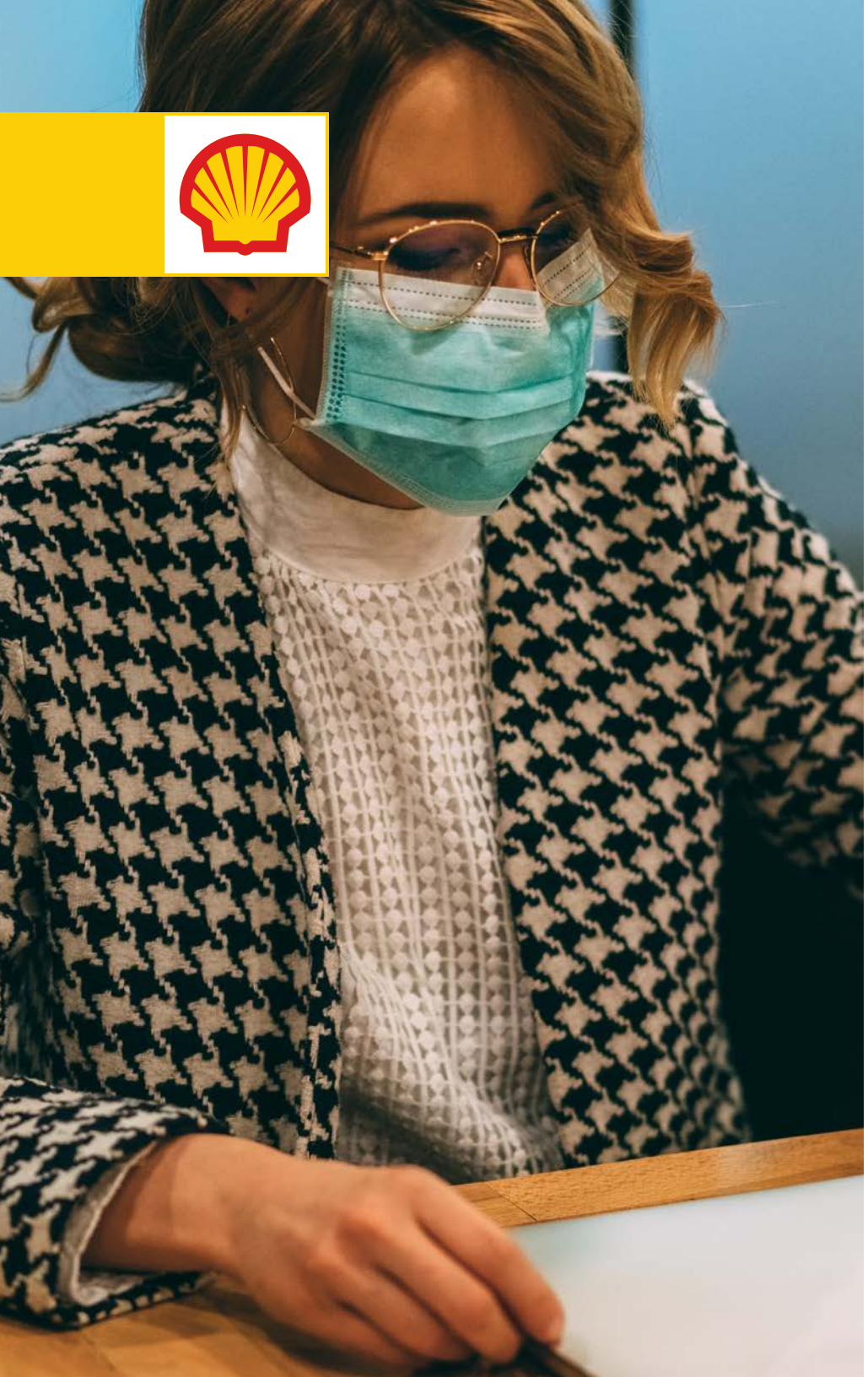

SHELL POLYMERS

MAKING THE EXPERIENCE MATTER

POLYMER TRENDS

