

The State of the U.S. Coatings

Resurgent Growth



Industry 2021: Meets Shortages, Allocations, and Late Deliveries

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Much has happened since last year, when I last addressed the State of the U.S. Paint and Coatings Industry in the August 2020 issue of *CoatingsTech*. At that time, I indicated that no one other than the most committed optimist would predict anything better for 2020 than a global economy suffering from a minimum of a 4-7% decrease in the global Gross Domestic Product (GDP), compared to the 2019 pre-COVID-19 prediction of an increase of 2.9%.

Clearly, I was being a bit of a pessimist because, thanks largely to a v-shaped recovery, the global GDP for 2020 declined by only 3.3%, and the U.S. GDP by 3.5%. Estimates for 2021 from the World Bank suggest global GDP growth of 5.6%, and 6.8% for the United States, with China leading the pack at a whopping 8.5%, so recovery is well underway.

This is not to say that things are “back to normal”—not by a long shot. Despite the recovery, *global output will still be about 2% below pre-pandemic projections by the end of this year.*¹ Moreover, at the end of June 2021, the entire supply chain was a mess:

- Production of virtually everything used in manufacturing industries, such as paint and coatings, cannot keep up with demand.
- Shipping costs doubled and, in some cases, tripled; load-to-truck ratios were up anywhere from 400%–1,700% year-over-year, April 2020–April 2021.
- Just as the great ports of the United States were beginning to become less backed up in May, a coronavirus outbreak forced Chinese authorities to shut down parts of Guangdong province, which is home to Yantian, one of the world’s busiest ports and a major gateway for containerized exports. As of late June, the port was only back to 70% capacity operation, with approximately 50 ships backed up, and roughly 350,000 loaded containers stranded on the docks.²
- In April 2019, the price of a common lumber western spruce and fir two-by-four was around \$400 for every 1,000 linear board feet. The price rose to approximately four times that amount by late May 2021, hitting just over \$1,600 for every 1,000 linear board feet, before dropping to \$960 in June.³ Lead times extended to 12 weeks or more, up from only two weeks or less, pre-pandemic.
- As a result of the “Great Freeze” in February 2021 on the Gulf Coast, production across the Permian Basin dropped by an average of more than 2 million barrels/day over three days during the third week in February.⁴ As of the end of June, we found that a surprising number of products from this area are still subject to force majeure and/or allotment and the supply chain, with individual product exceptions, won’t be fully functional until early in 2022.
- Epoxy resins, for all intents and purposes, are simply not available, a situation that will also not be rectified until early 2022.

- Raw material price increases for a basket of components used to make paints and coatings; adhesives; sealants; caulks; plastics (e.g., ABS, PVC, and acrylic); and similar materials used in construction will increase anywhere from 9% to 20% for 2021, based upon what we are seeing at the end of June.

The dominoes just keep on falling.

Yes, COVID-19 played its part as one component of what had turned into a “perfect storm,” with regard to the North American paint and coatings industry by February 2021, as did the “Great Gulf Freeze,” but the current situation has been a “storm in the making” for the past 8–10 years.

Rising consumer demand⁵; historically low mortgage rates⁶; serious problems with insufficient personnel and equipment in the trucking sector⁷; an extremely high savings rate; high consumer confidence; and other lesser factors have all affected the economy during the past several years to bring us to where we are today.

For this reason, it is an exercise in futility to blame COVID-19, the Gulf Freeze, the shortage of trucks and truck drivers, or any other factor or set of factors alone. The problem is that U.S. industry, in general, has failed to build resilience into its supply chains, and we are now paying the price for the industry’s negligence.

In March of this year, the “American Rescue Plan” placed an additional \$1.9 trillion in new stimulus funds into circulation at a time when many experts felt we were on the cusp of a consumer boom. This will only exacerbate the situation for the most prepared of all manufacturing and construction firms, and will potentially wreak havoc on less-prepared producers of raw materials and finished goods, that have failed to build sufficient resilience into their supply chain philosophies and practices.

IS A BOOM GOOD NEWS?

On the surface, a consumer boom sounds like good news, but—upon closer examination—it really bears a mixed message. With consumer spending up, prices tend to rise. People travel more, raising the demand for gasoline, diesel, and jet fuel, leading to shortages and higher prices. With the current low interest rates, an increasing number of millennials will wish to purchase their first homes or “buy up,” leading to an even worse residential home shortage than is currently the case, while driving up housing costs. As a result of the shortages, and resultant price increases, of lumber and other construction materials, the average new home costs about \$40,000 more today than it did at this time last year.⁸

We quickly see a picture forming: a picture in which inflation is increasing; lumber, steel, aluminum, PVC, ABS, epoxy, acrylics, and virtually all other manufacturing and construction raw material costs are rising; and the finished goods made from those raw materials are forced into higher pricing, whether a gallon of paint, a pail of construction adhesive, or a new residential home.

It is a picture in which the already challenged U.S. trucking fleet and driver shortage cannot be addressed soon enough—a picture in which facility shutdowns have exacerbated already existing shortages and lengthened supply lines that were already strained. In short, we have a mess—and we have a mess because the global supply chain is fundamentally lacking *resilience*, i.e., lacking the capacity to recover from difficulties quickly.

Clearly, changes need to be made in the global supply chain, and they need to be facilitated by those companies that rely upon it not only to remain in business but to flourish. The only way in which to increase resilience in the supply chain is to create greater visibility across the entire supply network, coupled with greater agility in responding to shifts in the environment.

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Diversification—of the supplier base, production footprint, and transportation partners—will be increasingly necessary to avoid the pitfalls that we are experiencing in 2021 and contingency planning takes on much greater importance than has heretofore been the case, when such processes were more talked about than implemented.

Those who prefer to see the current, chaotic situation as a direct result of the pandemic, in light of the assumption that “things will return to normal” at some point in the future, have a very rude awakening ahead of them. Those enterprises that understand that the current issues have been developing over a period of many years, and that they will not go away just because COVID-19 does, are already beginning to realize that they need to take a new approach toward spreading their risk—even if it comes at a higher cost.

The crisis of 2020 made clear that the old ways of purchasing will no longer produce optimal results—we have had a powerful light shone on the importance of visibility across the supply chain. Increased data sharing by raw material producers, adhesive manufacturers, lumber suppliers, steel producers, et al., and end-use customers is truly going to be a necessity to avoid the kinds of surprises that are becoming increasingly common, and that wreak havoc with people and systems because they were not anticipated.

