

TABLE OF CONTENTS









Table of Contents

FRONT MATTER

- Foreword
- Acknowledgments & Disclaimer
- Executive Summary

MAIN REPORT

Introduction

PERTINENT SUBJECT MATTER FOR COATINGS PRACTITIONERS

- Chapter 1: Raw Material Feedstocks' Dynamics and Trends
- Chapter 2: Regulatory Overview and Outlook
- Chapter 3: Global M&A Activity (2017–2019)
- Chapter 4: New Technology Developments and Market Opportunities
- Chapter 5: Coil Coatings
- Chapter 6: Powder Coatings







Table of Contents

ARCHITECTURAL | OEM | SPECIAL PURPOSE COATINGS

Architectural Coatings

Chapter 7: Architectural Coatings

OEM Coatings

- Chapter 8: Aerospace Finishes
- Chapter 9: Appliance Finishes
- Chapter 10: Automotive OEM Coatings
- Chapter 11: Heavy-Duty Truck, Bus, and RV Finishes
- Chapter 12: Machinery and Equipment Finishes
- Chapter 13: Metal Container and Closure Finishes
- Chapter 14: Non-Wood Furniture, Fixture, and Business Equipment Finishes
- Chapter 15: Paper, Paperboard, Film, and Foil (PPFF) Coatings
- Chapter 16: Rail Rolling Stock Coatings
- Chapter 17: Wood and Composition Board Flat-Stock Finishes
- Chapter 18: Wood Furniture, Cabinet, and Fixture Finishes







Table of Contents

Special Purpose Coatings

- Chapter 19: Aerosol Paint
- Chapter 20: Automotive Refinish Paint
- Chapter 21: Marine Coatings
- Chapter 22: Protective Coatings
- Chapter 23: Traffic Marking Paint

Liquid Coatings Resin Compilation

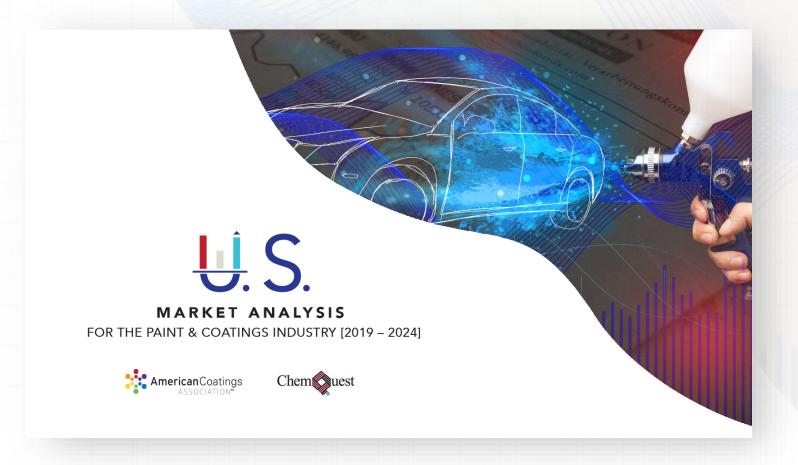
Chapter 24: Compilation of References to Major Resins







LIST OF FIGURES AND TABLES









EXECUTIVE SUMMARY

- Figure ES-1: U.S. Capacity Utilization Manufacturing (2009–2020)
- Figure ES-2: Industrial Production Index (2009–2020)
- Figure ES-3: # of Deals Split By Volume (1990–2019)
- Figure ES-4: \$ Billion Deals Split By Value (1990–2019)
- Figure ES-5: Multinational Coatings Manufacturers (2019 Sales)
- Figure ES-6: Architectural Coatings Demand (2009–2019e)
- Figure ES-7: Architectural Coatings Demand (2019–2024f)
- Figure ES-8: Industrial OEM Coatings Demand (2009–2019e)
- Figure ES-9: Industrial OEM Coatings Demand (2019–2024f)
- Figure ES-10: Special Purpose Coatings Demand (2009–2019e)
- Figure ES-11: Special Purpose Coatings Demand (2019–2024f)
- Figure ES-12: Total Coatings Demand (2009–2019e)
- Figure ES-13: Total Coatings Demand (2019–2024f)
- Figure ES-14: Secular Market Drivers







EXECUTIVE SUMMARY

- Figure ES-15: Estimated Share of End-Uses by Volume (2019e)
- Figure ES-16: Construction Spending Rankings in Market Size and Growth (2017–2022)
- Figure ES-17: OEM Coatings Value by Segment (2019e)
- Figure ES-18: Special Purpose Coatings Value by Segment (2019e)
- Figure ES-19: Global Coatings Market by Technology (2013–2020)
- Figure ES-20: Porter's Five Competitive Forces
- Figure ES-21: Industry Structure "Five Forces" Analysis by Volume (2019e)
- Table ES-1: Industry Dynamics Mixed
- Table ES-2: Reshoring + Foreign Direct Investment by Industry, 2010–2018
- Table ES-3: Influencing Factors, Reshoring + Foreign Direct Investment by Industry, 2010–2018
- Table ES-4: Special Purpose Coatings Key Trends







- Figure 1-1: Global Coatings Raw Material Supply Chain & Key Players
- Figure 1-2: Petrochemical Feedstocks for the Paint and Coatings Industry
- Figure 1-3: Raw Material Input for a Typical Unit of Coatings
- Figure 1-4: Architectural Cost/Raw Material Breakdown
- Figure 1-5: Industrial Cost/Raw Material Breakdown
- Figure 1-6: U.S. Crude Oil & Natural Gas Production (2009–2019)
- Figure 1-7: Energy & Feedstock Price History and Outlook
- Figure 1-8: Key North American Chemical Price Outlook
- Figure 1-9: North American Ethylene/Polyethylene Pricing Forecast (cents/lb)
- Figure 1-10: GDP Elasticity Measures Market Growth Rate Relative to Global GDP Growth
- Figure 1-11: 2018 Ethylene Production & Consumption by Region
- Figure 1-12: Global Ethylene Capacity & Demand (2010–2024f)
- Figure 1-13: Global Marginal Ethylene Capacity Additions
- Figure 1-14: Global Ethylene Capacity Additions by Feedstock







- Figure 1-15: Ethylene Feedslate Shift to Ethane and Propane
- Figure 1-16: Low-Cost Ethane Reduced U.S. Ethylene Prod Costs
- Figure 1-17: Forecast for Sustained Recovery of Ethylene Utilization
- Figure 1-18: 2018 NA Ethylene Capacity Outages
- Figure 1-19: 2019 NA Ethylene Capacity Outages
- Figure 1-20: Asia, SA, EU Imports vs. NA Exports (2012 to 2022)
- Figure 1-21: NA Ethylene Producers Share
- Figure 1-22: Global Ethylene Producers Share
- Figure 1-23: Ethylene End Uses (2019)
- Figure 1-24: Ethylene Demand by Derivative 2019 vs. 2029
- Figure 1-25: Ethylene vs. Ethane and Naphtha (2009–2019)
- Figure 1-26: Ethylene Regional Price Forecast (\$/mt)
- Figure 1-27: 2018 Propylene Production & Consumption by Region
- Figure 1-28: Global Propylene Production by Technology







- Figure 1-29: Propylene Capacity Led by Asia
- Figure 1-30: Global Propylene Capacity & Demand (2010–2024f)
- Figure 1-31: Global PDH and FCC Propylene Operating Rates
- Figure 1-32: Capacity Additions By Technology
- Figure 1-33: Total NA Propylene Exports thru 2022
- Figure 1-34: North America Propylene Producers
- Figure 1-35: Global Propylene Producers
- Figure 1-36: Largest North American Propylene Sellers & Buyers (Excluding Captive)
- Figure 1-37: Global & U.S. Propylene End Uses
- Figure 1-38: Propylene Demand by Derivative 2019 vs. 2029
- Figure 1-39: Incremental Propylene Capacity and Demand Changes
- Figure 1-40: Propylene Regional Price Forecast (\$/mt)
- Figure 1-41: Market Volume of Phenols Worldwide (MM Tons)
- Figure 1-42: Phenol Supply-Demand (k ton)







