certain previously reported amounts have been reclassified to conform to the current period presentation:

Year Ended December 31,	2019		2018	
	Amount in \$ Thousands	% of Net Sales	Amount in \$ Thousands	% of Net Sales
Net sales	\$ 2,859,732	100.0 %	\$ 2,764,761	100.0 %
Cost of sales (exclusive of depreciation and amortization shown below)	1,818,398	63.6	1,812,961	65.6
Selling, research & development and administrative	454,617	15.9	429,955	15.6
Depreciation and amortization	194,552	6.8	171,747	6.2
Restructuring initiatives	20,472	0.7	63,829	2.3
Operating income	371,693	13.0	286,269	10.3
Other expense	(29,624)	(1.0)	(20,249)	(0.7)
Income before income taxes	342,069	12.0	266,020	9.6
Net Income	242,227	8.5	194,766	7.0
Effective tax rate	29.2 %		26.8 %	
Adjusted EBITDA margin (1)	20.7 %		19.9 %	

(1) Adjusted EBITDA margin is calculated as Adjusted EBITDA divided by Reported Net Sales. See the reconciliation of Non-U.S. GAAP measures starting on page 22.

NET SALES

For the year ended December 31, 2019, reported net sales increased 3% to \$2.86 billion from \$2.76 billion a year ago. The average U.S. dollar exchange rate strengthened compared to most of our major operating currencies, resulting in a negative currency translation impact of 4%. The acquisitions of CSP Technologies, Gateway, Nanopharm and Noble positively impacted sales by 4%. Therefore, core sales for 2019 increased 3% over 2018 as growth in our Pharma and Food + Beverage segments compensated for slightly negative core sales to our Beauty + Home segment.

Year Ended December 31, 2019 Net Sales Change versus Prior Year	Beauty + Home	Pharma	Food + Beverage	Total
Core Sales Growth	(1)%	10 %	3 %	3 %
Acquisitions	— %	9 %	7 %	4 %
Currency Effects (1)	(4)%	(5)%	(2)%	(4)%
Total Reported Net Sales Growth	(5)%	14 %	8 %	3 %

(1) Currency effects are calculated by translating last year's amounts at this year's foreign exchange rates.

For further discussion on net sales by reporting segment, please refer to the segment analysis of net sales and operating income on the following pages.

The following table sets forth, for the periods indicated, net sales by geographic location:

Years Ended December 31,	2019	% of Total	2018	% of Total
Domestic	\$ 836,768	29 %	\$ 726,336	26 %
Europe	1,638,469	57 %	1,627,478	59 %
Other Foreign	384,495	14 %	410,947	15 %

COST OF SALES (EXCLUSIVE OF DEPRECIATION AND AMORTIZATION SHOWN BELOW)

Our cost of sales ("COS") as a percent of net sales decreased to 63.6% in 2019 compared to 65.6% in 2018. Our COS percentage was positively impacted by our mix of business and lower material costs. The mix of business positively impacted results as the sales growth of our higher margin Pharma products was greater than the sales growth of products in the other two segments. We also realized lower raw material input costs in 2019 compared to 2018 and the associated positive impact from the timing of passing through resin cost reductions to our customers.

SELLING, RESEARCH & DEVELOPMENT AND ADMINISTRATIVE

Our Selling, Research & Development and Administrative expenses ("SG&A") increased approximately 6% or \$24.7 million to \$454.6 million in 2019 compared to \$430.0 million in 2018. Excluding changes in foreign currency rates, SG&A increased by approximately \$40.7 million compared to the same period a year ago. The reported increase is primarily due to \$20.0 million of incremental operational costs during 2019 related to our acquired companies. We also recognized increases in professional fees and higher personnel costs in accordance with our growth strategy. SG&A as a percentage of net sales increased to 15.9% compared to 15.6% in the same period of the prior year due to the cost increases mentioned above.

DEPRECIATION AND AMORTIZATION

Reported depreciation and amortization expense increased approximately 13% or \$22.8 million to \$194.6 million in 2019 compared to \$171.7 million in 2018. Excluding changes in foreign currency rates, depreciation and amortization increased by approximately \$29.2 million compared to the same period a year ago. The reported increase is mainly due to \$20.0 million of incremental costs related to our acquisitions. We also increased our capital spending during the current and prior year to support our growth strategy. Depreciation and amortization as a percentage of net sales increased to 6.8% in 2019 compared to 6.2% in the same period of the prior year due to the incremental increase in expenses noted above.

RESTRUCTURING INITIATIVES

In late 2017, Aptar began a business transformation plan to drive profitable sales growth, increase operational excellence, enhance our approach to innovation and improve organizational effectiveness. The primary focus of the plan is the Beauty + Home segment; however, certain global general and administrative functions are also being addressed. Restructuring costs related to this plan for the years ended December 31, 2019 and 2018 are as follows:

Year Ended December 31,	2019		2018	
Restructuring Initiatives by Segment				
Beauty + Home	\$	17,682	\$	52,244
Pharma		632		3,589
Food + Beverage		391		4,185
Corporate & Other		1,767		3,811
Total Restructuring Initiatives	\$	20,472	\$	63,829

We expect total implementation costs of approximately \$110 million for these initiatives. The cumulative expense incurred to date is \$86.5 million. We also anticipate making capital investments related to the business transformation of approximately \$55 million, of which \$38 million has been incurred to date. We are progressing towards our initial target of \$80 million annualized incremental EBITDA by the end of 2020, principally within the Beauty + Home segment, related to our ongoing restructuring initiatives. However, ongoing changes in customer and vendor negotiations, material indices, macro-economic trends and other factors represent continuing headwinds to the Beauty + Home segment, and have offset the consolidated net benefits from these initiatives.

OPERATING INCOME

Reported operating income increased approximately \$85.4 million or 30% to \$371.7 million in 2019 compared to \$286.3 million in 2018. Excluding changes in currency rates, operating income increased by approximately \$101.0 million in 2019 compared to 2018. We incurred lower restructuring costs and realized improved margins related to our acquisitions and full year impact of CSP Technologies during 2019 compared to the prior year period. Additionally, this increase is related to lower restructuring costs, higher sales volumes in Pharma and Food + Beverage products and additional income related to acquired businesses. Operating income as a percentage of net sales increased to 13.0% in 2019 compared to 10.3% for the prior year.

NET OTHER EXPENSE

Net other expense increased in 2019 to \$29.6 million compared to \$20.2 million in 2018. This increase is partly due to \$5.7 million of higher net interest expense due to recent acquisition activity, including CSP Technologies during the third quarter of 2018. Included in the 2018 miscellaneous income is also a gain of approximately \$6.5 million due to an observable price change on our investment in Reciprocal Labs Corporation, doing business as Propeller Health ("Propeller Health").

EFFECTIVE TAX RATE

The reported effective tax rate on income before income taxes for 2019 and 2018 was 29.2% and 26.8%, respectively. The higher tax rate for 2019 primarily reflects the impact of loss operations not tax effected (+2.2%).

At December 31, 2019, as a result of the U.S. global intangible low taxed income ("GILTI") and the 2017 transition tax provisions, we do not have a balance of foreign earnings that will be subject to U.S. taxation. We continually analyze our global working capital requirements and the potential tax liabilities that would be incurred if the non-U.S. subsidiaries made a distribution of their cash or distributable reserves. These liabilities would include local country withholding and income tax and potential U.S. state taxation. As of December 31, 2019, all other cash or distributable reserve amounts continued to be reinvested indefinitely and would become subject to these additional taxes if they were remitted as dividends. We estimate the additional tax that would be payable on these earnings to be in the range of \$20 million to \$30 million.

NET INCOME ATTRIBUTABLE TO APTARGROUP, INC.

We reported net income of \$242.2 million compared to \$194.7 million reported in 2018.

BEAUTY + HOME SEGMENT

Year Ended December 31,	2019	2018	% Change 2019 vs. 2018
Net Sales	\$ 1,352,714	\$ 1,426,382	(5.2)%
Adjusted EBITDA (1)	181,150	185,926	(2.6)
Adjusted EBITDA margin (1)	13.4 %	13.0 %	

(1) Adjusted EBITDA is calculated as earnings before net interest, taxes, depreciation, amortization, unallocated corporate expenses, restructuring, acquisition-related costs, and other special items. Adjusted EBITDA margins are calculated as Adjusted EBITDA divided by Reported Net Sales. See the reconciliation of non-U.S. GAAP measures starting on page 22.

Reported net sales decreased approximately 5% in 2019 to \$1.35 billion compared to \$1.43 billion in 2018. Changes in currency rates negatively impacted net sales by 4%. Therefore, core sales decreased 1% in 2019 compared to the prior year. The majority of this decrease is due to reduced demand from the personal care market and a \$1.5 million reduction of sales due to the pass-through of lower resin prices to our customers. Core sales to the personal care market decreased 6%. The decrease is mostly related to a general softness in demand across most of our major applications, especially body care and hair care products, as political and economic uncertainties are leading to some customer destocking. We also recognized lower product and tooling sales in 2019 related to a large product launch for a specific North America customer during the second quarter of 2018. Core sales to the beauty market increased 4% on strong growth in skin care and fragrance dispensing systems, primarily driven by the Chinese luxury market and retail travel. Higher sales of our products used on air care and dish care applications drove the core sales growth in the home care market.

Year Ended December 31, 2019 Net Sales Change over Prior Year	Personal Care	Beauty	Home Care	Total
Core Sales Growth	(6)%	4 %	1 %	(1)%
Acquisitions	— %	— %	— %	— %
Currency Effects (1)	(3)%	(5)%	(3)%	(4)%
Total Reported Net Sales Growth	(9)%	(1)%	(2)%	(5)%

(1) Currency effects are calculated by translating last year's amounts at this year's foreign exchange rates.

Adjusted EBITDA for 2019 decreased to \$181.2 million from \$185.9 million reported in 2018. During 2019, we experienced favorable material cost impacts due to lower raw material input costs and the associated positive impact from the timing delay of passing through resin cost to our customers. We also realized improved profitability on our tooling projects, but these favorable variances were not enough to overcome the softening demand from our personal care customers as discussed above. Adjusted EBITDA as a percentage of sales improved to 13.4% in 2019 compared to 13.0% in 2018 due to the positive impact of our transformation initiatives along with the other positive factors mentioned above.

PHARMA SEGMENT

Year Ended December 31,	2019	2018	% Change 2019 vs. 2018
Net Sales	\$ 1,091,051	\$ 954,652	14.3 %
Adjusted EBITDA (1)	387,483	343,706	12.7
Adjusted EBITDA margin (1)	35.5 %	36.0 %	

(1) Adjusted EBITDA is calculated as earnings before net interest, taxes, depreciation, amortization, unallocated corporate expenses, restructuring, acquisition-related costs and other special items. Adjusted EBITDA margins are calculated as Adjusted EBITDA divided by Reported Net Sales. See the reconciliation of non-U.S. GAAP measures starting on page 22.

Reported net sales increased approximately 14% in 2019 to \$1.09 billion compared to \$954.7 million in 2018. Changes in currencies negatively affected net sales by 5% while our acquisitions of CSP Technologies, Gateway, Nanopharm and Noble positively impacted sales by 9% in 2019. Therefore, core sales increased 10% in 2019 compared to the prior year. Sales increased in all of our markets during 2019. Core sales to the prescription drug market increased 13% mainly driven by strong demand for our products sold for central nervous system and allergic rhinitis treatments. We also benefitted from the realization of \$1.8 million of revenue for achieving a development milestone related to a customer project. Core sales to the consumer health care market increased 6% on increased demand for our products used on eye care and nasal saline treatments. Core sales of our products to the injectables markets grew 8% due to increased demand across the majority of our product offerings and in all regions. Active packaging core sales comparisons are from our acquisition of CSP Technologies at the end of August 2018. The core sales increase is mostly due to strong pre-commercial sales activity for our new active blister packaging solution for oral solid dose drug delivery.

Year Ended December 31, 2019 Net Sales Change over Prior Year	Prescription Drug	Consumer Health Care	Injectables	Active Packaging	Total
Core Sales Growth	13 %	6 %	8 %	15 %	10 %
Acquisitions	1 %	— %	4 %	221 %	9 %
Currency Effects (1)	(5)%	(5)%	(5)%	(4)%	(5)%
Total Reported Net Sales Growth	9 %	1 %	7 %	232 %	14 %

(1) Currency effects are calculated by translating last year's amounts at this year's foreign exchange rates.

Adjusted EBITDA for 2019 increased to \$387.5 million compared to \$343.7 million in 2018. The strong product sales growth discussed above along with incremental profit related to our acquisitions led to the increase in reported results for 2019 compared to 2018. 2018 results also include a gain of approximately \$6.5 million on our investment in Propeller Health. Adjusted EBITDA as a percentage of sales declined to 35.5% in 2019 compared to 36.0% in 2018. Excluding the Propeller Health gain in 2018, the adjusted EBITDA percentage would have improved slightly during 2019.

FOOD + BEVERAGE SEGMENT

Year Ended December 31,	2019	2018	% Change 2019 vs. 2018
Net Sales	\$ 415,967	\$ 383,727	8.4 %
Adjusted EBITDA (1)	68,108	57,589	18.3
Adjusted EBITDA margin (1)	16.4 %	15.0 %	

(1) Adjusted EBITDA is calculated as earnings before net interest, taxes, depreciation, amortization, unallocated corporate expenses, restructuring, acquisition-related costs and other special items. Adjusted EBITDA margins are calculated as Adjusted EBITDA divided by Reported Net Sales. See the reconciliation of non-U.S. GAAP measures starting on page 22.

Reported net sales increased by approximately 8% in 2019 to \$416.0 million compared to \$383.7 million in 2018. Incremental sales from our CSP Technologies acquisition positively impacted net sales by 7% while changes in currency rates negatively impacted net sales by 2%. Therefore, core sales increased 3% in 2019 compared to the prior year. Core sales to the food market increased 7% while core sales to the beverage market decreased 2% compared to 2018. Sales to the food market increased due to strong sales of our products across all of our largest applications, including increases in sales to our sauces and condiments, non-beverage dairy, infant nutrition and granular powder customers. For the beverage market, strong sales of our products to our bottled water and concentrate customers were offset by a decline in beverage closure volumes related to a customer in China. Lower tooling sales and the pass-through of resin price changes also negatively impacted core sales compared to 2018 by \$0.9 million and \$5.1 million, respectively.

Year Ended December 31, 2019
Net Sales Change over Prior Year

	Food	Beverage	Total
Core Sales Growth	7 %	(2)%	3 %
Acquisitions	11 %	— %	7 %
Currency Effects (1)	(2)%	(3)%	(2)%
Total Reported Net Sales Growth	16 %	(5)%	8 %

(1) Currency effects are calculated by translating last year's amounts at this year's foreign exchange rates.

Adjusted EBITDA increased to \$68.1 million in 2019 compared to \$57.6 million in 2018. This increase is due to incremental profit related to our CSP Technologies acquisition and solid core sales growth discussed above. We also benefitted from the positive timing delay of passing on resin cost decreases from previous quarters to our customers. During 2018, we recognized an impairment of \$1.6 million related to prepaid royalties as a result of lower than expected sales during the contractual period. This impairment does not impact our current product portfolio or future project pipeline related to the underlying technology. Adjusted EBITDA as a percentage of sales improved to 16.4% in 2019 compared to 15.0% in 2018 due to favorable operational performance along with the other positive factors discussed above.

CORPORATE & OTHER

In addition to our three reporting segments, Aptar assigns certain costs to "Corporate & Other," which is presented separately in Note 18 of the Notes to the Consolidated Financial Statements. For Corporate & Other, Adjusted EBITDA (which excludes net interest, taxes, depreciation, amortization, restructuring, acquisition-related costs and other special items) primarily includes certain professional fees, compensation and information system costs which are not allocated directly to our reporting segments. Corporate & Other expense in 2019 increased to \$44.4 million compared to \$36.3 million in 2018. As discussed above, this increase is mainly due to higher professional fees and personnel costs as we continue to implement our growth strategy.

NON-U.S. GAAP MEASURES

In addition to the information presented herein that conforms to U.S. GAAP, we also present financial information that does not conform to U.S. GAAP, which are referred to as non-U.S. GAAP financial measures. Management may assess our financial results both on a U.S. GAAP basis and on a non-U.S. GAAP basis. We believe it is useful to present these non-U.S. GAAP financial measures because they allow for a better period-over-period comparison of operating results by removing the impact of items that, in management's view, do not reflect Aptar's core operating performance. These non-U.S. GAAP financial measures should not be considered in isolation or as a substitute for U.S. GAAP financial results, but should be read in conjunction with the audited consolidated statements of income and other information presented herein. Investors are cautioned against placing undue reliance on these non-U.S. GAAP measures. Further, investors are urged to review and consider carefully the adjustments made by management to the most directly comparable U.S. GAAP financial measure to arrive at these non-U.S. GAAP financial measures.

In our MD&A, we exclude the impact of foreign currency translation when presenting net sales and other information, which we define as “constant currency.” Changes in net sales excluding the impact of foreign currency translation is a non-U.S. GAAP financial measure. As a worldwide business, it is important that we take into account the effects of foreign currency translation when we view our results and plan our strategies. Consequently, when our management looks at our financial results to measure the core performance of our business, we exclude the impact of foreign currency translation by translating our prior period results at current period foreign currency exchange rates. As a result, our management believes that these presentations are useful internally and may be useful to investors. We also exclude the impact of material acquisitions when comparing results to prior periods. Changes in operating results excluding the impact of acquisitions are non-U.S. GAAP financial measures. We believe it is important to exclude the impact of acquisitions on period over period results in order to evaluate performance on a more comparable basis.

We present earnings before net interest and taxes (“EBIT”) and earnings before net interest, taxes, depreciation and amortization (“EBITDA”). We also present our adjusted earnings before net interest and taxes (“Adjusted EBIT”) and adjusted earnings before net interest, taxes, depreciation and amortization (“Adjusted EBITDA”), both of which exclude, among other special items, the business transformation charges and acquisition-related costs. Our Operations Outlook is also provided on a non-U.S. GAAP basis because certain reconciling items are dependent on future events that either cannot be controlled, such as tax and exchange rates, or reliably predicted because they are not part of our routine activities, such as restructuring and acquisition-related costs.

We provide a reconciliation of Net Debt to Net Capital as a non-U.S. GAAP measure. Net Debt is calculated as interest bearing debt less cash, cash equivalents and short-term investments while Net Capital is calculated as stockholder’s equity plus Net Debt. Net Debt to Net Capital measures a company’s financial leverage, which gives users an idea of a company’s financial structure, or how it is financing its operations, along with insight into its financial strength. We believe that it is meaningful to take into consideration the balance of our cash, cash equivalents and short-term investments when evaluating our leverage. If needed, such assets could be used to reduce our gross debt position.

Finally, we provide a reconciliation of free cash flow as a non-U.S. GAAP measure. Free cash flow is calculated as cash provided by operating activities less capital expenditures. We use free cash flow to measure cash flow generated by operations that is available for dividends, share repurchases, acquisitions and debt repayment. We believe that it is meaningful to investors in evaluating our financial performance and measure our ability to generate cash internally to fund our initiatives.

Year Ended December 31, 2019						
	Consolidated	Beauty + Home	Pharma	Food + Beverage	Corporate & Other	Net Interest
Net Sales	\$ 2,859,732	\$ 1,352,714	\$ 1,091,051	\$ 415,967	\$ -	\$ -
Reported net income	\$ 242,227					
Reported income taxes	99,842					
Reported income before income taxes	342,069	80,281	317,897	31,835	(56,629)	(31,315)
Adjustments:						
Restructuring initiatives	20,472	17,682	632	391	1,767	
Transaction costs related to acquisitions	3,927	409	3,364	154		
Purchase accounting adjustments related to acquired companies' backlog	1,202		1,202			
Adjusted earnings before income taxes	367,670	98,372	323,095	32,380	(54,862)	(31,315)
Interest expense	35,489					35,489
Interest income	(4,174)					(4,174)
Adjusted earnings before net interest and taxes (Adjusted EBIT)	398,985	98,372	323,095	32,380	(54,862)	-
Depreciation and amortization	194,552	82,778	65,590	35,728	10,456	-
Backlog amortization included in Depreciation and amortization above	(1,202)		(1,202)			
Adjusted earnings before net interest, taxes, depreciation and amortization (Adjusted EBITDA)	\$ 592,335	\$ 181,150	\$ 387,483	\$ 68,108	\$ (44,406)	\$ -
Adjusted EBITDA margins (Adjusted EBITDA / Reported Net Sales)	20.7%	13.4%	35.5%	16.4%		

**Year Ended
December 31, 2018**

	Consolidated	Beauty + Home	Pharma	Food + Beverage	Corporate & Other	Net Interest
Net Sales	\$ 2,764,761	\$ 1,426,382	\$ 954,652	\$ 383,727	\$ -	\$ -
Reported net income	\$ 194,766					
Reported income taxes	71,254					
Reported income before income taxes	266,020	49,443	276,550	23,956	(58,359)	(25,570)
Adjustments:						
Restructuring initiatives	63,829	52,244	3,589	4,185	3,811	
Transaction costs related to acquisitions	9,598	574			9,024	
Purchase accounting adjustments related to acquired companies' inventory	14,172	119	12,072	1,981		
Adjusted earnings before income taxes	353,619	102,380	292,211	30,122	(45,524)	(25,570)
Interest expense	32,626					32,626
Interest income	(7,056)					(7,056)
Adjusted earnings before net interest and taxes (Adjusted EBIT)	379,189	102,380	292,211	30,122	(45,524)	-
Depreciation and amortization	171,747	83,546	51,495	27,467	9,239	-
Adjusted earnings before net interest, taxes, depreciation and amortization (Adjusted EBITDA)	\$ 550,936	\$ 185,926	\$ 343,706	\$ 57,589	\$ (36,285)	\$ -
Adjusted EBITDA margins (Adjusted EBITDA / Reported Net Sales)	19.9%	13.0%	36.0%	15.0%		

Net Debt to Net Capital Reconciliation

**December 31,
2019** **December 31,
2018**

Notes payable, revolving credit facility and overdrafts	\$ 44,259	\$ 101,293
Current maturities of long-term obligations, net of unamortized debt issuance costs	65,988	62,678
Long-Term Obligations, net of unamortized debt issuance costs	1,085,453	1,125,993
Total Debt	1,195,700	1,289,964
Less:		
Cash and equivalents	241,970	261,823
Net Debt	\$ 953,730	\$ 1,028,141
Total Stockholders' Equity	\$ 1,572,252	\$ 1,422,871
Net Debt	953,730	1,028,141
Net Capital	\$ 2,525,982	\$ 2,451,012
Net Debt to Net Capital	37.8%	41.9%

Free Cash Flow Reconciliation

**December 31,
2019** **December 31,
2018**

Net Cash Provided by Operations	\$ 514,457	\$ 313,628
Less:		
Capital Expenditures	242,276	211,252
Free Cash Flow	\$ 272,181	\$ 102,376

LIQUIDITY AND CAPITAL RESOURCES

We believe we are in a strong financial position and have the financial resources to meet our business requirements in the foreseeable future. We have historically used cash flow from operations, our revolving credit facilities, proceeds from stock options and debt, as needed, as our primary sources of liquidity. Our primary uses of liquidity are to invest in equipment and facilities that are necessary to support our growth, cost efficiencies, and to make acquisitions that will contribute to the achievement of our strategic objectives. Other uses of liquidity include repurchasing shares of our common stock and paying dividends to stockholders. In the event that customer demand would decrease significantly for a prolonged period of time and negatively impact cash flow from operations, we would have the ability to restrict and significantly reduce capital expenditure levels, as well as evaluate our acquisition strategy and dividend and share repurchase programs. A prolonged and significant reduction in capital expenditure levels could increase future repairs and maintenance costs as well as have a negative impact on operating margins if we were unable to invest in new innovative products. Refer to Item 7 – Management’s Discussion and Analysis of Financial Condition and Results of Operations - Liquidity and Capital Resources in Part II of our Annual Report on Form 10-K for the fiscal year ended December 31, 2018 for additional information regarding Liquidity and Capital Resources for the year ended December 31, 2018 as compared to the year ended December 31, 2017.

Cash and equivalents decreased to \$242.0 million at December 31, 2019 from \$261.8 million at December 31, 2018. Total short and long-term interest bearing debt of \$1.2 billion at December 31, 2019 decreased from the \$1.3 billion at December 31, 2018 resulting from repayments made during the year on our group credit facilities and long-term debt obligations. The ratio of our Net Debt (interest bearing debt less cash and cash equivalents) to Net Capital (stockholders’ equity plus Net Debt) decreased to 37.8% at December 31, 2019 compared to 41.9% at December 31, 2018. See the reconciliation of non-U.S. GAAP measures starting on page 22.

In 2019, our operations provided approximately \$514.5 million in cash flow compared to \$313.6 million in 2018. Cash flow from operations was primarily derived from earnings before depreciation and amortization. The increase in 2019 cash flow from operations compared to 2018 is primarily attributable to lower restructuring costs, improved profitability and better working capital management.

We used \$336.3 million in cash for investing activities during 2019 compared to \$735.5 million during 2018. The lower cash utilization in 2019 compared to 2018 is mainly due to less cash outflows related to acquisitions. During 2019, approximately \$106.3 million of cash was utilized to fund our Gateway, Nanopharm and Noble acquisitions; we also released \$4.0 million relating to the final escrow settlement on our acquisition of CSP Technologies and invested \$3.5 million in two preferred equity investments. We also received \$16.5 million from the sale of our investment in Propeller Health in 2019. Our investment in capital projects increased \$31.0 million during 2019 as compared to 2018. Our cash utilization in 2018 is mainly due to acquisitions and capital investments to support our growth strategy. During 2018, approximately \$524.4 million of our cash (net of \$24.1 million of cash acquired and \$5.0 million in escrow) was utilized to fund our acquisition of CSP Technologies. We also invested \$10.0 million in preferred stock of Propeller Health and acquired Reboul for an initial purchase price of approximately \$3.5 million (net of \$112 thousand of cash acquired).

Financing activities utilized \$197.1 million in cash during 2019, compared to net cash utilized by financing activities of \$14.9 million during 2018. In 2019, we used cash on hand to repay net short term revolving credit facility of \$52.1 million, pay \$67.3 million of long-term debt and pay \$90.2 million of dividends, received net proceeds from stock option exercises of \$90.8 million and repurchased \$86.5 million of common stock that was placed into treasury. In 2018, we received net proceeds from our short term credit facility and stock option exercises of \$81.1 million and \$88.2 million, respectively. We used cash on hand to repay \$72.3 million of long-term debt, pay \$82.3 million of dividends and repurchase \$61.7 million of common and treasury stock.

We hold U.S. dollar and euro-denominated debt to align our capital structure with our earnings base. We also maintain a multi-currency revolving credit facility with two tranches, providing for unsecured financing of up to \$300 million that is available in the U.S. and up to €150 million that is available to our wholly-owned UK subsidiary. Each borrowing under the credit facility will bear interest at rates based on LIBOR, prime rates or other similar rates, in each case plus an applicable margin. A facility fee on the total amount of the facility is also payable quarterly, regardless of usage. The applicable margins for borrowings under the credit facility and the facility fee percentage may change from time to time depending on changes in our consolidated leverage ratio. \$25.0 million was utilized under our U.S. facility and no balance was utilized under our euro-based revolving credit facility as of December 31, 2019. No balance was utilized under our U.S. facility and €69.0 million was utilized under our euro-based revolving credit facility as of December 31, 2018. Credit facility balances are included in notes payable, revolving credit facility and overdrafts on the Condensed Consolidated Balance Sheets.