How Industry Shifts Can Affect Polyethylene Production

REPORT

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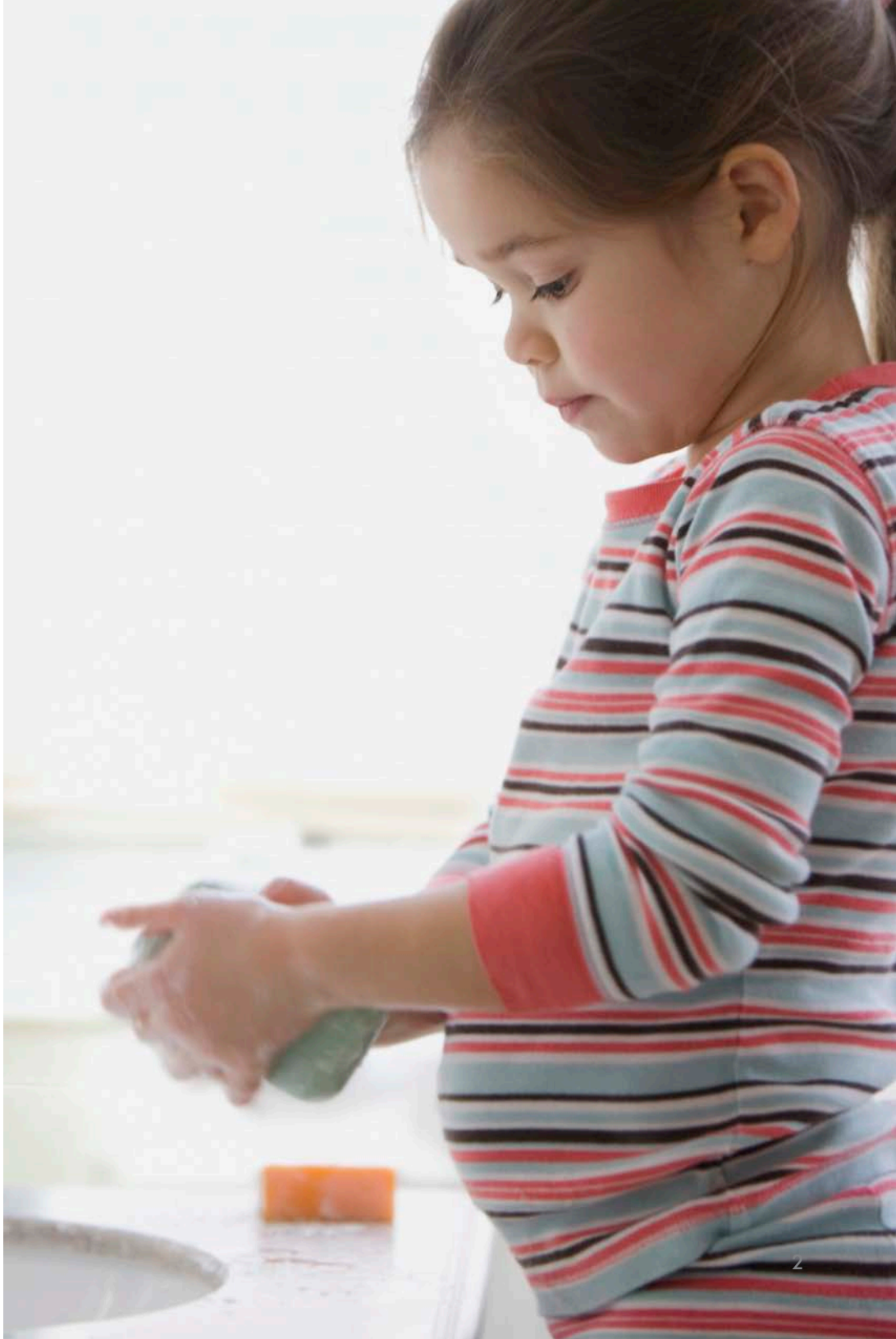
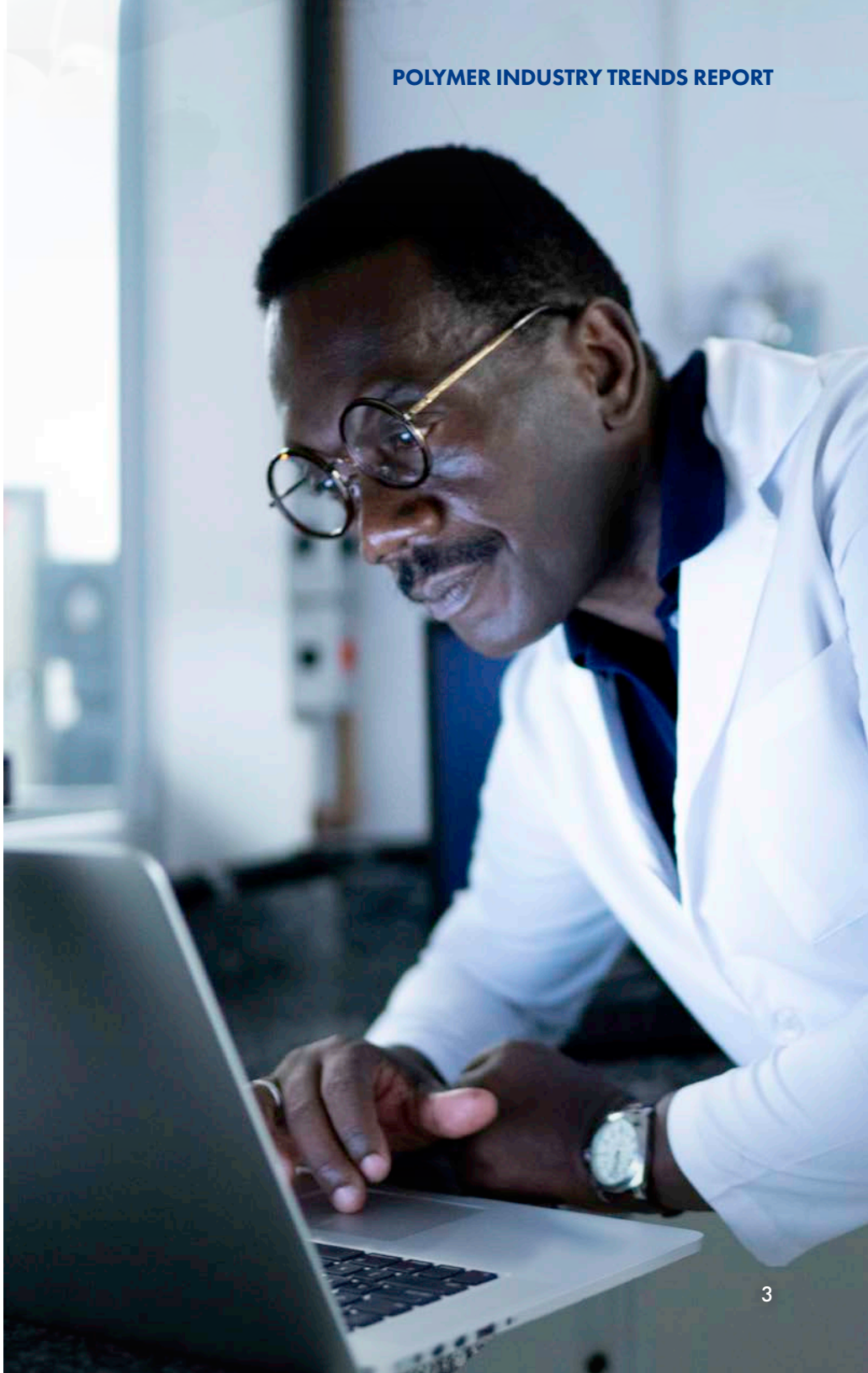