- Figure 1-43: Phenol Nameplate Capacity (Mn tons) by Producer
- Figure 1-44: 2018 Phenol End Uses
- Figure 1-45: Phenol vs. Benzene Prices
- Figure 1-46: Phenol Demand By Downstream Product (K ton)
- Figure 1-47: BPA Consumption 2015 vs. 2020
- Figure 1-48: Bisphenol-A End Uses
- Figure 1-49: Global Raw Materials of Epoxy Resins (Volume/Value)
- Figure 1-50: Global Epichlorohydrin Capacity (000 tonnes)
- Figure 1-51: China ECH Capacity & Demand (2010–2018)
- Figure 1-52: Global Epichlorohydrin End Uses
- Figure 1-53: U.S. Epichlorohydrin End Uses by Value
- Figure 1-54: MDI (Methylene Diphenyl Diisocyanate) and TDI (Toluene Diisocyanate)y
- Figure 1-55: MDI Outlook (ktpa, %)







- Figure 1-56: TDI Outlook (ktpa, %)
- Figure 1-57: Top Five MDI Makers
- Figure 1-58: Top Five TDI Makers
- Figure 1-59: Global MDI & TDI Capacity Shares
- Figure 1-60: China MDI & TDI Supply and Demand
- Figure 1-61: Chemical Product Exports Now Severely Affected by China-U.S. Trade Friction
- Figure 1-62: MDI End Uses
- Figure 1-63: TDI End Uses
- Figure 1-64: Leading the Capacity Expansion Cycle
- Figure 1-65: MDI Downstream Demand Estimates for China (kt)
- Figure 1-66: MDI Downstream Demand for China Growth Estimate
- Figure 1-67: MDI Prices Expected to Bottom Out in 2020
- Figure 1-68: TDI Europe (\$/mt)
- Figure 1-69: TDI China (Spot Price Huadong in \$/mt)







- Figure 1-70: Styrene Demand by Derivative & End-Market
- Figure 1-71: China Leads Styrene Capacity Expansion
- Figure 1-72: U.S. Styrene Exports
- Figure 1-73: Styrene Pricing Volatility
- Figure 1-74: Butadiene Capacity Vs. Demand Growth
- Figure 1-75: Regional Demand
- Figure 1-76: Forecast for New Capacities
- Figure 1-77: Europe Will Remain Net Exporter of Butadiene: Domestic Supply Meets Demand
- Figure 1-78: North America Not a Pure Net Exporter Despite Steady Growth
- Figure 1-79: NA Butadiene Supply Demand ('000 MM Tons)
- Figure 1-80: NA Butadiene Capacity vs Operating Rate ('000 MM Tons)
- Figure 1-81: Styrene Demand by Derivative & End-Market
- Figure 1-82: Recent Butadiene Pricing Volatility Forecasted to Stabilize
- Figure 1-83: Regional Butadiene Prices (June 2017 = 100%)







- Figure 1-84: Butadiene Price Forecast
- Figure 1-85: Global Acrylic Acid Consumption by Region
- Figure 1-86: Acrylic Acid Demand Growth (% Volume Growth)
- Figure 1-87: Global Acrylic Acid Supply & Demand ('000 tons)
- Figure 1-88: Acrylic Acid Growth by End Use (% Volume Growth)
- Figure 1-89: Acrylic Acid Net Trade
- Figure 1-90: Global VAM Market by Volume (Kilotons)
- Figure 1-91: Global VAM Market by Value (\$ MM)
- Figure 1-92: U.S. VAM Market Size by Application by Value
- Figure 1-93: Vinyl Acetate Monomer (VAM) Price History
- Figure 1-94: Specialty Polymers, Additives Among Fastest Growing Markets in Specialty Chemicals
- Figure 1-95: Coatings Additives
- Figure 1-96: Coatings Raw Materials by Value
- Figure 1-97: Coatings Raw Materials by Volume







CHAPTER 1: RAW MATERIAL FEEDSTOCKS' DYNAMICS AND TRENDS (continued)

- Figure 1-98: TiO2 Supply / Demand
- Figure 1-99: Ti02 End Markets (2018)
- Figure 1-100: Global Ti02 Producers
- Figure 1-101: Global Ti02 Price Forecast (\$/mt)

CHAPTER 2: REGULATORY OVERVIEW AND OUTLOOK

- Figure 2-1: "Circular Economy" Illustrated
- Figure 2-2: Companies Reporting Sustainability Outcomes
- Figure 2-3: SASB Universe of Sustainability Issues
- Figure 2-4: Sustainalytics Evaluation, Building Products Company
- Figure 2-5: Emissions of Formaldehyde
- Table 2-1: Notable Players in Sustainability/ESG
- Table 2-2: SASB Universe of Sustainability Issues







CHAPTER 2: REGULATORY OVERVIEW AND OUTLOOK (continued)

- Table 2-3: California AQMDs that Have Adopted CARB SCM
- Table 2-4: MACT Standards from Phase One
- Table 2-5: Completed RTRs
- Table 2-6: Unfinished RTRs with Pending Completion Date

CHAPTER 3: GLOBAL M&A ACTIVITY (2017–2019)

- Figure 3-1: # of Deals Split By Volume (1990–2019)
- Figure 3-2: \$ Billion Deals Split By Value (1990–2019)
- Figure 3-3: Acquisitions since January 2005
- Figure 3-4: Deals Led By 5 Top Acquirers (2013–2019)
- Figure 3-5: Acquisitions by Firms >\$1.0 BN in Revenue
- Figure 3-6: Key Coatings Acquisitions, 2008–2017 (\$ Billions)
- Figure 3-7: Acquisitions by Region Since 2013
- Figure 3-8: *Global Coatings—Organic Vs. Inorganic Growth







CHAPTER 3: GLOBAL M&A ACTIVITY (2017–2019) (continued)

Table 3-1: M&A Transactions

CHAPTER 4: NEW TECHNOLOGY DEVELOPMENTS AND MARKET OPPORTUNITIES

- Figure 4-1: Global Coatings Market by Technology (2013–2020)
- Figure 4-2: Typical Powder Coating and Recovery System
- Figure 4-3: Food Containers Featuring FlexSHIELD Coating
- Figure 4-4: Heraeus Curing System
- Figure 4-5: PPG B1:B2®'s Compact Process vs. Traditional Process
- Figure 4-6: Cool Roof Coatings for Thermal Management
- Figure 4-7: Solar Panel Cleaning
- Figure 4-8: Turbine Blade Erosion
- Figure 4-9: Argonne Coating for Battery Cathodes
- Figure 4-10: PPG Anode/Cathode Coatings
- Figure 4-11: BASF Biomass Balance Approach







CHAPTER 4: NEW TECHNOLOGY DEVELOPMENTS AND MARKET OPPORTUNITIES (continued)

- Figure 4-12: Olin Coating Material Guide
- Figure 4-13: Isocyanate-Free Approach for Synthesizing Polyurethanes
- Figure 4-14: Valspar's valPure V70 Series of Non-BPA Epoxy Technologies for Metal Packaging
- Figure 4-15: NMP Dry Painted Battery Concept
- Figure 4-16: DBNPA in Paint Enhances Preservation
- Figure 4-17: High-Performance Anti-Corrosion Market Share by Resin (2018)
- Figure 4-18: Surface Passivation of a Metal Substrate with an Organofunctional Silane Film After Application and Curing
- Figure 4-19: Improved Edge Coverage of Powder Coatings
- Figure 4-20: CBPC Example
- Figure 4-21: Cyclic Corrosion Testing for Aluminum
- Figure 4-22: Paint Test Rack
- Figure 4-23: Improve Coatings for Wood
- Figure 4-24: Dow 2K Waterborne Coating System







CHAPTER 4: NEW TECHNOLOGY DEVELOPMENTS AND MARKET OPPORTUNITIES (continued)