Our revolving credit facility and certain long-term obligations require us to satisfy certain financial and other covenants including:

	Requirement	Level at December 31, 2019
Consolidated Leverage Ratio (1)	Maximum of 3.50 to 1.00	1.71 to 1.00
Consolidated Interest Coverage Ratio (1)	Minimum of 3.00 to 1.00	16.21 to 1.00

(1) Definitions of ratios are included as part of the revolving credit facility agreement.

Based upon the above consolidated leverage ratio covenant, we would have the ability to borrow approximately an additional \$1.0 billion before the 3.50 to 1.00 ratio requirement would be exceeded.

Our foreign operations have historically met cash requirements with the use of internally generated cash or uncommitted short-term borrowings. We also have committed financing arrangements in both the U.S. and the UK as detailed above. We manage our global cash requirements considering (i) available funds among the many subsidiaries through which we conduct business, (ii) the geographic location of our liquidity needs, and (iii) the cost to access international cash balances.

OFF-BALANCE SHEET ARRANGEMENTS

We lease certain warehouse, plant and office facilities as well as certain equipment under noncancelable operating leases. Most of the operating leases contain renewal options and certain equipment leases include options to purchase during or at the end of the lease term. As a result of the adoption of ASU 2016-02 and subsequent amendments, which requires organizations to recognize leases on the balance sheet, we no longer have any significant off-balance sheet arrangements. Please refer to Note 8 – Lease Commitments of the Notes to Condensed Consolidated Financial Statements for lease arrangements that have not yet commenced and therefore are not included on the balance sheet.

OVERVIEW OF CONTRACTUAL OBLIGATIONS

Below is a table of our outstanding contractual obligations and future payments as of December 31, 2019:

Payment Due by Period	Total	2020	2021-2022	2023-2024	2025 and After
Long-term obligations (1)	\$ 1,123,730	\$ 61,670	\$ 196,661	\$ 614,995	\$ 250,404
Finance lease obligations (1)	29,952	4,318	6,185	3,849	15,600
Operating leases (1)	71,854	16,578	21,142	13,238	20,896
Notes payable, revolving credit facility and overdrafts (2)	44,259	44,259	—	—	—
Purchase obligations (3)	23,429	22,948	461	18	2
Interest obligations (4)	54,375	8,278	15,479	18,519	12,099
Total Contractual Obligations	\$ 1,347,599	\$ 158,051	\$ 239,928	\$ 650,619	\$ 299,001

- (1) The future payments listed above for long-term debt repayments and lease obligations reflect only principal payments.
- (2) Notes payable mainly includes foreign short-term borrowings. The future payments listed above assume that no additional amounts will be drawn under the credit facility.
- (3) Purchase obligations are agreements to purchase goods or services that are enforceable and legally binding on us that specify all significant terms, including: fixed or minimum quantities to be purchased; fixed, minimum, or variable price provisions; and the approximate timing of the transactions.
- (4) Approximately 15.0% of our total interest bearing long-term debt has variable interest rates. Using our long-term variable rate debt outstanding as of December 31, 2019 of approximately \$168.0 million at an average rate of approximately 3.2%, we included approximately \$1.8 million of variable interest rate obligations in each of the years for 2020, 2021 and 2022 reflecting timing of anticipated debt repayments. Interest rate obligations also include anticipated interest on the finance and operating lease liabilities.

We make contributions to our domestic pension plans but currently we are not required to make a minimum pension contribution to those plans. We also contribute to our foreign pension plans but amounts are expected to be discretionary in 2019 and future years. Therefore, amounts related to these plans are not included in the preceding table.

We do not record a current portion of the liability for uncertain tax positions. Aside from deferred income taxes, we have approximately \$124.2 million of other deferred long-term liabilities on the balance sheet, which consist primarily of retirement plan obligations. We are not able to reasonably estimate the timing of the long-term payments or the amount by which the liability will increase or decrease over time. Therefore, the long-term portion of the liability is excluded from the preceding table.

RECENTLY ISSUED ACCOUNTING STANDARDS

We have reviewed the recently issued accounting standards updates to FASB's Accounting Standards Codification that have future effective dates. Standards which are effective for 2019 are discussed in Note 1 – Summary of Significant Accounting Policies of the Notes to Consolidated Financial Statements.

In June 2016, the FASB issued ASU 2016-13, which replaces the incurred loss impairment methodology in current accounting principles generally accepted in the United States of America ("U.S. GAAP") with a new impairment model commonly referred to as the Current Expected Credit Loss ("CECL") methodology. CECL methodology will require an entity to measure, at each reporting date, the expected credit losses of financial instruments not measured at fair value, such as accounts receivable, over their contractual lives. The change in loss impairment methodology could increase our provision for credit losses. Modified retrospective adoption is required with any cumulative-effect adjustment recorded to retained earnings as of the beginning of the period of adoption. The guidance is effective for fiscal years beginning after December 15, 2019, including interim periods within those fiscal years. We are currently evaluating the impact of this new standard; however, we do not expect the impact to be material. We will adopt the requirement of this standard during the first quarter of 2020.

In January 2017, the FASB issued ASU 2017-04, which provides guidance to simplify how an entity is required to test goodwill for impairment by eliminating Step 2 from the goodwill impairment test. As a result, impairment charges will be required for the amount by which a reporting unit's carrying amount exceeds its fair value up to the amount of its allocated goodwill. The new standard is effective for the annual or any interim goodwill impairment tests in fiscal years beginning after December 15, 2019. We do not believe that this new guidance will have a material impact on our Consolidated Financial Statements.

In August 2018, the FASB issued ASU 2018-13, which amends disclosure requirements for fair value measurements. The new standard modifies disclosure requirements including removing requirements to disclose the valuation process for Level 3 measurements and adding requirements to disclose the changes in unrealized gains and losses for the period included in other comprehensive income for recurring Level 3 fair value measurements and the range and weighted average of significant unobservable inputs used to develop Level 3 measurements. The new standard is effective for interim and annual periods beginning after December 15, 2019. We are currently evaluating the impact of the adoption of this standard to our disclosures.

In August 2018, the FASB issued ASU 2018-14, which amends disclosure requirements for defined benefit pension and other postretirement plans. The new standard removes requirements to disclose the amounts in accumulated other comprehensive income expected to be recognized as components of net periodic benefit cost over the next fiscal year and the effects of a one-percentage-point changes in assumed health care cost trend rates. The standard also adds requirements to disclose the reasons for significant gains and losses related to changes in the benefit obligations for the period and the accumulated benefit obligation ("ABO") for plans with ABOs in excess of plan assets. The new standard will be effective for fiscal years ending after December 15, 2020. We are currently evaluating the impact of the adoption of this standard to our disclosures.

In August 2018, the FASB issued ASU 2018-15 to help entities evaluate the accounting for fees paid by a customer in a cloud computing arrangement (hosting arrangement) by providing guidance for determining when the arrangement includes a software license. The amendments in this update align the requirements for capitalizing implementation costs incurred in a hosting arrangement that is a service contract with the requirements for capitalizing implementation costs incurred to develop or obtain internal-use software (and hosting arrangements that include an internal-use software license). Accordingly, the amendments require an entity (customer) in a hosting arrangement that is a service contract to follow the guidance in Subtopic 350-40 to determine which implementation costs to capitalize as an asset related to the service contract and which costs to expense. The amendments also require the entity (customer) to expense the capitalized implementation costs of a hosting arrangement that is a service contract over the term of the hosting arrangement, which includes reasonably certain renewals. The new standard is effective for fiscal years beginning after December 15, 2019. We are currently evaluating the impact of adopting this guidance.

Other accounting standards that have been issued by the FASB or other standards-setting bodies that do not require adoption until a future date are not expected to have a material impact on our consolidated financial statements upon adoption.

CRITICAL ACCOUNTING ESTIMATES

The preparation of the financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues and expenses, and related disclosure of contingent assets and liabilities. We continually evaluate our estimates, including those related to bad debts, inventories, intangible assets, income taxes, pensions and contingencies. We base our estimates on historical experience and on a variety of other assumptions believed to be reasonable in order to make judgments about the carrying values of assets and liabilities. Actual results may differ from these estimates under different assumptions or conditions. We believe the following critical accounting policies affect our more significant judgments and estimates used in preparation of our Consolidated Financial Statements. Management has discussed the development and selection of these critical accounting estimates with the audit committee of our Board of Directors and the audit committee has reviewed our disclosure relating to it in this MD&A.

IMPAIRMENT OF GOODWILL

In accordance with current accounting standards, goodwill has an indefinite life and is not amortized. We evaluate our goodwill for impairment at the reporting unit level on an annual basis, or whenever indicators of impairment exist. We have determined that our Beauty + Home and Food + Beverage business segments represent reporting units. Within the Pharma segment, the injectables and active packaging divisions qualify as separate reporting units for goodwill impairment testing apart from the remaining Pharma business. As of December 31, 2019, we have \$763.5 million of goodwill, which is allocated as follows:

Reporting Unit	Balance at December 31, 2019	
Pharma	\$	116,561
Injectables		134,353
Active Packaging		162,736
Beauty + Home		221,658
Food + Beverage		128,153
Total	\$	763,461

We believe that the accounting estimates related to determining the fair value of our reporting units is a critical accounting estimate because: (1) it is highly susceptible to change from period to period because it requires management to make assumptions about the future cash flows for each reporting unit over several years, and (2) the impact that recognizing an impairment would have on the assets reported on our balance sheet as well as our results of operations could be material. Management's determination of the fair value of our reporting units, based on future cash flows for the reporting units, requires significant judgment and the use of estimates and assumptions related to projected revenue growth rates, the terminal growth factor, as well as the discount rate. Actual cash flows in the future may differ significantly from those forecasted today. The estimates and assumptions for future cash flows and its impact on the impairment testing of goodwill is a critical accounting estimate.

For our goodwill impairment assessment, we first consider qualitative factors to determine whether the existence of events or circumstances leads to a determination that it is more likely than not (greater than 50 percent chance) that the fair value of a reporting unit is less than its carrying amount (the "step zero" approach). Such qualitative factors may include the following: macroeconomic conditions; industry and market considerations; cost factors; overall financial performance, and other relevant entity-specific events. In the absence of sufficient qualitative factors, goodwill impairment is determined utilizing a two-step quantitative process. If it is determined that the fair value of a reporting unit is below its carrying amount, where necessary, goodwill will be impaired at that time.

The Company has historically evaluated its goodwill for impairment annually as of December 31 or more frequently if impairment indicators arose in accordance with Accounting Standards Codification ("ASC") Topic 350, "Intangibles - Goodwill and Other." In the fourth quarter of 2019, the Company changed the date of its annual assessment of goodwill to October 1 for all reporting units. The change in testing date for goodwill is a change in accounting principle, which management believes is preferable as the new date of the assessment better aligns with the Company's budgeting process and will create a more efficient and timely process surrounding the impairment tests. The change in the assessment date does not delay, accelerate or avoid a potential impairment charge. The Company has determined that it is impracticable to objectively determine projected cash flows and related valuation estimates that would have been used as of each October 1 of prior reporting periods without the use of hindsight. As such, the Company prospectively applied the change in annual goodwill impairment testing date from October 1, 2019. No impairment was recognized during the years ended December 31, 2019, 2018 or 2017.

Based on our qualitative assessment of macroeconomic, industry, and market events and circumstances as well as the overall financial performance of the reporting units, we determined it was more likely than not that the fair value of these reporting units was greater than their carrying amounts. As such, the annual two-step impairment test was deemed not necessary to be performed for our reporting units for the year ended December 31, 2019. During the third quarter of 2019, we performed a separate quantitative impairment assessment using a discounted cash flow analysis of the Active Packaging reporting unit, which was formed as a result of the CSP Technologies acquisition in the third quarter of 2018. We calculated the fair value of the Active Packaging reporting unit and compared it with the associated carrying value (the "step one" approach) as of July 1, 2019. Based on this quantitative analysis, the fair value of the reporting unit exceeded the carrying value and therefore no impairment loss was recognized.

INCOME TAXES

In the ordinary course of business, we make estimates of the tax treatment of many transactions, even though the ultimate tax outcome may remain uncertain for some time. These estimates become part of the annual income tax expense reported in our financial statements. Subsequent to year-end, we finalize our tax analysis and file income tax returns. Tax authorities periodically audit these income tax returns and examine our tax filing positions, including (among other things) the timing and amounts of deductions, and the allocation of income among tax jurisdictions. If necessary, we adjust income tax expense in our financial statements in the periods in which the actual outcome becomes more certain.

Our tax liability for unrecognized tax benefits contains uncertainties because management is required to make assumptions and to apply judgment to estimate the exposures related to our various filing positions.

Our effective tax rate is also impacted by changes in tax laws, the current mix of earnings by taxing jurisdiction, and the results of current tax audits and assessments. In December 2017, the U.S. enacted comprehensive tax legislation commonly referred to as the Tax Cuts and Jobs Act (TCJA), which resulted in significant changes to U.S. federal income tax law affecting us. Current and expected impacts are based on our current knowledge of the legislation and other authoritative guidance, which has been issued, including proposed regulations.

At December 31, 2019 and 2018, we had \$116.0 million and \$96.3 million, respectively, of net deferred tax assets on our balance sheet, a significant portion of which is related to net operating losses and other tax carryforwards. The ultimate realization of these deferred tax assets is dependent upon the amount, source, and timing of future taxable income. In cases where we believe it is more likely than not that we may not realize the future potential tax benefits, we establish a valuation allowance against them.

Changes in U.S. and foreign tax laws could impact assumptions related to the repatriation of certain foreign earnings. Audits by various taxing authorities continue as governments look for ways to raise additional revenue. Based upon past audit experience, we do not expect any material changes to our tax liability as a result of this audit activity; however, we could incur additional tax expense if we have audit adjustments higher than recent historical experience. The likelihood of recovery of net operating losses and other tax carryforwards has been closely evaluated and is based upon such factors as the time remaining before expiration, viable tax planning strategies, and future taxable earnings expectations. We believe that appropriate valuation allowances have been recorded as necessary. However, if earnings expectations or other assumptions change such that additional valuation allowances are required, we could incur additional tax expense. Likewise, if fewer valuation allowances are needed, we could incur reduced tax expense.

ACQUISITIONS

We account for business combinations using the acquisition method, which requires management to estimate the fair value of identifiable assets acquired and liabilities assumed, and to properly allocate purchase price consideration to the individual assets acquired and liabilities assumed. Goodwill is measured as the excess amount of consideration transferred, compared to fair value of the assets acquired and the liabilities assumed. The allocation of the purchase price utilizes significant estimates and assumptions in determining the fair values of identifiable assets acquired and liabilities assumed, especially with respect to intangible assets. These estimates are based on all available information and in some cases assumptions with respect to the timing and amount of future revenues and expenses associated with an asset. The purchase price allocation for business acquisitions contains uncertainties because it requires management's judgment.

Management applied judgment in determining the fair value of the acquired assets with respect to the acquisitions of Noble, Nanopharm, Gateway, CSP Technologies and Reboul. The judgments made in determining the estimated fair value assigned to the assets acquired, as well as the estimated life of the assets, can materially impact net income in periods subsequent to the acquisition through depreciation and amortization, and in certain instances through impairment charges, if the asset becomes impaired in the future. In particular, judgment was applied with respect to determining the fair value of customer relationships intangible assets, which involved the use of significant estimates and assumptions with respect to the timing and amounts of cash flow projections, the revenue growth rates, the customer attrition rates, the EBITDA margins and the discount rate.

VALUATION OF PENSION BENEFITS

The benefit obligations and net periodic pension cost associated with our domestic and foreign noncontributory pension plans are determined using actuarial assumptions. Such assumptions include discount rates to reflect the time value of money, rate of employee compensation increases, demographic assumptions to determine the probability and timing of benefit payments, and the long-term rate of return on plan assets. The actuarial assumptions are based upon management's best estimates, after consulting with outside investment advisors and actuaries. Because assumptions and estimates are used, actual results could differ from expected results.

The discount rate is utilized principally in calculating our pension obligations, which are represented by the Accumulated Benefit Obligation (ABO) and the Projected Benefit Obligation ("PBO"), and in calculating net periodic benefit cost. In establishing the discount rate for our foreign plans, we review a number of relevant interest rates including Aa corporate bond yields. In establishing the discount rate for our domestic plans, we match the hypothetical duration of our plans, using a weighted average duration that is based upon projected cash payments, to a simulated bond portfolio (FTSE Pension Index Curve). At December 31, 2019, the discount rates for our domestic and foreign plans were 3.2% and 1.04%, respectively.

We believe that the accounting estimates related to determining the valuation of pension benefits are critical accounting estimates because: (1) changes in them can materially affect net income and (2) we are required to establish the discount rate and the expected return on fund assets, which are highly uncertain and require judgment. The estimates for the valuation of pension benefits are critical accounting estimates for all of our segments.

To the extent the discount rates increase (or decrease), our PBO and net periodic benefit cost will decrease (or increase) accordingly. The estimated effect of a 1% decrease in each discount rate would be a \$68.2 million increase in the PBO (\$51.0 million for the domestic plans and \$17.2 million for the foreign plans) and a \$7.5 million increase in net periodic benefit cost (\$6.0 million for the domestic plans and \$1.5 million for the foreign plans). To the extent the PBO increases, the after-tax effect of such increase could reduce Other Comprehensive Income and Stockholders' Equity. The estimated effect of a 1% increase in each discount rate would be a \$53.1 million decrease in the PBO (\$39.0 million for the domestic plans and \$14.1 million for the foreign plans) and a \$5.1 million decrease in net periodic benefit cost (\$3.8 million for the domestic plans and \$1.3 million for the foreign plans).

The assumed expected long-term rate of return on assets is the average rate of earnings expected on the funds invested to provide for the benefits included in the PBO. Of domestic plan assets, approximately 49% was invested in equities, 29% was invested in fixed income securities, 10% was invested in hedge funds, 6% was invested in infrastructure securities, 5% was invested in real estate securities and 1% was invested in money market funds, at December 31, 2019. Of foreign plan assets, approximately 89% was invested in investment funds, 4% was invested in equity securities, 3% was invested in corporate securities, 1% was invested in fixed income securities and 3% was invested in money market funds at December 31, 2019.

The expected long-term rate of return assumptions are determined based on our investment policy combined with expected risk premiums of equities and fixed income securities over the underlying risk-free rate. This rate is utilized principally in calculating the expected return on the plan assets component of the net periodic benefit cost. To the extent the actual rate of return on assets realized over the course of a year is greater or less than the assumed rate, that year's net periodic benefit cost is not affected. Rather, this gain (or loss) reduces (or increases) future net periodic benefit cost over a period of approximately 15 to 20 years. To the extent the expected long-term rate of return on assets increases (or decreases), our net periodic benefit cost will decrease (or increase) accordingly. The estimated effect of a 1% decrease (or increase) in each expected long-term rate of return on assets would be a \$2.3 million increase (or decrease) in net periodic benefit cost.

The average rate of compensation increase is utilized principally in calculating the PBO and the net periodic benefit cost. The estimated effect of a 0.5% decrease in each rate of expected compensation increase would be a \$8.0 million decrease in the PBO (\$2.2 million for the domestic plans and \$5.8 million for the foreign plans) and a \$1.3 million decrease to the net periodic benefit cost. The estimated effect of a 0.5% increase in each rate of expected compensation increase would be a \$8.4 million increase in the PBO (\$2.2 million for the domestic plans and \$6.2 million for the foreign plans) and a \$1.4 million increase to the net periodic benefit cost.

Our primary pension related assumptions as of December 31, 2019 and 2018 were as follows:

Actuarial Assumptions as of December 31,	2019	2018
Discount rate:		
Domestic plans	3.20 %	4.20 %
Foreign plans	1.04 %	1.82 %
Expected long-term rate of return on plan assets:		
Domestic plans	7.00 %	7.00 %
Foreign plans	3.69 %	3.57 %
Rate of compensation increase:		
Domestic plans	4.00 %	4.00 %
Foreign plans	3.05 %	3.01 %

In order to determine the 2020 net periodic benefit cost, we expect to use the discount rates, expected long-term rates of return on plan assets and rates of compensation increase assumptions as of December 31, 2019. The estimated impact of the changes to the assumptions as noted in the table above on our 2020 net periodic benefit cost is expected to be an increase of approximately \$7.2 million.

OPERATIONS OUTLOOK

While there will continue to be near-term challenges, we are optimistic about the long-term opportunities for growth and we are excited about our recent strategic acquisitions and investments. Looking to the first quarter, certain Beauty + Home customers are continuing to focus on inventory reductions considering current macroeconomic uncertainties including the negative impact of the coronavirus outbreak. In addition, the travel retail industry, which is a significant part of the beauty market, is particularly exposed. Our Pharma segment is facing difficult comparisons compared to the prior year's exceptional growth and our Food + Beverage segment's Asian business may also be negatively affected by the coronavirus impact.

Aptar expects earnings per share for the first quarter of 2020, excluding any restructuring costs and acquisition-related expenses, to be in the range of \$0.85 to \$0.93 and this guidance is based on an effective tax rate range of 28% to 30%.

FORWARD-LOOKING STATEMENTS

Certain statements in MD&A and other sections of this Form 10-K are forward-looking and involve a number of risks and uncertainties, including certain statements set forth in the Restructuring Initiatives, Liquidity and Capital Resources, Contingencies and Operations Outlook sections of this Form 10-K. Words such as "expects," "anticipates," "believes," "estimates," "future," "potential" and other similar expressions or future or conditional verbs such as "will," "should," "would" and "could" are intended to identify such forward-looking statements. Forward-looking statements are made pursuant to the safe harbor provisions of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934 and are based on our beliefs as well as assumptions made by and information currently available to us. Accordingly, our actual results or other events may differ materially from those expressed or implied in such forward-looking statements due to known or unknown risks and uncertainties that exist in our operations and business environment, including but not limited to:

- economic conditions worldwide, including potential deflationary or inflationary conditions in regions we rely on for growth;
- political conditions worldwide, including the impact of the UK leaving the European Union (Brexit) on our UK operations;
- outbreaks of epidemics, including the impact of the coronavirus on our global supply chain and our Chinese customers and operations;
- significant fluctuations in foreign currency exchange rates or our effective tax rate;
- the impact of tax reform legislation, changes in tax rates and other tax-related events or transactions that could impact our effective tax rate;
- financial conditions of customers and suppliers;
- consolidations within our customer or supplier bases;
- changes in customer and/or consumer spending levels;
- loss of one or more key accounts;
- the availability of raw materials and components (particularly from sole sourced suppliers) as well as the financial viability of these suppliers;
- fluctuations in the cost of materials, components and other input costs (particularly resin, metal, anodization costs and transportation and energy costs);
- our ability to successfully implement facility expansions and new facility projects;
- our ability to offset inflationary impacts with cost containment, productivity initiatives or price increases;

- changes in capital availability or cost, including interest rate fluctuations;
- volatility of global credit markets;
- our ability to identify potential new acquisitions and to successfully acquire and integrate such operations or products, including the successful integration of the businesses we have acquired, including contingent consideration valuation;
- direct or indirect consequences of acts of war, terrorism or social unrest;
- cybersecurity threats that could impact our networks and reporting systems;
- the impact of natural disasters and other weather-related occurrences;
- fiscal and monetary policies and other regulations;
- changes or difficulties in complying with government regulation;
- changing regulations or market conditions regarding environmental sustainability;
- work stoppages due to labor disputes;
- competition, including technological advances;
- our ability to protect and defend our intellectual property rights, as well as litigation involving intellectual property rights;
- the outcome of any legal proceeding that has been or may be instituted against us and others;
- our ability to meet future cash flow estimates to support our goodwill impairment testing;
- the demand for existing and new products;
- the success of our customers' products, particularly in the pharmaceutical industry;
- our ability to manage worldwide customer launches of complex technical products, particularly in developing markets;
- difficulties in product development and uncertainties related to the timing or outcome of product development;
- significant product liability claims;
- the execution of our business transformation plan; and
- other risks associated with our operations.

Although we believe that our forward-looking statements are based on reasonable assumptions, there can be no assurance that actual results, performance or achievements will not differ materially from any future results, performance or achievements expressed or implied by such forward-looking statements. Readers are cautioned not to place undue reliance on forward-looking statements. We undertake no obligation to update publicly any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by law. Please refer to Part 1, Item 1A Risk Factors included in this Form 10-K for additional risk factors affecting the Company.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

MARKET RISKS

A significant number of our operations are located outside of the United States. Because of this, movements in exchange rates may have a significant impact on the translation of the financial condition and results of operations of our subsidiaries. Our primary foreign exchange exposure is to the euro, but we also have foreign exchange exposure to the Chinese yuan, Brazilian real, Mexican peso, Swiss franc and other Asian, European and South American currencies. A strengthening U.S. dollar relative to foreign currencies has a dilutive translation effect on our financial condition and results of operations. Conversely, a weakening U.S. dollar relative to foreign currencies has an additive translation effect on our financial condition and results of operations.

Additionally, in some cases, we sell products denominated in a currency different from the currency in which the related costs are incurred. Any changes in exchange rates on such inter-country sales may impact our results of operations.

We manage our exposures to foreign exchange principally with forward exchange contracts to hedge certain firm purchase and sales commitments and intercompany cash transactions denominated in foreign currencies.

The table below provides information as of December 31, 2019 about our forward currency exchange contracts. The majority of the contracts expire before the end of the first quarter of 2020.

In thousands

Year Ended December 31, 2019			
Buy/Sell	Contract Amount (in thousands)	Average Contractual Exchange Rate	Min / Max Notional Volumes
EUR / USD	\$ 15,368	1.1096	15,368-20,420
EUR / BRL	12,105	4.6722	11,522-12,185
USD / EUR	8,266	0.8989	4,022-8,266
EUR / IDR	4,754	15.7427	4,698-4,754
EUR / INR	3,996	79.7500	3,985-4,017
USD / CNY	2,000	7.0663	0-2,000
EUR / CHF	1,496	1.0972	0-1,496
EUR / CNY	1,344	7.8771	0-1,344
GBP / EUR	859	1.1539	657-1,807
EUR / MXN	372	21.4988	311-588
USD / CHF	325	0.9861	0-325
MXN / USD	226	0.0514	226-767
CHF / EUR	203	0.9119	203-6,668
EUR / GBP	202	0.8540	0-608
Total	\$ 51,516		

As of December 31, 2019, we have recorded the fair value of foreign currency forward exchange contracts of \$0.2 million in prepaid and other and \$0.4 million in accounts payable, accrued and other liabilities in the Consolidated Balance Sheets. Aptar also entered into a EUR/USD floating-to-fixed cross currency swap on July 20, 2017 to effectively hedge the foreign exchange and interest rate exposure on the \$280 million bank term loan drawn by its wholly owned UK subsidiary. The fair value of this cash flow hedge is \$2.6 million and is reported in prepaid and other in the Consolidated Balance Sheets.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

AptarGroup, Inc. CONSOLIDATED STATEMENTS OF INCOME

In thousands, except per share amounts

Year Ended December 31,	2019	2018	2017
Net Sales	\$ 2,859,732	\$ 2,764,761	\$ 2,469,283
Operating Expenses:			
Cost of sales (exclusive of depreciation and amortization shown below)	1,818,398	1,812,961	1,603,070
Selling, research & development and administrative	454,617	429,955	387,424
Depreciation and amortization	194,552	171,747	153,094
Restructuring initiatives	20,472	63,829	2,208
	2,488,039	2,478,492	2,145,796
Operating Income	371,693	286,269	323,487
Other (Expense) Income:			
Interest expense	(35,489)	(32,626)	(40,597)
Interest income	4,174	7,056	5,470
Equity in results of affiliates	135	(229)	(229)
Miscellaneous, net	1,556	5,550	6,694
	(29,624)	(20,249)	(28,662)
Income before Income Taxes	342,069	266,020	294,825
Provision for Income Taxes	99,842	71,254	74,796
Net Income	\$ 242,227	\$ 194,766	\$ 220,029
Net (Income) Loss Attributable to Noncontrolling Interests	(25)	(21)	1
Net Income Attributable to AptarGroup, Inc.	\$ 242,202	\$ 194,745	\$ 220,030
Net Income Attributable to AptarGroup, Inc. per Common Share:			
Basic	\$ 3.81	\$ 3.12	\$ 3.52
Diluted	\$ 3.66	\$ 3.00	\$ 3.41

See accompanying notes to consolidated financial statements.