At A Glance

U.S. plastics production is likely to surge in 2021 after the novel coronavirus caused a dip in 2020.[1] Shell Polymers has compiled this report to help provide insights on the outlook for key industries that utilize polyethylene (PE) and other polymers. It is informed by analysis from credible market research firms including ICIS, McKinsey, Grand View Research, Reports and Data, Kantar, and more.

In this report, discover how automotive, construction and infrastructure, healthcare, food and beverage, and home and personal care industries were impacted in 2020, and what that means for plastics converters looking forward to 2021 and beyond.



Healthcare & Hygiene

The COVID-19 crisis has increased demand for PE products due to increased focus on health and hygiene.

Because of its use in ventilators, masks, and personal protective equipment (PPE), the 2020 global pandemic puts plastics at the heart of the fight and treatment. In both healthcare and personal health applications, single-use plastic products help prevent the spread of diseases, eliminating the need for sanitation which is often left up to the medical staff and can leave room for unintentional error in a fast-paced industry.

Polymers Play an Important Role in Pandemic Safety

For decades, the chemicals industry has supplied the world with products that enable a variety of industries to function efficiently on a day-to-day basis. Whether it takes the form of hand sanitizer in blow-molded bottles or medical tools in protective film, the essential plastic products used in health, hygiene, and sanitation are often overlooked. Plastics are valued in healthcare because of their versatility, sterile nature, cost effectiveness, ease-of-use, and utility in new applications and solutions. According to Grand View Research, the global medical plastics market was valued at $23.5 billion in 2019 and projected to expand at a CAGR of 8.6% from 2020 to 2027.[2]

Polyethylene Film is in Demand Due to Hygiene Standards

An already robust market last valued at $70 million in 2016, PE film made of linear low-density polyethylene (LLDPE) gained popularity due to its cost, durability, chemical resistance, and sealability. With COVID-19 forcing restaurants and stores away from reusable items due to sanitation concerns.

The PE film market will likely see an increase in demand for hygienic and flexible packaging materials that is expected to continue to promote the market growth for years to come.[3]

Food & Beverage Packaging

The food and beverage industry is seeing a dramatic increase due to consumer shifts in spending and sanitation concerns.

In the food and beverage industry, single-use consumer products, such as straws, cups, or silverware are providing consumers with an easy and sanitary way to obtain food and beverages during the pandemic. With the enhanced focus on sanitation, restaurants and food and beverage producers are looking for new ways to provide their services, while still protecting the public health.

Packaging Strategies reports that "Food packaging is still the biggest sector for flexible packaging, with 50% of the market, and is estimated at $15.9 billion. If you add beverages, it becomes 59% and $18.8 billion."[6]

Entertainment and Dining Out Went Down

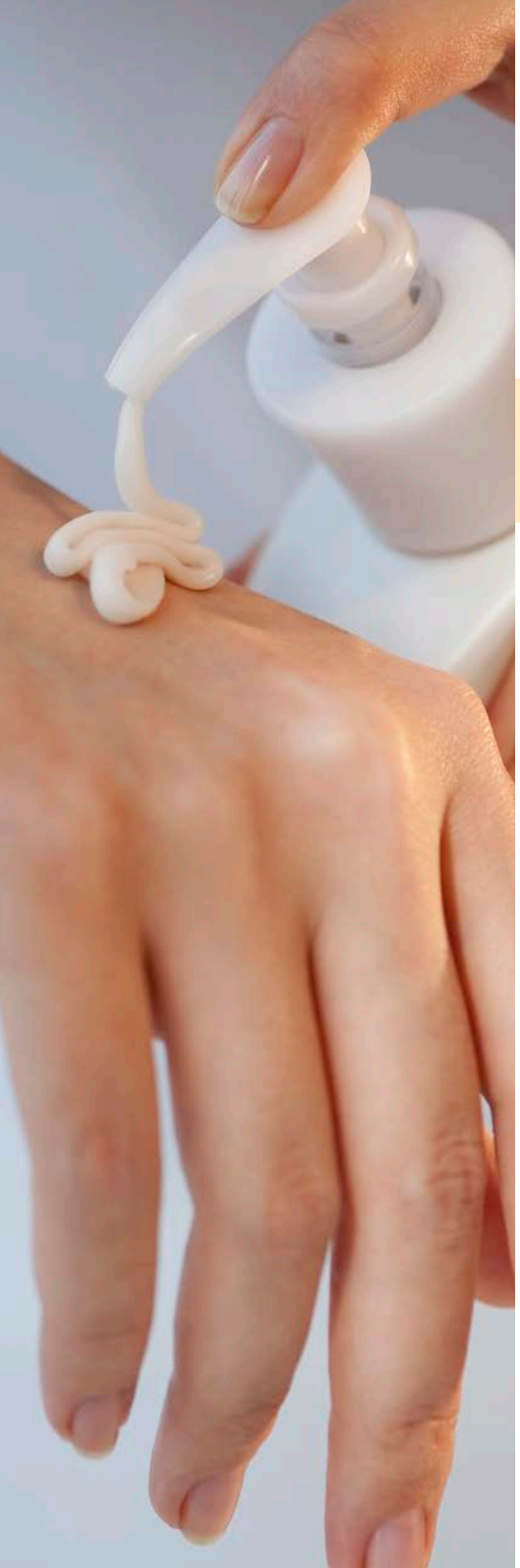
According to IHS Markit, COVID-19 resulted in intense economic uncertainty. This impacts the demand for resin because consumers are responding to the crisis by reducing discretionary spending on leisure and eating out, lowering the need for related polymers products.[4] However, because most sit-down restaurants have pivoted to offering food to-go and enhanced dine-in options, disposable plastic containers and silverware are still required to keep operations running safely and smoothly.