- Figure 4-25: PPG's ENVIROCRON Extreme Protection for Automotive Coil Springs
- Figure 4-26: CAGR vs Market Size (\$M USD) for Smart Coatings Functions
- Figure 4-27: Hydrophobic Example
- Figure 4-28: Self-Cleaning Coatings C (Superhydrophobic Surface)
- Figure 4-29: Self-Cleaning Coatings C (Superhydrophilic Surface)
- Figure 4-30: Self-Cleaning Coatings Approaches
- Figure 4-31: Electrostatic Charge for Self-Cleaning Systems
- Figure 4-32: Photo-Induced Hydrophilicity and Photocatalysis of Self-Cleaning Coatings
- Figure 4-33: Basic Structure and Functions of a Coating System and Major Self-Healing Mechanisms
- Figure 4-34: Self-Healing Mechanisms
- Figure 4-35: Dynamic Bonds and Shape Memory Polymers
- Figure 4-36: Anti-Microbial Coatings
- Figure 4-37: Anti-Microbial Coating
- Figure 4-38: Antifouling Coatings







CHAPTER 4: NEW TECHNOLOGY DEVELOPMENTS AND MARKET OPPORTUNITIES (continued)

- Figure 4-39: Sharklet Research
- Figure 4-40: Toyota's Structural Blue Color
- Figure 4-41: APS Films Viewed at Different Angles Under Ambient Light
- Figure 4-42: Cellulose-Colored Film and Its Optical Appearance Under a Microscope in Epi-Illumination Configuration
- Figure 4-43: Apellix Drone for Spray Paint Application and Cleaning
- Figure 4-44: Spray-Painting Drone
- Figure 4-45: Smart Paint Shop System
- Figure 4-46: Coating Megatrends
- Figure 4-47: Emerging Technologies
- Figure 4-48: AR and VR Equipment
- Figure 4-49: 3D Printing
- Figure 4-50: Wearables







CHAPTER 4: NEW TECHNOLOGY DEVELOPMENTS AND MARKET OPPORTUNITIES (continued)

- Table 4-1: Summary of Architectural Paint VOC Regulations in North America
- Table 4-2: Characteristics of Biocides Used in Polymer Dispersions
- Table 4-3: Overview on Coating Types' Key Applications for End-Use Industries
- Table 4-4: Microscale Patterned Poly(dimethylsiloxane) Surfaces for Evaluation of Adhesion and Biofilm Formation

CHAPTER 5: COIL COATINGS

- Figure 5-1: 2019 Coil Coatings Volume
- Figure 5-2: 2019 Coil Coatings Value
- Figure 5-3: Volume/Value Coil Coatings (2014–2019e)
- Figure 5-4: Coil Coatings, 5-Year Price Growth
- Figure 5-5: Estimated Market Share (2019)
- Figure 5-6: Coil-Coated Stock Estimates in MM ft² (2019)
- Figure 5-7: Coatings within Building Segment by Volume (2019)







CHAPTER 5: COIL COATINGS (continued)

- Figure 5-8: Coatings Growth Vs. Construction Spending (2009–2019e)
- Figure 5-9: Coatings for Domestic Production/Imports of Metal End Products
- Figure 5-10: Metal Imports (\$ Millions) (2014–2018)
- Figure 5-11: Coil Coating Automated Process
- Figure 5-12: Technology Share by Volume (2019e)
- Figure 5-13: Volume/Value of Coil Coatings (2019e–2024f)
- Figure 5-14: Coil Coatings, 5-Year Price Growth
- Figure 5-15: Industry Structure Analysis
- Figure 5-16: Intensity of Rivalry Amongst Competition
- Figure 5-17: Leverage of Buyers (End Customers)
- Figure 5-18: Leverage of Suppliers
- Figure 5-19: Threat of New Entrants
- Figure 5-20: Threat of Substitute Product







CHAPTER 5: COIL COATINGS (continued)

- Table 5-1: Historical Annual Growth Rates, Coil Coatings (2014–2019e)
- Table 5-2: 5-year CAGR Coil Coatings (2014–2019e)
- Table 5-3: Coatings Usage Vs. Construction Spending (2009–2019e)
- Table 5-4: Coil Coatings Characteristics
- Table 5-5: Annual Growth Rates, Coil Coatings (2019e–2024f)
- Table 5-6: 5-Year CAGR Coil Coatings (2019–2024f)

CHAPTER 6: POWDER COATINGS

- Figure 6-1: 2019 Powder Coatings Volume
- Figure 6-2: 2019 Powder Coatings Value
- Figure 6-3: Volume/Value of Powder Coatings (2014–2019e)
- Figure 6-4: 5-Year Powder Coatings Price Growth
- Figure 6-5: Estimated Market Share (2019e)
- Figure 6-6: End-Use Estimates by Volume







CHAPTER 6: POWDER COATINGS (continued)

- Figure 6-7: Market Share by Technology Type by Volume (2019)
- Figure 6-8: Market Share by Chemistry Type by Volume (2019)
- Figure 6-9: Buying Factors by End Use
- Figure 6-10: Volume/Value of Powder Coatings (2019–2024f)
- Figure 6-11: Powder Coatings, 5-Year Price Growth
- Figure 6-12: Industry Structure Analysis
- Figure 6-13: Intensity of Rivalry Amongst Competition
- Figure 6-14: Leverage of Buyers (End Customers)
- Figure 6-15: Leverage of Suppliers
- Figure 6-16: Threat of New Entrants
- Figure 6-17: Threat of Substitute Products
- Table 6-1: Historical Annual Growth Rates, Powder Coatings (2014–2019e)
- Table 6-2: 5-Year CAGR Powder Coatings (2014–2019e)







CHAPTER 6: POWDER COATINGS (continued)

- Table 6-3: Powder Coatings Characteristics
- Table 6-4: Annual Growth Rates, Powder Coatings (2019e–2024f)
- Table 6-5: 5-Year CAGR Powder Coatings (2019e–2024f)

CHAPTER 7: ARCHITECTURAL COATINGS

- Figure 7-1: 2019 Architectural Coatings Volume
- Figure 7-2: 2019 Architectural Coatings Value
- Figure 7-3: Volume/Value of Architectural Coatings (2014–2019e)
- Figure 7-4: Architectural Coatings, 5-Year Price Growth
- Figure 7-5: Estimated Market Share (2019e)
- Figure 7-6: Architectural Coatings Sales vs. U.S. GDP (2009–2019e)
- Figure 7-7: DIFM and DIY Share of Architectural Coatings Sales (2009–2019e)
- Figure 7-8: Declining Annual Rate of Mobility by Region (2018)
- Figure 7-9: Consumer Confidence Index (CCI)







- Figure 7-10: Seasonally Adjusted Unemployment Rate
- Figure 7-11: S&P Core Logic Case-Shiller Home Price Index
- Figure 7-12: Zillow Home Value Index
- Figure 7-13: Homeownership Rates
- Figure 7-14: New Housing Permits, Starts and Completions for Single and Multi-Family in (000) units (2009–2019E)
- Figure 7-15: Home Ownership Rates (Ages 35-44, 2014–2019)
- Figure 7-16: Home Ownership Rates (Ages 25-34, 2014–2019)
- Figure 7-17: Owner-Occupied Housing and Growth Rates
- Figure 7-18: Existing Home Sales and Inventory
- Figure 7-19: Coatings Volume vs. U.S. Construction Value
- Figure 7-20: Coatings Volume vs. Housing Sales
- Figure 7-21: Average Single-Family Housing Starts Growth Forecast
- Figure 7-22: New Housing Starts (2013–2019)