AptarGroup, Inc.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

In thousands

Year Ended December 31,	2019	2018	2017
Net Income	\$ 242,227	\$ 194,766	\$ 220,029
Other Comprehensive Income:			
Foreign currency translation adjustments	(8,727)	(62,914)	74,404
Changes in treasury locks, net of tax	—	17	28
Changes in derivative gains (losses), net of tax	(37)	1,547	(3,186)
Defined benefit pension plan, net of tax			
Actuarial (loss) gain, net of tax	(25,877)	5,292	(7,906)
Prior service cost, net of tax	320	(26)	(1,038)
Amortization of prior service cost included in net income, net of tax	2,541	533	296
Amortization of net loss included in net income, net of tax	332	4,991	3,828
Total defined benefit pension plan, net of tax	(22,684)	10,790	(4,820)
Total other comprehensive (loss) income	(31,448)	(50,560)	66,426
Comprehensive Income	210,779	144,206	286,455
Comprehensive Loss (Income) Attributable to Noncontrolling Interests	21	16	(18)
Comprehensive Income Attributable to AptarGroup, Inc.	\$ 210,800	\$ 144,222	\$ 286,437

See accompanying notes to consolidated financial statements.

AptarGroup, Inc.
CONSOLIDATED BALANCE SHEETS

In thousands

December 31,	2019	2018
Assets		
Current Assets:		
Cash and equivalents	\$ 241,970	\$ 261,823
Accounts and notes receivable, less allowance for doubtful accounts of \$3,626 in 2019 and \$3,541 in 2018	558,428	569,630
Inventories	375,795	381,110
Prepaid and other	115,048	118,245
	1,291,241	1,330,808
Property, Plant and Equipment:		
Buildings and improvements	504,328	453,572
Machinery and equipment	2,521,737	2,368,332
	3,026,065	2,821,904
Less: Accumulated depreciation	(1,963,520)	(1,855,810)
	1,062,545	966,094
Land	25,133	25,519
	1,087,678	991,613
Other Assets:		
Investments in equity securities	8,396	25,448
Goodwill	763,461	712,095
Intangible assets	291,084	254,904
Operating lease right-of-use assets	72,377	—
Miscellaneous	47,882	62,867
	1,183,200	1,055,314
Total Assets	\$ 3,562,119	\$ 3,377,735

See accompanying notes to consolidated financial statements.

AptarGroup, Inc.
CONSOLIDATED BALANCE SHEETS

In thousands, except share and per share amounts

December 31,	2019	2018
Liabilities and Stockholders' Equity		
Current Liabilities:		
Notes payable, revolving credit facility and overdrafts	\$ 44,259	\$ 101,293
Current maturities of long-term obligations, net of unamortized debt issuance costs	65,988	62,678
Accounts payable, accrued and other liabilities	573,028	525,199
	683,275	689,170
Long-Term Obligations, net of unamortized debt issuance costs	1,085,453	1,125,993
Deferred Liabilities and Other:		
Deferred income taxes	41,388	53,917
Retirement and deferred compensation plans	101,225	62,319
Operating lease liabilities	55,276	—
Deferred and other non-current liabilities	23,250	23,465
Commitments and contingencies	—	—
	221,139	139,701
Stockholders' Equity:		
AptarGroup, Inc. stockholders' equity		
Common stock, \$.01 par value, 199 million shares authorized, 68.6 and 67.3 million shares issued as of December 31, 2019 and 2018, respectively	686	673
Capital in excess of par value	770,596	678,769
Retained earnings	1,523,820	1,371,826
Accumulated other comprehensive loss	(341,948)	(310,504)
Less: Treasury stock at cost, 4.8 and 4.4 million shares as of December 31, 2019 and 2018, respectively	(381,238)	(318,208)
Total AptarGroup, Inc. Stockholders' Equity	1,571,916	1,422,556
Noncontrolling interests in subsidiaries	336	315
Total Stockholders' Equity	1,572,252	1,422,871
Total Liabilities and Stockholders' Equity	\$ 3,562,119	\$ 3,377,735

See accompanying notes to consolidated financial statements.

AptarGroup, Inc.
CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY
Years Ended December 31, 2019, 2018 and 2017

In thousands

	AptarGroup, Inc. Stockholders' Equity						
	Retained Earnings	Accumulated Other Comprehensive (Loss) Income	Common Stock Par Value	Treasury Stock	Capital in Excess of Par Value	Non-Controlling Interest	Total Equity
Balance - December 31, 2016	\$ 1,197,234	\$ (319,709)	\$ 660	\$ (250,917)	\$ 546,682	\$ 292	\$ 1,174,242
Net income	220,030	—	—	—	—	(1)	220,029
Foreign currency translation adjustments	—	74,385	—	—	—	19	74,404
Changes in unrecognized pension gains (losses) and related amortization, net of tax	—	(4,820)	—	—	—	—	(4,820)
Changes in treasury locks, net of tax	—	28	—	—	—	—	28
Changes in derivative gains (losses), net of tax	—	(3,186)	—	—	—	—	(3,186)
Stock awards and option exercises	—	—	12	25,212	67,605	—	92,829
Cash dividends declared on common stock	(79,944)	—	—	—	—	—	(79,944)
Treasury stock purchased	—	—	—	(120,540)	—	—	(120,540)
Common stock repurchased and retired	(36,173)	—	(5)	—	(4,816)	—	(40,994)
Balance - December 31, 2017	\$ 1,301,147	\$ (253,302)	\$ 667	\$ (346,245)	\$ 609,471	\$ 310	\$ 1,312,048
Net income	194,745	—	—	—	—	21	194,766
Adoption of revenue recognition standard	2,937	—	—	—	—	—	2,937
Reclassification of stranded tax effects	6,658	(6,658)	—	—	—	—	—
Foreign currency translation adjustments	—	(62,898)	—	—	—	(16)	(62,914)
Changes in unrecognized pension gains (losses) and related amortization, net of tax	—	10,790	—	—	—	—	10,790
Changes in treasury locks, net of tax	—	17	—	—	—	—	17
Changes in derivative gains (losses), net of tax	—	1,547	—	—	—	—	1,547
Stock awards and option exercises	—	—	12	31,942	75,763	—	107,717
Cash dividends declared on common stock	(82,346)	—	—	—	—	—	(82,346)
Treasury stock purchased	—	—	—	(3,905)	—	—	(3,905)
Common stock repurchased and retired	(51,315)	—	(6)	—	(6,465)	—	(57,786)
Balance - December 31, 2018	\$ 1,371,826	\$ (310,504)	\$ 673	\$ (318,208)	\$ 678,769	\$ 315	\$ 1,422,871
Net income	242,202	—	—	—	—	25	242,227
Foreign currency translation adjustments	—	(8,723)	—	—	—	(4)	(8,727)
Changes in unrecognized pension gains (losses) and related amortization, net of tax	—	(22,684)	—	—	—	—	(22,684)
Changes in derivative gains (losses), net of tax	—	(37)	—	—	—	—	(37)
Stock awards and option exercises	—	—	13	23,467	91,827	—	115,307
Cash dividends declared on common stock	(90,208)	—	—	—	—	—	(90,208)
Treasury stock purchased	—	—	—	(86,497)	—	—	(86,497)
Balance - December 31, 2019	\$ 1,523,820	\$ (341,948)	\$ 686	\$ (381,238)	\$ 770,596	\$ 336	\$ 1,572,252

See accompanying notes to consolidated financial statements.

AptarGroup, Inc.
CONSOLIDATED STATEMENTS OF CASH FLOWS

In thousands, brackets denote cash outflows

Year Ended December 31,	2019	2018	2017
Cash Flows from Operating Activities:			
Net income	\$ 242,227	\$ 194,766	\$ 220,029
Adjustments to reconcile net income to net cash provided by operations:			
Depreciation	166,944	156,292	142,755
Amortization	27,608	15,455	10,339
Stock-based compensation	23,893	19,561	18,924
Provision for doubtful accounts	782	923	235
Loss (gain) on disposition of fixed assets	344	(770)	387
Gain on remeasurement of equity securities	—	(6,500)	—
Debt prepayment costs	—	—	4,710
Deferred income taxes	8,746	(23,352)	2,238
Defined benefit plan expense	15,342	19,501	17,200
Equity in results of affiliates	(135)	229	229
Changes in balance sheet items, excluding effects from foreign currency adjustments:			
Accounts and other receivables	8,811	(66,968)	(44,658)
Inventories	605	(25,183)	(12,989)
Prepaid and other current assets	6,596	(9,437)	(33,959)
Accounts payable, accrued and other liabilities	(779)	37,155	58,245
Income taxes payable	5,658	(3,155)	(8,753)
Retirement and deferred compensation plan liabilities	(3,956)	(22,762)	(41,004)
Other changes, net	11,771	27,873	(9,199)
Net Cash Provided by Operations	514,457	313,628	324,729
Cash Flows from Investing Activities:			
Capital expenditures	(242,276)	(211,252)	(156,624)
Proceeds from sale of property, plant and equipment	4,301	4,466	2,036
Insurance proceeds	—	10,631	709
Settlement of derivative	—	—	(66,155)
Acquisition of business, net of cash acquired	(106,328)	(527,916)	—
Acquisition of intangible assets, net	(4,806)	(611)	—
Investment in equity securities	(3,530)	(10,000)	(5,000)
Proceeds from sale of investment in equity securities	16,487	—	—
Notes receivable, net	(116)	(779)	234
Net Cash Used by Investing Activities	(336,268)	(735,461)	(224,800)
Cash Flows from Financing Activities:			
Proceeds from notes payable and overdrafts	50,854	49,069	—
Repayments of notes payable and overdrafts	(53,269)	(29,994)	—
Proceeds and repayments of short term revolving credit facility, net	(52,096)	81,063	(169,213)
Proceeds from long-term obligations	10,523	13,161	625,628
Repayments of long-term obligations	(67,276)	(72,290)	(165,798)
Dividends paid	(90,208)	(82,346)	(79,944)
Credit facility costs	—	—	(3,542)
Debt prepayment costs	—	—	(4,710)
Proceeds from stock option exercises	90,834	88,156	73,905
Purchase of treasury stock	(86,497)	(3,905)	(120,540)
Common stock repurchased and retired	—	(57,786)	(40,994)
Net Cash (Used) Provided by Financing Activities	(197,135)	(14,872)	114,792
Effect of Exchange Rate Changes on Cash	(904)	(9,112)	31,632
Net (Decrease) Increase in Cash and Equivalents and Restricted Cash	(19,850)	(445,817)	246,353
Cash and Equivalents and Restricted Cash at Beginning of Period	266,823	712,640	466,287
Cash and Equivalents and Restricted Cash at End of Period	\$ 246,973	\$ 266,823	\$ 712,640
Supplemental Cash Flow Disclosure:			
Interest paid	\$ 34,422	\$ 32,005	\$ 38,838
Income taxes paid	86,097	96,048	77,349

Restricted cash included in the line item prepaid and other on the Consolidated Balance Sheets as shown below represents amounts held in escrow related to the Noble acquisition in 2019 and the CSP Technologies acquisition in 2018.

Year Ended December 31,	2019	2018	2017
Cash and equivalents	\$ 241,970	\$ 261,823	\$ 712,640
Restricted cash included in prepaid and other	5,003	5,000	—
Total Cash and Equivalents and Restricted Cash shown in the Statement of Cash Flows	\$ 246,973	\$ 266,823	\$ 712,640

See accompanying notes to consolidated financial statements.

AptarGroup, Inc.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(Dollars in Thousands, Except Share and per Share Amounts, or as Otherwise Indicated)

NOTE 1 SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

BASIS OF PRESENTATION

The accompanying consolidated financial statements include the accounts of AptarGroup, Inc. and our subsidiaries. The terms "AptarGroup", "Aptar", "Company", "we", "us" or "our" as used herein refer to AptarGroup, Inc. and our subsidiaries. All significant intercompany accounts and transactions have been eliminated. Certain previously reported amounts have been reclassified to conform to the current period presentation.

AptarGroup's organizational structure consists of three market-focused business segments which are Beauty + Home, Pharma and Food + Beverage. This is a strategic structure which allows us to be more closely aligned with our customers and the markets in which they operate.

In late 2017, Aptar began a business transformation plan to drive profitable sales growth, increase operational excellence, enhance our approach to innovation and improve organizational effectiveness (see Note 21 – Restructuring Initiatives for further details). The primary focus of the plan is the Beauty + Home segment; however, certain global general and administrative functions are also addressed. During 2019, 2018 and 2017, we recognized approximately \$20.5 million, \$63.8 million and \$2.2 million, respectively, of restructuring costs related to this plan.

During the quarter ended June 30, 2018, primarily based on published estimates which indicate that Argentina's three-year cumulative inflation rate has exceeded 100%, we concluded that Argentina has become a highly inflationary economy. Beginning July 1, 2018, we have applied highly inflationary accounting for our Argentinian subsidiaries. We have changed the functional currency from the Argentinian peso to the U.S. dollar. Local currency monetary assets and liabilities were remeasured into U.S. dollars using exchange rates as of the latest balance sheet date, with remeasurement adjustments and other transaction gains and losses recognized in net earnings. During the last half of 2018, we recognized approximately \$0.8 million of currency gains due to these changes. Our Argentinian operations contributed approximately less than 2.0% of consolidated net assets and revenues at and for the year ended December 31, 2019.

ACCOUNTING ESTIMATES

The financial statements are prepared in conformity with accounting principles generally accepted in the United States of America ("U.S. GAAP"). This process requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenue and expenses during the reporting period. Actual results could differ from those estimates.

CASH AND CASH EQUIVALENTS

We consider all investments that are readily convertible to known amounts of cash with an original maturity of three months or less when purchased to be cash equivalents.

INVENTORIES

Inventories are stated at lower of cost or net realizable value. Costs included in inventories are raw materials, direct labor and manufacturing overhead.

INVESTMENTS IN EQUITY SECURITIES

We account for our 20% to 50% owned investments using the equity method. Equity investments that do not result in consolidation and are not accounted for under the equity method are measured at fair value. Any related changes in fair value is recognized in net income unless the investments qualify for a practicality exception. In May 2018, we invested \$10.0 million in preferred equity stock of Reciprocal Labs Corporation, doing business as Propeller Health. During 2018, we increased the value of this investment by approximately \$6.5 million due to fair value inputs. This investment was ultimately sold during January 2019 for an amount of \$16.5 million (see Note 20 – Acquisitions for further details). During August 2019, we also invested an aggregate amount of \$3.5 million in two preferred equity investments that are accounted for at cost less impairment, if any, plus or minus changes resulting from observable price changes in orderly transactions for identical or similar investments of the same issuer. There were no indications of impairment nor were there any changes from observable price changes noted for the year ended December 31, 2019. There were no dividends received from affiliated companies in 2019, 2018 and 2017.

PROPERTY AND DEPRECIATION

Properties are stated at cost. Depreciation is determined on a straight-line basis over the estimated useful lives for financial reporting purposes and accelerated methods for income tax reporting. Generally, the estimated useful lives are 10 to 40 years for buildings and improvements and 3 to 15 years for machinery and equipment.

FINITE-LIVED INTANGIBLE ASSETS

Finite-lived intangibles, consisting of patents, acquired technology, customer relationships, trademarks and trade names and license agreements acquired in purchase transactions, are capitalized and amortized over their useful lives which range from 1 to 20 years.

GOODWILL

The Company has historically evaluated the excess of purchase price over the fair value of the net assets acquired ("goodwill") for impairment annually as of December 31 or more frequently if impairment indicators arose in accordance with Accounting Standards Codification ("ASC") Topic 350, "Intangibles - Goodwill and Other." In the fourth quarter of 2019, the Company changed the date of its annual assessment of goodwill to October 1 for all reporting units. The change in testing date for goodwill is a change in accounting principle, which management believes is preferable as the new date of the assessment better aligns with the Company's budgeting process and will create a more efficient and timely process surrounding the impairment tests. The change in the assessment date does not delay, accelerate or avoid a potential impairment charge. The Company has determined that it is impracticable to objectively determine projected cash flows and related valuation estimates that would have been used as of each October 1 of prior reporting periods without the use of hindsight. As such, the Company prospectively applied the change in annual goodwill impairment testing date from October 1, 2019.

We believe that the accounting estimates related to determining the fair value of our reporting units is a critical accounting estimate because: (1) it is highly susceptible to change from period to period because it requires management to make assumptions about the future cash flows for each reporting unit over several years, and (2) the impact that recognizing an impairment would have on the assets reported on our balance sheet as well as our results of operations could be material. Management's determination of the fair value of our reporting units, based on future cash flows for the reporting units, requires significant judgment and the use of estimates and assumptions related to projected revenue growth rates, the terminal growth factor, as well as the discount rate. Actual cash flows in the future may differ significantly from those forecasted today. The estimates and assumptions for future cash flows and its impact on the impairment testing of goodwill is a critical accounting estimate.

Management believes goodwill in purchase transactions has continuing value. Goodwill is not amortized and must be tested annually, or more frequently as circumstances dictate, for impairment. The annual goodwill impairment test may first consider qualitative factors to determine whether it is more likely than not (i.e., greater than 50 percent chance) that the fair value of a reporting unit is less than its book value. This is sometimes referred to as the "step zero" approach and is an optional step in the annual goodwill impairment analysis. Management has performed this qualitative assessment as of October 1, 2019 for each of our reporting units. Based on our review of macroeconomic, industry, and market events and circumstances as well as the overall financial performance of the reporting units, we determined that it was more likely than not that the fair value of these reporting units was greater than their carrying amounts.

During the third quarter of 2019, we performed a separate quantitative impairment assessment using a discounted cash flow analysis of the Active Packaging reporting unit, which was formed as a result of the CSP Technologies Acquisition in the third quarter of 2018. We calculated the fair value of the Active Packaging reporting unit and compared it with the associated carrying value (the "step one" approach) as of July 1, 2019. Based on this quantitative analysis, the fair value of the reporting unit exceeded the carrying value and therefore no impairment loss was recognized.

IMPAIRMENT OF LONG-LIVED ASSETS

Long-lived assets, such as property, plant and equipment and finite-lived intangibles, are evaluated for impairment whenever events or changes in circumstances indicate that the carrying value of an asset may not be recoverable. An impairment loss is recognized when estimated undiscounted future cash flows expected to result from the use of the asset plus net proceeds expected from disposition of the asset (if any) are less than the carrying value of the asset.

DERIVATIVES INSTRUMENTS AND HEDGING ACTIVITIES

Derivative financial instruments are recorded in the Consolidated Balance Sheets at fair value as either assets or liabilities. Changes in the fair value of derivatives are recorded in each period in earnings or other comprehensive income, depending on whether a derivative is designated and effective as part of a hedge transaction.

RETIREMENT OF COMMON STOCK

During 2019, we repurchased 779 thousand shares of common stock, all of which were returned to treasury stock. During 2018, we repurchased 668 thousand shares of common stock, of which 623 thousand shares were immediately retired. Common stock was reduced by the number of shares retired at \$0.01 par value per share. We allocate the excess purchase price over par value between additional paid-in capital and retained earnings.

RESEARCH & DEVELOPMENT EXPENSES

Research and development costs, net of any customer funded research and development or government research and development credits, are expensed as incurred. These costs amounted to \$82.8 million, \$75.3 million and \$68.2 million in 2019, 2018 and 2017, respectively.

INCOME TAXES

We compute taxes on income in accordance with the tax rules and regulations of the many taxing authorities where the income is earned. The income tax rates imposed by these taxing authorities may vary substantially. Taxable income may differ from pre-tax income for financial accounting purposes. To the extent that these differences create timing differences between the tax basis of an asset or liability and its reported amount in the financial statements, an appropriate provision for deferred income taxes is made.

All of our non-U.S. earnings are subject to U.S. taxation, either from the transition tax enacted in the U.S. by the Tax Cuts and Jobs Act ("TCJA") on accumulated non-U.S. earnings as of the end of 2017 or the global intangible low-taxed income ("GILTI") provisions on non-U.S. earnings thereafter. We maintain our assertion that the cash and distributable reserves at our non-U.S. affiliates are indefinitely reinvested. We will provide for the necessary withholding and local income taxes when management decides that an affiliate should make a distribution. These decisions are made taking into consideration the financial requirements of the non-U.S. affiliates and the global cash management goals of the Company.

We provide a liability for the amount of unrecognized tax benefits from uncertain tax positions. This liability is provided whenever we determine that a tax benefit will not meet a more-likely-than-not threshold for recognition. See Note 6 – Income Taxes for more information.

TRANSLATION OF FOREIGN CURRENCIES

The functional currencies of the majority of our foreign operations are the local currencies. Assets and liabilities of our foreign operations are translated into U.S. dollars at the rates of exchange on the balance sheet date. Sales and expenses are translated at the average rates of exchange prevailing during the year. The related translation adjustments are accumulated in a separate section of Stockholders' Equity. Realized and unrealized foreign currency transaction gains and losses are reflected in income, as a component of miscellaneous income and expense, and represented losses of \$1.7 million, \$1.7 million and \$5.0 million in 2019, 2018 and 2017, respectively.

STOCK-BASED COMPENSATION

Accounting standards require the application of the non-substantive vesting approach which means that an award is fully vested when the employee's retention of the award is no longer contingent on providing future service. Under this approach, compensation costs are recognized over the requisite service period of the award instead of ratably over the vesting period stated in the grant. As such, costs are recognized immediately if the employee is retirement eligible on the date of grant or over the period from the date of grant until retirement eligibility if retirement eligibility is reached before the end of the vesting period stated in the grant. See Note 16 – Stock-Based Compensation for more information.

REVENUE RECOGNITION

At inception of customer contracts, we assess the goods and services promised in order to identify a performance obligation for each promise to transfer a good or service (or bundle of goods or services) that is distinct. To identify the performance obligations, we consider all the goods or services promised in the contract, whether explicitly stated or implied based on customary business practices. For a contract that has more than one performance obligation, we allocate the total contract consideration to each distinct performance obligation on a relative standalone selling price basis. Revenue is recognized when (or as) the performance obligations are satisfied (i.e., when the customer obtains control of the good or service). The majority of our revenues are derived from product and tooling sales; however, we also receive revenues from service, license, exclusivity and royalty arrangements, which are considered insignificant. See specific discussions about methods of accounting for control transfers of product and tooling sales in Note 2 – Revenue.

LEASES

We determine if an arrangement is a lease at inception. Operating lease assets are included in operating lease right-of-use ("ROU") assets and operating lease liabilities are included in accounts payable accrued and other liabilities in our Consolidated Balance Sheets. Finance leases are included in property, plant and equipment, current maturities of long-term obligations and long-term obligations in our Consolidated Balance Sheets.

ROU assets represent our right to use an underlying asset for the lease term and lease liabilities represent our obligation to make lease payments arising from the lease. Operating lease ROU assets and liabilities are recognized at commencement date based on the present value of lease payments over the lease term. We use the implicit rate when readily determinable. As most of our leases do not provide an implicit rate, we use our incremental borrowing rate based on the information available at the commencement date of the lease in determining the present value of lease payments. The operating lease ROU asset includes any lease payments made as well as initial direct costs incurred and excludes lease incentives. Our lease terms may include options to extend or terminate the lease when it is reasonably certain that we will exercise that option. Lease expense for operating lease payments is recognized on a straight-line basis over the lease term.

We have lease agreements with lease and non-lease components, which are generally accounted for separately. For certain equipment leases, we account for the lease and non-lease components as a single lease component. We have elected not to recognize right-of-use assets and lease liabilities that arise from short-term leases (a lease whose term is 12 months or less and does not include a purchase option that we are reasonably certain to exercise).

Certain vehicle lease contracts include guaranteed residual value that is considered in the determination of lease classification. The probability of having to satisfy a residual value guarantee is not considered for the purpose of lease classification, but is considered when measuring a lease liability.

ADOPTION OF RECENT ACCOUNTING PRONOUNCEMENTS

Changes to U.S. GAAP are established by the Financial Accounting Standards Board ("FASB") in the form of Accounting Standards Updates ("ASUs") to the FASB's Accounting Standards Codification.

In February 2016, the FASB issued a new standard related to leases to increase transparency and comparability among organizations. Most prominent among the changes in the standard is the recognition of ROU assets and lease liabilities by lessees for those leases classified as operating leases, as our accounting for finance leases remained substantially unchanged. Under the new standard, disclosures are required to meet the objective of enabling users of financial statements to assess the amount, timing, and uncertainty of cash flows arising from leases. We adopted the standard on January 1, 2019 using a modified retrospective transition, with the effective date method. Under this method, financial results reported in periods prior to 2019 are not recast. We elected the package of practical expedients permitted under the transition guidance within the new standard, which among other things, allows companies to carry forward their historical lease classification. We also implemented internal controls and key system functionality to enable the preparation of financial information on adoption. The impact of adoption of the standard to previously reported results is shown below.

	Balance at December 31, 2018	Adjustments	Balance at January 1, 2019
Consolidated Balance Sheets			
Operating lease right-of-use assets	\$ —	\$ 83,222	\$ 83,222
Prepaid and other	118,245	(1,383)	116,862
Property, plant and equipment	991,613	5,876	997,489
Current maturities of long-term obligations, net of unamortized debt issuance costs	62,678	2,631	65,309
Accounts payable, accrued and other liabilities	525,199	20,508	545,707
Operating lease liabilities	—	61,331	61,331
Long-term obligations, net of unamortized debt issuance costs	1,125,993	3,245	1,129,238

In May 2014, the FASB issued ASU 2014-09, which amended the guidance for recognition of revenue from customer contracts. The core principle of the guidance is that an entity should recognize revenue to depict the transfer of promised goods or services to customers in the amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. On January 1, 2018, we adopted this standard and all the related amendments (the "new revenue standard") for all contracts. This adoption was accounted for using the modified retrospective method. We recognized the cumulative effect of initially applying the new revenue standard as an adjustment to the January 1, 2018 opening balance of retained earnings. Comparative information for the prior periods has not been restated and continues to be reported under the accounting standards in effect prior to January 1, 2018.