Of the nearly 150 executives responding to the Foley & Lardner LLP Global Supply Chain Disruption and Future Strategies Survey,⁹ 70% agreed that, as a result of the lessons that they have learned from the pandemic, sourcing from the lowest-cost supplier will no longer be the sole focus in making supply decisions. Companies will place greater emphasis on partnering with suppliers that have more resilient and flexible processes to assure continuity of supply.

Sixty-two percent of respondents in this same study agreed that the pandemic will lessen companies’ focus on just-in-time manufacturing models in favor of warehousing and inventory banks for additional protections against shutdowns. Companies will reduce their reliance on single sources for the supply of various materials and components. Where dual sourcing is a viable option,

manufacturers can, and should, qualify alternate suppliers with manufacturing operations in different locations.

It's not pretty, it's not going away anytime soon, and we won't see the establishment of the "new normal" until 2022. Isn't this plenty of incentive for anyone with common sense and a strong survival instinct to begin handling their supply chains differently going forward than they have in the past? Building resilience into the entire process is the only way forward, and it will require that we spend less time being concerned with the lowest price, the fastest delivery, minimum inventory, and the longest payment terms—and more time focusing on visibility, agility, diversification, and contingency planning.

With this in mind, it is time to take a look at an overview of how the U.S.

paint and coatings industry performed in 2020, is performing in 2021, and is likely to perform in 2022.

THE STATE OF THE U.S. PAINT AND COATINGS INDUSTRY, 2020-2022F

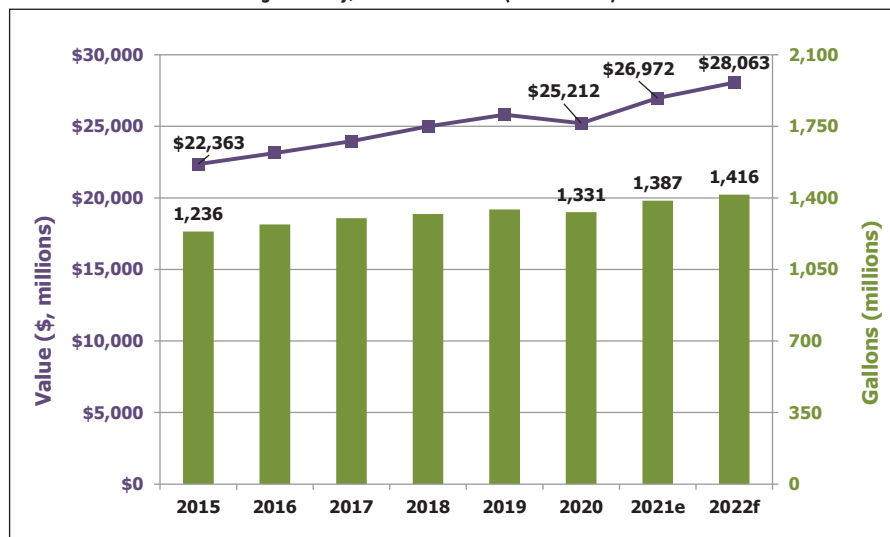
Regarding the "State of the U.S. Paint and Coatings Industry," it is always important to look at the macroeconomic picture that surrounds all businesses that depend upon the specialty chemical stream for their livelihood. While the manufacturing sector in the United States is only weakly correlated to GDP under normal circumstances, the relationship becomes more pronounced under conditions of extreme economic duress, such as the COVID-19 crisis.

According to the Congressional Budget Office, GDP in Q1 of 2021 was

+6.4%, compared to overall GDP of -3.5% for 2020, and the GDPNow¹⁰ estimate for Q2 is +8.3%, showing a clear pattern of robust recovery from the pandemic-induced recession. It is within this context that we now turn to the U.S. coatings industry performance during 2021 so far, and its anticipated performance during the remainder of the year and into 2022.

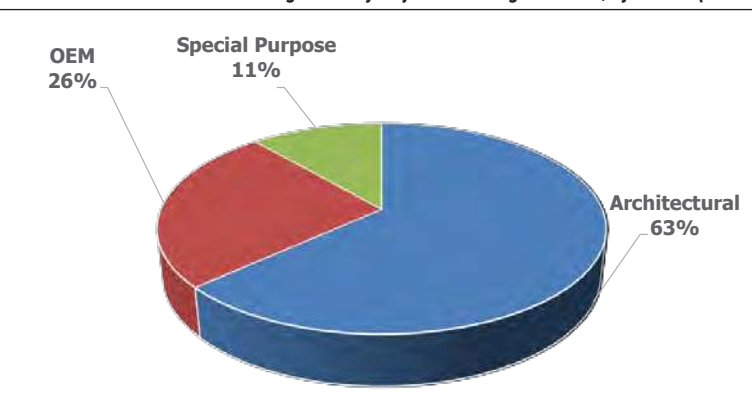
The year 2021 is expected to be a mixed year for paint and coatings in the United States, with some "relative winners" but also with a couple "losers." The year 2020 ended with production of 1.3 billion gallons valued at \$25.2 billion, down 0.9% in volume and 2.3% in value from 2019, but the outlook for 2021e suggests full-year production of 1.4 billion gallons valued at \$27.0 billion, up 4.2% in volume and 7.0% in value over 2020 (Figures 1-3).

FIGURE 1—U.S. Paint and Coatings Industry, Volume and Value (2015–2022f)



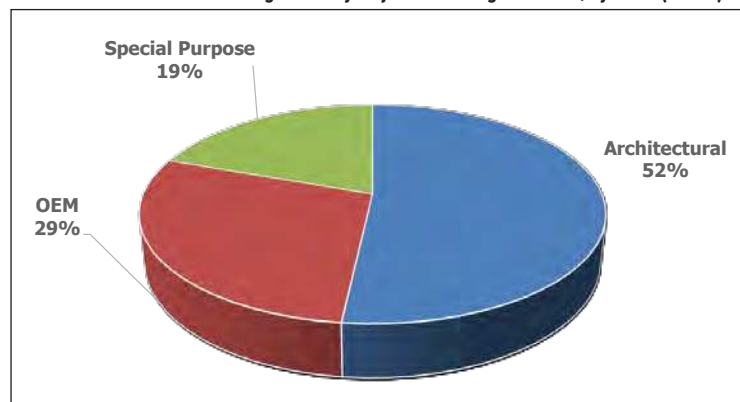
Source: The ChemQuest Group, Inc., estimates

FIGURE 2—U.S. Paint and Coatings Industry Major Market Segmentation, by Volume (2021e)



Source: The ChemQuest Group, Inc.