Grocery Demand has Increased

Another trend that has impacted plastics is the increase in food consumption at home during the COVID-19 lockdown. With restaurants and entertainment venues closed, people are spending more in grocery stores on snacks and meal items.[5] Packaging Strategies reports that "Food packaging is still the biggest sector for flexible packaging, with 50% of the market, and is estimated at $15.9 billion. If you add beverages, it becomes 59% and $18.8 billion."[6]

In a Q2 2020 webinar hosted by ICIS, Chief Economist with PLASTICS, Perc Pineda said that sales of consumer essentials — at grocery stores and food and beverage stores — jumped over 25% in March due to the lockdown.[7]

The Center for Disease Control (CDC) states that the risk of infection through food packaging or bags is thought to be very low,[8] therefore packaged food items have been considered the most hygienic way of getting food during the pandemic. PE is a valued material for food packaging because of its versatility, sterile nature, safety, cost effectiveness, ease of use, and utility across many applications.



Home & Personal Care

Home and personal care products are seeing dramatic shifts in consumer habits due to quarantine and working from home.

With the COVID-19 pandemic keeping people in their houses, the virus is changing the home and personal care narrative by eliminating the need to maintain personal care routines and increasing home maintenance routines. As the demand for household care products continues to rise, PE production will also increase as HDPE's chemical resistance makes it the ideal choice for household care product packaging.

Personal Care Products Haven't Been Needed

Quarantine and the work-from-home order are causing a downturn in purchasing personal care products that use plastic packaging such as mouthwash, fragrance bottles, shampoo, conditioner, and more. Kantar's WorldPanel reports that consumers who work from home at least once a week have 11 fewer personal care occasions, including but not limited to, hair washing, putting on makeup, or shaving, per week than those who don't. With increased videoconferencing and reduced need to leave the house, cosmetic usage is expected to decrease by as much as 402 million times per week as more social events are canceled.[9]

On the flip side, over-the-counter healthcare products, such as bottled medicine, increased by 25% around March 2020, when stockpiling for the quarantine started to happen.[10]

Home Cleaning Products Are Up

According to IHS Markit, plastics will also benefit from increased spending on household cleaning, hygiene, and personal protection products, as well as higher domestic food consumption from a more home-based life. When quarantine became reality for many, consumers stockpiled home care products, causing sales to increase by 40%.[11] As 2020 continues to unfold, consumers are expected to continue spending more than normal on household care products.[12]

Over-the-counter healthcare products, such as bottled medicine, increased by 25% around March 2020.

Construction & Infrastructure

The integration of plastic components like PE pipes in infrastructure makes it a critical part of the construction industry.