	Balance at December 31, 2017	Adjustment	Balance at January 1, 2018
Consolidated Balance Sheets			
Assets			
Inventories	\$ 337,216	\$ (7,064)	\$ 330,152
Prepaid and other	109,791	6,411	116,202
Liabilities			
Accounts payable, accrued and other liabilities	461,579	(5,706)	455,873
Deferred income taxes	20,995	1,292	22,287
Deferred and other non-current liabilities	5,608	824	6,432
Stockholders' Equity			
Retained earnings	1,301,147	2,937	1,304,084

A majority of our sales revenue continues to be recognized when products are shipped from our manufacturing facilities. For certain custom product and tooling sales where revenue was previously recognized when the products were shipped, we now recognize revenue over the time required to manufacture the product or build the tool in accordance with the new revenue standard. We also have certain extended warranty contracts, which under the new standard are considered a separate performance obligation and are required to be deferred and recognized into revenue over the life of the agreement.

In accordance with the new revenue standard requirements, the disclosure of the impact of adoption on our consolidated statements of income and balance sheets is as follows:

	For the Year Ended December 31, 2018		
	As Reported	Balances Without Adoption of ASC 606	Effect of Change Higher/(Lower)
Consolidated Statements of Income			
Net Sales			
Beauty + Home	\$ 1,426,382	\$ 1,424,701	\$ 1,681
Pharma	954,652	954,497	155
Food + Beverage	383,727	385,001	(1,274)
Costs and Expenses			
Cost of sales (exclusive of depreciation and amortization)	1,812,961	1,811,290	1,671
Provision for income taxes	71,254	71,541	(287)
Net income	194,766	195,588	(822)

	December 31, 2018		
	As Reported	Balances Without Adoption of ASC 606	Effect of Change Higher/(Lower)
Consolidated Balance Sheets			
Assets			
Inventories	\$ 381,110	\$ 391,315	\$ (10,205)
Prepaid and other	118,245	108,490	9,755
Liabilities			
Accounts payable, accrued and other liabilities	525,199	529,168	(3,969)
Deferred income taxes	53,917	52,912	1,005
Deferred and other non-current liabilities	23,465	23,066	399
Stockholders' Equity			
Retained earnings	1,371,826	1,369,711	2,115

In January 2016, the FASB issued ASU 2016-01, which provides guidance on the classification and measurement of financial assets and liabilities (equity securities and financial liabilities) under the fair value option and the presentation and disclosure requirements for financial instruments. In February 2018, ASU 2018-03 was issued to clarify certain aspects of the guidance issued in January 2016. The guidance modifies how entities measure equity investments and present changes in the fair value of financial liabilities. Under the new guidance, entities measure equity investments that do not result in consolidation and are not accounted for under the equity method at fair value and recognize any related changes in fair value in net income unless the investments qualify for the new practicality exception. A measurement alternative exists for those equity investments that do not have a readily determinable fair value. These investments may be measured at cost less impairment, if any, plus or minus changes resulting from observable price changes in orderly transactions for identical or similar investments of the same issuer. The standard also includes a new impairment model for equity investments without readily determinable fair values. The new model is a single-step model under which we are required to perform a qualitative assessment each reporting period to identify impairment. When a qualitative assessment indicates that an impairment exists, we will estimate the fair value of the investment and recognize in current earnings an impairment loss equal to the difference between the fair value and the carrying amount of the equity investment. The new standard is effective for fiscal years and interim periods beginning after December 15, 2017. We adopted the requirements of this standard during the first quarter of 2018.

In November 2016, the FASB issued ASU 2016-18, which provides guidance to address the diversity in the classification and presentation of changes in restricted cash on the statement of cash flows. The amendments in this standard require that a statement of cash flows explain the change during the period in the total cash, cash equivalents, and amounts generally described as restricted cash or restricted cash equivalents. The new standard is effective for fiscal years and interim periods beginning after December 15, 2017. We adopted the requirements of this standard during the first quarter of 2018 and appropriate disclosures are included on the statement of cash flows to the extent applicable.

In February 2018, the FASB issued ASU 2018-02, which provides guidance on the reclassification of certain tax effects from accumulated other comprehensive income. This guidance allows for the reclassification from accumulated other comprehensive income to retained earnings for stranded tax effects resulting from the TCJA. The new standard is effective for fiscal years and interim periods beginning after December 15, 2018. We elected to early adopt this standard in the fourth quarter of 2018. As part of this adoption, we elected to reclassify \$6.7 million of stranded income tax effects of the TCJA from accumulated other comprehensive income to retained earnings at the beginning of the fourth quarter of 2018.

Other accounting standards that have been issued by the FASB or other standards-setting bodies did not have a material impact on our consolidated financial statements.

NOTE 2 REVENUE

Revenue by segment and geography for the years ended December 31, 2019 and 2018 is as follows:

For the Year Ended December 31, 2019					
Segment	Europe	Domestic	Latin America	Asia	Total
Beauty + Home	\$ 792,255	\$ 310,411	\$ 160,048	\$ 90,000	\$ 1,352,714
Pharma	729,882	297,871	26,344	36,954	1,091,051
Food + Beverage	116,332	228,486	33,996	37,153	415,967
Total	\$ 1,638,469	\$ 836,768	\$ 220,388	\$ 164,107	\$ 2,859,732

For the Year Ended December 31, 2018					
Segment	Europe	Domestic	Latin America	Asia	Total
Beauty + Home	\$ 816,359	\$ 334,881	\$ 178,392	\$ 96,750	\$ 1,426,382
Pharma	696,079	196,928	25,485	36,160	954,652
Food + Beverage	115,040	194,527	31,742	42,418	383,727
Total	\$ 1,627,478	\$ 726,336	\$ 235,619	\$ 175,328	\$ 2,764,761

Aptar performs its obligations under a contract with a customer by transferring goods and/or services in exchange for consideration from the customer. The timing of performance will sometimes differ from the timing of the receipt of the associated consideration from the customer, thus resulting in the recognition of a contract asset or a contract liability. Aptar recognizes a contract asset when it transfers control of goods or services to a customer prior to invoicing for the related performance obligation. The contract asset is transferred to accounts receivable when the product is shipped and invoiced to the customer. Aptar recognizes a contract liability if the customer's payment of consideration precedes the entity's performance.

The opening and closing balances of Aptar's contract asset and contract liabilities are as follows:

	Balance as of December 31, 2018 (opening)	Balance as of December 31, 2019 (closing)	Increase/ (Decrease)
Contract asset (current)	\$ 15,858	\$ 16,245	\$ 387
Contract asset (long-term)	\$ —	\$ —	\$ —
Contract liability (current)	\$ 68,134	\$ 79,305	\$ 11,171
Contract liability (long-term)	\$ 11,261	\$ 9,779	\$ (1,482)

The differences in the opening and closing balances of our contract asset and contract liabilities are primarily the result of acquisitions and timing differences between our performance and the customer's payment. The total amount of revenue recognized during the current year against contract liabilities is \$61.3 million, including \$32.6 million relating to contract liabilities at the beginning of the year.

Determining the Transaction Price

In most cases, the transaction price for each performance obligation is stated in the contract. In determining the variable amounts of consideration within the transaction price (such as volume-based customer rebates), Aptar includes an estimate of the expected amount of consideration as revenue. Aptar applies the expected value method based on all of the information (historical, current and forecast) that is reasonably available and identifies reasonable estimates based on this information. We apply the method consistently throughout the contract when estimating the effect of an uncertainty on the amount of variable consideration to which it will be entitled.

Point in Time Performance Obligations

For product and tooling sales considered to be point in time, Aptar typically assesses, among other things, the shipping terms of the contract, shipping being one of the indicators of transfer of control. For free on board ("FOB") shipping point terms, revenue is recognized at the time of shipment. The performance obligation with respect to the sale of goods is satisfied at the time of shipment because the customer gains control at that time. Once the goods are shipped, we are precluded from redirecting the shipment to another customer. With respect to FOB destination sales, shipping and/or handling costs that occur before the customer obtains control of the goods are deemed to be fulfillment activities and are accounted for as fulfillment costs and revenue is recorded upon final delivery to the customer location.

Over Time Performance Obligations

For performance obligations related to manufacturing of highly customized products that have no alternative use for us and for which we have an enforceable right to payment for performance completed to date, we transfer control and recognize revenue over time by measuring progress towards complete satisfaction using the Output Method based on the number of products produced. For similar performance obligations related to our tooling sales, we transfer control and recognize revenue over time by measuring progress towards complete satisfaction using the Input Method based on costs incurred relative to total estimated costs to completion. We believe these measurements provide a faithful depiction of the transfer of goods as the costs incurred reflect the value of the products produced.

Product Sales

Aptar primarily manufactures dispensing systems for our Beauty + Home, Pharma and Food + Beverage customers. The amount of consideration is typically fixed for such customers. At the time of delivery, the customer is invoiced the agreed-upon price. Revenue from product sales is typically recognized upon manufacture or shipment, when control of the goods transfers to the customer.

To determine when the control transfers, Aptar typically assesses, among other things, the shipping terms of the contract, shipping being one of the indicators of transfer of control. A majority of product sales are sold FOB shipping point. For FOB shipping point shipments, control of the goods transfers to the customer at the time of shipment of the goods. Therefore, Aptar's performance obligation is satisfied at the time of shipment. Aptar has elected to account for shipping and handling costs that occur after the customer has obtained control of a good as fulfillment costs rather than as a promised service. Aptar does not have any material significant payment terms as payment is typically received shortly after the point of sale.

There also exist instances where Aptar manufactures highly customized products that have no alternative use to Aptar and for which Aptar has an enforceable right to payment for performance completed to date. For these products, we transfer control and recognizes revenue over time by measuring progress towards completion using the Output Method based on the number of products produced. As we normally make our products to a customer's order, the time between production and shipment of our products is typically within a few weeks.

As a part of its customary business practice, Aptar offers a standard warranty that the products will materially comply with the technical specifications and will be free from material defects. Because such warranties are not sold separately, do not provide for any service beyond a guarantee of a product's initial specifications, and are not required by law, there is no revenue deferral for these types of warranties.

Tooling Sales

Aptar also builds or contracts for molds and other tools (collectively defined as "tooling") necessary to produce our products. As with product sales, Aptar recognizes revenue when control of the tool transfers to the customer. If the tooling is highly customized with no alternative use to Aptar and Aptar has an enforceable right to payment for performance completed to date, we transfer control and recognize revenue over time by measuring progress towards completion using the Input Method based on costs incurred relative to total estimated costs to completion. Otherwise, revenue for the tooling is recognized at the point in time when the customer approves the tool. Aptar does not have any material significant payment terms as payment is typically either received during the mold-build process or shortly after completion.

In certain instances, Aptar offers extended warranties on our tools above and beyond the normal standard warranties. Aptar normally receives payment at the inception of the contract and recognizes revenue over the term of the contract. At December 31, 2018, \$758 thousand of unearned revenue associated with outstanding contracts was reported in Accounts Payable, Accrued and Other Liabilities. At December 31, 2019, the unearned amount was \$515 thousand. Aptar expects to recognize approximately \$228 thousand of the unearned amount in 2020 and \$287 thousand thereafter.

Service Sales

Aptar also provides services to its pharmaceutical customers. As with product sales, Aptar recognizes revenue based on completion of each performance obligation of the service contract.

Contract Costs

Aptar does not incur significant costs to obtain or fulfill revenue contracts.

Practical Expedients

Significant financing component: Aptar elected not to adjust the promised consideration for the time value of money for contracts where the difference between the time of payment and performance is one year or less.

Remaining performance obligations: Aptar elected not to disclose the aggregate amount of the transaction price allocated to remaining performance obligations for its contracts that are one year or less, as the revenue is expected to be recognized within the next year. In addition, we have elected not to disclose the expected consideration related to performance obligations where we recognize revenue in the amount it has a right to invoice (e.g., usage-based pricing terms).

NOTE 3 INVENTORIES

Inventories, by component net of reserves, consisted of:

		2019	2018
Raw materials	\$	111,653	\$ 110,720
Work in process		123,750	131,091
Finished goods		140,392	139,299
Total	\$	375,795	\$ 381,110

NOTE 4 GOODWILL AND OTHER INTANGIBLE ASSETS

The changes in the carrying amount of goodwill for the year ended December 31, 2019 are as follows by reporting segment:

	Beauty + Home	Pharma	Food + Beverage	Corporate & Other	Total
Balance as of December 31, 2017					
Goodwill	\$ 223,947	\$ 203,069	\$ 16,871	\$ 1,615	\$ 445,502
Accumulated impairment losses	—	—	—	(1,615)	(1,615)
	<u>\$ 223,947</u>	<u>\$ 203,069</u>	<u>\$ 16,871</u>	<u>\$ —</u>	<u>\$ 443,887</u>
Acquisition	5,565	174,343	103,678	—	283,586
Reallocation, net	—	(8,048)	8,048	—	—
Foreign currency exchange effects	(5,579)	(9,481)	(318)	—	(15,378)
Balance as of December 31, 2018					
Goodwill	\$ 223,933	\$ 359,883	\$ 128,279	\$ 1,615	\$ 713,710
Accumulated impairment losses	—	—	—	(1,615)	(1,615)
	<u>\$ 223,933</u>	<u>\$ 359,883</u>	<u>\$ 128,279</u>	<u>\$ —</u>	<u>\$ 712,095</u>
Acquisition	—	57,934	—	—	57,934
Foreign currency exchange effects	(2,275)	(4,167)	(126)	—	(6,568)
Balance as of December 31, 2019					
Goodwill	\$ 221,658	\$ 413,650	\$ 128,153	\$ 1,615	\$ 765,076
Accumulated impairment losses	—	—	—	(1,615)	(1,615)
	<u>\$ 221,658</u>	<u>\$ 413,650</u>	<u>\$ 128,153</u>	<u>\$ —</u>	<u>\$ 763,461</u>

During the fourth quarter of 2018, certain CSP Technologies product lines were transferred from Pharma segment to the Food + Beverage segment affecting the Active Packaging and Food + Beverage reporting units to better align our customer needs. The changes resulted in the reassignment of the assets and liabilities to the reporting units affected. The goodwill was reallocated to the reporting units affected using the relative fair value approach.

During the third quarter of 2019, we performed a separate quantitative impairment assessment using a discounted cash flow analysis of the Active Packaging reporting unit, which was formed as a result of the CSP Technologies Acquisition in the third quarter of 2018. We calculated the fair value of the Active Packaging reporting unit and compared it with the associated carrying value (the “step one” approach) as of July 1, 2019. Based on this quantitative analysis, the fair value of the reporting unit exceeded the carrying value and therefore no impairment loss was recognized.

We have completed the annual impairment analysis of our reporting units as of October 1, 2019 using a qualitative analysis of goodwill commonly referred to as the “step zero” approach for each of our reporting units. Based on our review of macroeconomic, industry, and market events and circumstances as well as the overall financial performance of the reporting units, we determined that it was more likely than not that the fair value of these reporting units was greater than their carrying amounts. No impairment was recognized during the years ended December 31, 2019, 2018 or 2017.

The table below shows a summary of intangible assets for the years ended December 31, 2019 and 2018.

	Weighted Average Amortization Period (Years)	2019			2018		
		Gross Carrying Amount	Accumulated Amortization	Net Value	Gross Carrying Amount	Accumulated Amortization	Net Value
Amortized intangible assets:							
Patents	7.2	\$ 2,804	(1,318)	\$ 1,486	\$ 5,427	\$ (5,294)	\$ 133
Acquired technology	13.0	100,511	(25,430)	75,081	92,389	(18,304)	74,085
Customer relationships	13.6	217,934	(33,924)	184,010	179,597	(20,439)	159,158
Trademarks and trade names	7.0	35,015	(11,003)	24,012	21,243	(5,914)	15,329
License agreements and other	10.3	16,153	(9,658)	6,495	13,852	(7,653)	6,199
Total intangible assets	12.6	\$ 372,417	\$ (81,333)	\$ 291,084	\$ 312,508	\$ (57,604)	\$ 254,904

Aggregate amortization expense for the intangible assets above for the years ended December 31, 2019, 2018 and 2017 was \$27,608, \$15,455 and \$10,339, respectively.

Estimated amortization expense for the years ending December 31 is as follows:

2020	\$ 31,135
2021	29,582
2022	29,343
2023	29,171
2024 and thereafter	171,853

Future amortization expense may fluctuate depending on changes in foreign currency rates. The estimates for amortization expense noted above are based upon foreign exchange rates as of December 31, 2019.

NOTE 5 ACCOUNTS PAYABLE, ACCRUED AND OTHER LIABILITIES

At December 31, 2019 and 2018, accounts payable, accrued and other liabilities consisted of the following:

	2019	2018
Accounts payable, principally trade	\$ 192,739	\$ 164,528
Accrued employee compensation costs	163,839	168,349
Customer deposits and other unearned income	86,820	67,775
Other accrued liabilities	129,630	124,547
Total	\$ 573,028	\$ 525,199

NOTE 6 INCOME TAXES

On December 22, 2017, the U.S. enacted the Tax Cuts and Jobs Act ("TCJA"), which significantly changed U.S. tax law. The TCJA lowered the Company's U.S. statutory federal income tax rate from 35% to 21% effective January 1, 2018, while imposing a deemed repatriation tax on previously deferred foreign income. The Company completed its accounting for the income tax effects of the TCJA during 2018, in accordance with the U.S. Securities and Exchange Commission Staff Accounting Bulletin No. 118.

Income before income taxes consists of:

Years Ended December 31,	2019	2018	2017
United States	\$ 94,612	\$ 34,404	\$ 36,139
International	247,457	231,616	258,686
Total	\$ 342,069	\$ 266,020	\$ 294,825

The provision (benefit) for income taxes is composed of:

Years Ended December 31,	2019	2018	2017
Current:			
U.S. Federal	\$ 2,129	\$ 10,273	\$ (342)
State/Local	883	877	230
International	88,084	83,456	72,670
	\$ 91,096	\$ 94,606	\$ 72,558
Deferred:			
U.S. Federal/State	\$ 4,670	\$ (17,019)	\$ 2,570
International	4,076	(6,333)	(332)
	\$ 8,746	\$ (23,352)	\$ 2,238
Total	\$ 99,842	\$ 71,254	\$ 74,796

The difference between the actual income tax provision and the tax provision computed by applying the statutory federal income tax rate of 21.0% in 2019 and 2018, and 35.0% in 2017 to income before income taxes is as follows:

Years Ended December 31,	2019	2018	2017
Income tax at statutory rate	\$ 71,835	\$ 55,864	\$ 103,189
State income taxes (benefits), net of federal (tax) benefit	2,622	(1,516)	(2,620)
Investment incentives	(2,530)	(1,900)	(1,900)
Tax resolutions	(1,915)	(3,400)	(5,188)
Excess tax benefits from share-based compensation	(12,520)	(10,800)	(10,383)
Deferred benefits from tax rate changes	—	(2,800)	(5,055)
U.S. GILTI and BEAT	(1,485)	5,625	—
U.S. tax reform - transition tax	—	(2,570)	31,575
Results of forward contract	—	—	(23,883)
Valuation allowance	10,623	3,170	1,344
Rate differential on earnings of foreign operations	29,807	26,424	(16,097)
Other items, net	3,405	3,157	3,814
Actual income tax provision	\$ 99,842	\$ 71,254	\$ 74,796
Effective income tax rate	29.2 %	26.8 %	25.4 %

The 2019 tax provision was favorably impacted by excess tax benefits on deductible share-based compensation. The tax provision for 2019 reflects a \$12.5 million benefit from this item. The mix of pretax income has an unfavorable impact, because the majority of our income is earned in higher tax jurisdictions. Additionally, we have incurred losses in jurisdictions where we cannot tax effect the loss. We have elected to account for the tax on the U.S. GILTI as a period cost and not as a measure of deferred taxes.

The 2018 tax provision was favorably impacted by excess tax benefits on deductible stock compensation. The tax provision for 2018 reflects a \$10.8 million benefit from this item. The mix of pretax income has an unfavorable impact, reflecting that the majority of our income is earned in higher tax jurisdictions. The U.S. GILTI tax and Base Erosion Anti-Abuse Tax ("BEAT") also had a \$5.6 million unfavorable impact.

The 2017 tax provision was favorably impacted by the mix of pretax income in various non-U.S. tax jurisdictions. The tax provision for 2017 reflects \$10.4 million related to the excess tax benefits on deductible stock compensation, which is new for 2017. The deferred tax benefit of \$5.1 million is net of a provisional benefit of \$6.8 million recorded for the change in the U.S. tax rate and a charge of \$1.7 million for tax rate changes in France and Argentina. The \$5.2 million related to tax resolutions includes an amount of \$3.2 million related to uncertain tax positions in Europe. The remaining \$2.0 million is a refund from a distribution tax paid in France. Furthermore, the tax provision for 2017 reflects a provisional charge of \$31.6 million from the transition tax enacted as part of the U.S. tax reform. This was partially offset by a benefit of \$23.9 million from the forward contracts discussed in Note 11 – Derivative Instruments and Hedging Activities.

Significant deferred tax assets and liabilities as of December 31, 2019 and 2018 are composed of the following temporary differences:

	2019	2018
Deferred Tax Assets:		
Net operating loss carryforwards	\$ 24,941	\$ 22,462
Operating and finance leases	25,440	—
Pension liabilities	24,925	15,405
Share-based compensation	6,082	10,130
U.S. federal tax credits	8,575	12,045
U.S. state tax credits	7,881	10,186
Vacation and bonus	7,645	6,891
Research and development	7,539	6,945
Inventory	5,993	6,038
Workers compensation	3,835	3,373
Other	16,496	13,985
Total gross deferred tax assets	139,352	107,460
Less valuation allowance	(23,320)	(11,189)
Net deferred tax assets	116,032	96,271
Deferred Tax Liabilities:		
Acquisition related intangibles	62,851	59,004
Depreciation and amortization	28,284	31,140
Operating and finance leases	27,555	2,034
Other	6,215	10,351
Total gross deferred tax liabilities	124,905	102,529
Net deferred tax (liabilities) assets	\$ (8,873)	\$ (6,258)

The \$12.1 million increase in our valuation allowance in 2019 is primarily due to losses in foreign jurisdictions where we cannot record the benefit of the losses.

We evaluate the deferred tax assets and record a valuation allowance when it is believed it is more likely than not that the benefit will not be realized. We have established a valuation allowance for \$20.2 million of the \$24.9 million of tax effected net operating loss carryforwards. These losses are generally in locations that have not produced cumulative three year operating profit. A valuation allowance of \$3.1 million has also been established against the \$7.9 million of U.S. state tax credit carryforwards.

The U.S. federal tax credits will expire in the years 2026 and 2027. There is no expiration date on \$20.8 million of the tax-effected net operating loss carryforwards and \$4.1 million (tax effected) will expire in the years 2020 to 2038. The U.S. state tax credit carryforwards of \$7.9 million (tax effected) will expire in the years 2020 to 2034.

As a result of U.S. tax reform and the U.S. GILTI provisions, none of the non-U.S. unremitted earnings will be subject to U.S. taxation. We maintain our assertion that all other cash and distributable reserves at our non-U.S. affiliates will continue to be indefinitely reinvested. We estimate the amount of additional local and withholding tax that would be payable on distributions to be in the range of \$20 million to \$30 million.

We have not provided for taxes on certain tax-deferred income of a foreign operation. The income arose predominately from government grants. Taxes of approximately \$1.6 million would become payable in the event the terms of the grant are not fulfilled.

Income Tax Uncertainties

We provide a liability for the amount of tax benefits realized from uncertain tax positions. A reconciliation of the beginning and ending amount of income tax uncertainties is as follows:

	2019	2018	2017
Balance at January 1	\$ 3,559	\$ 3,080	\$ 6,356
Increases based on tax positions for the current year	412	360	370
Increases based on tax positions of prior years	663	610	1,562
Settlements	(558)	(491)	(4,874)
Lapse of statute of limitations	(429)	—	(334)
Balance at December 31	\$ 3,647	\$ 3,559	\$ 3,080

The amount of income tax uncertainties that, if recognized, would impact the effective tax rate is approximately \$3.6 million. We estimate that it is reasonably possible that the liability for uncertain tax positions will decrease no more than \$1.8 million in the next twelve months from the resolution of various uncertain positions as a result of the completion of tax audits, litigation and the expiration of the statute of limitations in various jurisdictions.

We recognize interest and penalties accrued related to unrecognized tax benefits as a component of income taxes. As of December 31, 2019, 2018 and 2017, we had approximately \$1.7 million, \$1.9 million and \$1.6 million, respectively, accrued for the payment of interest and penalties, of which approximately \$0.2 million was recognized as a tax benefit for the year ended 2019 and \$0.4 million and \$0.1 million was recognized in income tax expense in the years ended December 31, 2018 and 2017, respectively.

Aptar or its subsidiaries file income tax returns in the U.S. Federal jurisdiction and various state and foreign jurisdictions. The major tax jurisdictions we file in, with the years still subject to income tax examinations, are listed below:

Major Tax Jurisdiction	Tax Years Subject to Examination
United States — Federal	2014-2019
United States — State	2010-2019
France	2016-2019
Germany	2015-2019
Italy	2014-2019
China	2010-2019

NOTE 7 DEBT

Notes Payable, Revolving Credit Facility and Overdrafts

At December 31, 2019 and 2018, our notes payable, revolving credit facility and overdrafts, consisted of the following:

	2019	2018
Revolving credit facility	\$ 25,000	\$ 79,000
Notes payable	1,436	4,544
Overdrafts	17,823	17,749
	\$ 44,259	\$ 101,293

We maintain a multi-currency revolving credit facility with two tranches that matures in July 2022 which provides for unsecured financing of up to \$300 million that is available in the U.S. and up to €150 million that is available to our wholly-owned UK subsidiary. \$25.0 million was utilized under our U.S. facility and no balance was utilized under our euro-based revolving credit facility as of December 31, 2019. No balance was utilized under our U.S. facility and €69.0 million was utilized under our euro-based revolving credit facility as of December 31, 2018.

There are no compensating balance requirements associated with our revolving credit facility. Each borrowing under the credit facility will bear interest at rates based on LIBOR, prime rates or other similar rates, in each case plus an applicable margin. A facility fee on the total amount of the facility is also payable quarterly, regardless of usage. The applicable margins for borrowings under the credit facility and the facility fee percentage may change from time to time depending on changes in AptarGroup's consolidated leverage ratio. We incurred approximately \$1.5 million in interest and fees related to this credit facility during both 2019 and 2018.

Average borrowings under the revolving credit facility and notes payable were \$34.1 million and \$40.0 million for 2019 and 2018, respectively. The average annual interest rate on the revolving credit facility and notes payable was 1.6% and 1.9% for 2019 and 2018, respectively.