FIGURE 3—U.S. Paint and Coatings Industry Major Market Segmentation, by Value (2021e)



Source: The ChemQuest Group, Inc.



As a result of aggressive consolidation, the top 10 global coatings firms accounted for 43.5% of global sales in 2020, up from 42% in 2019. Taking this one step further, the top three global players account for 62.4% of the top 10 coatings firms’ sales in 2020, which is down from 63.4% in 2019 (Figure 4). “Winners” and certain “losers” within the U.S. paints and coatings market sub-segments in 2020 include:

- **Winners**
 - Architectural coatings (residential, in particular, due to pent-up housing demand)
 - Packaging coatings
 - Coatings for medical devices
- **Neutral**
 - Commercial and infrastructure (new construction and refurbishment)
 - Automotive OEM
 - Refinish
- **Losers**
 - Transportation OEM, particularly aerospace
 - Protective coatings (oil and gas hit particularly hard in 2020)

ARCHITECTURAL PAINTS

Architectural coatings sales are highly correlated with the health of the housing/construction market. The architectural paints segment currently accounts for 63% of the volume, and 52% of the value, within the U.S. coatings industry (Figures 2, 3).

Despite COVID-19, architectural coatings grew 4.2% in value in 2020, compared to 2019 with volume growth of 3.8%. We anticipate continued, albeit slightly slower, volume growth during 2021e as a result of at least a certain percentage of the workforce returning to their offices from home, and estimate an increase of 2.5% in volume and an increase in value of 4.8% for 2021e, resulting in volume of 877 million gallons valued at \$14.0 billion (Figure 5).

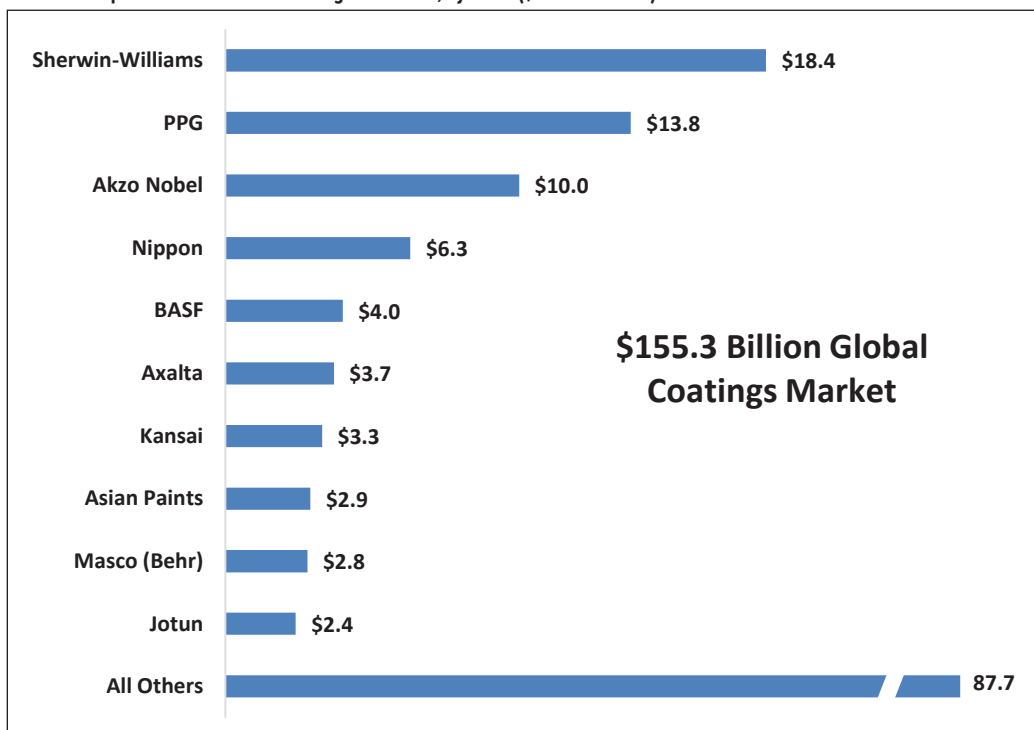
The percentage of professionally (PRO) applied paint had continued to grow, unabated, since 2012, reaching a relationship of 63-64% PRO to 36-37% do-it-yourself (DIY) in 2019, the highest that this ratio has been since 2006 (Figure 6).

Going forward into 2020, we had expected this relationship to stabilize,

but the COVID-19 effect caused the PRO share to nosedive between mid-March and mid-May as homebound consumers decided to purchase paint and apply it themselves, rather than hiring a PRO to do it for them. The ratio of DIY:PRO ended up at 42%:58% for 2020 and is expected to close the year 2021e at 40%:60%.

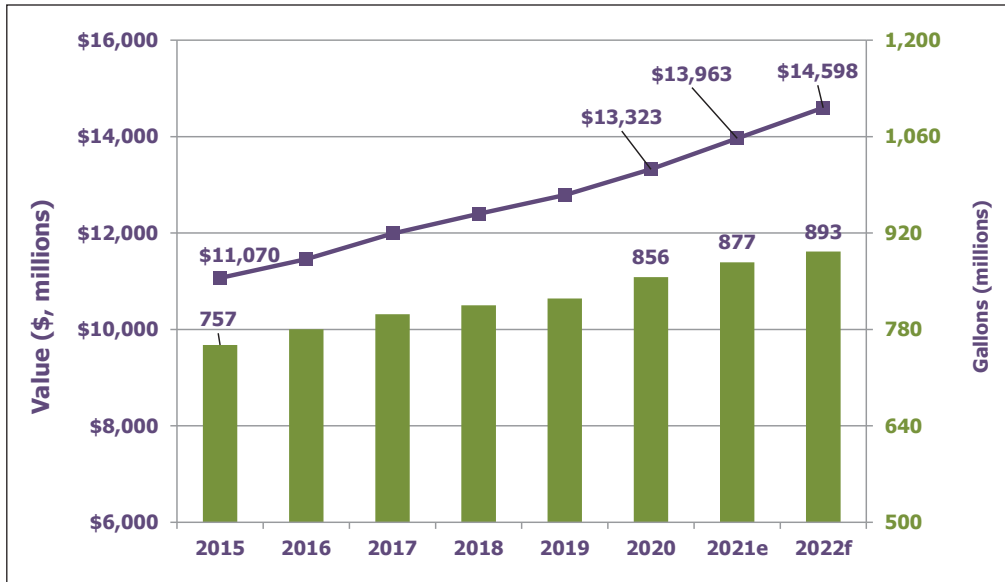
With the relaxation of shelter-in-place mandates, we would expect DIY activity to decrease, and PRO activity to increase—and this is precisely what began happening in mid-May of this year. The rate of increase, however, will depend upon when the effects of COVID-19 are fully mitigated; when the majority of businesses either return to work or decide that a certain percentage of working time can be done from home; to what degree the homeowner’s behavior has become permanently altered; and how long the post-pandemic economic upturn lasts. As of early July, it seems reasonable to anticipate that the ratio of DIY:PRO for 2021 will end the year around 40%:60% and PRO will continue trending up toward 62-63% during 2022/2023.