- Figure 7-23: Garages in New Homes (# of houses in thousands)
- Figure 7-24: Parking Options per Home Size
- Figure 7-25: New Single-Family Home Construction Sold by Region by ft² (2018)
- Figure 7-26: 2-Car Garage = Largest Share of Completed Homes
- Figure 7-27: Avg. Area (ft²) of Finished Basement
- Figure 7-28: By Home Size (ft²) Finished Basements Preferred
- Figure 7-29: % of All Homes = Full/Partial Basement
- Figure 7-30: Primary Exterior Material Used on New U.S. Single-Family Homes (1980–2018)
- Figure 7-31: Construction Spending Rankings in Market Size and Growth (2017–2022)
- Figure 7-32: Deutsche Bank Remodeling Index
- Figure 7-33: Harvard Joint Housing's Outlook On Remodeling Activity
- Figure 7-34: Indicators Driving Q2 '19 Home Improvement
- Figure 7-35: Housing Stock Age by State and Related Renovation
- Figure 7-36: Market Value of Home Repair, Improvement (\$ MM)







- Figure 7-37: Leading Home Improvement Retailers (\$ BN)
- Figure 7-38: Total Sales of Home Improvement (\$ BN)
- Figure 7-39: Retail Sales Per Store (\$ MM)
- Figure 7-40: DIY Sales By Store Type (\$ BN)
- Figure 7-41: Number of Stores
- Figure 7-42: Larger Home Builds on Average
- Figure 7-43: Combined Nonresidential & Residential Square Footage
- Figure 7-44: Contractor-Built SF Home Average Size (2013–2018)
- Figure 7-45: <u>Completed Houses</u> (thousand ft², 2009–2018)
- Figure 7-46: Sold Houses (thousand ft², 2009–2018)
- Figure 7-47: Completed Houses by Lot Size (thousand ft², 2009–2018)
- Figure 7-48: Sold Houses by Lot Size (thousand ft², 2009–2018)
- Figure 7-49: 2019 Remodeling Impact Report (>5,000 Respondents)
- Figure 7-50: Full Interior Paint Job







- Figure 7-51: Appeal to Buyers (Highest to Lowest)
- Figure 7-52: Projects Likely to Add Resale Value (Highest to Lowest)
- Figure 7-53: Appeal to Buyers (Highest to Lowest)
- Figure 7-54: Projects Likely to Add Resale Value (Highest to Lowest)
- Figure 7-55: Homeowner Discretionary Expenditures (2017)
- Figure 7-56: Homeowner Replacement Expenditures (2017)
- Figure 7-57: Metropolitan Home Improvement Spending (2017)
- Figure 7-58: Home Improvement Spending Growth (2019e)
- Figure 7-59: Retailers Visited During DIY Project
- Figure 7-60: Best Paint Primers in 2019 No. 1 Sponsored Ad
- Figure 7-61: Best Paint Primers Top Organic Google Result
- Figure 7-62: Best Interior Paint Top Organic Google Result
- Figure 7-63: Home Depot Product Portfolio
- Figure 7-64: Lowe's Product Portfolio







- Figure 7-65: Estimated Share of End-Use Products by Volume
- Figure 7-66: Top 20 States Nonresidential Construction Spending
- Figure 7-67: Total State Capital Spending Breakdown
- Figure 7-68: Construction Employment (2010–2019)
- Figure 7-69: Nonresidential Construction Forecasts
- Figure 7-70: U.S. Infrastructure
- Figure 7-71: U.S. Architectural Coatings Split Between PRO and DIY
- Figure 7-72: Architectural Channel Sales Trends
- Figure 7-73: Proportion of Online Revenue
- Figure 7-74: DIY, Furniture & Homewares in 2018 (Y/Y Sales Growth)
- Figure 7-75: Number of DIY & Home Improvement Stores thru 2022f
- Figure 7-76: Consumer Age Demographics by Channel (2018)
- Figure 7-77: Percent of Cost in (2018, 2019f)
- Figure 7-78: Architectural Cost/Raw Material Breakdown







- Figure 7-79: Industrial Cost/Raw Material Breakdown
- Figure 7-80: Technology Share Volume, Value (2019e)
- Figure 7-81: Paint Types Breakdown by Volume (2019e)
- Figure 7-82: Interior Paint Consumption Trends (2014–2018)
- Figure 7-83: Exterior Paint Consumption Trends (2014–2018)
- Figure 7-84: Interior Primer Consumption Trends (2014–2018)
- Figure 7-85: Exterior Primer Consumption Trends (2014–2018)
- Figure 7-86: Interior Stain Consumption Trends (2014–2018)
- Figure 7-87: Exterior Stain Consumption Trends (2014–2018)
- Figure 7-88: Volume/Value of Architectural Coatings (2019e–2024f)
- Figure 7-89: Architectural Coatings, 5-Year Price Growth
- Figure 7-90: PPI and PMI Indexes
- Figure 7-91: Household Estimates
- Figure 7-92: Population Age 15+ by Age Group (2010–2023f)







- Figure 7-93: Household Projections by Age Group (2018–2028f)
- Figure 7-94: Industry Structure Analysis
- Figure 7-95: Intensity of Rivalry Amongst Competition
- Figure 7-96: Leverage of Buyers (End Customers)
- Figure 7-97: Leverage of Suppliers
- Figure 7-98: Threat of New Entrants
- Figure 7-99: Threat of Substitute Products
- Table 7-1: Historical Annual Growth Rates, Architectural Coatings (2014–2019e)
- Table 7-2: 5-Year CAGR Architectural Coatings (2014–2019e)
- Table 7-3: 2020 Private Sector Spending Growth
- Table 7-4: Annual Growth Rates, Architectural Coatings (2019e–2024f)
- Table 7-5: 5-Year CAGR Architectural Coatings (2019e–2024f)
- Table 7-6: Volume Growth Outlook







CHAPTER 8: AEROSPACE FINISHES

- Figure 8-1: 2019 Aerospace Finishes Volume
- Figure 8-2: 2019 Aerospace Finishes Value
- Figure 8-3: Volume/Value of Aerospace Finishes (2014–2019e)
- Figure 8-4: Aerospace Finishes, 5-Year Price Growth
- Figure 8-5: Estimated Volume Share of Producers (2019e)
- Figure 8-6: Estimated Value Share by Subsegment (2019e)
- Figure 8-7: Commercial Sector's 2019 Backlog Value (June 2019)
- Figure 8-8: Market Build Rates (2014–2022)
- Figure 8-9: Commercial's Projected Fleet Size (2018–2037)
- Figure 8-10: Value of Aerospace Imports (2014–2019)
- Figure 8-11: Value of Aerospace Exports (2014–2019)
- Figure 8-12: Conventional System vs. New High Solids Technology
- Figure 8-13: Boeing 777x Paint Shop Operations
- Figure 8-14: Volume/Value of Aerospace Finishes (2019e–2024f)







CHAPTER 8: AEROSPACE FINISHES (continued)

- Figure 8-15: Aerospace Finishes, 5-Year Price Growth
- Figure 8-16: Industry Structure Analysis
- Figure 8-17: Intensity of Rivalry Amongst Competition
- Figure 8-18: Leverage of Buyers (End Customers)
- Figure 8-19: Leverage of Suppliers
- Figure 8-20: Threat of New Entrants
- Figure 8-21: Threat of Substitute Products
- Table 8-1: Historical Annual Growth Rates, Aerospace Finishes (2014–2019e)
- Table 8-2: 5-Year CAGR Aerospace Finishes (2014–2019e)
- Table 8-3: 2019 Orders and Deliveries (April 2019)
- Table 8-4: Total Paint System Volume in Gallons
- Table 8-5: Annual Growth Rates, Aerospace Finishes (2019e–2024f)
- Table 8-6: 5-Year CAGR Aerospace Finishes (2019e–2024f)







CHAPTER 9: APPLIANCE FINISHES

- Figure 9-1: 2019 Appliance Finishes Volume
- Figure 9-2: 2019 Appliance Finishes Value
- Figure 9-3: Volume/Value of Appliance Finishes (2014–2019e)
- Figure 9-4: Appliance Finishes, 5-Year Price Growth
- Figure 9-5: Estimated Market Share (2019e)
- Figure 9-6: Major Appliance Imports vs. Demand (2009–2023f)
- Figure 9-7: Top 10 Countries Imports to U.S. (2014–2018)
- Figure 9-8: Top 10 Countries U.S. Exports (2014–2018)
- Figure 9-9: Net Import/Export Value (2014–2018)
- Figure 9-10: Consumer Price Index Major Appliances
- Figure 9-11: Technology Share by Volume (2019e)
- Figure 9-12: Resins Share by Volume (2019e)
- Figure 9-13: Technology Share by Volume (2019e)
- Figure 9-14: Technology Share by Value (2019e)