Long-Term Obligations

At December 31, 2019, our long-term obligations consisted of the following:

	Principal	Unamortized Debt Issuance Costs	Net
Notes payable 0.00% – 10.90%, due in monthly and annual installments through 2028	\$ 19,220	\$ —	\$ 19,220
Senior unsecured notes 3.2%, due in 2022	75,000	64	74,936
Senior unsecured debts 3.2% USD floating swapped to 1.36% EUR fixed, equal annual installments through 2022	168,000	390	167,610
Senior unsecured notes 3.5%, due in 2023	125,000	144	124,856
Senior unsecured notes 1.0%, due in 2023	112,170	356	111,814
Senior unsecured notes 3.4%, due in 2024	50,000	63	49,937
Senior unsecured notes 3.5%, due in 2024	100,000	144	99,856
Senior unsecured notes 1.2%, due in 2024	224,340	742	223,598
Senior unsecured notes 3.6%, due in 2025	125,000	169	124,831
Senior unsecured notes 3.6%, due in 2026	125,000	169	124,831
Finance Lease Liabilities	29,952	—	29,952
	\$ 1,153,682	\$ 2,241	\$ 1,151,441
Current maturities of long-term obligations	(65,988)	—	(65,988)
Total long-term obligations	\$ 1,087,694	\$ 2,241	\$ 1,085,453

At December 31, 2018, our long-term obligations consisted of the following:

	Principal	Unamortized Debt Issuance Costs	Net
Notes payable 0.00% – 16.00%, due in monthly and annual installments through 2028	\$ 15,531	\$ —	\$ 15,531
Senior unsecured notes 3.2%, due in 2022	75,000	88	74,912
Senior unsecured debts 4.0% USD floating swapped to 1.36% EUR fixed, equal annual installments through 2022	224,000	541	223,459
Senior unsecured notes 3.5%, due in 2023	125,000	181	124,819
Senior unsecured notes 1.0%, due in 2023	114,535	432	114,103
Senior unsecured notes 3.4%, due in 2024	50,000	76	49,924
Senior unsecured notes 3.5%, due in 2024	100,000	181	99,819
Senior unsecured notes 1.2%, due in 2024	229,070	904	228,166
Senior unsecured notes 3.6%, due in 2025	125,000	207	124,793
Senior unsecured notes 3.6%, due in 2026	125,000	208	124,792
Capital lease obligations	8,353	—	8,353
	\$ 1,191,489	\$ 2,818	\$ 1,188,671
Current maturities of long-term obligations	(62,678)	—	(62,678)
Total long-term obligations	\$ 1,128,811	\$ 2,818	\$ 1,125,993

The aggregate long-term maturities, excluding finance lease liabilities, which are discussed in Note 8, due annually for the next five years are \$61,670, \$61,337, \$135,324, \$239,826, \$375,169 and \$250,404 thereafter.

Covenants

Our revolving credit facility and corporate long-term obligations require us to satisfy certain financial and other covenants including:

	Requirement	Level at December 31, 2019
Consolidated Leverage Ratio (1)	Maximum of 3.50 to 1.00	1.71 to 1.00
Consolidated Interest Coverage Ratio (1)	Minimum of 3.00 to 1.00	16.21 to 1.00

(1) Definitions of ratios are included as part of the revolving credit facility agreement and the private placement agreements.

NOTE 8 LEASE COMMITMENTS

We lease certain warehouse, plant, and office facilities as well as certain equipment under noncancelable operating and finance leases expiring at various dates through the year 2032. Most of the operating leases contain renewal options and certain leases include options to purchase the related asset during or at the end of the lease term.

Amortization expense related to finance leases is included in depreciation expense while rent expense related to operating leases is included within cost of sales and selling research & development and administrative expenses ("SG&A"). Rent expense related to operating leases (including taxes, insurance and maintenance when included in the rent) amounted to \$32.7 million in 2018 under the old lease accounting standard.

The components of lease expense for the current period were as follows:

Year Ended December 31,		2019
Operating lease cost	\$	23,410
Finance lease cost:		
Amortization of right-of-use assets	\$	4,217
Interest on lease liabilities		1,353
Total finance lease cost	\$	5,570
Short-term lease and variable lease costs	\$	8,629

Supplemental cash flow information related to leases was as follows:

Year Ended December 31,		2019
Cash paid for amounts included in the measurement of lease liabilities:		
Operating cash flows from operating leases	\$	21,872
Operating cash flows from finance leases		1,245
Financing cash flows from finance leases		4,730
Right-of-use assets obtained in exchange for lease obligations:		
Operating leases	\$	15,226
Finance leases		15,957

Supplemental balance sheet information related to leases was as follows:

	December 31, 2019
Operating Leases	
Operating lease right-of-use assets	\$ 72,377
Accounts payable, accrued and other liabilities	\$ 16,578
Operating lease liabilities	55,276
Total operating lease liabilities	\$ 71,854
Finance Leases	
Property, plant and equipment, gross	\$ 47,020
Accumulated depreciation	(4,271)
Property, plant and equipment, net	\$ 42,749
Current maturities of long-term obligations, net of unamortized debt issuance cost	\$ 4,318
Long-term obligations, net of unamortized debt issuance cost	25,634
Total finance lease liabilities	\$ 29,952
Weighted Average Remaining Lease Term (in years)	
Operating leases	6.1
Finance leases	7.0
Weighted Average Discount Rate	
Operating leases	5.05 %
Finance leases	5.13 %

Maturities of lease liabilities as of December 31, 2019, were as follows:

	Operating Leases	Finance Leases
Year 1	\$ 19,652	\$ 5,655
Year 2	15,411	4,787
Year 3	10,740	3,870
Year 4	9,365	3,099
Year 5	6,998	2,658
Thereafter	22,331	18,051
Total lease payments	84,497	38,120
Less imputed interest	(12,643)	(8,168)
Total	\$ 71,854	\$ 29,952

Maturities of lease liabilities as of December 31, 2018 under the old lease accounting standard were as follows:

	Operating Leases	Capital Leases
Year 1	\$ 26,512	\$ 1,828
Year 2	21,386	1,653
Year 3	16,529	1,546
Year 4	12,549	1,160
Year 5	10,225	880
Thereafter	21,932	3,827
Total lease payments	\$ 109,133	10,894
Less imputed interest		(2,541)
Present value of future lease payments		\$ 8,353

As of December 31, 2019, we have additional operating and finance leases, primarily for buildings, that have not yet commenced of \$1.8 million. These operating and finance leases will commence in 2020 with lease terms of 3 to 10 years.

NOTE 9 RETIREMENT AND DEFERRED COMPENSATION PLANS

We have various noncontributory retirement plans covering certain of our domestic and foreign employees. Benefits under our retirement plans are based on participants' years of service and annual compensation as defined by each plan. Annual cash contributions to fund pension costs accrued under our domestic plans are generally at least equal to the minimum funding amounts required by the Employee Retirement Income Security Act of 1974, as amended ("ERISA"). Certain pension commitments under our foreign plans are also funded according to local requirements or at our discretion.

The following table presents the changes in the benefit obligations and plan assets for the most recent two years for our domestic and foreign plans.

	Domestic Plans		Foreign Plans	
	2019	2018	2019	2018
Change in benefit obligation:				
Benefit obligation at beginning of year	\$ 180,803	\$ 198,450	\$ 104,911	\$ 109,030
Service cost	11,093	11,396	5,921	5,954
Interest cost	7,381	6,878	2,023	1,828
Special termination benefit charge	—	—	64	62
Plan Amendment	—	—	18	—
Curtailment/Settlement	—	—	(271)	(1,751)
Transfer	—	—	939	—
Business acquired	—	—	—	1,937
Prior service cost	—	—	(451)	35
Actuarial loss (gain)	39,209	(23,510)	13,575	(3,743)
Benefits paid	(11,211)	(12,411)	(4,130)	(3,288)
Foreign currency translation adjustment	—	—	(2,109)	(5,153)
Benefit obligation at end of year	\$ 227,275	\$ 180,803	\$ 120,490	\$ 104,911
	Domestic Plans		Foreign Plans	
	2019	2018	2019	2018
Change in plan assets:				
Fair value of plan assets at beginning of year	\$ 169,958	\$ 169,600	\$ 68,992	\$ 73,384
Actual return on plan assets	29,618	(7,642)	3,851	(487)
Employer contribution	436	20,411	6,542	2,780
Benefits paid	(11,211)	(12,411)	(4,130)	(3,288)
Transfer	—	—	359	—
Foreign currency translation adjustment	—	—	(1,425)	(3,397)
Fair value of plan assets at end of year	\$ 188,801	\$ 169,958	\$ 74,189	\$ 68,992
Funded status at end of year	\$ (38,474)	\$ (10,845)	\$ (46,301)	\$ (35,919)

The following table presents the funded status amounts recognized in our Consolidated Balance Sheets as of December 31, 2019 and 2018.

	Domestic Plans		Foreign Plans	
	2019	2018	2019	2018
Non-current assets	\$ —	\$ 207	\$ 938	\$ 500
Current liabilities	(449)	(430)	(44)	(8)
Non-current liabilities	(38,025)	(10,622)	(47,195)	(36,411)
	\$ (38,474)	\$ (10,845)	\$ (46,301)	\$ (35,919)

The following table presents the amounts not recognized as components of periodic benefit cost that are recognized in accumulated other comprehensive loss as of December 31, 2019 and 2018.

	Domestic Plans		Foreign Plans	
	2019	2018	2019	2018
Net actuarial loss	\$ 68,789	\$ 48,776	\$ 40,442	\$ 29,761
Net prior service cost	—	—	3,774	4,656
Tax effects	(15,821)	(17,876)	(14,040)	(4,855)
	\$ 52,968	\$ 30,900	\$ 30,176	\$ 29,562

Changes in benefit obligations and plan assets recognized in other comprehensive income in 2019, 2018 and 2017 are as follows:

	Domestic Plans		
	2019	2018	2017
Current year actuarial (loss) gain	\$ (21,970)	\$ 4,611	\$ (12,593)
Amortization of net loss	1,957	4,873	3,205
	<u>\$ (20,013)</u>	<u>\$ 9,484</u>	<u>\$ (9,388)</u>

	Foreign Plans		
	2019	2018	2017
Current year actuarial (loss) gain	\$ (11,999)	\$ 534	\$ 2,952
Current year prior service cost	451	(35)	(1,399)
Transfer Prior service Cost	(18)	—	—
Transfer Actuarial (loss) gain	(126)	—	—
Recognition due to curtailment	—	1,692	—
Amortization of net loss	1,444	1,716	1,895
Amortization of prior service cost	449	720	400
	<u>\$ (9,799)</u>	<u>\$ 4,627</u>	<u>\$ 3,848</u>

The following table presents the amounts in accumulated other comprehensive loss as of December 31, 2019 expected to be recognized as components of periodic benefit cost in 2020.

	Domestic Plans	Foreign Plans
Amortization of net loss	\$ 5,719	\$ 2,092
Amortization of prior service cost	—	391
	<u>\$ 5,719</u>	<u>\$ 2,483</u>

Components of net periodic benefit cost:

	Domestic Plans		
	2019	2018	2017
Service cost	\$ 11,093	\$ 11,396	\$ 9,706
Interest cost	7,381	6,878	7,010
Expected return on plan assets	(12,379)	(11,257)	(9,880)
Amortization of net loss	1,957	4,873	3,205
Net periodic benefit cost	<u>\$ 8,052</u>	<u>\$ 11,890</u>	<u>\$ 10,041</u>

	Foreign Plans		
	2019	2018	2017
Service cost	\$ 5,921	\$ 5,954	\$ 5,526
Interest cost	2,023	1,828	1,747
Expected return on plan assets	(2,366)	(2,610)	(2,409)
Amortization of net loss	1,444	1,716	1,895
Amortization of prior service cost	449	720	400
Net periodic benefit cost	<u>\$ 7,471</u>	<u>\$ 7,608</u>	<u>\$ 7,159</u>
Curtailment	(246)	(59)	—
Special termination benefit charge	65	62	—
Total Net periodic benefit cost	<u>\$ 7,290</u>	<u>\$ 7,611</u>	<u>\$ 7,159</u>

The accumulated benefit obligation (“ABO”) for our domestic defined benefit pension plans was \$205.3 million and \$163.0 million at December 31, 2019 and 2018, respectively. The ABO for our foreign defined benefit pension plans was \$91.8 million and \$80.9 million at December 31, 2019 and 2018, respectively.

The following table provides the projected benefit obligation ("PBO"), ABO, and fair value of plan assets for all pension plans with an ABO in excess of plan assets as of December 31, 2019 and 2018.

	Domestic Plans		Foreign Plans	
	2019	2018	2019	2018
Projected benefit obligation	\$ 227,275	\$ 11,052	\$ 92,561	\$ 93,029
Accumulated benefit obligation	205,326	9,216	65,062	68,981
Fair value of plan assets	188,801	—	46,371	56,611

The following table provides the PBO, ABO and fair value of plan assets for all pension plans with a PBO in excess of plan assets as of December 31, 2019 and 2018.

	Domestic Plans		Foreign Plans	
	2019	2018	2019	2018
Projected benefit obligation	\$ 227,275	\$ 11,052	\$ 102,310	\$ 92,555
Accumulated benefit obligation	205,326	9,216	73,943	68,506
Fair value of plan assets	188,801	—	55,260	56,136

During 2018, our domestic employee retirement plan has plan assets in excess of the PBO.

Assumptions:

	Domestic Plans			Foreign Plans		
	2019	2018	2017	2019	2018	2017
Weighted-average assumptions used to determine benefit obligations at December 31:						
Discount rate	3.20 %	4.20 %	3.55 %	1.04 %	1.82 %	1.62 %
Rate of compensation increase	4.00 %	4.00 %	4.00 %	3.05 %	3.01 %	3.02 %
Weighted-average assumptions used to determine net periodic benefit cost for years ended December 31:						
Discount rate	4.20 %	3.55 %	4.05 %	1.84 %	1.62 %	1.65 %
Expected long-term return on plan assets	7.00 %	7.00 %	7.00 %	3.69 %	3.66 %	3.66 %
Rate of compensation increase	4.00 %	4.00 %	4.00 %	3.05 %	3.02 %	3.00 %

We develop the expected long-term rate of return assumptions based on historical experience and by evaluating input from the plans' asset managers, including the managers' review of asset class return expectations and benchmarks, economic indicators and long-term inflation assumptions.

In order to determine the 2020 net periodic benefit cost, we expect to use the December 31, 2019 discount rates, December 31, 2019 rates of compensation increase assumptions and the same assumed long-term returns on domestic and foreign plan assets used for the 2019 net periodic benefit cost.

Our domestic and foreign pension plan weighted-average asset allocations at December 31, 2019 and 2018 by asset category are as follows:

Plan Assets:

	Domestic Plans Assets at December 31,		Foreign Plans Assets at December 31,	
	2019	2018	2019	2018
Equity securities	49 %	44 %	4 %	4 %
Fixed income securities	29 %	29 %	1 %	1 %
Corporate debt securities	—	—	3 %	3 %
Infrastructure	6 %	7 %	—	—
Hedge funds	10 %	10 %	—	—
Money market	1 %	5 %	3 %	1 %
Investment Funds	—	—	89 %	91 %
Real estate	5 %	5 %	—	—
Total	100 %	100 %	100 %	100 %

Our investment strategy for our domestic and foreign pension plans is to maximize the long-term rate of return on plan assets within an acceptable level of risk. The investment policy strives to have assets sufficiently diversified so that adverse or unexpected results from one security type will not have an unduly detrimental impact on the entire portfolio and accordingly, establishes a target allocation for each asset category within the portfolio. The domestic plan asset allocation is reviewed on a quarterly basis and the foreign plan asset allocation is reviewed annually. Rebalancing occurs as needed to comply with the investment strategy. The domestic plan target allocation for 2020 is 60% equity securities and 40% fixed income securities and infrastructure. The foreign plan target allocation for 2020 is 100% investment funds.

Authoritative guidelines require the categorization of assets and liabilities into three levels based upon the assumptions (inputs) used to price the assets or liabilities. Level 1 provides the most reliable measure of fair value, whereas Level 3 generally requires significant management judgment. The three levels are defined as follows:

- Level 1: Unadjusted quoted prices in active markets for identical assets and liabilities.
- Level 2: Observable inputs other than those included in Level 1. For example, quoted prices for similar assets or liabilities in active markets or quoted prices for identical assets or liabilities in inactive markets.
- Level 3: Unobservable inputs reflecting management's own assumptions about the inputs used in pricing the asset or liability.

(In Thousands \$)	Domestic Fair Value Measurement at December 31, 2019				Foreign Fair Value Measurement at December 31, 2019			
	Total	(Level 1)	(Level 2)	(Level 3)	Total	(Level 1)	(Level 2)	(Level 3)
Cash and Short-term Securities (a)	\$ 1,988	\$ 1,988	\$ —	\$ —	\$ 2,030	\$ 2,030	\$ —	\$ —
USD	—	1,988	—	—	—	—	—	—
EUR	—	—	—	—	—	2,012	—	—
Others	—	—	—	—	—	18	—	—
Equity Securities (a)	\$ 81,997	\$ 81,997	—	—	\$ 2,995	\$ 2,995	—	—
U.S. Large Cap Equities	—	48,580	—	—	—	—	—	—
U.S. Small Cap Equities	—	9,921	—	—	—	—	—	—
International Equities	—	23,496	—	—	—	2,995	—	—
Fixed Income (a&b)	\$ 35,898	\$ 35,898	—	—	\$ 820	\$ 820	—	—
Corporate debts securities	—	—	—	—	\$ 2,115	\$ 2,115	—	—
Euro Corporate Bonds (a)	—	—	—	—	—	2,115	—	—
Investment Funds	—	—	—	—	\$ 66,229	\$ 23,797	\$ 42,432	—
Mutual Funds in Equities (a)	—	—	—	—	—	4,025	—	—
Mutual Funds in Bonds (a)	—	—	—	—	—	18,881	—	—
Mutual Funds Diversified (a&b)	—	—	—	—	—	891	42,432	—
Total Investments in Fair Value Hierarchy	\$ 119,883	\$ 119,883	\$ —	\$ —	\$ 74,189	\$ 31,757	\$ 42,432	\$ —
Investments at Net Asset Value per Share	68,918	—	—	—	—	—	—	—
Total Investments	<u>\$ 188,801</u>	<u>\$ 119,883</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 74,189</u>	<u>\$ 31,757</u>	<u>\$ 42,432</u>	<u>\$ —</u>

(In Thousands \$)	Domestic Fair Value Measurement at December 31, 2018				Foreign Fair Value Measurement at December 31, 2018			
	Total	(Level 1)	(Level 2)	(Level 3)	Total	(Level 1)	(Level 2)	(Level 3)
Cash and Short-term Securities (a)	\$ 8,964	\$ 8,964	\$ —	\$ —	\$ 718	\$ 718	\$ —	\$ —
USD	—	8,964	—	—	—	—	—	—
EUR	—	—	—	—	—	718	—	—
Equity Securities (a)	\$ 66,707	\$ 66,707	—	—	\$ 2,591	\$ 2,591	—	—
U.S. Large Cap Equities	—	38,804	—	—	—	—	—	—
U.S. Small Cap Equities	—	7,747	—	—	—	—	—	—
International Equities	—	20,156	—	—	—	2,591	—	—
Fixed Income (a&b)	\$ 32,272	\$ 32,272	—	—	\$ 717	\$ 717	—	—
Corporate debts securities	—	—	—	—	\$ 2,097	\$ 2,097	—	—
Euro Corporate Bonds (a)	—	—	—	—	—	2,097	—	—
Investment Funds	—	—	—	—	\$ 62,869	\$ 22,122	\$ 40,747	—
Mutual Funds in Equities (a)	—	—	—	—	—	3,339	—	—
Mutual Funds in Bonds (a)	—	—	—	—	—	18,060	—	—
Mutual Funds Diversified (a&b)	—	—	—	—	—	723	40,747	—
Total Investments in Fair Value Hierarchy	\$ 107,943	\$ 107,943	\$ —	\$ —	\$ 68,992	\$ 28,245	\$ 40,747	\$ —
Investments at Net Asset Value per Share	62,015	—	—	—	—	—	—	—
Total Investments	\$ 169,958	\$ 107,943	\$ —	\$ —	\$ 68,992	\$ 28,245	\$ 40,747	\$ —

(a) Based on third party quotation from financial institution.

(b) Based on observable market transactions.

Contributions

Annual cash contributions to fund pension costs accrued under our domestic plans are generally at least equal to the minimum funding amounts required by ERISA. We contributed \$0.4 million to our domestic defined benefit plans in 2019 and although we have no minimum funding requirement, we plan to contribute approximately \$0.4 million to pay our ongoing SERP annuity contracts in 2020. Contributions to fund pension costs accrued under our foreign plans are made in accordance with local laws or at our discretion. We contributed approximately \$6.5 million to our foreign defined benefit plan in 2019 and expect to contribute approximately \$0.7 million in 2020.

Estimated Future Benefit Payments

As of December 31, 2019, we expect the plans to make the following estimated benefit payments relating to our defined benefit plans over the next ten years:

	Domestic Plans	Foreign Plans
2020	\$ 11,064	\$ 5,382
2021	11,134	2,904
2022	11,665	3,155
2023	12,467	4,676
2024	13,077	6,537
2025 - 2029	74,584	34,386

Other Plans

We have a non-qualified supplemental pension plan for domestic employees which provides for pension amounts that would have been payable from our principal domestic pension plan if it were not for limitations imposed by income tax regulations. The liability for this plan, which is not funded, was \$12.6 million and \$11.1 million at December 31, 2019 and 2018, respectively. This amount is included in the liability for domestic plans shown above.

We have a defined contribution 401(k) employee savings plan available to substantially all domestic employees. Company matching contributions are made in cash up to a maximum of 3% of the participating employee's salary subject to income tax regulations. For each of the years ended December 31, 2019, 2018 and 2017, total contributions made to these plans were approximately \$4.1 million, \$3.7 million and \$3.3 million, respectively.

We have several foreign defined contribution plans, which require us to contribute a percentage of the participating employee's salary according to local regulations. For each of the years ended December 31, 2019, 2018 and 2017, total contributions made to these plans were approximately \$2.3 million, \$2.4 million and \$2.2 million, respectively.

We have no additional postretirement or postemployment benefit plans.

NOTE 10 ACCUMULATED OTHER COMPREHENSIVE INCOME/(LOSS)

Changes in Accumulated Other Comprehensive Income/(Loss) by Component:

	Foreign Currency	Defined Benefit Pension Plans	Derivatives	Total
Balance - December 31, 2016	\$ (259,888)	\$ (59,775)	\$ (46)	\$ (319,709)
Other comprehensive income (loss) before reclassifications	74,385	(8,944)	(11,806)	53,635
Amounts reclassified from accumulated other comprehensive income (loss)	—	4,124	8,648	12,772
Net current-period other comprehensive income (loss)	74,385	(4,820)	(3,158)	66,407
Balance - December 31, 2017	\$ (185,503)	\$ (64,595)	\$ (3,204)	\$ (253,302)
Other comprehensive (loss) income before reclassifications	(62,898)	5,266	16,624	(41,008)
Amounts reclassified from accumulated other comprehensive income (loss)	—	5,524	(15,060)	(9,536)
Net current-period other comprehensive (loss) income	(62,898)	10,790	1,564	(50,544)
Reclassification of stranded tax effects	—	(6,658)	—	(6,658)
Balance - December 31, 2018	\$ (248,401)	\$ (60,463)	\$ (1,640)	\$ (310,504)
Other comprehensive (loss) income before reclassifications	(8,723)	(25,557)	8,026	(26,254)
Amounts reclassified from accumulated other comprehensive income (loss)	—	2,873	(8,063)	(5,190)
Net current-period other comprehensive (loss) income	(8,723)	(22,684)	(37)	(31,444)
Balance - December 31, 2019	<u>\$ (257,124)</u>	<u>\$ (83,147)</u>	<u>\$ (1,677)</u>	<u>\$ (341,948)</u>

Reclassifications Out of Accumulated Other Comprehensive Income/(Loss):

Details about Accumulated Other Comprehensive Income Components Year Ended December 31,	Amount Reclassified from Accumulated Other Comprehensive Income			Affected Line in the Statement Where Net Income is Presented
	2019	2018	2017	
Defined Benefit Pension Plans				
Amortization of net loss	\$ 3,401	\$ 6,589	\$ 5,100	(1)
Amortization of prior service cost	449	720	400	(1)
	3,850	7,309	5,500	Total before tax
	(977)	(1,785)	(1,376)	Tax benefit
	\$ 2,873	\$ 5,524	\$ 4,124	Net of tax
Derivatives				
Changes in treasury locks	\$ —	\$ 26	\$ 42	Interest Expense
Changes in cross currency swap: interest component	(4,805)	(5,150)	(1,526)	Interest Expense
Changes in cross currency swap: foreign exchange component	(3,258)	(13,025)	11,911	Miscellaneous, net
	(8,063)	(18,149)	10,427	Total before tax
	—	3,089	(1,779)	Tax benefit
	\$ (8,063)	\$ (15,060)	\$ 8,648	Net of tax
Total reclassifications for the period	\$ (5,190)	\$ (9,536)	\$ 12,772	

(1) These accumulated other comprehensive income components are included in the computation of total net periodic benefit costs, net of tax (see Note 9 - Retirement and Deferred Compensation Plans for additional details).

NOTE 11 DERIVATIVE INSTRUMENTS AND HEDGING ACTIVITIES

We maintain a foreign exchange risk management policy designed to establish a framework to protect the value of our non-functional currency denominated transactions from adverse changes in exchange rates. Sales of our products can be denominated in a currency different from the currency in which the related costs to produce the product are denominated. Changes in exchange rates on such inter-country sales or intercompany loans can impact our results of operations. Our policy is not to engage in speculative foreign currency hedging activities, but to minimize our net foreign currency transaction exposure defined as firm commitments and transactions recorded and denominated in currencies other than the functional currency. We may use foreign currency forward exchange contracts, options and cross currency swaps to economically hedge these risks.

For derivative instruments designated as hedges, we formally document the nature and relationships between the hedging instruments and the hedged items, as well as the risk management objectives, strategies for undertaking the various hedge transactions, and the method of assessing hedge effectiveness at inception. Quarterly thereafter, we formally assess whether the derivatives that are used in hedging transactions are highly effective in offsetting changes in the fair value or cash flows of the hedged item. Additionally, in order to designate any derivative instrument as a hedge of an anticipated transaction, the significant characteristics and expected terms of any anticipated transaction must be specifically identified, and it must be probable that the anticipated transaction will occur. All derivative financial instruments used as hedges are recorded at fair value in the Consolidated Balance Sheets (See Note 12 – Fair Value).

Cash Flow Hedge

For derivative instruments that are designated and qualify as cash flow hedges, the changes in fair values are recorded in accumulated other comprehensive loss and included in changes in derivative gain/loss. The changes in the fair values of derivatives designated as cash flow hedges are reclassified from accumulated other comprehensive loss to net income when the underlying hedged item is recognized in earnings. Cash flows from the settlement of derivative contracts designated as cash flow hedges offset cash flows from the underlying hedged items and are included in operating activities in the Consolidated Statements of Cash Flows.

