Scope

• Coatings that protect + decorate new light vehicles → passenger cars + light commercial vehicles
  • Primarily [ ] coatings, with [ ] use of powder/powder-slurry; energy-cured and [ ] coatings

• Application
  • Factory setting by OEM or its independent parts manufacturers (tier suppliers)
  • Plastic and metal substrates for interior, exterior, and underbody applications for new cars, light trucks, vans (including minivans), and sport utility vehicles (SUVs)
  • Typical steps: [ ] (innovations in progress)

• Exclusions
  • Powder coatings except (Chapter 6)
  • Heavy-duty truck, bus, and recreational vehicles (Chapter 11)
  • Refinish, refurbishment, or aftermarket applications (Chapter 20)
MARKET OVERVIEW
2019 Automotive Coatings within OEM Coatings Sector

**Figure 10-1: 2019 Automotive Coatings Volume – X Million Gallons**

**Figure 10-2: 2019 Automotive Coatings Value – $Y Billion**

*Source: The ChemQuest Group, Inc.*
Sector Analysis

- Sector: Industrial OEM Coatings

- Automotive OEM coatings volume demand:
  - 2019 revenues: $Y MM on sales of X MM gallons
  - 2014–2019 comparison (5-year CAGR): X% increase in volume; Y% increase in value

- Automotive OEM coatings: [CQ data here]
  - X% of volume and Y% of value of 2019 OEM market
  - X% of volume and Y% of value of overall 2019 U.S. coatings market
    - Only [CQ data here] are larger segments by value.
  - Average sales price of $P per gallon is P% higher than the average OEM selling price and P% higher than total U.S. market’s average selling price
    - [CQ data here]
    - Sales color preference: [CQ data here] = % (2025 forecast: %); other colors = %
Quantitative Data (2014–2019)

**Market Size and Growth Rates**

*Table 10-1: Historical Annual Growth Rates, Auto Coatings (2014–2019)*

<table>
<thead>
<tr>
<th>Year</th>
<th>Volume Gal (Millions)</th>
<th>Value Dollars ($Millions)</th>
<th>AGR Volume (%)</th>
<th>AGR Value (%)</th>
<th>Average Price ($/Gal)</th>
<th>AGR Price (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>CQ data here</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>CQ data here</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>CQ data here</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td>CQ data here</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>CQ data here</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2019</td>
<td>CQ data here</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Table 10-2: 5-Year CAGR Automotive Coatings (2014–2019)*

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume (MM gallons)</td>
<td>CQ data here</td>
<td>CQ data here</td>
<td>CQ data here</td>
</tr>
<tr>
<td>Value ($ MM)</td>
<td>CQ data here</td>
<td>CQ data here</td>
<td>CQ data here</td>
</tr>
<tr>
<td>Price ($/gallon)</td>
<td>CQ data here</td>
<td>CQ data here</td>
<td>CQ data here</td>
</tr>
</tbody>
</table>

Source: The ChemQuest Group, Inc.

Overview

- 5-year CAGR: X% for volume (U.S. average); Y% for value (not adjusted for inflation)

Table 10-3: Cost of Coating Materials by Function (2019)

<table>
<thead>
<tr>
<th>Coating Materials</th>
<th>Per Vehicle Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretreatment**</td>
<td></td>
</tr>
<tr>
<td>Underbody</td>
<td></td>
</tr>
<tr>
<td>Interior</td>
<td></td>
</tr>
<tr>
<td>APC</td>
<td></td>
</tr>
<tr>
<td>Exterior Body</td>
<td></td>
</tr>
</tbody>
</table>

** Pretreat imparts:

Source: The ChemQuest Group, Inc.
Price Drivers (2014–2019)

- 5-year CAGR: % for price (not inflation adjusted)
Estimated Market Share of Automotive Coatings Producers (2019)

Overview

- 3 suppliers = % of OEM sector
- Remaining market:
  - Notable suppliers:
- Industry trends:

Source: The ChemQuest Group, Inc.
MARKET DYNAMICS
End-Use Markets and Applications

• Coatings used on automotive parts by OEMs and tiers
U.S. Vehicle Retail Sales and Miles Driven (2010–2019)

Figure 10-6: SAAR Auto and Light Truck Sales

Figure 10-7: 12-Month Total Vehicle Miles Traveled

Economic Influences

- Automotive OEM coatings market reflects
Economic Influences

**Overview**

**Figure 10-8: Light Auto Sales Vs. GDP (2009–2019)**

![Graph showing Light Auto Sales Vs. GDP (2009–2019)]