FIGURE 4—Top 10 Global Paint and Coatings Producers, by Value (\$Billions—2020)



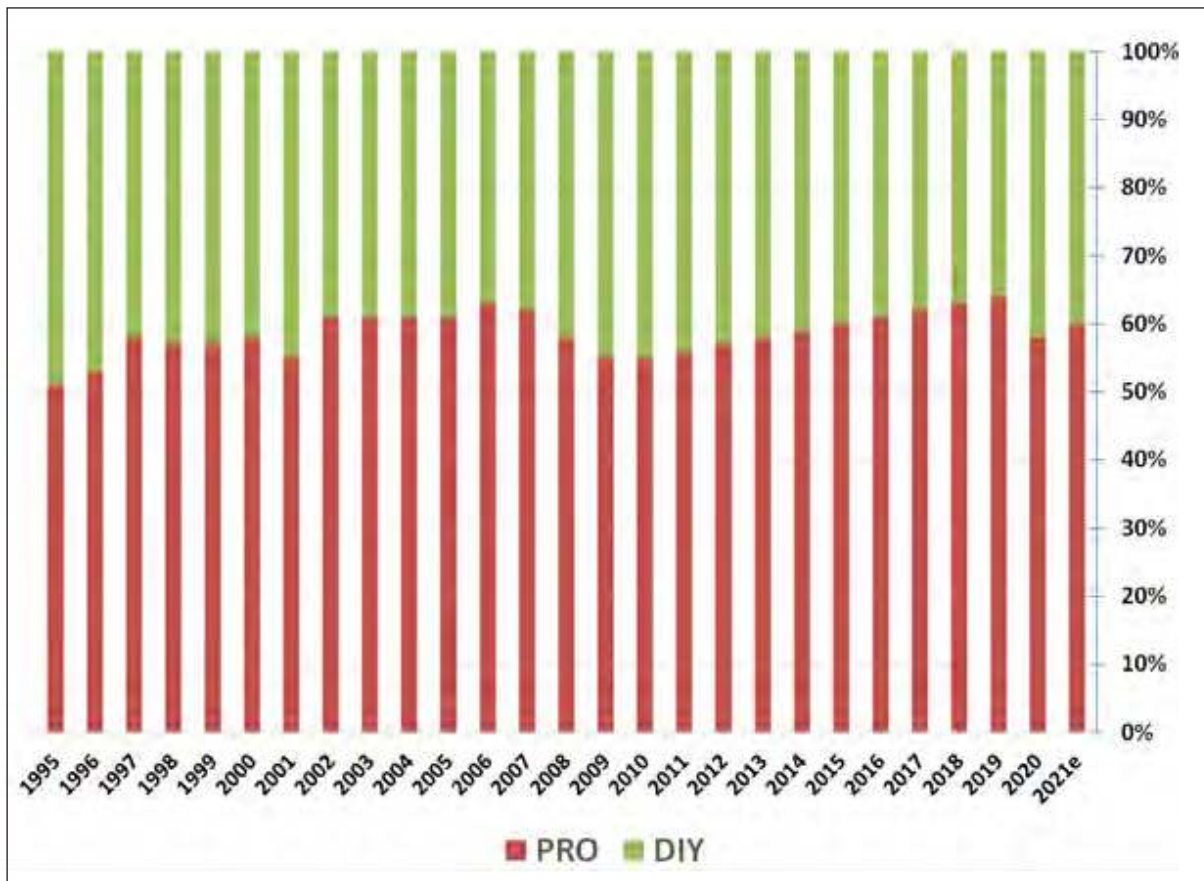
Source: The ChemQuest Group, Inc., estimates

FIGURE 5—U.S. Architectural Coatings Market Segment, Volume and Value (2015–2022f)



Source: The ChemQuest Group, Inc., estimates

FIGURE 6—U.S. Architectural Coatings, PRO vs. DIY (1995-2021e)



Source: The ChemQuest Group, Inc.

The State of the U.S. Coatings Industry 2021

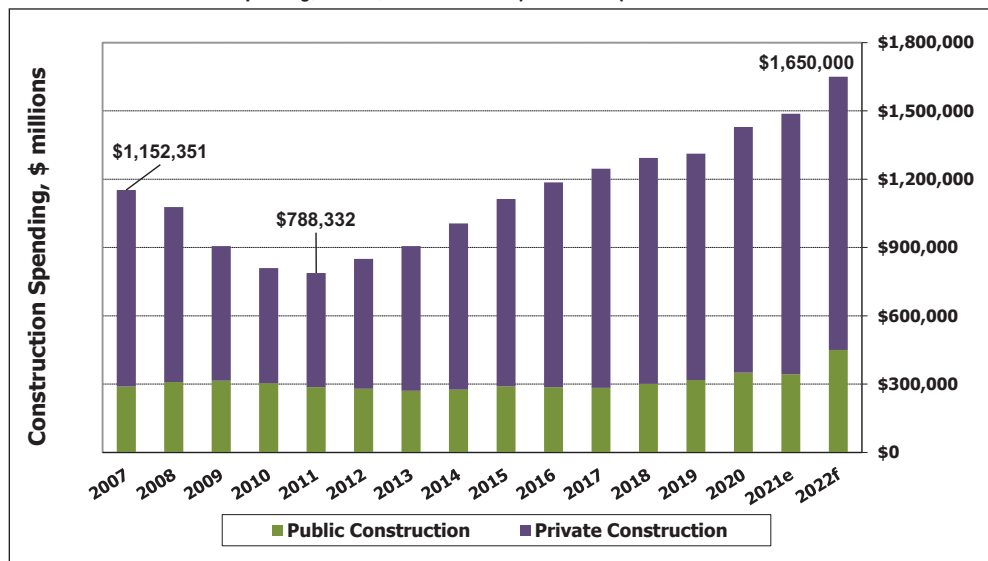
A major driver of the architectural coatings segment is construction, which has a very close correlation to coatings volume. Because construction in the United States in 2020 continued its prolonged recovery from the unprecedented low point experienced in 2011, this was good news for architectural paints and coatings. Year-over-year growth

in construction spending for 2020 was 9.0% and is anticipated to increase by an additional 4.1% during 2021e, for a total of \$1.49 trillion (Figure 7).

Another driver for the architectural coatings segment is remodeling, and the activity in this area is monitored by the Joint Center for Housing Studies of Harvard University's Leading Indicator

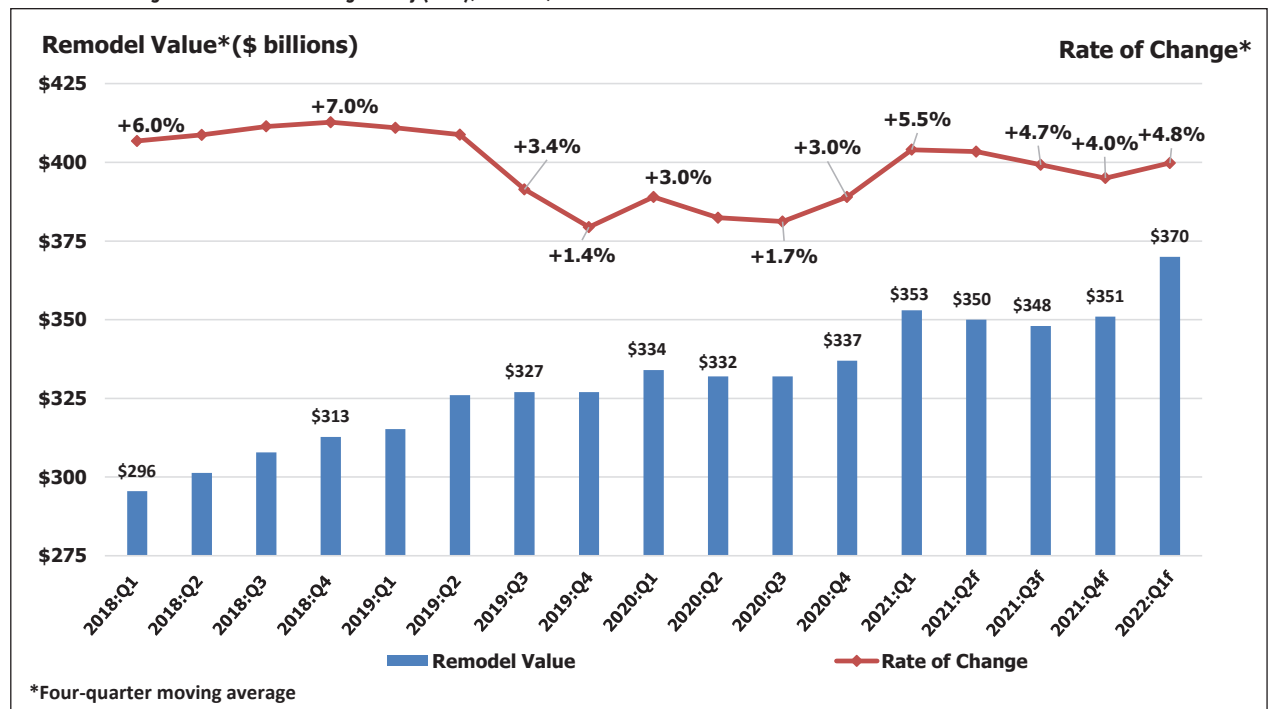
of Remodeling Activity (LIRA). As shown in Figure 8, 2018 and 2019 were strong for remodeling, but began to slow toward the end of 2019 when compared to the very active growth in the earlier period. Growth during 2020 was minimal, but is forecast to improve significantly during the period Q1 of 2021 through Q1 of 2022f (Figure 8).

FIGURE 7—U.S. Construction Spending, Private, Public and Total (2007-2022f)



Source: The ChemQuest Group, Inc.

FIGURE 8—Leading Indicator of Remodeling Activity (LIRA), 2018-Q1, 2022f



*Four-quarter moving average

Source: Joint Center for Housing Studies of Harvard University

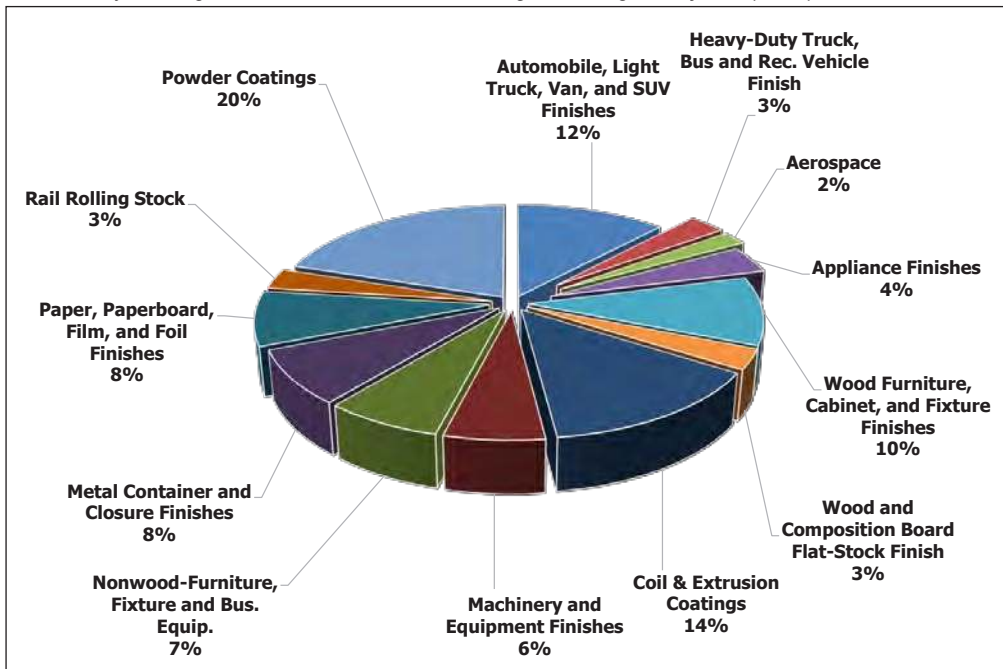
INDUSTRIAL OEM

The industrial OEM segment is comprised of more than a dozen sub-segments, of which appliances, HVAC, fireplaces, microwaves, automotive OEM (including rigid and flexible automotive exterior trim systems, brake systems, et al.), coil coatings,

wood furniture and cabinets, and metal furniture and fixtures are a few representative coatings areas (Figure 9). The industrial OEM segment tends to be driven by a variety of factors, as a result of such a diversity of goods, although most are influenced by the macroeconomic environment, and especially by industrial production.