As disclosed in Note 7 – Debt, our wholly owned UK subsidiary borrowed \$280 million in term loan borrowings under a new credit facility. In order to mitigate the currency risk of U.S. dollar debt on a euro functional currency entity and to mitigate the risk of variability in interest rates, we entered into a EUR/USD floating-to-fixed cross currency swap on July 20, 2017 in the notional amount of \$280 million to effectively hedge the foreign exchange and interest rate exposure on the \$280 million term loan. Related to this hedge, approximately \$1.7 million and \$1.6 million, respectively, of net after-tax loss is included in accumulated other comprehensive loss at December 31, 2019 and 2018. The amount expected to be recognized into earnings during the next 12 months related to the interest component of our cross currency swap, based on prevailing foreign exchange and interest rates at December 31, 2019, is \$2.8 million. The amount expected to be recognized into earnings during the next 12 months related to the foreign exchange component of our cross currency swap is dependent on fluctuations in currency exchange rates. As of December 31, 2019, the fair value of the cross currency swap was a \$2.6 million asset. The swap contract expires on July 20, 2022.

Hedge of Net Investments in Foreign Operations

A significant number of our operations are located outside of the United States. Because of this, movements in exchange rates may have a significant impact on the translation of the financial condition and results of operations of our foreign entities. A weakening U.S. dollar relative to foreign currencies has an additive translation effect on our financial condition and results of operations. Conversely, a strengthening U.S. dollar has a dilutive effect. In some cases we maintain debt in these subsidiaries to offset the net asset exposure. We do not otherwise actively manage this risk using derivative financial instruments. In the event we plan on a full or partial liquidation of any of our foreign subsidiaries where our net investment is likely to be monetized, we will consider hedging the currency exposure associated with such a transaction.

Other

As of December 31, 2019, we have recorded the fair value of foreign currency forward exchange contracts of \$0.2 million in prepaid and other and \$0.4 million in accounts payable, accrued and other liabilities in the balance sheet. All forward exchange contracts outstanding as of December 31, 2019 had an aggregate notional contract amount of \$51.5 million.

Fair Value of Derivative Instruments in the Consolidated Balance Sheets as of December 31, 2019 and December 31, 2018

		December 31, 2019		December 31, 2018	
		Derivatives Designated as Hedging Instruments	Derivatives not Designated as Hedging Instruments	Derivatives Designated as Hedging Instruments	Derivatives not Designated as Hedging Instruments
Balance Sheet Location					
Derivative Assets					
Foreign Exchange Contracts	Prepaid and other	\$ —	\$ 206	\$ —	\$ 259
Cross Currency Swap Contract (1)	Prepaid and other	2,552	—	—	—
		<u>\$ 2,552</u>	<u>\$ 206</u>	<u>\$ —</u>	<u>\$ 259</u>
Derivative Liabilities					
Foreign Exchange Contracts	Accounts payable, accrued and other liabilities	\$ —	\$ 401	\$ —	\$ 331
Cross Currency Swap Contract (1)	Accounts payable, accrued and other liabilities	—	—	1,040	—
		<u>\$ —</u>	<u>\$ 401</u>	<u>\$ 1,040</u>	<u>\$ 331</u>

(1) This cross currency swap contract is composed of both an interest component and a foreign exchange component.

The Effect of Cash Flow Hedge Accounting on Accumulated Other Comprehensive Income (Loss) for the Fiscal Years Ended December 31, 2019 and December 31, 2018

Derivatives in Cash Flow Hedging Relationships	Amount of Gain (Loss) Recognized in Other Comprehensive Income on Derivative		Location of (Loss) Gain Recognized in Income on Derivatives	Amount of Gain (Loss) Reclassified from Accumulated Other Comprehensive Income on Derivative		Total Amount of Affected Income Statement Line Item
	2019	2018		2019	2018	
Cross currency swap contract:						
Interest component	\$ 5,103	\$ 7,014	Interest expense	\$ 4,805	\$ 5,150	\$ (35,489)
Foreign exchange component	3,258	13,025	Miscellaneous, net	3,258	13,025	1,556
	<u>\$ 8,361</u>	<u>\$ 20,039</u>		<u>\$ 8,063</u>	<u>\$ 18,175</u>	

The Effect of Derivatives Not Designated as Hedging Instruments on the Consolidated Statements of Income for the Fiscal Years Ended December 31, 2019 and December 31, 2018

Derivatives Not Designated as Hedging Instruments	Location of (Loss) Gain Recognized in Income on Derivatives	Amount of (Loss) Gain Recognized in Income on Derivatives	
		2019	2018
Foreign Exchange Contracts	Other (Expense) Income: Miscellaneous, net		
		\$ (141)	\$ 652
		<u>\$ (141)</u>	<u>\$ 652</u>

Description	Gross Amount	Gross Amounts Offset in the Statement of Financial Position	Net Amounts Presented in the Statement of Financial Position	Gross Amounts not Offset in the Statement of Financial Position		Net Amount
				Financial Instruments	Cash Collateral Received	
December 31, 2019						
Derivative Assets	\$ 2,758	—	\$ 2,758	—	—	\$ 2,758
Total Assets	\$ 2,758	—	\$ 2,758	—	—	\$ 2,758
Derivative Liabilities						
Derivative Liabilities	\$ 401	—	\$ 401	—	—	\$ 401
Total Liabilities	\$ 401	—	\$ 401	—	—	\$ 401
December 31, 2018						
Derivative Assets	\$ 259	—	\$ 259	—	—	\$ 259
Total Assets	\$ 259	—	\$ 259	—	—	\$ 259
Derivative Liabilities						
Derivative Liabilities	\$ 1,371	—	\$ 1,371	—	—	\$ 1,371
Total Liabilities	\$ 1,371	—	\$ 1,371	—	—	\$ 1,371

NOTE 12 FAIR VALUE

Authoritative guidelines require the categorization of assets and liabilities into three levels based upon the assumptions (inputs) used to price the assets or liabilities. Level 1 provides the most reliable measure of fair value, whereas Level 3 generally requires significant management judgment. The three levels are defined as follows:

- Level 1: Unadjusted quoted prices in active markets for identical assets and liabilities.
- Level 2: Observable inputs other than those included in Level 1. For example, quoted prices for similar assets or liabilities in active markets or quoted prices for identical assets or liabilities in inactive markets.
- Level 3: Unobservable inputs reflecting management's own assumptions about the inputs used in pricing the asset or liability.

As of December 31, 2019, the fair values of our financial assets and liabilities were categorized as follows:

	Total	Level 1	Level 2	Level 3
Assets				
Foreign exchange contracts ⁽¹⁾	\$ 206	\$ —	\$ 206	\$ —
Cross currency swap contract ⁽¹⁾	2,552	—	2,552	—
Total assets at fair value	\$ 2,758	\$ —	\$ 2,758	\$ —
Liabilities				
Foreign exchange contracts ⁽¹⁾	\$ 401	\$ —	\$ 401	\$ —
Contingent consideration obligation	5,930	—	—	5,930
Total liabilities at fair value	\$ 6,331	\$ —	\$ 401	\$ 5,930

As of December 31, 2018, the fair values of our financial assets and liabilities were categorized as follows:

	Total	Level 1	Level 2	Level 3
Assets				
Foreign exchange contracts ⁽¹⁾	\$ 259	\$ —	\$ 259	\$ —
Total assets at fair value	\$ 259	\$ —	\$ 259	\$ —
Liabilities				
Foreign exchange contracts ⁽¹⁾	\$ 331	\$ —	\$ 331	\$ —
Cross currency swap contract ⁽¹⁾	1,040	—	1,040	—
Total liabilities at fair value	\$ 1,371	\$ —	\$ 1,371	\$ —

(1) Market approach valuation technique based on observable market transactions of spot and forward rates.

The carrying amounts of our other current financial instruments such as cash and equivalents, accounts and notes receivable, notes payable and current maturities of long-term obligations approximate fair value due to the short-term maturity of the instrument. We consider our long-term obligations a Level 2 liability and utilize the market approach valuation technique based on interest rates that are currently available to us for issuance of debt with similar terms and maturities. The estimated fair value of our long-term obligations was \$1.1 billion as of December 31, 2019 and December 31, 2018.

As discussed in Note 20 – Acquisitions, we have a contingent consideration obligation to the selling equity holders of Noble in connection with the Noble Acquisition (as defined herein) based on 2024 cumulative performance targets and a contingent consideration obligation to the selling equity holder of Gateway in connection with the Gateway Acquisitions (as defined herein) based on 2020 and 2022 performance targets. We consider these obligations a Level 3 liability and have estimated the aggregate fair value for these contingent consideration arrangements to be \$2.9 million and \$3.0 million, respectively, as of December 31, 2019. Additionally, during the year ended December 31, 2018, we had a contingent consideration obligation to the selling shareholders of Reboul SAS (“Reboul”) in connection with the Reboul Acquisition (as defined herein) based on 2018 earnings before net interest, taxes, depreciation and amortization (“EBITDA”). We consider this obligation a Level 3 liability; however, we estimated the aggregate fair value for this contingent consideration arrangement to be zero as of December 31, 2018.

NOTE 13 COMMITMENTS AND CONTINGENCIES

In the normal course of business, we are subject to a number of lawsuits and claims both actual and potential in nature. While management believes the resolution of these claims and lawsuits will not have a material adverse effect on our financial position or results of operations or cash flows, claims and legal proceedings are subject to inherent uncertainties, and unfavorable outcomes could occur that could include amounts in excess of any accruals which management has established. Were such unfavorable final outcomes to occur, it is possible that they could have a material adverse effect on our financial position, results of operations and cash flows.

Under our Certificate of Incorporation, we have agreed to indemnify our officers and directors for certain events or occurrences while the officer or director is, or was, serving at our request in such capacity. The maximum potential amount of future payments we could be required to make under these indemnification agreements is unlimited; however, we have a directors and officers liability insurance policy that covers a portion of our exposure. As a result of our insurance policy coverage, we believe the estimated fair value of these indemnification agreements is minimal. We have no liabilities recorded for these agreements as of December 31, 2019.

An environmental investigation, undertaken to assess areas of possible contamination, was completed at our facility in Jundiaí, São Paulo, Brazil. The facility is primarily an internal supplier of anodized aluminum components for certain of our dispensing systems. The testing indicated that soil and groundwater in certain areas of the facility were impacted above acceptable levels established by local regulations. In March 2017, we reported the findings to the relevant environmental authority, the Environmental Company of the State of São Paulo – CETESB. Based upon our best estimate, we recorded a reserve of \$1.5 million (operating expense) in the first quarter of 2017 relating to this contingency. For the year ended December 31, 2019, we have paid approximately \$0.6 million and made adjustments to the accrual based on our future anticipated expenditures. As of December 31, 2019, our outstanding reserve is \$0.5 million. The ultimate loss associated with this environmental contingency is subject to the investigation and ongoing review of the CETESB. We will continue to evaluate the range of likely costs as the investigation proceeds and we have further clarity on the nature and extent of remediation that will be required. We note that the contamination, or any failure to complete any required remediation in a timely manner, could potentially result in fines or penalties.

In March 2017, the Supreme Court of Brazil issued a decision that a certain state value added tax should not be included in the calculation of federal gross receipts taxes. The decision reduces our gross receipts tax in Brazil prospectively and, potentially, retrospectively. During the first quarter of 2019, we received a favorable court decision of \$2.7 million for the retrospective right to recover part of our claim. This amount is recorded in cost of sales as a favorable impact of \$1.7 million and \$1.0 million was recognized as interest income. During the fourth quarter of 2018, we recorded an amount of \$631 thousand based on the favorable court decision. If the Judicial Court grants full retrospective recovery, we estimate remaining potential recoveries of approximately \$3 million to \$10 million, including interest, depending on the future decisions of the Supreme Court of Brazil. Due to uncertainties around our remaining court recovery claims, we have not recorded any further amounts relating to the retrospective nature of this matter.

In December 2019, tax authorities in Brazil notified us of a tax assessment of approximately \$7.9 million, including interest and penalties of \$3.0 million and \$1.0 million, respectively, relating to differences in tax classification codes used for import duties for the period from January 2015 to August 2018. We are vigorously contesting the assessment, including interest and penalties, and have filed an administrative defense appeal in December 2019. Considering the complex nature of the assessment, we expect the appeal process to go through different levels of administrative and/or judicial processes. Accordingly, due to uncertainty of the timing and amounts of assessment, no liability is recorded as of December 31, 2019.

NOTE 14 STOCK REPURCHASE PROGRAM

We announced the \$350 million share repurchase program in effect for the year ended December 31, 2018 on October 20, 2016. On April 18, 2019, we announced a new share repurchase authorization of up to \$350 million of common stock. This authorization replaces previous authorizations and has no expiration date. Aptar may repurchase shares through the open market, privately negotiated transactions or other programs, subject to market conditions.

In 2019 and 2018, we repurchased approximately 779 thousand and 668 thousand shares of our outstanding common stock at a total cost of \$86.5 million and \$61.7 million, respectively. As of December 31, 2019, there was \$278.5 million of authorized share repurchases available to us.

NOTE 15 CAPITAL STOCK

We have 199 million authorized shares of common stock. The number of shares of common stock and treasury stock and the share activity were as follows:

	Common Shares		Treasury Shares	
	2019	2018	2019	2018
Balance at the beginning of the year	67,341,316	66,742,490	4,424,884	4,881,889
Employee option exercises	1,079,841	1,182,547	(367,705)	(502,005)
Director option exercises	146,083	—	—	—
Restricted stock vestings	41,268	39,691	—	—
Common stock repurchases	—	—	778,848	45,000
Common stock repurchased and retired	—	(623,412)	—	—
Balance at the end of the year	68,608,508	67,341,316	4,836,027	4,424,884

The cash dividends paid on the common stock for the years ended December 31, 2019, 2018 and 2017 aggregated \$90.2 million, \$82.3 million and \$79.9 million, respectively.

NOTE 16 STOCK-BASED COMPENSATION

Historically we have issued stock options and restricted stock units (“RSUs”), which consist of time-based and performance-based awards, to employees under stock awards plans approved by stockholders. In addition, RSUs are issued to non-employee directors under a Restricted Stock Unit Award Agreement for Directors pursuant to the 2018 Equity Incentive Plan. Previously, non-employee directors were issued stock options under a Director Stock Option Plan. Stock options are awarded with the exercise price equal to the market price on the date of grant and generally vest over three years and expire 10 years after grant.

RSUs granted to employees vest according to a specified performance period and/or vesting period. Time-based RSUs generally vest over three years. Performance-based RSUs vest at the end of the specified performance period, generally three years, assuming required performance or market vesting conditions are met. Performance-based RSUs have one of two vesting conditions: (1) based on Aptar’s internal financial performance metrics and (2) based on Aptar’s total shareholder return (“TSR”) relative to total shareholder returns of an industrial peer group, subject to discretion if the overall TSR is negative at the conclusion of the performance period. At the time of vesting, Aptar will issue or cause to be issued in the employee’s name the vested shares of common stock. In addition, RSU awards are generally net settled (shares are withheld to cover the employee tax obligation). Director RSUs are only time-based and generally vest over one year.

Compensation expense recorded attributable to stock options for the year ended December 31, 2019 was approximately \$5.7 million (\$4.5 million after tax). Approximately \$4.8 million of the compensation expense was recorded in SG&A expenses and the balance was recorded in cost of sales. Compensation expense recorded attributable to stock options for the year ended December 31, 2018 was approximately \$10.9 million (\$8.4 million after tax). Approximately \$8.7 million of the compensation expense was recorded in SG&A and the balance was recorded in cost of sales. Compensation expense recorded attributable to stock options for the year ended December 31, 2017 was approximately \$15.2 million (\$10.5 million after tax). Approximately \$13.2 million of the compensation expense was recorded in SG&A expenses and the balance was recorded in cost of sales.

For stock option grants, we used historical data to estimate expected life and volatility. The weighted-average fair value of stock options granted under the Stock Awards Plans was \$14.82 and \$11.86 per share in 2018 and 2017, respectively. These values were estimated on the respective dates of grant using the Black-Scholes option-pricing model with the following weighted-average assumptions:

Stock Awards Plans:		
Years Ended December 31,	2018	2017
Dividend Yield	1.5 %	1.7 %
Expected Stock Price Volatility	14.2 %	15.8 %
Risk-free Interest Rate	2.8 %	2.2 %
Expected Life of Option (years)	6.6	6.7

A summary of option activity under our stock plans as of December 31, 2019, and changes during the period then ended is presented below:

	Stock Awards Plans		Director Stock Option Plans	
	Options	Weighted Average Exercise Price	Options	Weighted Average Exercise Price
Outstanding, January 1, 2019	6,761,055	\$ 65.76	155,200	\$ 58.13
Granted	—	—	—	—
Exercised	(1,560,047)	57.10	(19,949)	55.99
Forfeited or expired	(156,828)	73.15	—	—
Outstanding at December 31, 2019	5,044,180	\$ 68.32	135,251	\$ 58.45
Exercisable at December 31, 2019	4,288,542	\$ 66.01	135,251	\$ 58.45
Weighted-Average Remaining Contractual Term (Years):				
Outstanding at December 31, 2019	5.4		3.2	
Exercisable at December 31, 2019	5.0		3.2	
Aggregate Intrinsic Value:				
Outstanding at December 31, 2019	\$ 239,033		\$ 7,732	
Exercisable at December 31, 2019	\$ 212,745		\$ 7,732	
Intrinsic Value of Options Exercised During the Years Ended:				
December 31, 2019	\$ 87,251		\$ 1,172	
December 31, 2018	\$ 72,951		\$ 2,286	
December 31, 2017	\$ 51,140		\$ 1,995	

The grant date fair value of options vested during the years ended December 31, 2019, 2018 and 2017 was \$17.5 million, \$16.5 million and \$16.9 million, respectively. Cash received from option exercises was approximately \$90.2 million and the actual tax benefit realized for the tax deduction from option exercises was approximately \$19.5 million in the year ended December 31, 2019. As of December 31, 2019, the remaining valuation of stock option awards to be expensed in future periods was \$2.3 million and the related weighted-average period over which it is expected to be recognized is 1.0 year.

The fair value of both time-based RSUs and performance-based RSUs pertaining to internal performance metrics is determined using the closing price of our common stock and expected dividend on the grant date. The fair value of performance-based RSUs pertaining to TSR is estimated using a Monte Carlo simulation. Inputs and assumptions used to calculate the fair value are shown in the table below. The fair value of these RSUs is expensed over the vesting period using the straight-line method or using the graded vesting method when an employee becomes eligible to retain the award at retirement.

Year Ended December 31,	2019	2018
Fair value per stock award	\$ 134.97	\$ 128.70
Grant date stock price	\$ 104.51	\$ 89.42
Assumptions:		
Aptar's stock price expected volatility	16.50 %	12.30 %
Expected average volatility of peer companies	31.90 %	27.50 %
Correlation assumption	37.40 %	20.20 %
Risk-free interest rate	2.19 %	2.42 %
Dividend yield assumption	1.30 %	1.43 %

A summary of RSU activity as of December 31, 2019, and changes during the period then ended is presented below:

	Time-Based RSUs		Performance-Based RSUs	
	Units	Weighted Average Grant-Date Fair Value	Units	Weighted Average Grant-Date Fair Value
Nonvested at January 1, 2019	261,487	\$ 91.78	69,990	\$ 111.55
Granted	295,412	97.80	123,246	119.35
Vested	(51,433)	88.77	—	—
Forfeited	(24,737)	98.72	(11,556)	117.04
Nonvested at December 31, 2019	480,729	\$ 95.45	181,680	\$ 117.26

Included in the December 31, 2019 time-based RSUs are 11,490 units awarded to non-employee directors and 14,257 units vested related to non-employee directors.

Compensation expense recorded attributable to RSUs for the years ended December 31, 2019, 2018 and 2017 was approximately \$18.2 million, \$8.7 million and \$3.7 million, respectively. The actual tax benefit realized for the tax deduction from RSUs was approximately \$1.0 million for the year ended December 31, 2019. The fair value of units vested during the years ended December 31, 2019, 2018 and 2017 was \$4.6 million, \$3.0 million and \$4.7 million, respectively. The intrinsic value of units vested for the years ended December 31, 2019, 2018 and 2017 was \$5.4 million, \$3.7 million and \$5.2 million, respectively. As of December 31, 2019, there was \$28.9 million of total unrecognized compensation cost relating to RSU awards which is expected to be recognized over a weighted average period of 2.9 years.

We have a long-term incentive program for certain employees. Each award is based on the cumulative TSR of our common stock during a three year performance period compared to a peer group. The total expense related to this program for awards outstanding as of December 31, 2019 is approximately \$2.7 million. For the years ended December 31, 2019, 2018 and 2017, we recognized expense of \$0.8 million, \$1.2 million and \$0.7 million, respectively. The accrued awards will be paid in the first quarter of 2020 with no future grants anticipated as this TSR incentive program is no longer awarded.

NOTE 17 EARNINGS PER SHARE

Basic net income per share is calculated by dividing net income attributable to Aptar by the weighted-average number of common shares outstanding during the period. Diluted net income per share is calculated by dividing the net income attributable to Aptar by the weighted-average number of common and common equivalent shares outstanding during the applicable period. The difference between basic and diluted earnings per share is attributable to stock based compensation awards. Share-based compensation awards for which total employee proceeds exceed the average market price over the applicable period would have an antidilutive effect on earnings per share, and accordingly, are excluded from the calculation of diluted earnings per share. The reconciliation of basic and diluted earnings per share ("EPS") for the years ended December 31, 2019, 2018 and 2017 are as follows:

	Income (Numerator)	Shares (Denominator)	Per Share Amount
For the Year Ended December 31, 2019			
Basic EPS			
Income available to common stockholders	\$ 242,202	63,574	\$ 3.81
Effect of Dilutive Securities			
Stock options		2,344	
Restricted stock		232	
Diluted EPS			
Income available to common stockholders	\$ 242,202	66,150	\$ 3.66
For the Year Ended December 31, 2018			
Basic EPS			
Income available to common stockholders	\$ 194,745	62,437	\$ 3.12
Effect of Dilutive Securities			
Stock options		2,440	
Restricted stock		81	
Diluted EPS			
Income available to common stockholders	\$ 194,745	64,958	\$ 3.00
For the Year Ended December 31, 2017			
Basic EPS			
Income available to common stockholders	\$ 220,030	62,435	\$ 3.52
Effect of Dilutive Securities			
Stock options		2,106	
Restricted stock		55	
Diluted EPS			
Income available to common stockholders	\$ 220,030	64,596	\$ 3.41

NOTE 18 SEGMENT INFORMATION

We are organized into three reporting segments. Operations that sell dispensing systems and sealing solutions primarily to the beauty, personal care and home care markets form the Beauty + Home segment. Operations that sell dispensing systems and sealing solutions to the prescription drug, consumer health care, injectables and active packaging markets form the Pharma segment. Operations that sell dispensing systems and sealing solutions to the food and beverage markets form the Food + Beverage segment.

The accounting policies of the segments are the same as those described in Note 1 – Summary of Significant Accounting Policies. In order to more closely align with how the markets analyze our segment results, we have changed our non-U.S. GAAP segment measure of profitability from Segment Income to Adjusted EBITDA beginning in 2018. All internal segment reporting and discussions of results with our Chief Operating Decision Maker (CODM) are now based on segment Adjusted EBITDA. All references to segment profitability have been updated for this change.

Financial information regarding our reporting segments is shown below:

Year Ended December 31,	2019	2018	2017
Total Sales:			
Beauty + Home	\$ 1,376,027	\$ 1,446,231	\$ 1,333,048
Pharma	1,100,463	955,069	805,913
Food + Beverage	418,017	386,689	352,483
Total Sales	\$ 2,894,507	\$ 2,787,989	\$ 2,491,444
Less: Intersegment Sales:			
Beauty + Home	\$ 23,313	\$ 19,849	\$ 19,262
Pharma	9,412	417	33
Food + Beverage	2,050	2,962	2,866
Total Intersegment Sales	\$ 34,775	\$ 23,228	\$ 22,161
Net Sales:			
Beauty + Home	\$ 1,352,714	\$ 1,426,382	\$ 1,313,786
Pharma	1,091,051	954,652	805,880
Food + Beverage	415,967	383,727	349,617
Net Sales	\$ 2,859,732	\$ 2,764,761	\$ 2,469,283
Adjusted EBITDA (1):			
Beauty + Home	\$ 181,150	\$ 185,926	\$ 173,227
Pharma	387,483	343,706	275,933
Food + Beverage	68,108	57,589	62,903
Corporate & Other, unallocated	(44,406)	(36,285)	(37,457)
Acquisition-related costs (2)	(3,927)	(23,770)	—
Restructuring Initiatives (3)	(20,472)	(63,829)	(2,208)
Gain on insurance recovery (4)	—	—	10,648
Depreciation and amortization (5)	(194,552)	(171,747)	(153,094)
Interest Expense	(35,489)	(32,626)	(40,597)
Interest Income	4,174	7,056	5,470
Income before Income Taxes	\$ 342,069	\$ 266,020	\$ 294,825
Depreciation and Amortization:			
Beauty + Home	\$ 82,778	\$ 83,546	\$ 79,422
Pharma	65,590	51,495	41,143
Food + Beverage	35,728	27,467	24,720
Corporate & Other	10,456	9,239	7,809
Depreciation and Amortization	\$ 194,552	\$ 171,747	\$ 153,094
Capital Expenditures:			
Beauty + Home	\$ 96,040	\$ 101,371	\$ 76,425
Pharma	89,702	54,433	33,005
Food + Beverage	45,130	41,236	38,730
Corporate & Other	13,933	25,739	18,924
Transfer of Corporate Technology Expenditures (6)	(2,529)	(11,527)	(10,460)
Capital Expenditures	\$ 242,276	\$ 211,252	\$ 156,624
Total Assets:			
Beauty + Home	\$ 1,378,292	\$ 1,373,816	\$ 1,358,283
Pharma	1,422,815	1,324,696	881,443
Food + Beverage	534,527	501,700	296,271
Corporate & Other	226,485	177,523	601,826
Total Assets	\$ 3,562,119	\$ 3,377,735	\$ 3,137,823

- (1) We evaluate performance of our reporting segments and allocate resources based upon Adjusted EBITDA. Adjusted EBITDA is defined as earnings before net interest, taxes, depreciation, amortization, unallocated corporate expenses, restructuring, acquisition-related costs and insurance recoveries.
- (2) Acquisition-related costs include transaction costs and purchase accounting adjustments related to inventory for acquisitions (see Note 20 – Acquisitions for further details).

- (3) Restructuring Initiatives includes expense items for the years ended December 31, 2019 and 2018 as follows (see Note 21 – Restructuring Initiatives for further details):

Year Ended December 31,	2019	2018	2017
Restructuring Initiatives by Segment			
Beauty + Home	\$ 17,682	\$ 52,244	\$ 529
Pharma	632	3,589	—
Food + Beverage	391	4,185	1,679
Corporate & Other	1,767	3,811	—
Total Restructuring Initiatives	\$ 20,472	\$ 63,829	\$ 2,208

- (4) The gain on insurance recovery relates to the Annecy fire (see Note 19 – Insurance Settlement Receivable for further details).
- (5) Depreciation and amortization includes amortization related to acquisition purchase accounting adjustments for backlog. See the reconciliation of Non-U.S. GAAP measures starting on page 22.
- (6) The transfer of corporate technology expenditures represents amounts of projects managed by corporate for the benefit of specific entities within each segment. Once the projects are complete, all related costs are allocated from corporate to and paid by the appropriate entity and the associated assets are then depreciated at the entity level.