**Table 10-4: 5-Year Light Vehicle Sales Growth**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Sales</td>
<td></td>
<td></td>
<td>CQ Data</td>
</tr>
</tbody>
</table>

Source: Bureau of Economic Analysis, Bureau of Transportation Statistics
Trade Influences

Overview

• Domestic vehicle production is affected by

Figure 10-9: Imports of Vehicles and Parts by Country of Origin (2011-2018)

Source: TradeStats Express

Figure 10-10: Vehicle and Auto Parts Trade Estimates (NAFTA 2017)

Source: ChemQuest, U.S. Dept. of Commerce, AMIA, Statistics Canada, Marklines, Nomura estimates
TECHNOLOGY OVERVIEW
Technology Trends and Drivers

- Waterborne paints:
- Solventborne paints:
- Increasing use of
- Other:
Technology Trends and Drivers

**Overview**

- Application process:
- Resins:

---

**Figure 10-11: Coatings Product Type Share (2019)**

X MM gallons valued at $Y MM

Source: The ChemQuest Group, Inc.
R&D Initiatives
R&D Initiatives
R&D Initiatives
FIVE-YEAR FORECAST
Regulatory and Environmental Influences
Electric Vehicle Sales Forecast (2023)

- In 2018, global EV sales reached X units, an X% jump over 2017.

Figure 10-12: U.S. Share of Electric Vehicle Sales

Source: Bloomberg New Energy Finance (2018 Forecast)

By Dec 31, 2023:

- %, EU
- %, U.S.
- %, China
- %, India
- %, Korea
- %, Australia
- %, Japan
Figure 10-13: Volume of U.S. Commercial Electric Light Trucks (2020–2030f)

Note: in 1,000 units
## Key Buying Factors

<table>
<thead>
<tr>
<th>Overview</th>
<th>Automotive OEMs’ Buying Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Coatings must be</td>
<td></td>
</tr>
<tr>
<td>• Condition of doing business:</td>
<td></td>
</tr>
<tr>
<td>• Price =</td>
<td></td>
</tr>
<tr>
<td>• Service =</td>
<td></td>
</tr>
<tr>
<td>• Performance =</td>
<td></td>
</tr>
</tbody>
</table>
Quantitative Data (2019–2024f)

### Market Size and Growth Rates

**Table 10-5: Annual Growth Rates, Automotive Coatings (2019–2024f)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Volume Gal (MM)</th>
<th>Value Dollars ($ MM)</th>
<th>AGR Volume (%)</th>
<th>AGR Value (%)</th>
<th>Average Price ($/Gal)</th>
<th>AGR Price (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2020f</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2021f</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2022f</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2023f</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2024f</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 10-6: 5-Year CAGR Automotive Coatings (2019–2024f)**

<table>
<thead>
<tr>
<th></th>
<th>2019</th>
<th>2020f</th>
<th>2021f</th>
<th>2022f</th>
<th>2023f</th>
<th>2024f</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume (MM gallons)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value ($ MM)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price ($/gallon)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: The ChemQuest Group, Inc.

### Estimated Market Growth – Volume, Value, Price

**Figure 10-14: Volume/Value of Automotive Coatings (2019–2024f)**

**Figure 10-15: Auto Coatings, 5-Year Price Growth**

Source: The ChemQuest Group, Inc.
# Trends and Drivers (2019–2024)

<table>
<thead>
<tr>
<th>Trends</th>
<th>Drivers</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 5-year CAGR: X% for volume; Y% for value (not inflation adjusted)</td>
<td>• 5-year CAGR: P% for price (not inflation adjusted)</td>
</tr>
<tr>
<td>• 2024f forecast: X MM gallons valued at $Y MM. Value is expected to [CQ Data]</td>
<td>• Future price growth:</td>
</tr>
<tr>
<td>• Anticipated: higher use of</td>
<td></td>
</tr>
</tbody>
</table>
Future Technology Trends
PORTER’S FIVE FORCES ANALYSIS
Porter Index: X – A Snapshot in Time of Market Attractiveness

**Overview**

- Porter Index of X is indicative of
- Basis for its Porter Index of X:
  - Porter Index: X

Porter Index: X

---

**Figure 10-16: Industry Structure Analysis**

**Industry Structure**

**Five Force Analysis**

- **Porter Index**: X
- **Intensity of Rivalry Amongst Competition**
- **Leverage of Buyers (end customers)**
- **Threat of Substitute Products**
- **Leverage of Suppliers**
- **Threat of New Entrants**

Source: The ChemQuest Group, Inc.
Porter Index: X – A Snapshot in Time of Market Attractiveness