CHAPTER 9: APPLIANCE FINISHES (continued)

- Figure 9-15: Volume/Value of Appliance Finishes (2019e–2024f)
- Figure 9-16: Appliance Finishes, 5-Year Price Growth
- Figure 9-17: Industry Structure Analysis
- Figure 9-18: Intensity of Rivalry Amongst Competition
- Figure 9-19: Leverage of Buyers (End Customers)
- Figure 9-20: Leverage of Suppliers
- Figure 9-21: Threat of New Entrants
- Figure 9-22: Threat of Substitute Products
- Table 9-1: Historical Annual Growth Rates, Appliance Finishes (2014–2019e)
- Table 9-2: 5-Year CAGR Appliance Finishes (2014–2019e)
- Table 9-3: Growth of Appliance Imports (\$ Billions)
- Table 9-4: Technology Share by Volume and Value (2019e)
- Table 9-5: Sample Powder Coating Property Requirements







CHAPTER 9: APPLIANCE FINISHES (continued)

- Table 9-6: Annual Growth Rates, Appliance Finishes (2019e–2024f)
- Table 9-7: 5-Year CAGR Appliance Finishes (2019e–2024f)

CHAPTER 10: AUTOMOTIVE OEM COATINGS

- Figure 10-1: 2019 Automotive Coatings Volume
- Figure 10-2: Automotive Coatings Value
- Figure 10-3: Volume/Value of Automotive Coatings (2014–2019e)
- Figure 10-4: Auto Coatings, 5-Year Price Growth
- Figure 10-5: Estimated Market Share (2019e)
- Figure 10-6: SAAR Auto and Light Truck Sales
- Figure 10-7: 12-Month Total Vehicle Miles Traveled
- Figure 10-8: Light Auto Sales Vs. GDP (2009–2019)
- Figure 10-9: Imports of Vehicles and Parts by Country of Origin (2011-2018)
- Figure 10-10: Vehicle and Auto Parts Trade Estimates (NAFTA 2017)







CHAPTER 10: AUTOMOTIVE OEM COATINGS

- Figure 10-11: Coatings Product Type Share (2019e)
- Figure 10-12: U.S. Share of Electric Vehicle Sales
- Figure 10-13: Volume of U.S. Commercial Electric Light Trucks (2020–2030f)
- Figure 10-14: Volume/Value of Automotive Coatings (2019e–2024f)
- Figure 10-15: Automotive Coatings, 5-Year Price Growth
- Figure 10-16: Industry Structure Analysis
- Figure 10-17: Intensity of Rivalry Amongst Competition
- Figure 10-18: Leverage of Buyers (End Customers)
- Figure 10-19: Leverage of Suppliers
- Figure 10-20: Threat of New Entrants
- Figure 10-21: Threat of Substitute Products
- Table 10-1: Historical Annual Growth Rates, Auto Coatings (2014–2019e)
- Table 10-2: 5-Year CAGR Automotive Coatings (2014–2019e)
- Table 10-3: Cost of Coating Materials by Function (2019e)







CHAPTER 10: AUTOMOTIVE OEM COATINGS (continued)

- Table 10-4: 5-Year Light Vehicle Sales Growth
- Table 10-5: Annual Growth Rates, Automotive Coatings (2019e–2024f)
- Table 10-6: 5-Year CAGR Automotive Coatings (2019e–2024f)

CHAPTER 11: HEAVY-DUTY TRUCK, BUS, and RV FINISHES

- Figure 11-1: 2019 HD Vehicle Finishes Volume
- Figure 11-2: 2019 HD Vehicle Finishes Value
- Figure 11-3: Volume/Value of HD Vehicle Finishes (2014–2019e)
- Figure 11-4: HD Vehicle Finishes, 5-Year Price Growth
- Figure 11-5: Estimated Market Share (2019e)
- Figure 11-6: Industrial Production and Capacity Utilization
- Figure 11-7: Heavy-Duty Truck Manufacturing Revenue (2015–2023f)
- Figure 11-8: Total World Imports to U.S. by Value (2014–2019)
- Figure 11-9: Technology Share by Value (2019e)







CHAPTER 11: HEAVY-DUTY TRUCK, BUS, and RV FINISHES

- Figure 11-10: Volume/Value of HD Vehicles Finishes (2019e–2024f)
- Figure 11-11: HD Vehicles Finishes, 5-Year Price Growth
- Figure 11-12: Industry Structure Analysis
- Figure 11-13: Intensity of Rivalry Amongst Competition
- Figure 11-14: Leverage of Buyers (End Customers)
- Figure 11-15: Leverage of Suppliers
- Figure 11-16: Threat of New Entrants
- Figure 11-17: Threat of Substitute Products
- Table 11-1: Historical Annual Growth Rates, HD Vehicle Finishes (2014–2019e)
- Table 11-2: 5-Year CAGR HD Vehicle Finishes (2014–2019e)
- Table 11-3: Heavy- and Medium-Duty Trucks Technology Share (2019e)
- Table 11-4: Annual Growth Rates, HD Vehicles Finishes (2019e–2024f)
- Table 11-5: 5-Year CAGR HD Vehicles Finishes (2019e–2024f)







CHAPTER 12: MACHINERY AND EQUIPMENT FINISHES

- Figure 12-1: 2019 M&E Finishes Volume
- Figure 12-2: 2019 M&E Finishes Value
- Figure 12-3: Volume/Value of M&E Finishes (2014–2019e)
- Figure 12-4: M&E Finishes, 5-Year Price Growth
- Figure 12-5: Estimated Market Share (2019e)
- Figure 12-6: U.S. Farm Financial Data
- Figure 12-7: U.S. Market Share Crop Exports Market
- Figure 12-8: *Total Farm Wheel Tractors
- Figure 12-9: Construction Spending
- Figure 12-10: M&E Imports (select categories and years)
- Figure 12-11: Technology Share by Volume (2019e)
- Figure 12-12: Volume/Value of M&E Finishes (2019e–2024f)
- Figure 12-13: M&E Finishes, 5-Year Price Growth
- Figure 12-14: Industry Structure Analysis







CHAPTER 12: MACHINERY AND EQUIPMENT FINISHES (continued)

- Figure 12-15: Intensity of Rivalry Amongst Competition
- Figure 12-16: Leverage of Buyers (End Customers)
- Figure 12-17: Leverage of Suppliers
- Figure 12-18: Threat of New Entrants
- Figure 12-19: Threat of Substitute Products
- Table 12-1: Historical Annual Growth Rates, M&E Finishes (2014–2019e)
- Table 12-2: 5-Year CAGR M&E Finishes (2014–2019e)
- Table 12-3: Annual Growth Rates, M&E Finishes (2019e–2024f)
- Table 12-4: 5-Year CAGR M&E Finishes (2019e–2024f)







CHAPTER 13: METAL CONTAINER AND CLOSURE FINISHES

- Figure 13-1: 2019 MCC Finishes Volume
- Figure 13-2: 2019 MCC Finishes Value
- Figure 13-3: Volume/Value of MCC Finishes (2014–2019e)
- Figure 13-4: MCC Finishes, 5-Year Price Growth
- Figure 13-5: Estimated Market Share (2019e)
- Figure 13-6: Metal Can Shipments (U.S. and Canada)
- Figure 13-7: Metal Can Shipments: 2017–2018 (Millions of Cans)
- Figure 13-8: NAICS Code 332119 Imports/Exports by Value (\$ MM)
- Figure 13-9: Volume/Value of MCC Finishes (2019e–2024f)
- Figure 13-10: MCC Finishes, 5-Year Price Growth
- Figure 13-11: Industry Structure Analysis
- Figure 13-12: Intensity of Rivalry Amongst Competition
- Figure 13-13: Leverage of Buyers (End Customers)
- Figure 13-14: Leverage of Suppliers







CHAPTER 13: METAL CONTAINER AND CLOSURE FINISHES (continued)

- Figure 13-15: Threat of New Entrants
- Figure 13-16: Threat of Substitute Products
- Table 13-1: Historical Annual Growth Rates, MCC Finishes (2014–2019e)
- Table 13-2: 5-Year CAGR MCC Finishes (2014–2019e)
- Table 13-3: Coating Dry Film Weight (DFW) by Product (2018)
- Table 13-4: Application Types and Purposes
- Table 13-5: Annual Growth Rates, MCC Finishes (2019e–2024f)
- Table 13-6: 5-Year CAGR MCC Finishes (2019–2024f)







CHAPTER 14: NON-WOOD FURNITURE, FIXTURE, AND BUSINESS EQUIPMENT FINISHES

- Figure 14-1: 2019 NWFFBE Finishes Volume
- Figure 14-2: 2019 NWFFBE Finishes Value
- Figure 14-3: Volume/Value of NWFFBE Finishes (2014–2019e)
- Figure 14-4: NWFFBE Finishes, 5-Year Price Growth
- Figure 14-5: Estimated Market Share (2019e)
- Figure 14-6: End-Use Value Estimates by Coating Type (2019e)
- Figure 14-7: Industrial Production and Capacity Utilization
- Figure 14-8: Imports of Office Furniture and Fixtures by Value
- Figure 14-9: Imports of Computer and Electronic Products by Value
- Figure 14-10: Technology Share (2019e)
- Figure 14-11: Modern Office Furniture and Phone Colors (2019)
- Figure 14-12: Volume/Value of NWFFBE Finishes (2019–2024f)
- Figure 14-13: NWFFBE Finishes, 5-Year Price Growth
- Figure 14-14: Industry Structure Analysis







CHAPTER 14: NON-WOOD FURNITURE, FIXTURE, AND BUSINESS EQUIPMENT FINISHES (continued)

- Figure 14-15: Intensity of Rivalry Amongst Competition
- Figure 14-16: Leverage of Buyers (End Customers)
- Figure 14-17: Leverage of Suppliers
- Figure 14-18: Threat of New Entrants
- Figure 14-19: Threat of Substitute Products
- Table 14-1: Historical Annual Growth Rates, NWFFBE Finishes (2014–2019e)
- Table 14-2: 5-Year CAGR NWFFBE Finishes (2014–2019e)
- Table 14-3: Smart Coatings Forecast (20% AGR)
- Table 14-4: Annual Growth Rates, NWFFBE Finishes (2019e–2024f)
- Table 14-5: 5-Year CAGR NWFFBE Finishes (2019e–2024f)







CHAPTER 15: PAPER, PAPERBOARD, FILM, AND FOIL (PPFF) COATINGS

- Figure 15-1: 2019 PPFF Coatings Volume
- Figure 15-2: 2019 PPFF Coatings Value
- Figure 15-3: Volume/Value of PPFF Coatings (2014–2019e)
- Figure 15-4: PPFF Coatings, 5-Year Price Growth
- Figure 15-5: Estimated Market Share (2019e)
- Figure 15-6: End-Use Estimates by Volume (2019e)
- Figure 15-7: Flexible Packaging End Uses (2019)
- Figure 15-8: Packaging (Machinery) Shipments by End Use (2018)
- Figure 15-9: Import/Export Growth of Converted Paper Products (\$ Millions)
- Figure 15-10: Converted Paper Products Imports by Country (2014–2019*)
- Figure 15-11: Technology Share by Value (2019e)
- Figure 15-12: Volume/Value of PPFF Coatings (2019e–2024f)
- Figure 15-13: PPFF Coatings, 5-Year Price Growth
- Figure 15-14: U.S. Paperboard Packaging Shipments







CHAPTER 15: PAPER, PAPERBOARD, FILM, AND FOIL (PPFF) COATINGS (continued)

- Figure 15-15: Healthcare Packaging Pain Points for Seniors
- Figure 15-16: Industry Structure Analysis
- Figure 15-17: Intensity of Rivalry Amongst Competition
- Figure 15-18: Leverage of Buyers (End Customers)
- Figure 15-19: Leverage of Suppliers
- Figure 15-20: Threat of New Entrants
- Figure 15-21: Threat of Substitute Products
- Table 15-1: Historical Annual Growth Rates, PPFF Coatings (2014–2019e)
- Table 15-2: 5-Year CAGR PPFF Coatings (2014–2019e)
- Table 15-3: Annual Growth Rates, PPFF Coatings (2019e–2024f)
- Table 15-4: 5-Year CAGR PPFF Coatings (2019–2024f)
- Table 15-5: Market Trends and Drivers







CHAPTER 16: RAIL ROLLING STOCK COATINGS

- Figure 16-1: 2019 RR Stock Coating Volume
- Figure 16-2: 2019 RR Stock Coating Value
- Figure 16-3: Volume/Value of RR Stock Coatings (2014–2019e)
- Figure 16-4: RR Stock Coatings, 5-Year Price Growth
- Figure 16-5: Estimated Market Share (2019e)
- Figure 16-6: Rail Rolling Stock Coatings Value Chain
- Figure 16-7: Weight of Freight by Mode
- Figure 16-8: Value of Freight by Mode
- Figure 16-9: Savannah Georgia Ports Authority to Double Rail Capacity by 2020
- Figure 16-10: Class I RR Freight Breakdown by Volume (2018)
- Figure 16-11: Class I RR Freight Breakdown by Value (2018)
- Figure 16-12: Chemical and Freight Rail Revenues (\$ Billion)
- Figure 16-13: Major Rail Gateways for U.S. Chemical Industry
- Figure 16-14: Domestic Movements of Crude Oil and Selected Products by Rail (2010–2018)







CHAPTER 16: RAIL ROLLING STOCK COATINGS (continued)

- Figure 16-15: U.S. Crude Oil Refineries and Pipelines
- Figure 16-16: Coastal Fuel Product Flows (Imports/Exports)
- Figure 16-17: Top 10 Exporting Countries by Value (YoY Growth)
- Figure 16-18: Top 10 Importing Countries by Value (YoY Growth)
- Figure 16-19: Domestic Rail Imports/Exports Net Gain(2018)
- Figure 16-20: Average \$ Price/Gallon by Rail Vehicle Type
- Figure 16-21: Coatings Supplier Revenues by Rail Vehicle Type
- Figure 16-22: Interior Linings Technology Share
- Figure 16-23: Exterior Coatings Technology Share
- Figure 16-24: Exterior Coatings Technology Volume Share by Number of Cars (2019e)
- Figure 16-25: Volume/Value of RR Stock Coatings (2019e–2024f)
- Figure 16-26: RR Stock Coatings, 5-Year Price Growth
- Figure 16-27: Industry Structure Analysis
- Figure 16-28: Intensity of Rivalry Amongst Competition







CHAPTER 16: RAIL ROLLING STOCK COATINGS (continued)

- Figure 16-29: Leverage of Buyers (End Customers)
- Figure 16-30: Leverage of Suppliers
- Figure 16-31: Threat of New Entrants
- Figure 16-32: Threat of Substitute Products
- Table 16-1: Historical Annual Growth Rates, RR Stock Coatings (2014–2019e)
- Table 16-2: 5-year CAGR RR Stock Coatings (2014–2019e)
- Table 16-3: Average Selling Price by Technology Type (2019)
- Table 16-4: U.S. Wheat Supply (MM Bushels)
- Table 16-5: Typical Recoating Intervals by Rail Vehicle Types
- Table 16-6: Annual Growth Rates, RR Stock Coatings (2019e–2024f)
- Table 16-7: 5-Year CAGR RR Stock Coatings (2019–2024f)