Geographic Information

The following are net sales and long-lived asset information by geographic area and product information for the years ended December 31, 2019, 2018 and 2017:

	2019	2018	2017
Net Sales to Unaffiliated Customers (1):			
United States	\$ 836,768	\$ 726,336	\$ 642,164
Europe:			
France	895,110	862,364	744,856
Germany	452,409	474,369	416,802
Italy	141,867	144,044	131,523
Other Europe	149,083	146,701	132,992
Total Europe	1,638,469	1,627,478	1,426,173
Other Foreign Countries	384,495	410,947	400,946
Total	\$ 2,859,732	\$ 2,764,761	\$ 2,469,283
Property, Plant and Equipment			
United States	\$ 300,820	\$ 265,004	\$ 182,434
Europe:			
France	338,288	308,250	266,804
Germany	163,782	154,505	163,948
Italy	53,562	54,978	57,080
Other Europe	63,636	59,411	59,963
Total Europe	619,268	577,144	547,795
Other Foreign Countries	167,590	149,465	137,677
Total	\$ 1,087,678	\$ 991,613	\$ 867,906

- (1) Sales are attributed to countries based upon where the sales invoice to unaffiliated customers is generated.

No single customer represents 6% or more of our net sales in 2019, 2018 or 2017.

NOTE 19 INSURANCE SETTLEMENT RECEIVABLE

A fire caused damage to our facility in Annecy, France in June 2016. The fire was contained to one of three production units and there were no reported injuries. Aptar Annecy supplies anodized aluminum components for certain Aptar dispensing systems. We are insured for the damages caused by the fire, including business interruption insurance, and we do not expect this incident to have a material impact on our financial results.

Losses related to the Annecy fire of \$18.9 million and \$20.3 million were incurred during 2018 and 2017, respectively. For the year ended December 31, 2019, we received insurance proceeds of \$3.4 million, and have no insurance receivable at year-end. Operating Income was negatively impacted by \$5.8 million during 2018. These 2018 losses negatively impacted the Beauty + Home and Pharma segments by \$3.8 million and \$2.0 million, respectively. Operating income was negatively impacted by \$5.6 million during 2017. During 2017, we also recognized \$10.6 million of gain due to the insurance recovery on the involuntary conversion of fixed assets related to this fire, which is included in Other (Expense) Income on the Consolidated Statements of Income. These 2017 amounts impacted the Beauty + Home segment. The final settlement is still in process of negotiation with the insurance company.

NOTE 20 ACQUISITIONS

Business Combinations

On October 31, 2019, we completed our acquisition (the “Noble Acquisition”) of 100% of the equity interests of Noble International Holdings, Inc., Genia Medical, Inc. and JCB Holdings, LLC (collectively referred to as “Noble”). Noble, based in Orlando, FL, is a leading provider in developing patient-centric advanced drug delivery system training devices including autoinjector, prefilled syringe, onbody and respiratory devices for the world’s leading biopharmaceutical companies and original equipment manufacturers. The purchase price was approximately \$62.3 million (net of \$1.6 million of cash acquired) and was funded by cash on hand. As part of the Noble Acquisition, we are also obligated to pay to the selling equityholders of Noble certain contingent consideration based on 2024 cumulative financial performance metrics defined in the purchase agreement. Based on projection as of the acquisition date, we estimated the aggregate fair value for this contingent consideration arrangement to be \$2.9 million utilizing the Black-Scholes valuation model. We are in the process of finalizing purchase accounting. As of December 31, 2019, \$5 million was held in restricted cash pending the finalization of a working capital adjustment. The results of Noble’s operations have been included in the Condensed Consolidated Financial Statements within our Pharma segment since the date of acquisition.

On June 5, 2019, we completed our acquisition (the “Nanopharm Acquisition”) of all of the outstanding capital stock of Nanopharm Ltd. (“Nanopharm”). Nanopharm, located in Newport, UK, is a science-driven, leading provider of orally inhaled and nasal drug product design and development services. The purchase price was approximately \$38.1 million (net of \$1.8 million of cash acquired) and was funded by cash on hand. The results of Nanopharm’s operations have been included in the Condensed Consolidated Financial Statements within our Pharma segment since the date of acquisition.

On May 31, 2019, we completed our acquisition (the “Gateway Acquisition”) of all of the outstanding equity interests of Gateway Analytical LLC (“Gateway”). Gateway, located in Gibsonia, PA, provides industry-leading particulate detection and predictive analytical services to customers developing injectable medicines. The purchase price was approximately \$7.0 million and was funded by cash on hand. As part of the Gateway Acquisition, we are also obligated to pay to the selling equityholder of Gateway certain contingent consideration based on 2020 and 2022 performance targets defined in the purchase agreement. Based on projections as of the acquisition date, we estimated the aggregate fair value for this contingent consideration arrangement to be \$3.0 million. The results of Gateway’s operations have been included in the Condensed Consolidated Financial Statements within our Pharma segment since the date of acquisition.

On August 27, 2018, we completed our acquisition (the “CSP Technologies Acquisition”) of all of the outstanding capital stock of CSP Technologies S.à r.l. (“CSP Technologies”). CSP Technologies is a leader in active packaging technology based on proprietary material science expertise for the pharma and food service markets. CSP Technologies operates manufacturing locations in the U.S. and France. The preliminary purchase price was approximately \$553.5 million and was funded by cash on hand. As of December 31, 2018, \$5 million was held in restricted cash pending the finalization of a working capital adjustment. The \$5 million cash amount was released from restriction in January 2019 after the finalization of the working capital adjustment, resulting in a refund of \$1.0 million.

CSP Technologies contributed net sales of \$48.9 million and pretax loss of \$10.2 million for the year ended December 31, 2018. Sales of \$33.9 million and \$15.0 million were reported in the Pharma and Food + Beverage segments, respectively, for the year ended December 31, 2018. Pretax loss of \$10.3 million and pretax income of \$0.1 million were reported in the Pharma and Food + Beverage segments, respectively, for the year ended December 31, 2018. Included in pretax income is \$14.1 million of fair value adjustment amortization for inventory sold during 2018.

For the year ended December 31, 2019, we recognized \$3.4 million in transaction costs related to the acquisitions of Noble, Nanopharm and Gateway. For the year ended December 31, 2018, we recognized \$9.0 million in transaction costs related to the acquisition of CSP Technologies. These costs are reflected in the selling, research & development and administration section of the Consolidated Statements of Income and within acquisition-related costs as disclosed in Note 18 – Segment Information.

The following table summarizes the assets acquired and liabilities assumed as of the acquisition date at estimated fair value.

	2019	2018
Assets		
Cash and equivalents	\$ 3,427	\$ 24,053
Accounts receivable	3,504	20,847
Inventories	—	42,169
Prepaid and other	2,478	3,995
Property, plant and equipment	4,267	99,194
Goodwill	59,143	278,020
Intangible assets	52,980	177,120
Other miscellaneous assets	430	1,039
Liabilities		
Current maturities of long-term obligations	—	129
Accounts payable, accrued and other liabilities	5,388	31,989
Long-term obligations	—	6,037
Deferred income taxes	2,592	38,442
Retirement and deferred compensation plans	—	1,038
Deferred and other non-current liabilities	1,598	15,344
Net assets acquired	\$ 116,651	\$ 553,458

The following table is a summary of the fair value estimates of the acquired identifiable intangible assets and weighted-average useful lives as of the acquisition date:

	2019		2018	
	Weighted-Average Useful Life (in years)	Estimated Fair Value of Asset	Weighted-Average Useful Life (in years)	Estimated Fair Value of Asset
Acquired technology	8	\$ 9,160	12	\$ 46,700
Customer relationships	11	39,379	16	113,300
Trademarks and trade names	4	2,457	9	14,600
License agreements and other	1	1,984	11	2,520
Total		\$ 52,980		\$ 177,120

Goodwill in the amount of \$59.1 million and \$278.0 million was recorded related to the 2019 and 2018 acquisitions, respectively. For 2019, \$59.1 million is included in the Pharma segment and, for 2018, \$174.3 million and \$103.7 million is included in the Pharma and Food + Beverage segments, respectively. Goodwill is calculated as the excess of the consideration transferred over the net assets acquired and represents the estimated future economic benefits arising from other assets acquired that could not be individually identified and separately recognized. Goodwill largely consists of leveraging our commercial presence in selling the Noble, Nanopharm, Gateway and CSP Technologies lines of products in markets where they did not previously operate and the abilities of the acquired companies to maintain their competitive advantage from a technical viewpoint. Goodwill will not be amortized, but will be tested for impairment at least annually. For 2019 acquisitions, goodwill of \$29.6 million will be deductible for tax purposes. For the 2018 acquisitions, we do not expect any of the goodwill will be deductible for tax purposes.

Pro forma results of operations for 2019 acquisitions have not been presented as the effects of these business combinations individually and in aggregate were not material to the consolidated results of operations.

The unaudited pro forma results presented below include the effects of the CSP Technologies acquisition as if it had occurred as of January 1, 2017. The unaudited pro forma results reflect certain adjustments related to the acquisition, such as intangible asset amortization, fair value adjustments for inventory and financing costs related to the change in our debt structure. The 2018 pro forma earnings were adjusted to exclude \$16.7 million after tax (\$22.0 million pretax) of transaction and other costs. The aforementioned costs include compensation, consulting, legal and advisory fees. The 2018 pro forma earnings were also adjusted to exclude \$10.9 million after tax (\$14.1 million pretax) of nonrecurring expense related to the fair value adjustment to acquisition-date inventory. The 2017 pro forma earnings were adjusted to include these adjustments.

The pro forma results do not include any synergies or other expected benefits of the acquisition. Accordingly, the unaudited pro forma financial information below is not necessarily indicative of either future results of operations or results that might have been achieved had the acquisition been completed on the dates indicated.

Years Ended December 31,**2018****2017**

Net Sales	\$	2,857,765	\$	2,605,095
Net Income Attributable to AptarGroup Inc.		208,717		230,753
Net Income per common share — basic		3.34		3.70
Net Income per common share — diluted		3.21		3.57

On May 1, 2018, we acquired 100% of the common stock of Reboul, a French manufacturer specializing in stamping, decorating and assembling metal and plastic packaging for the cosmetics and luxury markets, for an initial purchase price of approximately \$3.5 million (net of \$112 thousand of cash acquired) (the “Reboul Acquisition”). The results of Reboul's operations have been included in the consolidated financial statements within our Beauty + Home segment since the date of acquisition. As part of the Reboul Acquisition, we were obligated to pay to the selling shareholders of Reboul certain contingent consideration based on 2018 EBITDA as defined in the purchase agreement. These targets were not achieved and we did not pay any contingent consideration.

Subsequent to year end, on February 13, 2020, we entered into a securities purchase agreement to acquire 100% of the membership interests of Fusion Packaging I, LP (“Fusion”), contingent on the closing date of the transaction. Fusion, based in Dallas, TX, is a global leader in the design, engineering, manufacturing and distribution of luxury packaging for the beauty industry. The transaction is subject to customary regulatory approvals and other customary closing conditions. The purchase will be funded with available cash on hand and/or borrowings under our revolving credit facility.

Asset Acquisition

On August 2, 2019, we completed our asset acquisition (the “Bapco Acquisition”) of the remaining 80% ownership interest in the capital stock of Bapco Closures Holdings Limited (“Bapco”), for \$3.8 million (net of \$2.9 million of cash acquired). The 20% ownership investment previously held in Bapco is now included within the intangible assets acquired. Bapco, located in Horesell, UK, provides innovative closures sealing technology that provides package integrity and tamper evidence. The results of Bapco's operations have been included in the Condensed Consolidated Financial Statements within our Food + Beverage segment since the date of acquisition.

Equity and Other Investments

On October 1, 2019, we entered into a strategic definitive agreement to acquire 49% of the equity interests in three related companies: Suzhou Hsing Kwang, Suqian Hsing Kwang and Suzhou BTY, (collectively referred to as “BTY”), contingent on the settlement date of the transaction. We have a call option to acquire an additional 26% to 31% of BTY's equity interests following the initial lock-up period of 5 years based on a predetermined formula. Subsequent to the second lock-up period, which ends 3 years subsequent to the initial lock-up period, we have a call option to acquire the remaining equity interests of BTY based on a predetermined formula. Additionally, the selling shareholders of BTY have a put option for the remaining equity interest to be acquired by Aptar based on a predetermined formula. The BTY entities are leading Chinese manufacturers of high quality, decorative metal components, metal-plastic sub-assemblies, and complete color cosmetics packaging solutions for the beauty industry. Subsequent to the year ended December 31, 2019, on January 1, 2020 the transaction closed for an approximate purchase price of \$32 million for our 49% share.

During August 2019, we also invested an aggregate amount of \$3.5 million in two preferred equity investments in sustainability companies that are accounted for at cost less impairment, if any, plus or minus changes resulting from observable price changes in orderly transactions for identical or similar investments of the same issuer. There were no indications of impairment nor were there any changes from observable price changes noted in the three months ended December 31, 2019.

In May 2018, we invested \$10.0 million in preferred equity stock of Reciprocal Labs Corporation, doing business as Propeller Health, consistent with measurement alternative guidance described in Note 1 above. No impairment charge was recorded during 2018 against this investment. We recorded a gain of approximately \$6.5 million during the fourth quarter of 2018 by adjusting the carrying amount to its expected sales proceeds as this investment was subsequently sold during January 2019.

NOTE 21 RESTRUCTURING INITIATIVES

In late 2017, we began a business transformation to drive profitable sales growth, increase operational excellence, enhance our approach to innovation and improve organizational effectiveness. The primary focus of the plan will be the Beauty + Home segment; however, certain global general and administrative functions will also be addressed. During 2019 and 2018, we recognized approximately \$20.5 million and \$63.8 million of restructuring costs related to this plan, respectively. Using current exchange rates, we expect total implementation costs of approximately \$110 million for these initiatives. The cumulative expense incurred to date was \$86.5 million. We also anticipate making capital investments related to the transformation plan of approximately \$55 million, of which the \$38 million has been incurred to date.

As of December 31, 2019 we have recorded the following activity associated with the transformation plan:

	Beginning Reserve at 12/31/2018	Net Charges for the Year Ended 12/31/2019	Cash Paid	Interest and FX Impact	Ending Reserve at 12/31/2019
Employee severance	\$ 3,934	\$ 8,104	\$ (4,813)	\$ (135)	\$ 7,090
Professional fees and other costs	11,101	12,368	(19,795)	(65)	3,609
Totals	\$ 15,035	\$ 20,472	\$ (24,608)	\$ (200)	\$ 10,699

NOTE 22 QUARTERLY DATA (UNAUDITED)

Quarterly results of operations and per share information for the years ended December 31, 2019 and 2018 are as follows:

	Quarter				Total for Year
	First	Second	Third	Fourth	
Year Ended December 31, 2019:					
Net sales	\$ 744,460	\$ 742,661	\$ 701,278	\$ 671,333	\$ 2,859,732
Gross profit (1)	233,841	231,739	215,222	193,588	874,390
Net Income	62,999	73,921	56,769	48,538	242,227
Net Income Attributable to AptarGroup, Inc.	63,004	73,915	56,750	48,533	242,202
Per Common Share — 2019:					
Net Income Attributable to AptarGroup, Inc.					
Basic	\$ 1.00	\$ 1.16	\$.89	\$.76	\$ 3.81
Diluted	.96	1.12	.85	.73	3.66
Average number of shares outstanding:					
Basic	62,964	63,471	64,010	63,835	63,574
Diluted	65,349	66,232	66,702	66,192	66,150
Year Ended December 31, 2018:					
Net sales	\$ 703,350	\$ 710,608	\$ 665,775	\$ 685,028	\$ 2,764,761
Gross profit (1)	209,171	209,018	192,544	184,775	795,508
Net Income	59,288	55,781	39,022	40,675	194,766
Net Income Attributable to AptarGroup, Inc.	59,300	55,775	38,996	40,674	194,745
Per Common Share — 2018:					
Net Income Attributable to AptarGroup, Inc.					
Basic	\$.95	\$.89	\$.63	\$.65	\$ 3.12
Diluted	.92	.86	.60	.62	3.00
Average number of shares outstanding:					
Basic	62,128	62,402	62,378	62,834	62,437
Diluted	64,414	64,850	65,129	65,344	64,958

(1) Gross profit is defined as net sales less cost of sales and depreciation.

NOTE 23 SUBSEQUENT EVENTS

On January 1, 2020, the BTY transaction closed for an approximate purchase price of \$32 million for our 49% share. Refer to Note 20- Acquisitions for further details on the investment.

On February 13, 2020, we entered into a securities purchase agreement to acquire 100% of the membership interests of Fusion. Refer to Note 20 – Acquisitions for further details on the acquisition.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders of AptarGroup, Inc.

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of AptarGroup, Inc. and its subsidiaries (the "Company") as of December 31, 2019 and 2018, and the related consolidated statements of income, comprehensive income, changes in equity, and cash flows for each of the three years in the period ended December 31, 2019, including the related notes and schedule of valuation and qualifying accounts for each of the three years in the period ended December 31, 2019 listed in the index appearing under Item 15(a)(2) (collectively referred to as the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on criteria established in Internal Control - Integrated Framework (2013) issued by the COSO.

Change in Accounting Principle

As discussed in Note 1 to the consolidated financial statements, the Company changed the manner in which it accounts for leases in 2019.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in Management's Report on Internal Control over Financial Reporting appearing under Item 9A. Our responsibility is to express opinions on the Company's consolidated financial statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

As described in Management's Report on Internal Control over Financial Reporting, management has excluded Nanopharm Ltd. and Noble International Holdings, Inc., Genia Medical Inc., and JBCB Holdings, LLC (collectively referred to as "Noble") from its assessment of internal control over financial reporting as of December 31, 2019 because the entities were acquired by the Company in purchase business combinations during 2019. We have also excluded Nanopharm Ltd. and Noble from our audit of internal control over financial reporting. Nanopharm Ltd. and Noble are wholly-owned subsidiaries whose total assets and total revenues excluded from management's assessment and our audit of internal control over financial reporting represent less than 1% of the related consolidated financial statement amounts as of and for the year ended December 31, 2019.

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Critical Audit Matters

The critical audit matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that (i) relates to accounts or disclosures that are material to the consolidated financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Goodwill Impairment Assessment – Active Packaging Reporting Unit

As described in Note 1 and 4 to the consolidated financial statements, the Company's consolidated goodwill balance was \$763 million as of December 31, 2019. As disclosed by management, the goodwill associated with the Active Packaging reporting unit was \$163 million as of December 31, 2019. During the third quarter of 2019, management performed a quantitative impairment assessment using a discounted cash flow analysis of the Active Packaging reporting unit. Management calculated the fair value of the Active Packaging reporting unit and compared it with the associated carrying amount as of July 1, 2019, and, upon management's change to the Company's goodwill impairment testing date, performed a qualitative impairment assessment as of October 1, 2019. Management's determination of the fair value of the Company's reporting units, based on future cash flows for the reporting units, requires significant judgment and the use of estimates and assumptions related to projected revenue growth rates, the terminal growth factor, as well as the discount rate.

The principal considerations for our determination that performing procedures relating to the goodwill impairment assessment of Active Packaging reporting unit is a critical audit matter are there was significant judgment by management when developing the fair value measurement of the reporting unit. This in turn led to a high degree of auditor judgment, subjectivity, and effort in performing procedures to evaluate management's future cash flows, including the significant assumptions related to projected revenue growth rates, the terminal growth factor, and the discount rate. In addition, the audit effort involved the use of professionals with specialized skill and knowledge to assist in performing these procedures and evaluating the audit evidence obtained from these procedures.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to management's goodwill impairment assessment, including controls over the valuation of the Active Packaging reporting unit. These procedures also included, among others, testing management's process for developing the fair value estimate of the reporting unit; evaluating the appropriateness of management's discounted cash flow model; testing the completeness and accuracy of underlying data used in the model; and evaluating the significant assumptions used by management, including the projected revenue growth rates, the terminal growth factor, and the discount rate. Evaluating management's assumption related to projected revenue growth rates involved evaluating whether the assumption used by management was reasonable considering (i) the current and past performance of the reporting unit, (ii) the consistency with external market and industry data, and (iii) whether this assumption was consistent with evidence obtained in other areas of the audit. Professionals with specialized skill and knowledge were used to assist in the evaluation of the Company's discounted cash flow model and certain significant assumptions, including the terminal growth factor and the discount rate.

/s/ PRICEWATERHOUSECOOPERS LLP

Chicago, Illinois
February 24, 2020

We have served as the Company's auditor since 1992.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

ITEM 9A. CONTROLS AND PROCEDURES

DISCLOSURE CONTROLS AND PROCEDURES

Management has evaluated, with the participation of the chief executive officer and chief financial officer of the Company, the effectiveness of our disclosure controls and procedures (as such term is defined in Rule 13a-15(e) under the Securities Exchange Act of 1934) as of December 31, 2019. Based on that evaluation, the chief executive officer and chief financial officer have concluded that these controls and procedures were effective as of such date.

MANAGEMENT'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Rule 13a-15(f) under the Securities Exchange Act of 1934. Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate. On June 5, 2019 and October 31, 2019, we completed our acquisitions of Nanopharm Ltd. and Noble International Holdings, Inc., Genia Medical, Inc. and JBCB Holdings, LLC (collectively referred to as "Noble") respectively, as discussed in Item 8, Note 20 - Acquisitions to the Consolidated Financial Statements. Management excluded Nanopharm Ltd. and Noble from its assessment of our internal control over financial reporting as they were acquired during the fiscal year. Nanopharm Ltd. and Noble's total assets and total revenues represent less than 1% of the Consolidated Financial Statement amounts as of and for the year ended December 31, 2019. Management has evaluated, with the participation of the chief executive officer and chief financial officer of the Company, the effectiveness of our internal control over financial reporting as of December 31, 2019 based on the framework in *Internal Control—Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on that evaluation under the framework in *Internal Control—Integrated Framework*, management has concluded that our internal control over financial reporting was effective as of December 31, 2019.

PricewaterhouseCoopers LLP, an independent registered public accounting firm, has issued an attestation report on the effectiveness of our internal control over financial reporting. This report appears on page 77.

CHANGES IN INTERNAL CONTROL OVER FINANCIAL REPORTING

During the fiscal quarter ended December 31, 2019, the Company implemented enterprise resource planning ("ERP") systems at one operating facility. Consequently, the control environments have been modified at this location to incorporate the controls contained within the new ERP systems. Except for the foregoing, no changes in our internal control over financial reporting (as such term is defined in Rule 13a-15(f) under the Securities Exchange Act of 1934) occurred during our fiscal quarter ended December 31, 2019 that materially affected, or are reasonably likely to materially affect, our internal control over financial reporting. As noted above, we excluded Nanopharm Ltd. and Noble from our evaluation of internal control over financial reporting as of December 31, 2019 because these acquisitions were completed during the fiscal year.

ITEM 9B. OTHER INFORMATION

None.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

Information with respect to directors may be found under the caption "Election of Directors" in our Proxy Statement for the Annual Meeting of Stockholders to be held on May 6, 2020 (the "2020 Proxy Statement") and is incorporated herein by reference.

Information with respect to executive officers may be found under the caption "Information About Our Executive Officers" in Part I of this report and is incorporated herein by reference.

Information with respect to audit committee members and audit committee financial experts may be found under the caption "Corporate Governance—Audit Committee" in the 2020 Proxy Statement and is incorporated herein by reference.

Information with respect to our Code of Business Conduct and Ethics may be found under the caption “Corporate Governance—Code of Business Conduct and Ethics” in the 2020 Proxy Statement and is incorporated herein by reference. Our Code of Business Conduct and Ethics is available through the Corporate Governance link on the Investors page of our website (www.aptar.com).

The information set forth under the heading “Delinquent Section 16(a) Reports” in the 2020 Proxy Statement is incorporated herein by reference.

ITEM 11. EXECUTIVE COMPENSATION

The information set forth under the headings “Board Compensation”, “Executive Officer Compensation” and “Management Development and Compensation Committee Report” in the 2020 Proxy Statement is incorporated herein by reference. The information included under the heading “Management Development and Compensation Committee Report” in the 2020 Proxy Statement shall not be deemed to be “soliciting” material or to be “filed” with the Securities and Exchange Commission or subject to Regulation 14A or 14C, or to the liabilities of Section 18 of the Securities Exchange Act of 1934, as amended.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

The information set forth under the heading “Security Ownership of Certain Beneficial Owners, Directors and Management” and “Equity Compensation Plan Information” in the 2020 Proxy Statement is incorporated herein by reference.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The information set forth under the heading “Transactions with Related Persons” and “Corporate Governance—Independence of Directors” in the 2020 Proxy Statement is incorporated herein by reference.

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

Information with respect to the independent registered public accounting firm fees and services may be found under the caption “Ratification of the Appointment of PricewaterhouseCoopers LLP as the Independent Registered Public Accounting Firm for 2020” in the 2020 Proxy Statement. Such information is incorporated herein by reference.

PART IV

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

(a) The following documents are filed as a part of this report:

Description

1) <i>All Financial Statements</i>	
The financial statements are set forth under Item 8 of this report on Form 10-K	
Consolidated Statements of Income for the Years Ended December 31, 2019, 2018 and 2017	34
Consolidated Statements of Comprehensive Income for the Years Ended December 31, 2019, 2018 and 2017	35
Consolidated Balance Sheets as of December 31, 2019 and 2018	36
Consolidated Statements of Changes in Equity for the Years Ended December 31, 2019, 2018 and 2017	38
Consolidated Statements of Cash Flows for the Years Ended December 31, 2019, 2018 and 2017	39
Notes to Consolidated Financial Statements	41
Report of Independent Registered Public Accounting Firm	77
2) <i>II – Valuation and Qualifying Accounts</i>	88

All other schedules have been omitted because they are not applicable or not required.

(b) Exhibits required by Item 601 of Regulation S-K are incorporated by reference to the Exhibit Index on pages 82-86 of this report.

ITEM 16. FORM 10-K SUMMARY

None.