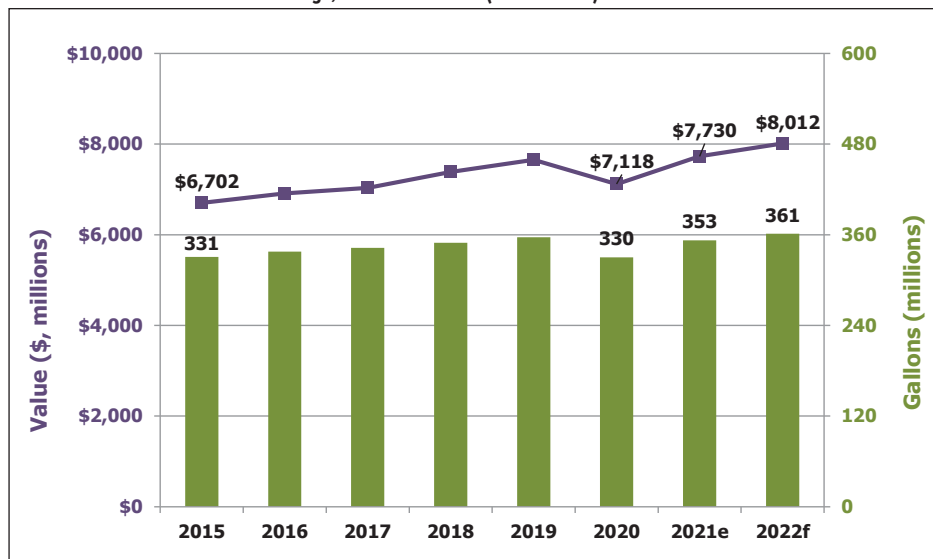
The U.S. industrial OEM segment declined in value 7.0% in 2020 (-7.6% volume; +0.6% price), generating \$7.1 billion in sales (~330 million gallons by volume). The current 2021e forecast is for an increase of 8.6% in value and 6.8% in volume, with pricing increasing by 1.8%, resulting in \$7.7 billion in sales on 353 million gallons (Figure 10).

FIGURE 9—Major Sub-segments of the U.S. Industrial OEM Coatings Market Segment, by Value (2021e)



Source: The ChemQuest Group, Inc., estimates

FIGURE 10—U.S. Industrial OEM Coatings, Volume and Value (2015–2022f)



Sources: Federal Reserve Bank of St. Louis; The ChemQuest Group, Inc., estimates

The year 2019 was not stellar for the automotive sub-segment (defined as the total of domestic production, transplants, and imports of automobiles, light trucks, vans, and SUVs). The challenges continued into 2020 with a decline in automotive builds of 18.4%. Automotive OEM builds are forecast to increase in 2021, however, by roughly 7% (Figure 11).

The “COVID-19 Factor” is certainly responsible for a portion of the 2020 decline, but equally important were the effects of 2019 (i.e., pre-pandemic) setbacks, such as slowing consumer spending due to increasing consumer debt, China trade conflicts, the imminent Brexit, and general global economic slowdown. Going forward into 2022, it is reasonable to expect flat growth from 2021.¹¹

Trends in the industrial OEM market segment are driven by the need for products that create operational efficiencies (increased productivity/reduced labor/decreased cycle times); increased sustainability (reduce CO₂ footprint and product end-of-life [EOL] reuse/disposal); and continual innovation (infrared reflectance/noise vibration/insulation), et al.

SPECIAL PURPOSE COATINGS

The major end-markets for special purpose coatings include automotive refinishing, industrial maintenance/protective coatings, traffic-marking paints, marine coatings, and aerosol paints (Figure 12). The special purpose coatings market segment serves far fewer end-market segments and sub-segments than industrial OEM coatings, but—as an overall segment—typically commands higher margins than OEM coatings.

In 2020, special purpose coatings declined in value at a rate of -11.2% (-10.5% in volume; -0.7% in price) and contributed \$4.8 billion (~145 million gallons) of the \$25.2 billion generated by the U.S. paint and coatings industry. This represents only 11% of the volume but 19% of the value of all coatings produced. In 2021, we are expecting an increase in value of special purpose coatings, from \$4.8 to \$5.3 billion, with volume increasing from 145 million to 157 million gallons (Figure 13). This represents a forecast sales dollar increase of -10.6% (-8.3% in volume and -2.3%

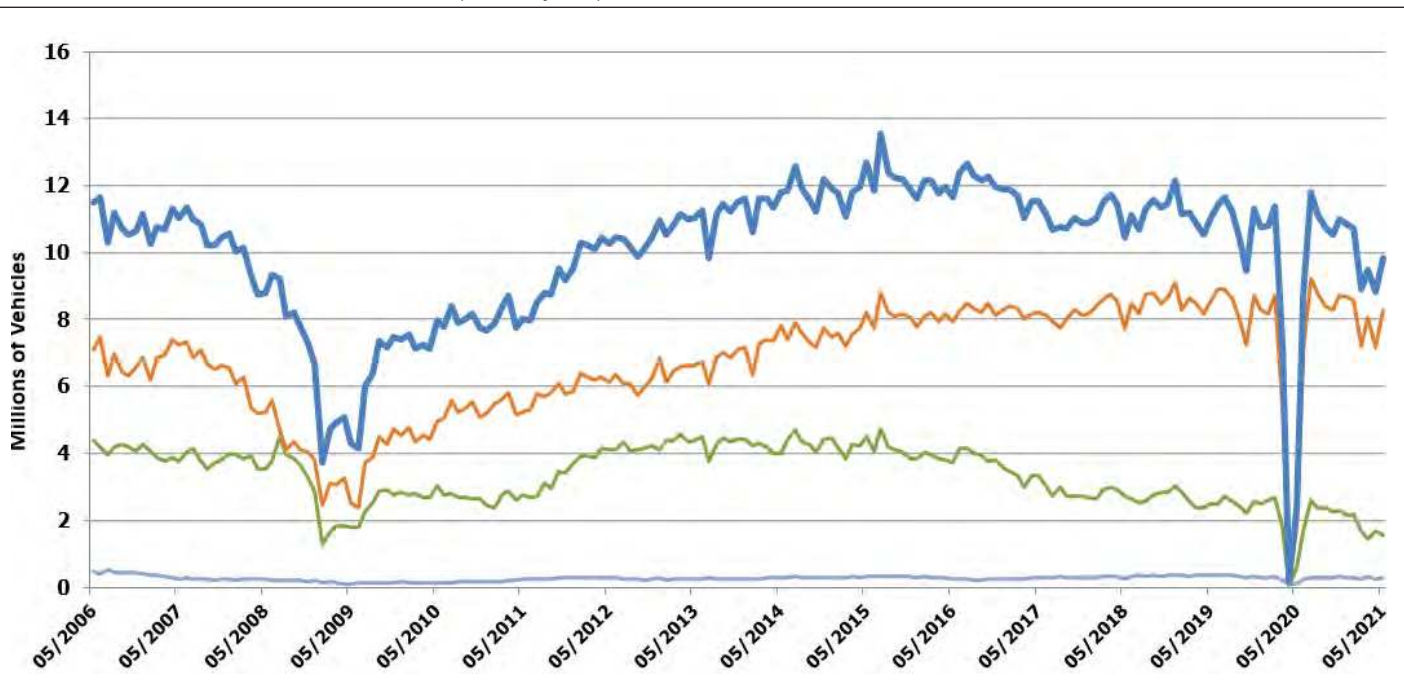
in price). In 2022f, we are forecasting \$5.5 billion on 161 million gallons, for an increase in value of 3.3% and in volume of 3.0%.

Special purpose coatings are dominated by automotive refinish coatings and industrial maintenance/protective coatings. As a result, this segment tends to track accident rates, automotive sales, size of the car parc (total number of registered vehicles in use at any given time), and total miles driven (refinish paints)—as well as industrial construction, infrastructure refurbishment, and crude oil prices.

U.S. sales of automotive refinish paints were \$2.1 billion on 37 million gallons in 2020, and are projected to increase slightly in 2021e to \$2.3 billion on 40 million gallons. Automotive refinish coatings are directly tied to the accident rates, and indirectly to the total number of miles driven.

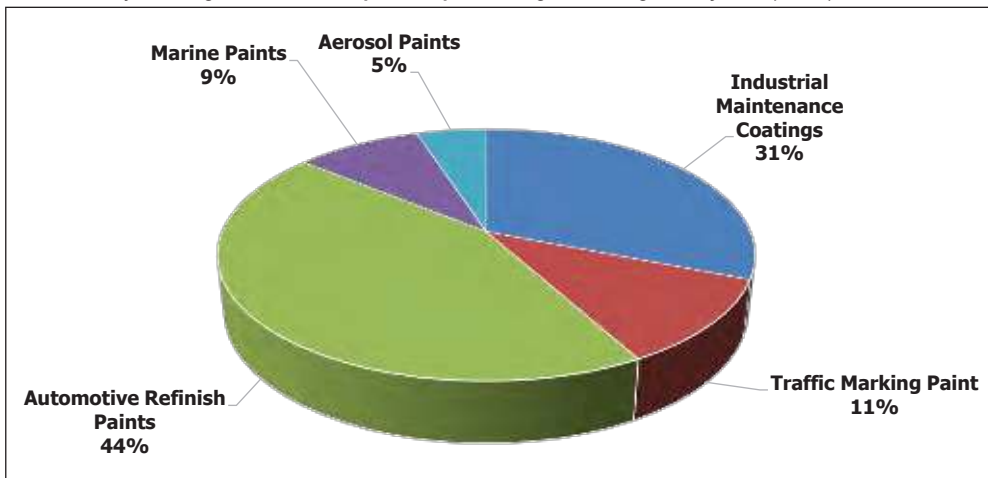
Sales of automotive refinish coatings are, therefore, always teetering on the brink of growth versus decline, depending upon a number of conflicting factors that can dominate the situation at any given time. These factors include, but

FIGURE 11—U.S. Total Motor Vehicle Assemblies (2006–May 2021)



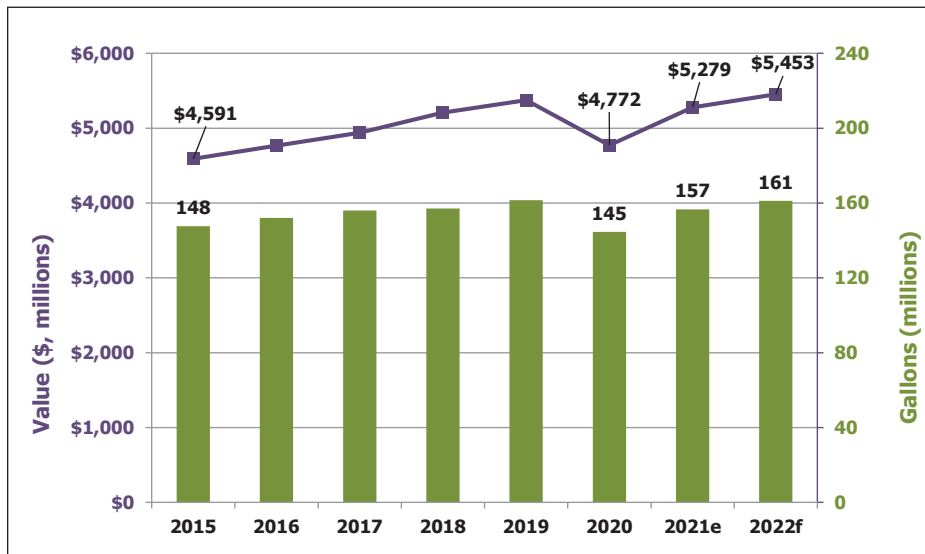
Source: The ChemQuest Group, Inc.

FIGURE 12—Major Sub-segments of the U.S. Special Purpose Coatings Market Segment, by Value (2021e)



Source: The ChemQuest Group, Inc., estimates

FIGURE 13—U.S. Special Purpose Coatings, Volume and Value (2015-2022f)



Source: The ChemQuest Group, Inc., estimates

are certainly not limited to, improved education of the populace with regard to safer driving habits, as well as the advent of safer, “smarter” cars that help in accident avoidance and damage mitigation with an assortment of devices from energy-absorbing bumpers to back-up cameras, adjacent vehicle indicators, and automatic controls that keep cars from accidentally crossing the center line. Also, insurance companies have been lowering the monetary threshold for declaring a vehicle to be “totaled.”