According to market intelligence firm, Reports and Data, the global construction plastics market was valued at $75.6 billion in 2018 and is expected to grow at a Compound Annual Growth Rate (CAGR) of 6.9%. Primarily used for seals, profiles (windows and doors), pipes, cables, floor coverings, and insulation, plastics are a safe, lightweight, and economically-priced material with applications in both residential and non-residential constructions.[13]

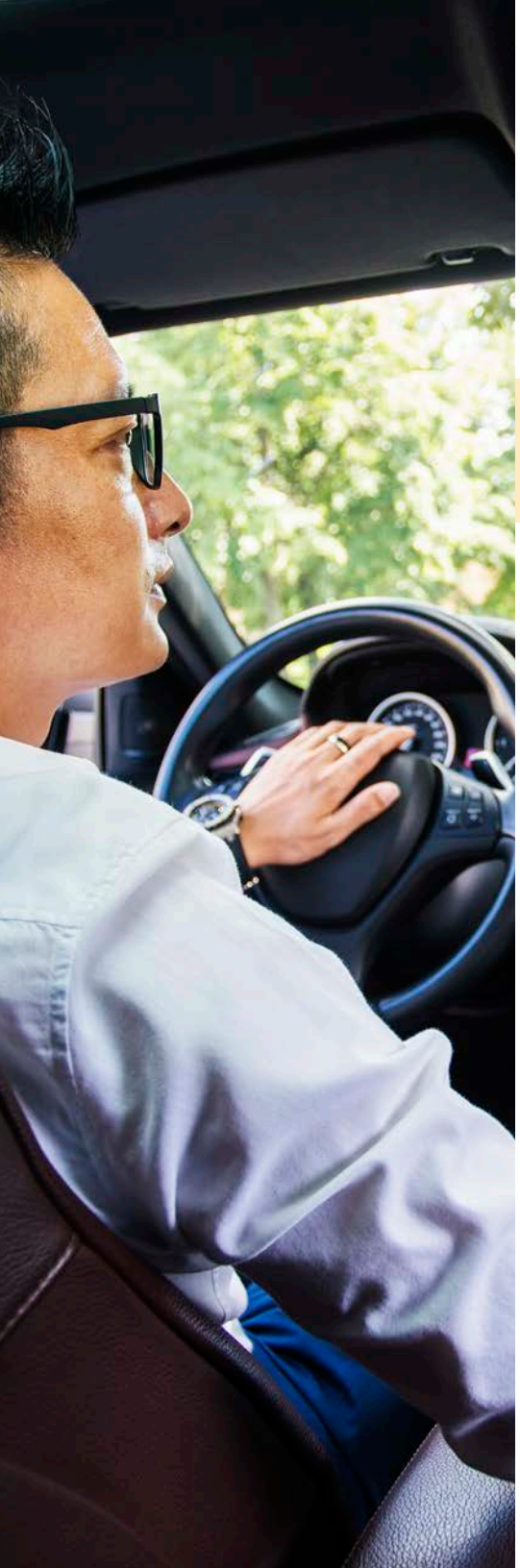
HDPE Gains Momentum in Construction

Between 2020 and 2025, the HDPE market is expected to register a CAGR of over 4%. According to Mordor Intelligence, the major factors driving the market include an increased use of HDPE plastic pipes in industry sectors such as sewage and manholes, cold water supply, fire loops, and more. Because PE is lighter than alternative materials commonly used in construction, such as metal, it's easier to install and requires less special equipment. Pipes made from HDPE tend to be more durable, withstanding high-impact conditions such as harsh weather that might cause alternative materials to crack.[15]

Market for Plastic Pipes Continues to Dominate

Based on application, plastic pipes are anticipated to be the largest segment of the construction plastics market. The market is driven by a number of factors such increasing demand for lightweight materials and major qualities that plastics possess such as thermal conductivity, durability, and scratch resistance.

Plastic pipes currently hold 71.4% of the total market share in construction plastics.[14]



Automotive

Ranging from blow-molded gas tanks to injection-molded engine parts, PE is a key component of automotive manufacturing now and in the long run.