INDEX TO EXHIBITS

Exhibit Number	Description
2.2	Stock Purchase Agreement, dated as of July 26, 2018, between AptarGroup, Inc. and CSP Technologies Parent S.A., filed as Exhibit 2.2 to the Company's quarterly report on Form 10-Q for the quarter ended September 30, 2018, is hereby incorporated by reference. †
3(i)	Amended and Restated Certificate of Incorporation of AptarGroup, Inc., as amended, filed as Exhibit 4(a) to the Company's Registration Statement on Form S-8, filed on July 25, 2008, is hereby incorporated by reference.
3(ii)	Amended and Restated By-Laws of the Company, filed as Exhibit 3.1 to the Company's Form 8-K filed on October 24, 2016, is hereby incorporated by reference. The Company hereby agrees to provide the Commission, upon request, copies of instruments defining the rights of holders of long-term debt of the Company and its subsidiaries as are specified by item 601(b)(4)(iii)(A) of Regulation S-K.
4.1	Note Purchase Agreement dated as of July 31, 2008, among AptarGroup, Inc. and the purchasers listed on Schedule A thereto, filed as Exhibit 4.1 to the Company's quarterly report on Form 10-Q for the quarter ended June 30, 2008, is hereby incorporated by reference.
4.2	First Amendment to 2008 Note Purchase Agreement, dated as of November 30, 2010, among the Company and each of the institutions listed as signatories thereto, filed as Exhibit 4.2 to the Company's current report on Form 8-K filed on December 1, 2010, is hereby incorporated by reference.
4.3	Supplemental Note Purchase Agreement, dated as of November 30, 2010, among the Company and each of the purchasers listed in Exhibit A thereto, filed as Exhibit 4.3 to the Company's current report on Form 8-K filed on December 1, 2010, is hereby incorporated by reference.
4.4	Form of AptarGroup, Inc. 3.78% Series 2008-B-2 Senior Notes due November 30, 2020, filed as Exhibit 4.5 to the Company's current report on Form 8-K filed on December 1, 2010, is hereby incorporated by reference.
4.5	Second Supplemental Note Purchase Agreement, dated as of September 5, 2012, among the Company and each of the purchasers listed in Exhibit A thereto, filed as Exhibit 4.1 to the Company's current report on Form 8-K filed on September 5, 2012, is hereby incorporated by reference.
4.6	Form of AptarGroup, Inc. 3.25% Series 2008-C-1 Senior Notes Due September 5, 2022, filed as Exhibit 4.2 to the Company's current report on Form 8-K filed on September 5, 2012, is hereby incorporated by reference.
4.7	Form of AptarGroup, Inc. 3.40% Series 2008-C-2 Senior Notes Due September 5, 2024, filed as Exhibit 4.3 to the Company's current report on Form 8-K filed on September 5, 2012, is hereby incorporated by reference.
4.8	Note Purchase Agreement, dated as of December 16, 2014, among the Company and each of the purchasers listed in Schedule B thereto, filed as Exhibit 4.1 to the Company's current report on Form 8-K filed on December 17, 2014, is hereby incorporated by reference.
4.9	Form of AptarGroup, Inc. 3.49% Series 2014-A-1 Senior Notes due December 16, 2023 (included as a part of Exhibit 4.8), filed as Exhibit 4.2 to the Company's current report on Form 8-K filed on December 17, 2014, is hereby incorporated by reference.
4.10	Form of AptarGroup, Inc. 3.49% Series 2014-A-2 Senior Notes due February 26, 2024 (included as a part of Exhibit 4.8), filed as Exhibit 4.3 to the Company's current report on Form 8-K filed on December 17, 2014, is hereby incorporated by reference.
4.11	Form of AptarGroup, Inc. 3.61% Series 2014-A-3 Senior Notes due December 16, 2025 (included as a part of Exhibit 4.8), filed as Exhibit 4.4 to the Company's current report on Form 8-K filed on December 17, 2014, is hereby incorporated by reference.
4.12	Form of AptarGroup, Inc. 3.61% Series 2014-A-4 Senior Notes due February 26, 2026 (included as a part of Exhibit 4.8), filed as Exhibit 4.5 to the Company's current report on Form 8-K filed on December 17, 2014, is hereby incorporated by reference.
4.13	Second Amendment to 2008 Note Purchase Agreement, dated as of December 16, 2014, among the Company and each of the noteholders listed on the signature pages thereto, filed as Exhibit 4.7 to the Company's current report on Form 8-K filed on December 17, 2014, is hereby incorporated by reference.
4.14	Note Purchase and Guaranty Agreement, dated as of July 19, 2017, among AptarGroup UK Holdings, Limited and each of the purchasers listed in Purchasers Schedule thereto, filed as Exhibit 4.1 to the Company's current report on Form 8-K filed on July 25, 2017, is hereby incorporated by reference.
4.15	Form of AptarGroup, Inc. 0.98% Series D Senior Notes due July 19, 2023 (included as a part of Exhibit 4.14), filed as Exhibit 4.2 to the Company's current report on Form 8-K filed on July 25, 2017, is hereby incorporated by reference.

Exhibit Number	Description
4.16	Form of AptarGroup, Inc. 1.17% Series E Senior Notes due July 19, 2024 (included as a part of Exhibit 4.14), filed as Exhibit 4.3 to the Company's current report on Form 8-K filed on July 25, 2017, is hereby incorporated by reference.
4.17	Third Amendment to the 2008 Note Purchase Agreement, dated as of July 19, 2017, among the Company and each of the noteholders listed on the signature pages thereto, filed as Exhibit 4.4 to the Company's current report on Form 8-K filed on July 25, 2017, is hereby incorporated by reference.
4.18	First Amendment to 2014 Note Purchase Agreement, dated as of July 19, 2017, among the Company and each of the noteholders listed on the signature pages thereto, filed as Exhibit 4.5 to the Company's current report on Form 8-K filed on July 25, 2017, is hereby incorporated by reference.
4.19*	Description of the Company's Securities
10.1	AptarGroup, Inc. 2000 Stock Awards Plan, filed as Appendix A to the Company's Proxy Statement, dated April 6, 2000, is hereby incorporated by reference.**
10.2	AptarGroup, Inc. 2004 Stock Awards Plan, filed as Appendix A to the Company's Proxy Statement, dated March 26, 2004, is hereby incorporated by reference.**
10.3	AptarGroup, Inc. 2004 Director Stock Option Plan, filed as Appendix B to the Company's Proxy Statement, dated March 26, 2004, is hereby incorporated by reference.**
10.4	AptarGroup, Inc., Stock Option Agreement for Employees pursuant to the AptarGroup, Inc. 2004 Stock Awards Plan, filed as Exhibit 10.1 to the Company's quarterly report on Form 10-Q for the quarter ended September 30, 2004, is hereby incorporated by reference.**
10.5	AptarGroup, Inc. Stock Option Agreement for Non-Employee Directors pursuant to the AptarGroup, Inc. 2004 Director Option Plan, filed as Exhibit 10.2 to the Company's quarterly report on Form 10-Q for the quarter ended September 30, 2004, is hereby incorporated by reference.**
10.6	AptarGroup, Inc. Stock Option Agreement for Employees pursuant to the AptarGroup, Inc. 2000 Stock Awards Plan, filed as Exhibit 10.3 to the Company's quarterly report on Form 10-Q for the quarter ended September 30, 2004, is hereby incorporated by reference.**
10.7	AptarGroup, Inc. Restricted Stock Award Agreement pursuant to the AptarGroup, Inc. 2000 Stock Awards Plan, filed as Exhibit 10.4 to the Company's quarterly report on Form 10-Q for the quarter ended September 30, 2004, is hereby incorporated by reference.**
10.8	Form of AptarGroup, Inc. Stock Option Agreement for Employees pursuant to the AptarGroup, Inc. 2014 Stock Awards Plan, filed as Exhibit 10.2 to the Company's quarterly report on Form 10-Q for the quarter ended June 30, 2014, is hereby incorporated by reference.**
10.9	Form of AptarGroup, Inc. Restricted Stock Unit Award Agreement pursuant to the AptarGroup, Inc. 2014 Stock Awards Plan, filed as Exhibit 10.3 to the Company's quarterly report on Form 10-Q for the quarter ended June 30, 2014, is hereby incorporated by reference.**
10.10	Supplementary Pension Plan—France dated August 24, 2001, filed as Exhibit 10.2 to the Company's quarterly report on Form 10-Q for the quarter ended March 31, 2004, is hereby incorporated by reference.**
10.11	AptarGroup, Inc. Supplemental Retirement Plan (amended and restated effective January 1, 2009), filed as Exhibit 10.1 to the Company's quarterly report on Form 10-Q for the quarter ended September 30, 2008, is hereby incorporated by reference.**
10.12	Employment Agreement, dated November 21, 2016, between AptarGroup, Inc. and Stephan B. Tanda, filed as Exhibit 10.1 to the Company's current report on Form 8-K filed on November 22, 2016, is hereby incorporated by reference.**
10.13	Employment Agreement effective January 1, 2012 of Robert W. Kuhn, filed as Exhibit 10.2 to the Company's quarterly report on Form 10-Q for the quarter ended September 30, 2012, is hereby incorporated by reference.**
10.14	Employment Agreement effective January 1, 2012 of Eldon W. Schaffer, filed as Exhibit 10.4 to the Company's quarterly report on Form 10-Q for the quarter ended September 30, 2012, is hereby incorporated by reference.**
10.15	Employment Agreement dated March 30, 2011 and as amended February 10, 2016 of Gael Touya, filed as Exhibit 10.17 to the Company's annual report on Form 10-K for the fiscal year ended December 31, 2015, is hereby incorporated by reference.**
10.16	AptarGroup, Inc. 2008 Stock Option Plan, filed as Exhibit 10.3 to the Company's current report on Form 8-K filed on May 1, 2008, is hereby incorporated by reference.**
10.17	AptarGroup, Inc. 2008 Director Stock Option Plan, filed as Exhibit 10.1 to the Company's current report on Form 8-K filed on May 1, 2008, is hereby incorporated by reference.**
10.18	Form of AptarGroup, Inc. Stock Option Agreement for Employees pursuant to the AptarGroup, Inc. 2008 Stock Option Plan, filed as Exhibit 10.4 to the Company's quarterly report on Form 10-Q for the quarter ended June 30, 2008, is hereby incorporated by reference.**

Exhibit Number	Description
10.19	Form of AptarGroup, Inc. Stock Option Agreement for Directors pursuant to the AptarGroup, Inc. 2008 Director Stock Option Plan, filed as Exhibit 10.5 to the Company's quarterly report on Form 10-Q for the quarter ended June 30, 2008, is hereby incorporated by reference.**
10.20	Form of AptarGroup, Inc. Restricted Stock Unit Award Agreement pursuant to the AptarGroup, Inc. 2004 Stock Awards Plan, filed as Exhibit 10.6 to the Company's quarterly report on Form 10-Q for the quarter ended June 30, 2008, and amended as of January 1, 2010.**
10.21	Form of AptarGroup, Inc. Stock Option Agreement for Employees pursuant to the AptarGroup, Inc. 2011 Stock Awards Plan, filed as Exhibit 10.2 to the Company's quarterly report on Form 10-Q for the quarter ended September 30, 2011, is hereby incorporated by reference.**
10.22	Form of AptarGroup, Inc. Restricted Stock Unit Award Agreement pursuant to the AptarGroup, Inc. 2011 Stock Awards Plan, filed as Exhibit 10.3 to the Company's quarterly report on Form 10-Q for the quarter ended September 30, 2011, is hereby incorporated by reference.**
10.23	AptarGroup, Inc. 2011 Stock Awards Plan, filed as Exhibit 10.1 to the Company's current report on Form 8-K filed on May 10, 2011, is hereby incorporated by reference.**
10.24	AptarGroup, Inc. 2014 Stock Awards Plan, filed as Exhibit 10.1 to the Company's current report on Form 8-K filed on May 12, 2014, is hereby incorporated by reference.**
10.25	Amendment to Stock Option Award Agreements, filed as Exhibit 10.1 to the Company's quarterly report on Form 10-Q for the quarter ended September 30, 2015, is hereby incorporated by reference.**
10.26	AptarGroup Performance Incentive Plan, filed as Exhibit 10.1 to the Company's current report on Form 8-K filed on May 13, 2013, is hereby incorporated by reference.**
10.27	AptarGroup, Inc. 2014 Long-Term Incentive Program (as Amended and Restated) under the AptarGroup, Inc. Performance Incentive Plan, filed as Exhibit 10.28 to the Company's annual report on Form 10-K for the fiscal year ended December 31, 2013, is hereby incorporated by reference.**
10.28	AptarGroup, Inc. 2014 Long-Term Incentive Program (as Amended and Restated) under the AptarGroup, Inc. Performance Incentive Plan filed as Exhibit 10.31 to the Company's annual report on Form 10-K for the fiscal year ended December 31, 2014, is hereby incorporated by reference.**
10.29	AptarGroup, Inc. 2015 Director Restricted Stock Unit Plan, filed as Exhibit 4(c) to the Company's Registration Statement on Form S-8, filed on May 6, 2015, is hereby incorporated by reference.**
10.30	Form of AptarGroup, Inc. 2015 Restricted Stock Unit Award Agreement for Directors pursuant to the AptarGroup, Inc. 2015 Director Restricted Stock Unit Plan, filed as Exhibit 10.2 to the Company's quarterly report on Form 10-Q for the quarter ended June 30, 2015, is hereby incorporated by reference.**
10.31	AptarGroup, Inc. 2016 Equity Incentive Plan, filed as Exhibit 10.1 to the Company's current report on Form 8-K filed on May 9, 2016, is hereby incorporated by reference.**
10.32	Form of AptarGroup, Inc. Stock Option Agreement for Employees pursuant to the AptarGroup, Inc. 2016 Equity Incentive Plan, filed as Exhibit 10.1 to the Company's quarterly report on Form 10-Q for the quarter ended March 31, 2016, is hereby incorporated by reference.**
10.33	Form of AptarGroup, Inc. Restricted Stock Unit Award Agreement pursuant to the AptarGroup, Inc. 2016 Equity Incentive Plan, filed as Exhibit 10.2 to the Company's quarterly report on Form 10-Q for the quarter ended March 31, 2016, is hereby incorporated by reference.**
10.34	Form of AptarGroup, Inc. 2016 Restricted Stock Unit Award Agreement for Directors pursuant to the AptarGroup, Inc. 2016 Equity Incentive Plan, filed as Exhibit 10.3 to the Company's quarterly report on Form 10-Q for the quarter ended March 31, 2016, is hereby incorporated by reference.**
10.35	Credit Agreement, dated as of July 20, 2017 among AptarGroup, Inc., AptarGroup UK Holdings, Limited and the financial institutions party thereto as Lenders, Wells Fargo Bank, National Association, as administrative agent, Bank of America, N.A., HSBC Bank USA, N.A. and JPMorgan Chase Bank, N.A., as co-syndication agents, BNP Paribas as documentation agent, and Wells Fargo Securities, LLC, HSBC Bank USA, N.A., J.P. Morgan Chase Bank N.A. and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as joint lead arrangers and joint bookrunners, filed as Exhibit 10.1 to the Company's current report on Form 8-K filed on July 25, 2017, is hereby incorporated by reference.
10.36	AptarGroup 2018 Performance Incentive Plan, filed as Exhibit 10.1 to the Company's current report on Form 8-K filed on February 8, 2018, is hereby incorporated by reference.**
10.37	AptarGroup, Inc. Restricted Stock Unit Award Agreement (Service-Based Vesting Form), filed as Exhibit 10.43 to the Company's annual report on Form 10-K for the fiscal year ended December 31, 2017, is hereby incorporated by reference.**

Exhibit Number	Description
10.38	AptarGroup, Inc. Restricted Stock Unit Award Agreement (Performance-Based Vesting Form), filed as Exhibit 10.44 to the Company's annual report on Form 10-K for the fiscal year ended December 31, 2017, is hereby incorporated by reference.**
10.39	AptarGroup, Inc. 2018 Equity Incentive Plan, filed as Exhibit 10.1 to the Company's current report on Form 8-K filed on May 3, 2018, is hereby incorporated by reference.**
10.40	2018 Equity Incentive Plan Restricted Stock Unit Award Agreement (Service-Based Vesting Form), filed as Exhibit 10.1 to the Company's quarterly report on Form 10-Q for the quarter ended June 30, 2018, is hereby incorporated by reference.**
10.41	2018 Equity Incentive Plan Restricted Stock Unit Award Agreement (Performance-Based Vesting Form), filed as Exhibit 10.2 to the Company's quarterly report on Form 10-Q for the quarter ended June 30, 2018, is hereby incorporated by reference.**
10.42	2018 Equity Incentive Plan Restricted Stock Unit Award Agreement for Directors, filed as Exhibit 10.3 to the Company's quarterly report on Form 10-Q for the quarter ended June 30, 2018, is hereby incorporated by reference.**
10.43	Form of AptarGroup, Inc. Retention Award Restricted Stock Unit Award Agreement (Service-Based Vesting Form) (French employee version) pursuant to the AptarGroup, Inc. 2018 Equity Incentive Plan, filed as Exhibit 10.1 to the Company's quarterly report on Form 10-Q for the quarter ended June 30, 2019, is hereby incorporated by reference.**
10.44	Form of AptarGroup, Inc. Retention Award Restricted Stock Unit Award Agreement (Service-Based Vesting Form) (Non-French employee version) pursuant to the AptarGroup, Inc. 2018 Equity Incentive Plan, filed as Exhibit 10.2 to the Company's quarterly report on Form 10-Q for the quarter ended June 30, 2019, is hereby incorporated by reference.**
10.45	Form of AptarGroup, Inc. Restricted Stock Unit Award Agreement (Service-Based Vesting Form) (French employee version) pursuant to the AptarGroup, Inc. 2018 Equity Incentive Plan, filed as Exhibit 10.3 to the Company's quarterly report on Form 10-Q for the quarter ended June 30, 2019, is hereby incorporated by reference.**
10.46	Form of AptarGroup, Inc. Restricted Stock Unit Award Agreement (Service-Based Vesting Form) (Non-French employee version) pursuant to the AptarGroup, Inc. 2018 Equity Incentive Plan, filed as Exhibit 10.4 to the Company's quarterly report on Form 10-Q for the quarter ended June 30, 2019, is hereby incorporated by reference.**
10.47	Form of AptarGroup, Inc. Restricted Stock Unit Award Agreement (Service-Based Vesting Form) (Chinese employee version) pursuant to the AptarGroup, Inc. 2018 Equity Incentive Plan, filed as Exhibit 10.5 to the Company's quarterly report on Form 10-Q for the quarter ended June 30, 2019, is hereby incorporated by reference.**
10.48	Form of AptarGroup, Inc. Restricted Stock Unit Award Agreement (Performance-Based Vesting Form) (French employee version) pursuant to the AptarGroup, Inc. 2018 Equity Incentive Plan, filed as Exhibit 10.6 to the Company's quarterly report on Form 10-Q for the quarter ended June 30, 2019, is hereby incorporated by reference.**
10.49	Form of AptarGroup, Inc. Restricted Stock Unit Award Agreement (Performance-Based Vesting Form) (Non-French employee version) pursuant to the AptarGroup, Inc. 2018 Equity Incentive Plan, filed as Exhibit 10.7 to the Company's quarterly report on Form 10-Q for the quarter ended June 30, 2019, is hereby incorporated by reference.**
10.50	AptarGroup, Inc. Employment Agreement of Xiangwei Gong as of May 30, 2018, filed as Exhibit 10.8 to the Company's quarterly report on Form 10-Q for the quarter ended June 30, 2019, is hereby incorporated by reference.**
21*	List of Subsidiaries.
23*	Consent of Independent Registered Public Accounting Firm.
31.1*	Certification Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2*	Certification Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1*	Certification Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2*	Certification Pursuant to 18 U.S.C. Section 1350 as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.

Exhibit**Number Description**

- 101* The following financial information from AptarGroup, Inc.'s annual report on Form 10-K for the fiscal year ended December 31, 2019, filed with the SEC on February 24, 2020, formatted in Inline Extensible Business Reporting Language (XBRL): (i) the Cover Page (ii) the Consolidated Statements of Income for the years ended December 31, 2019, 2018 and 2017, (iii) the Consolidated Statements of Comprehensive Income for the years ended December 31, 2019, 2018 and 2017, (iv) the Consolidated Balance Sheets as of December 31, 2019 and 2018, (v) the Consolidated Statements of Cash Flows for the years ended December 31, 2019, 2018 and 2017, (vi) the Consolidated Statements of Changes in Equity for the years ended December 31, 2019, 2018 and 2017 and (vii) Notes to the Consolidated Financial Statements.
- 104* Cover Page Interactive Data File (embedded within the Inline XBRL document).

* Filed or furnished herewith.

** Management contract or compensatory plan or arrangement.

† Omitted schedules will be furnished supplementally to the SEC upon request.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

AptarGroup, Inc.

(Registrant)

Date: February 24, 2020

By /s/ ROBERT W. KUHN
Robert W. Kuhn
Executive Vice President,
Chief Financial Officer and Secretary

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the Registrant in the capacities and on the date indicated.

Signature	Title	Date
<u>/s/ GEORGE L. FOTIADES</u> George L. Fotiades	Chairman of the Board and Director	February 24, 2020
<u>/s/ STEPHAN B. TANDA</u> Stephan B. Tanda	President and Chief Executive Officer and Director (Principal Executive Officer)	February 24, 2020
<u>/s/ ROBERT W. KUHN</u> Robert W. Kuhn	Executive Vice President, Chief Financial Officer and Secretary (Principal Accounting and Financial Officer)	February 24, 2020
<u>/s/ MARITZA GOMEZ MONTIEL</u> Maritza Gomez Montiel	Director	February 24, 2020
<u>/s/ GIOVANNA KAMPOURI-MONNAS</u> Giovanna Kampouri-Monnas	Director	February 24, 2020
<u>/s/ ANDREAS KRAMVIS</u> Andreas Kramvis	Director	February 24, 2020
<u>/s/ B. CRAIG OWENS</u> B. Craig Owens	Director	February 24, 2020
<u>/s/ ISABEL MAREY-SEMPER</u> Isabel Marey-Semper	Director	February 24, 2020
<u>/s/ DR. JOANNE C. SMITH</u> Dr. Joanne C. Smith	Director	February 24, 2020
<u>/s/ JESSE WU</u> Jesse Wu	Director	February 24, 2020
<u>/s/ RALF WUNDERLICH</u> Ralf Wunderlich	Director	February 24, 2020

AptarGroup, Inc.
SCHEDULE II – VALUATION AND QUALIFYING ACCOUNTS

For the years ended December 31, 2019, 2018 and 2017

Dollars in thousands

	Balance at Beginning Of Period	Charged to Costs and Expenses	Charged to Other Accounts	Deductions from Reserve (a)	Balance at End of Period
2019					
Allowance for doubtful accounts	\$ 3,541	\$ 782	\$ —	\$ (697)	\$ 3,626
Deferred tax valuation allowance	11,189	12,058	1,508	(1,435)	23,320
2018					
Allowance for doubtful accounts	\$ 3,161	\$ 923	\$ —	\$ (543)	\$ 3,541
Deferred tax valuation allowance	5,414	4,230	2,604	(1,059)	11,189
2017					
Allowance for doubtful accounts	\$ 2,989	\$ 235	\$ —	\$ (63)	\$ 3,161
Deferred tax valuation allowance	4,070	3,640	—	(2,296)	5,414

(a) Write-off accounts considered uncollectible, net of recoveries and foreign currency impact adjustments.

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Executive Officers, Directors & Board Committees

Executive Officers

Stephan Tanda
President and
Chief Executive Officer

Robert Kuhn
Executive Vice President,
Chief Financial Officer
and Secretary

Shiela Vinczeller
Chief Human Resources Officer

Xiangwei Gong
President, Aptar Asia

Gael Touya
President, Aptar Pharma

Marc Prieur
President, Aptar Beauty + Home

Hedi Tlili
President, Aptar Food + Beverage

Eldon Schaffer
Executive Vice President,
Strategic Projects and
Commercial Excellence

Board of Directors

George Fotiades
Chairman of the Board; President
and Chief Executive Officer of Cantel
Medical Corp.; Director of Cantel
Medical Corp. and Prologis, Inc.

Maritza Montiel
Former Deputy Chief Executive Officer
and Vice Chairman of Deloitte LLP
(retired); Director of McCormick &
Company, Inc., Royal Caribbean
Cruises Ltd. and Comcast Corporation

Giovanna Kampouri Monnas
Chairman of Exea Ventures BV;
Director of Puig S.L.

Andreas Kramvis
Operating Partner, AEA Investors LP

B. Craig Owens
Former Chief Financial Officer
and Chief Administrative Officer
of Campbell Soup Company (retired);
Director of Dean Foods Company,
J.C. Penney Company, Inc. and
Crown Holdings, Inc.

Isabel Marey-Semper
Former Executive Vice President of
Communications and Public Affairs
and General Manager of L'Oréal;
Director of Damae Medical, Imagine
Institute and Inria Foundation

Dr. Joanne Smith
Physician and Chief Executive Officer
of the Shirley Ryan AbilityLab;
Director of Performance Health, Inc.

Stephan Tanda
President and Chief Executive Officer;
Director of Ingredion

Jesse Wu
Private Equity Advisor; Director of The
a2 Milk Company Limited and Shanghai
Kehua Bio-Engineering Co. Ltd.

Ralf Wunderlich
Private Equity Advisor and Operating
Partner; Director of Essentra PLC
and Huhtamaki Oyj

Board Committees

Corporate Governance
Committee

Dr. Joanne Smith, Chair
Isabel Marey-Semper
Ralf Wunderlich

Audit Committee

Maritza Montiel, Chair
Andreas Kramvis
B. Craig Owens

Compensation Committee

Giovanna Kampouri Monnas, Chair
George Fotiades
Jesse Wu

Corporate Information

Corporate Headquarters

AptarGroup, Inc.
265 Exchange Drive, Suite 100
Crystal Lake, Illinois 60014
+1-815-477-0424

Counsel

Sidley Austin LLP
One South Dearborn Street
Chicago, Illinois 60603

Independent Registered Public Accounting Firm

PricewaterhouseCoopers LLP
One North Upper Wacker Drive
Chicago, Illinois 60606

Stock Exchange

AptarGroup common stock is listed
on the New York Stock Exchange
(symbol: ATR)

Annual Meeting

The Annual Meeting of Stockholders
will be held May 6, 2020. Please
visit **investors.aptar.com** for
more information about this event.

Stock Transfer and Stockholder Services

EQ Shareowner Services
P.O. Box 64874
St. Paul, Minnesota 55164-0874
U.S. & Canada: +1-800-468-9716
International: +1-651-450-4064
For additional information, visit:
www.shareowneronline.com

By Courier or Express Delivery

EQ Shareowner Services
1110 Centre Pointe Curve, Suite 101
Mendota Heights, Minnesota 55120-4100
+1-800-468-9716

Notices regarding changes of
address and inquiries regarding
lost or stolen certificates and
transfers of stock should be
directed to the transfer agent.

Other Information

You may access a copy of the
AptarGroup, Inc. Form 10-K Report
filed with the Securities and Exchange
Commission through the Reports
& SEC Filings link on the Investor
Relations page of our web site at
www.aptar.com or you may receive
a copy of the Report by emailing
us at **investorrelations@aptar.com**.

Website

www.aptar.com

Compared to 2018,
we reduced absolute
energy consumption
as well as greenhouse
gas emissions, and we
surpassed our target of

50%

of our sites sourcing
renewable electricity
globally.

We joined more than

60

other leading global
companies in the Catalyst
CEO Champions for Change
movement focused on
furthering gender equality,
diversity and inclusion
in the workplace.

Our focus on safety
reduced the Total
Recordable Incident Rate
(TRIR) by more than

25%

from year-end 2018.

We have
14,000
employees in
20
countries.

"We believe that strong
governance and responsible
behavior are essential to long-
term success and we continue
to pursue an inclusive
workplace, embrace climate-
focused practices and further a
circular economy where plastic
is reused and recycled."

Stephan Tanda
Aptar President and CEO

50%
of our Board has
been renewed
in the past
five years.

47%
of our sites
are Landfill Free
certified through
our internal
program.

Our Board
of Directors
includes
40%
women and all
Board Committees
are chaired by women
directors.

Our Board of Directors
is comprised of
10
multicultural, experienced
and diverse professionals
who come from a wide
variety of backgrounds
across three continents.



Aptar 

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Suite 100
Crystal Lake, IL 60014

+1-815-477-0424

aptar.com