CHAPTER 17: WOOD AND COMPOSITION BOARD FLAT-STOCK FINISHES

- Figure 17-1: 2019 Flat-Stock Finishes Volume
- Figure 17-2: 2019 Flat-Stock Finishes Value
- Figure 17-3: Volume/Value of Flat-Stock Finishes (2014–2019e)
- Figure 17-4: Flat-Stock Finishes, 5-Year Price Growth
- Figure 17-5: Exterior Trim Fragmented Market (2018)
- Figure 17-6: Estimated Market Share (2019e)
- Figure 17-7: Flat-Stock Finishes End-Use Estimates by Value (2019)
- Figure 17-8: Primary Exterior Material Used on New U.S. Single-Family Homes (1980–2018)
- Figure 17-9: Imports of Veneer, Plywood & Engineered Wood Products
- Figure 17-10: Technology and Product Share (2019e)
- Figure 17-11: Volume/Value of Flat-Stock Finishes (2019–2024f)
- Figure 17-12: Flat-Stock Finishes, 5-Year Price Growth
- Figure 17-13: Industry Structure Analysis
- Figure 17-14: Intensity of Rivalry Amongst Competition







CHAPTER 17: WOOD AND COMPOSITION BOARD FLAT-STOCK FINISHES (continued)

- Figure 17-15: Leverage of Buyers (End Customers)
- Figure 17-16: Leverage of Suppliers
- Figure 17-17: Threat of New Entrants
- Figure 17-18: Threat of Substitute Products
- Table 17-1: Historical Annual Growth Rates, Flat-Stock Finishes (2014–2019e)
- Table 17-2: 5-Year CAGR Flat-Stock Finishes (2014–2019e)
- Table 17-3: Top 10 Exterior Siding Materials by Share (2019)
- Table 17-4: Annual Growth Rates, Flat-Stock Finishes (2019e–2024f)
- Table 17-5: 5-Year CAGR Flat-Stock Finishes (2019e–2024f)







CHAPTER 18: WOOD FURNITURE, CABINET, AND FIXTURE FINISHES

- Figure 18-1: 2019 WFCF Finishes Volume
- Figure 18-2: 2019 WFCF Finishes Value
- Figure 18-3: Volume/Value of WFCF Finishes (2014–2019e)
- Figure 18-4: WFCF Finishes, 5-Year Price Growth
- Figure 18-5: Estimated Market Share (2019e)
- Figure 18-6: Coatings Value by End Use Market (2019e)
- Figure 18-7: Industrial Production and Capacity Utilization
- Figure 18-8: Wood Furniture & Fixtures Imports by Country (2014–2019)
- Figure 18-9: Technology & Color Share by Value (2019e)
- Figure 18-10: Technology Breakdown by Value (2019e)
- Figure 18-11: Volume/Value of WFCF Finishes (2019–2024f)
- Figure 18-12: WFCF Finishes, 5-Year Price Growth
- Figure 18-13: Industry Structure Analysis
- Figure 18-14: Intensity of Rivalry Amongst Competition







CHAPTER 18: WOOD FURNITURE, CABINET, AND FIXTURE FINISHES (continued)

- Figure 18-15: Leverage of Buyers (End Customers)
- Figure 18-16: Leverage of Suppliers
- Figure 18-17: Threat of New Entrants
- Figure 18-18: Threat of Substitute Products
- Table 18-1: Historical Annual Growth Rates, WFCF Finishes (2014–2019e)
- Table 18-2: 5-Year CAGR WFCF Finishes (2014–2019e)
- Table 18-3: Annual Growth Rates, WFCF Finishes (2019e–2024f)
- Table 18-4: 5-Year CAGR WFCF Finishes (2019e–2024f)







CHAPTER 19: AEROSOL PAINT

- Figure 19-1: 2019 Aerosol Paint Volume
- Figure 19-2: 2019 Aerosol Paint Value
- Figure 19-3: Volume/Value of Aerosol Paint (2014–2019e)
- Figure 19-4: Aerosol Paint, 5-Year Price Growth
- Figure 19-5: Estimated Market Share (2019e)
- Figure 19-6: Aerosol Paint Supply Chain
- Figure 19-7: End-Use Estimates by Volume (2019e)
- Figure 19-8: Distribution of Aerosol Paint by Application (2019e)
- Figure 19-9: Technology Share by Volume (2019e)
- Figure 19-10: Volume/Value of Aerosol Paint (2019e–2024f)
- Figure 19-11: Aerosol Paint, 5-Year Price Growth
- Figure 19-12: Industry Structure Analysis
- Figure 19-13: Intensity of Rivalry Amongst Competition
- Figure 19-14: Leverage of Buyers (End Customers)







CHAPTER 19: AEROSOL PAINT (continued)

- Figure 19-15: Leverage of Suppliers
- Figure 19-16: Threat of New Entrants
- Figure 19-17: Threat of Substitute Products
- Table 19-1: Historical Annual Growth Rates, Aerosol Paint (2014–2019e)
- Table 19-2: 5-Year CAGR Aerosol Paint (2014–2019e)
- Table 19-3: Description of Aerosol Paint by Application
- Table 19-4: Annual Growth Rates, Aerosol Paint (2019e–2024f)
- Table 19-5: 5-Year CAGR Aerosol Paint (2019e–2024f)







CHAPTER 20: AUTOMOTIVE REFINISH PAINT

- Figure 20-1: 2019 Automotive Refinish Volume
- Figure 20-2: 2019 Automotive Refinish Value
- Figure 20-3: Volume/Value of Auto Refinish Paint (2014–2019e)
- Figure 20-4: Auto Refinish, 5-Year Paint Price Growth
- Figure 20-5: Total Vehicle Crashes (MM)
- Figure 20-6: Estimated Market Share (2019e)
- Figure 20-7: Composition of Collision Repair Market
- Figure 20-8: Market Segmentation Estimates
- Figure 20-9: Source of Repair Payments for Motor Vehicle Crashes
- Figure 20-10: Insurer Market Share
- Figure 20-11: Insurer Direct Repair Programs
- Figure 20-12: Market Share by Product (2019e)
- Figure 20-13: Volume/Value of Auto Refinish Paint (2019–2024f)
- Figure 20-14: Auto Refinish Paint, 5-Year Price Growth







CHAPTER 20: AUTOMOTIVE REFINISH PAINT (continued)

- Figure 20-15: Industry Structure Analysis
- Figure 20-16: Intensity of Rivalry Amongst Competition
- Figure 20-17: Leverage of Buyers (End Customers)
- Figure 20-18: Leverage of Suppliers
- Figure 20-19: Threat of New Entrants
- Figure 20-20: Threat of Substitute Products
- Table 20-1: Historical Annual Growth Rates, Auto Refinish Paint (2014–2019e)
- Table 20-2: 5-Year CAGR of Auto Refinish Paint (2014–2019e)
- Table 20-3: Annual Growth Rates, Auto Refinish Paint (2019–2024f)
- Table 20-4: 5-Year CAGR Auto Refinish Paint (2019–2024f)







CHAPTER 21: MARINE COATINGS

- Figure 21-1: 2019 Marine Coatings Volume
- Figure 21-2: 2019 Marine Coatings Value
- Figure 21-3: Volume/Value of Marine Coatings (2014–2019e)
- Figure 21-4: Marine Coatings, 5-Year Price Growth
- Figure 21-5: Estimated Market Share (2019e)
- Figure 21-6: National Defense Annual Spending (2014–2019)
- Figure 21-7: Largest Shipbuilding Nations Per Gross Tonnage (2018)
- Figure 21-8: 2019 Imports of NAICS 3366 Ship & Boat Building
- Figure 21-9: 2019 Exports of NAICS 3366 Ship & Boat Building
- Figure 21-10: End-Use Estimates by Value (2019e)
- Figure 21-11: Volume/Value of Marine Coatings (2019e–2024f)
- Figure 21-12: Marine Coatings, 5-Year Price Growth
- Figure 21-13: Industry Structure Analysis
- Figure 21-14: Intensity of Rivalry Amongst Competition







CHAPTER 21: MARINE COATINGS (continued)

- Figure 21-15: Leverage of Buyers (End Customers)
- Figure 21-16: Leverage of Suppliers
- Figure 21-17: Threat of New Entrants
- Figure 21-18: Threat of Substitute Products
- Table 21-1: Historical Annual Growth Rates, Marine Coatings (2014–2019e)
- Table 21-2: 5-Year CAGR Marine Coatings (2014–2019e)
- Table 21-3: Marine Coatings' Technology and Product Applications
- Table 21-4: Annual Growth Rates, Marine Coatings (2019e–2024f)
- Table 21-5: 5-Year CAGR Marine Coatings (2019e–2024f)

CHAPTER 22: PROTECTIVE COATINGS

- Figure 22-1: 2019 Protective Coatings Volume
- Figure 22-2: 2019 Protective Coatings Value







CHAPTER 22: PROTECTIVE COATINGS (continued)

- Figure 22-3: Oil and Gas Value Chain
- Figure 22-4: Volume/Value of Protective Coatings (2014–2019e)
- Figure 22-5: Protective Coatings, 5-Year Price Growth
- Figure 22-6: Estimated Market Share (2019)
- Figure 22-7: WTI Crude Oil Prices (2014–2020f)
- Figure 22-8: End-Use Estimates by Value (2019e)
- Figure 22-9: Construction Spending (2011–2018)
- Figure 22-10: Average Age of U.S. Major Infrastructure Segments
- Figure 22-11: ASCE U.S. Infrastructure Grades (2017)
- Figure 22-12: Average Annual Investment Gap thru 2040 (\$ BN)
- Figure 22-13: Total Energy Generation by Type through 2050
- Figure 22-14: Marine Energy Market Has Growth Potential
- Figure 22-15: U.S. Nonresidential Construction Forecasts (\$ MM)
- Figure 22-16: Annual O&G Infrastructure CAPEX (\$ MM)







CHAPTER 22: PROTECTIVE COATINGS (continued)

- Figure 22-17: Avg. Annual Capital Investment—Subsegment (\$ MM)
- Figure 22-18: Total CAPEX (\$ BN)
- Figure 22-19: North American CAPEX (\$ BN)
- Figure 22-20: Public Highway & Bridge Construction
- Figure 22-21: Private Highway & Bridge Construction
- Figure 22-22: U.S. Bridges
- Figure 22-23: Protective Coatings Technology Share (2019e)
- Figure 22-24: Polyurethane, Alkyd, and Epoxy Technologies
- Figure 22-25: Coating Technology & O&G
- Figure 22-26: Coating Technology & "High Value" Infrastructure Applications
- Figure 22-27: Coatings Technology & Food/Beverage
- Figure 22-28: Coating Technology & Highway & Bridge
- Figure 22-29: Coating Technology & Water & Wastewater
- Figure 22-30: Volume/Value of Protective Coatings (2019e–2024f)







CHAPTER 22: PROTECTIVE COATINGS (continued)

- Figure 22-31: Protective Coatings, 5-Year Price Growth
- Figure 22-32: Industry Structure Analysis
- Figure 22-33: Intensity of Rivalry Amongst Competition
- Figure 22-34: Leverage of Buyers (End Customers)
- Figure 22-35: Leverage of Suppliers
- Figure 22-36: Threat of New Entrants
- Figure 22-37: Threat of Substitute Products
- Table 22-1: Historical Annual Growth Rates, Protective Coatings (2014–2019e)
- Table 22-2: 5-Year CAGR Protective Coatings (2014–2019e)
- Table 22-3: Technology Type Buying Factors (2019)
- Table 22-4: Annual Growth Rates, Protective Coatings (2019e–2024f)
- Table 22-5: 5-Year CAGR Protective Coatings (2019e–2024f)







CHAPTER 23: TRAFFIC MARKING PAINT

- Figure 23-1: 2019 Traffic Marking Volume
- Figure 23-2: 2019 Traffic Marking Value
- Figure 23-3: Volume/Value of Traffic Marking Paint (2014–2019e)
- Figure 23-4: Traffic Marking Paint, 5-Year Price Growth
- Figure 23-5: Estimated Market Share (2019e)
- Figure 23-6: End-Use Estimates by Volume (2019e)
- Figure 23-7: ASCE's 2017 Infrastructure Super Map (Road Costs)
- Figure 23-8: Public Spending on Transportation and Water Infrastructure (2017)
- Figure 23-9: Public Spending on Transportation and Water Infrastructure, by Infrastructure Type (2017)
- Figure 23-10: ASCE's Funding Gap
- Figure 23-11: Technology Share by Value (2018)
- Figure 23-12: Volume/Value of Traffic Marking Paint (2019–2024f)
- Figure 23-13: Traffic Marking Paint, 5-Year Price Growth
- Figure 23-14: Industry Structure Analysis







CHAPTER 23: TRAFFIC MARKING PAINT (continued)

- Figure 23-15: Intensity of Rivalry Amongst Competition
- Figure 23-16: Leverage of Buyers (End Customers)
- Figure 23-17: Leverage of Suppliers
- Figure 23-18: Threat of New Entrants
- Figure 23-19: Threat of Substitute Products
- Table 23-1: Historical Annual Growth Rates, Traffic Marking Paint (2014–2019e)
- Table 23-2: 5-Year CAGR Traffic Marking Paint (2014–2019e)
- Table 23-3: Traffic Markings Characteristics
- Table 23-4: Paint Striping Comparative Contractor Bids (2015)
- Table 23-5: Annual Growth Rates, Traffic Marking Paint (2019e–2024f)
- Table 23-6: 5-Year CAGR Traffic Marking Paint (2019e–2024f)







CHAPTER 24: COMPILATION OF REFERENCES TO MAJOR RESINS

- Figure 24-1: Coil Coating Automated Process
- Figure 24-2: Coil Coating Technology Share by Volume (2019e)
- Figure 24-3: Raw Material Input for a Typical Unit of Coatings Percent of Cost in 2018, 2019f
- Figure 24-4: Architectural Cost/Raw Material Breakdown
- Figure 24-5: Industrial Cost/Raw Material Breakdown
- Figure 24-6: Architectural Coatings Technology Share (2019e)
- Figure 24-7: Aerospace Conventional vs. High Solids Technology
- Figure 24-8: Appliance Finishes Technology Share by Volume (2019e)
- Figure 24-9: Appliance Finishes Resins Share by Volume (2019e)
- Figure 24-10: Automotive Coatings Product Type Share (2019e)
- Figure 24-11: HD Vehicles Technology Share by Value (2019e)
- Figure 24-12: M&E Finishes Technology Share by Volume (2019e)
- Figure 24-13: RR Stock Coatings Interior Linings Technology Share
- Figure 24-14: RR Stock Coatings Exterior Coatings Technology Share







CHAPTER 24: COMPILATION OF REFERENCES TO MAJOR RESINS (continued)

- Figure 24-15: RR Stock Coatings Exterior Coatings Technology Volume Share by Number of Cars (2019e)
- Figure 24-16: Flat-Stock Finishes Technology Share (2019e)
- Figure 24-17: Technology & Color Share by Value (2019e)
- Figure 24-18: Technology Breakdown by Value (2019e)
- Figure 24-19: Aerosol Technology Share by Volume (2019e)
- Figure 24-20: Market Share by Product (2019e)
- Figure 24-21: Protective Coatings Technology Share (2019e)
- Figure 24-22: Polyurethane, Alkyd, and Epoxy Technologies
- Figure 24-23: Coating Technology & O&G
- Figure 24-24: Coating Technology & "High Value" Infrastructure Applications
- Figure 24-25: Coating Technology & Food/Beverage; Polyurethane Follows
- Figure 24-26: Coating Technology & Highway & Bridge
- Figure 24-27: Coating Technology & Water & Wastewater







CHAPTER 24: COMPILATION OF REFERENCES TO MAJOR RESINS (continued)

- Figure 24-28: Traffic Marking Technology Share by Value (2018)
- Table 24-1: Coil Coatings Characteristics
- Table 24-2: Heavy- and Medium-Duty Trucks Technology Share (2019e)
- Table 24-3: Marine Coatings' Technology and Product Applications