These factors, which negatively affect the sales of refinish coatings, are countered by other factors, such as the increase in disposable income, changing lifestyle and buying behavior, and demand for luxury vehicles, including crossovers and SUVs. These factors typically drive increases in the need for refinish coatings—e.g., luxury car owners tend to have scratches and minor dings repaired more readily than non-luxury vehicle owners.

The latest driving distractions, such as talking, texting, and glancing at GPS

screens while driving increase accident rates, and therefore benefit the automotive refinish coatings sub-segment. At any moment, however, external events, such as the COVID-19 pandemic, hurricanes, and other natural disasters, can tip the balance either way.

Sheltering-in-place during the pandemic caused a steep drop in the number of drivers on the road, the number of trips being made, and the number of miles being driven, resulting in a corresponding decrease in the need for automotive refinish coatings.

Overall, the year 2020 was a surprisingly good one for the U.S. coatings industry, which declined only 2.3% in value and 0.9% in volume.

With the passage of time, these various conflicting factors will settle down and mitigate against growth of the automotive refinish market, causing it to begin trending downward at an estimated 0.1–0.5% per year in volume during the period 2022–2024.

The industrial maintenance (I/M) and protective coatings market segment represented 39 million gallons valued at slightly under \$1.5 billion in 2020, a decrease from 2019 of -10.2% by volume and -11.2% by value. I/M and Protective coatings consumption is directly tied to construction, maintenance of medium- and heavy-duty facilities such as petrochemical and wastewater treatment plants, infrastructure, and oil and gas (O&G) production—and indirectly to global crude oil prices, which ranged from \$55 to \$65/barrel in 2019, and \$17–\$60/barrel in 2020.

The price of Brent Crude hovered around \$40/barrel throughout 2020, and since certain subsegments of I/M and protective coatings, such as O&G, are negatively influenced by crude oil prices, a decrease in volume of protective coatings in 2020 was not unexpected. In 2021e, however, we are predicting an increase in volume of protective coatings of 8% and an increase in value of 11%, due to a variety of overall economic factors, but at least partially due to the unexpected increase of crude oil to a 2021e range of \$70–\$75/barrel.

On a global basis, marine coatings are directly related to shipbuilding activity which is cyclical in nature. Shipbuilding is principally concentrated in South Korea, Japan, and China (40%, 30% and 24%, respectively), with the remaining 6% parceled out to all other countries. Shipbuilding is not, therefore, a driver for the sale of marine coatings in the United States, where this subsegment primarily addresses the needs of pleasure craft, military ships, platforms, and offshore supply vessels, etc. This market segment was

valued at \$420 million (8.8 million gallons) in 2020, down 11.2% in value and 10.2% in volume from 2019. As a result of both the increased price of crude oil and the resurgent economy, an increase in growth is expected in 2021 of 10.7% in value and 8.0% in volume.

Overall, the year 2020 was a surprisingly good one for the U.S. coatings industry, which declined only 2.3% in value and 0.9% in volume. Pricing declined more than volume (-1.4%), which means that the coatings producers were not able to keep ahead of raw material increases at an appropriate pace, and also that there were very likely some price concessions made during 2020.

For 2021, we estimate volume and value to increase by 4.2% and 7.0%, respectively. The U.S. coatings industry, with an estimated value of \$27.0 billion on 1.4 billion gallons in 2021e, remains large and relatively healthy—and the outlook for 2022f suggests that growth will continue, albeit at a slower pace than 2021e. Things are clearly headed “back to normal,” although it is unlikely to be the same “normal” that prevailed in 2019.

We have been through a global pandemic that helped to expose a number of weaknesses in the resilience of global supply chains—weaknesses that have wrought chaos in virtually all manufacturing sectors of the global economy. These problems won’t be solved until Q1-Q2 of 2022f, when we will find ourselves in the “new normal,” and will have to determine how to strengthen the resilience of our supply chains in advance of the next global disruption, in order to avoid the global raw material shortages and production problems that plagued 2021. Just as the world experienced a “new normal” following the Great Recession of 2008–2009, there will be a new normal in the post-pandemic era, and it is not going to represent “business as usual,” as defined by 2019.

THE “NEW NORMAL”

What will this “new normal” be like? What types of behavior will be permanently changed? Will there be a decline in the construction of office buildings because many workers, who performed their jobs quite effectively from their homes, will no longer need—or want—offices? Will homeowners who discovered that doing their own painting was a lot easier than they thought, continue this activity into the future at a higher level than in the past few years, eschewing the use of PRO painters? (Or, conversely, will they hire PRO painters in large numbers to fix their painting mistakes?)

Will the decline in building “brick and mortar” stores selling consumer goods continue, or perhaps even accelerate, as a result of a new group of people being sequestered in their homes, and discovering online shopping? What sorts of changes will we experience within the “global economy,” whatever that is? Will countries that previously outsourced production to lower-cost areas of the world begin repatriating a variety of businesses, as a result of the COVID-19 crisis, revealing just how vulnerable their supply chains were? From the vantage point of mid-2021, it is safe to say that nobody knows.

It is certainly important for strategic, forward-looking companies to make money this year so that they will still be in business next year—that just makes good fiscal sense, and it definitely requires some tactical maneuvering along the way. They recognize, however, that year-after-year of nothing but tactical decisions will eventually lead nowhere, and that unless they take a strategic approach to their business, there is a tombstone somewhere in the future with their name on it.

Creating new products is *essential* to remaining in business in the future. One need only think back a relatively short number of years to recall past paint and coatings producers that were either driven out of business or were acquired as the result of a lack of innovation and organic/inorganic growth strategies—or simply chose to close their doors because they were tired of treading water. Unfortunately, these are the options for paint producers that have

chosen to sacrifice their future on the altar of the tactical. In the New Normal, strategic management is going to be more important than ever before to maximize a company's chances for survival.

For those companies with a concise, carefully considered, and clearly articulated strategy for the future, their reward will be that they will weather the post-COVID-19 period and be the first to introduce exciting new products and processes for an eager and receptive marketplace. They will also be manufacturing these products with revised processes and procedures, not only regarding supply chain considerations, but very probably with a somewhat different approach to the deployment of human resources and physical assets as well.

Whether these companies create their strategies and new products on their own, or work with outside partners—strategic business and/or technology consultants, independent laboratories, universities or all four—should be the subject of serious discussion in a changing world where in-house assets are increasingly challenged and easily overwhelmed. Ultimately, having

a strategy—and implementing that strategy—is of paramount importance, because this is what will separate the winners from the losers, following the most devastating global disruption of the modern era.

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