<table>
<thead>
<tr>
<th>Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td>• This market segment is</td>
</tr>
<tr>
<td>• Since products require</td>
</tr>
<tr>
<td>• There is a high X relationship</td>
</tr>
<tr>
<td>• Switching costs, therefore, are</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Figure 10-17: Intensity of Rivalry Amongst Competition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Factors for Rivalry</strong></td>
</tr>
<tr>
<td>Number of Players in the market?</td>
</tr>
<tr>
<td>Competitor size, Concentrated or...</td>
</tr>
<tr>
<td>High or low fixed costs to manufacture...</td>
</tr>
<tr>
<td>Degree of differentiation?</td>
</tr>
<tr>
<td>Price/value relationship?</td>
</tr>
<tr>
<td>Switching costs, high intermediate or low?</td>
</tr>
<tr>
<td>Diversity of competitors?</td>
</tr>
<tr>
<td>Relative strength of competitors;...</td>
</tr>
<tr>
<td>Competitors' ability to exploit the experience...</td>
</tr>
<tr>
<td>Exit costs—easy or hard to exit?</td>
</tr>
</tbody>
</table>

Source: The ChemQuest Group, Inc.
Porter Index: X – A Snapshot in Time of Market Attractiveness

Overview

• Given its coating supplier X, buyers have
• The offering is
• Switching costs are
• Buyers do not

Figure 10-18: Leverage of Buyers (End Customers)

Factors for Leverage of Buyers

- Buyer concentration?
- Relative importance of offering?
- Buyer leverage—financial muscle?
- Ability to backward integrate?
- Prospect’s sensitivity to price?
- Switching costs/cost advantage/undifferentiated products?

Source: The ChemQuest Group, Inc.
Porter Index: X – A Snapshot in Time of Market Attractiveness

**Overview**

- There is
- The automotive market segment

**Figure 10-19: Leverage of Suppliers**

**Factors for Leverage of Suppliers**

- Supplier concentration and size—oligopoly threat?
- Degree of capacity utilization?
- Threat of forward integration by suppliers?
- Switching costs—ability to switch suppliers?
- Degree of supplier’s product differentiation?
- Degree of end-use/application fragmentation?

*Source: The ChemQuest Group, Inc.*
Porter Index: X – A Snapshot in Time of Market Attractiveness

Overview

- Potential new entrants

Source: The ChemQuest Group, Inc.

Figure 10-20: Threat of New Entrants

Factors for Threat of New Entrants

- IP strength?
- Market growth?
- Cost of Service?
- Specification business with high value-added?
- Bargaining power of prospects?
- Degree of capacity utilization?
- Access to distribution?
- Economies of scale?
- Degree of leveraging Brand Identity?
- Expected Retaliation?
- Switching costs/cost advantage?

Chapter 10: Automotive OEM Coatings
Porter Index: X – A Snapshot in Time of Market Attractiveness

**Overview**

**Figure 10-21: Threat of Substitute Products**

**Factors for Substitute Products**

- Switching costs/cost advantage?
- Effect of government actions to encourage or discourage substitution?
- Industry participants propensity to switch?
- Induction time to commercialization?
- Specification cycles?
- Service requirements?
- Unmet needs?
- Degree of differentiation?

*Source: The ChemQuest Group, Inc.*
Important Takeaways

- Overall demand has
- Industry trends
- CAGR (2019-2024f forecast): X% increase in volume; Y% increase in value.
  - CAGR: P% paint price/gallon
- 2024 paint demand forecast: X MM gallons valued @ $Y MM
Chapter 6

Automotive OEM Coatings

Sample chapter

Questions? Contact Aggie Lotz at alotz@chemquest.com or at 412.781.320
Chapter 6: Automotive OEM Coatings

Scope

- Coatings that protect + decorate new passenger vehicles
  - Primarily [ ] coatings, ; [ ] usage of powder, powder-slurry, and energy-cured coatings

- Application
  - Factory setting by OEM or its independent parts manufacturers (tier suppliers)
  - Plastic and metal substrates for interior, exterior, and underbody applications for new cars, light trucks, vans, and sport utility vehicles (SUVs)
  - Typical steps: [ ]

- Exclusions
  - Powder coatings (Chapter 3)
  - Other transportation vehicles (Chapter 8) and vessels (Chapter 12)
  - Refinish, refurbishment, or aftermarket applications (Chapter 11)
MARPET OVERVIEW
2019 Automotive Coatings within the Industrial OEM Sector