The automotive industry is a powerhouse in the global economy, providing more than eight million jobs in the U.S. alone and globally yielding over $5,000 billion in revenue since 2017.[17] Plastics play a large role in this. According to the Independent Commodity Intelligence Services (ICIS), a typical automotive vehicle contains over 1,000 plastic parts and light-weight vehicles make up over 30% of the demand for plastics resins.

Sustainability Drives Up Need for Plastic Parts

With the increasing popularity of electric vehicles, the growth rates of plastics such as PE are expected to increase, while the consumption of engineering plastics is expected to decline as they are not necessary to fulfill the requirements of plastic electric car components.[19] Because it can reduce the overall vehicle weight, be customized to address electric vehicle-specific requirements, and feature additional strength and safety benefits, PE is an ideal material for electric vehicle parts. On top of that, PE parts are cheaper to produce than metal parts, making them a more economic choice for automotive manufacturers to boost profits in a shorter time frame.

Global Pandemic Brings Automotive Sales Down

Because of the COVID-19 pandemic that started to escalate at the end of Q1 2020, IHS Markit predicts global light vehicle production is expected to drop more than 20%, which is nearly a 19 million unit decline over 2019. According to their estimates.

The biggest disruption to the industry hit automotive manufacturers in the first half of 2020, with year-over-year output expected to be down by 24% in the first quarter, and by 44% in the second quarter as the pandemic grew.[18]

Looking into the Future of Polyethylene

At Shell Polymers, our team of Polymer Pros and Pioneers are committed to providing customers with expert insights, backed by years of industry experience. We asked members of our technical team to share what they've observed in 2020 and their thoughts on how it could impact the industry moving forward. Here are some of the highlights:

"Almost universally, the polymer industry has banded together to support our families, our friends, our neighbors, and the broader communities in which we operate."

"Demand for products will continue to grow and lift up many industries, but it is the demand for solutions, and our ability to provide them, that I think sets this industry apart."

- Elliot Carnevale, Technical Service Engineer | Injection Molding

"Everyday living has been significantly impacted by Covid-19 and will be for the foreseeable future. As we work towards a new normal, demand for everyday essentials are at record highs."

"Converters are striving to keep up with unprecedented demand while still innovating with new packaging products that are clearer, stronger and more sustainable in today's circular economy."

- Dan Falla, Senior Technical Service Engineer | FIlm

"Demand for PE packaging has remained strong during the pandemic and is expected to remain consistently strong or increase in line with changes in consumer behaviors and purchasing habits in response to Covid-19."

"With COVID-19, the demand for plastic in durable goods suffered, and while this demand has begun to rebound, it is not expected to get back to pre-pandemic levels until 2021."

- Natalie Holmes, Polyethylene Product Manager

"At the same time, the industry can pinpoint where it was able to adjust its operations to satisfy the pandemic requirements and implement that into its day-to-day processes, making for an overall better operation."

"Our industry has never seen such a dramatic shift in demand as it has with the emergence of COVID-19. As people were stocking up during lockdown, the demand for single-serve food & beverage products saw an immediate increase."

- Michael Misco, Technical Service Engineer

ABOUT SHELL POLYMERS

Shell Polymers is dedicated to creating an unrivaled customer experience. That's why we're helping create a stronger PE supply chain and building a plant that will produce 3.3. billion pounds of polyethylene a year.

Its strategic location in Monaca, USA, puts it within 700 miles of the majority of the current North American polyethylene industry.

The site will also house a large application hall that will have commercial-sized units for multilayer linear, low-density polyethylene film, high-molecular-weight film, pipe and injection and blow molding. Shell Polymers will also have a lab dedicated to quality control that ensures the product meets the required specifications, as well as a separate lab for conducting in-depth analysis of Shell Polymers resin and parts made from it. These buildings will also be the home of over 50 industry experts known as Shell's "Polymer Pioneers" and "Polymer Pros".

Using these state-of-the-art conversion machines and technical experts with proven track records in the industry, Shell Polymers will work with customers to troubleshoot issues, raise operational performance, or trial new product solutions.

For further information, please visit our website at
www.shell.com/polymers

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