**Figure 6-1: Automotive Coatings Volume – X Billion Liters**

- Automotive OEM Coatings
  - MM Liters
  - %
- Other OEM Coatings
  - MM Liters
  - %

**Figure 6-2: Automotive Coatings Value – $Y Billion**

- Automotive OEM Coatings
  - $ MM
  - %
- Other OEM Coatings
  - $ MM
  - %

Source: The ChemQuest Group, Inc.
Sector Analysis

• Sector: industrial OEM coatings

• Automotive OEM coatings sales volume and revenue: increased
  • 2013 revenues: $Y billion sales on X billion liters
  • 2019 revenues: $Y billion sales on X billion liters
    • 2013–2019 comparison (CAGR): X% increase in volume; Y% increase in value.
  • 2024f revenues: $Y billion sales on X billion liters
    • 2019–2024f comparison (CAGR): X% increase in volume; Y% increase in value.

• Automotive OEM coatings: volume/value = [    ]
  • X% of volume and Y% of value of 2019 industrial OEM market
  • X% of volume and Y% of value of overall 2019 global coatings market
Quantitative Data (2013–2024f)

Table 6-1: Volume, Value, Price Growth (2013–2024f)

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2019</th>
<th>2024f</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume (Million Liters)</td>
<td>CQ data here</td>
<td>CQ data here</td>
<td>CQ data here</td>
</tr>
<tr>
<td>Value ($ Million)</td>
<td>CQ data here</td>
<td>CQ data here</td>
<td>CQ data here</td>
</tr>
<tr>
<td>Average Selling Price $/Liter</td>
<td>CQ data here</td>
<td>CQ data here</td>
<td>CQ data here</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2019</th>
<th>2024f</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume</td>
<td>CQ data here</td>
<td>CQ data here</td>
<td>CQ data here</td>
</tr>
<tr>
<td>Value</td>
<td>CQ data here</td>
<td>CQ data here</td>
<td>CQ data here</td>
</tr>
<tr>
<td>Average Selling Price</td>
<td>CQ data here</td>
<td>CQ data here</td>
<td>CQ data here</td>
</tr>
</tbody>
</table>

Figure 6-3: Volume/Value of Automotive Coatings (2013–2024f)

Source: The ChemQuest Group, Inc.
Regional Distribution

Overview

- Coatings are applied

Figure 6-4: Regional Distribution of Volume and Value (2019)

Source: The ChemQuest Group, Inc.
## Competitive Landscape

### Overview

### Table 6-2: Examples of Regional Suppliers

<table>
<thead>
<tr>
<th>North America</th>
<th>Western Europe</th>
<th>APAC</th>
<th>Latin America</th>
<th>MEA</th>
</tr>
</thead>
</table>

Source: The ChemQuest Group, Inc.
MARKET DYNAMICS
End-Use Markets
Regional Vehicle Production (2018–2023)

Table 6-3: Vehicle Production by Region (2018)

<table>
<thead>
<tr>
<th>Region</th>
<th>2018</th>
<th>2023</th>
<th>CAGR 2018 - 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asia Pacific</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Europe</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North America</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latin America</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MEA</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: OICA, IHS Automotive, the ChemQuest Group

Figure 6-5: Forecast Production Growth by Region (2018–2023)

Source: OICA, IHS Automotive, the ChemQuest Group
Economic Influences
Trade Influences

**Overview**

**Figure 6-6: Imports of NAICS 3361 - Motor Vehicles (2019)**

Imports to the U.S. by Value

Billions


Mexico | Canada | Japan | Germany | South Korea | ROW

Sources: TradeStats Express, The ChemQuest Group, Inc.
Technology Trends and Drivers

Overview

Figure 6-7: Regional Auto OEM Technology Share by Volume (2019)

Sources: The ChemQuest Group, Inc.
# Technology Trends and Drivers

## Overview

- Application process: evolution in progress
- Resins:

## Overview

- R&D efforts
Technology Trends and Drivers

<table>
<thead>
<tr>
<th>Overview</th>
<th>Figure 6-8: Global Color Preferences (2019)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• R&amp;D efforts (continued)</td>
<td></td>
</tr>
</tbody>
</table>
FIVE-YEAR FORECAST
Regulatory and Environmental Influences

• From a coating perspective:

• From a vehicle perspective:
Key Buying Factors
CONCLUSION
Important Takeaways

• Coating demand
  • CAGR (2019–2024 forecast): X% increase in volume; Y% increase in value.
  • CAGR: P% average selling price/liter
  • 2024 coatings demand forecast: X billion liters valued at $Y billion

• Coatings market reflects: