NORTH AMERICAN MARKET REPORT
for Adhesives and Sealants with a Global Overview
2020-2023 North American MARKET REPORT for Adhesives and Sealants

A Comprehensive Report on the Adhesives and Sealants Market

In NORTH AMERICA

with a Global Overview

2021 Edition

AN ASC MARKET REPORT
### Table of Contents

- **Introduction** (pp 1 – 58)
- **CHAPTER 1: Global Adhesives and Sealants Market Size (2020)**
- **CHAPTER 2: Addressable Adhesives and Sealants Market in North America (2020)**
- **CHAPTER 3: The Role of Adhesives and Sealants in Assembly Operations (2020–2023)**
- **CHAPTER 5: The Role of Adhesives and Sealants in Consumer/DIY Retail (2020–2023)**
- **CHAPTER 7: The Role of Adhesives in Paper, Board & Related Products**
# TABLE OF CONTENTS

## Table of Contents

- **CHAPTER 8:** The Role of Adhesives and Sealants in Transportation Markets
- **CHAPTER 9:** The Role of Adhesives in Woodworking & Joinery (2020–2023)
- **CHAPTER 10:** NA Overview of Adhesives and Sealants Technologies (2020–2023)
- **CHAPTER 11:** Key Mergers and Acquisitions (2018–2020)
- **CHAPTER 12:** The Role of Channels and Distribution in Adhesives and Sealants (2020–2023)
- **CHAPTER 13:** A&S Regulatory Update (2020-2023)
- **CHAPTER 14:** Feedstock & Raw Material Value Chain Overview
- **CHAPTER 15:** The Role of Adhesive Bonding in 3D Printing (Bonded Assemblies, Transportation Markets, Building & Construction)
- **CHAPTER 16:** ASC A&S Member Manufacturers
# TABLE OF CONTENTS

**List of Tables**

- **2021 MACRO ECONOMIC OVERVIEW**
  - Impact of COVID in 2020 on Adhesives and Sealants
  - Several global trends across a diverse range of markets
- **CHAPTER 3: The Role of Adhesives and Sealants in Assembly Operations (2020–2023)**
  - Structure Lightweighting in Construction Product Bonding Assembly
  - Cross-industry exchange may increase the speed of industrialization
  - Overview of Investment Attractiveness: Wind Turbine Components
  - Bonded Composite Applications (2020)
  - Assembly Adhesives: Key end-use applications
  - Assembly Operations: Key Decision Criteria
  - Structural Adhesives Market Overview
LIST OF TABLES

• CHAPTER 3: The Role of Adhesives and Sealants in Assembly Operations (2020–2023)
  • Structural Adhesives Market Dynamics
  • Micro Drivers in Assembly Structural Adhesives
  • Medical Applications: Key Decision Criteria
  • Global Construction Market Growth (2020–2040)
  • AIA panel: Consensus Construction Forecast (2020–2022)
  • Home Remodeling Drivers (2019) – REALTOR® Ranked Interior Projects
  • Leading Suppliers to the U.S. Roofing Market by Products Offered
  • Roofing Value Chain Players
# Table of Contents

## List of Tables

  - NA Infrastructure and Buildings: Value Share by End Market (2020)
  - Construction/Repair/Civil Engineering Product Technology Uses
  - SWOT – Structural Strengthening
  - SWOT – Composites in O&G Pipeline Repair
  - SWOT – Epoxy used in Composites for Infrastructure
  - FRP Repair Fiber Selection Criteria
  - Comparison of Chemical Anchor and Mechanical Anchor Performance Attributes
  - Comparison of Chemical Anchor and Mechanical Expansion Anchor Service
  - Selection Criteria for Epoxy and Acrylic A&S Products
  - Chemical Anchoring Manufacturers
  - Bonding & Crack Repair Service
TABLE OF CONTENTS

List of Tables

  • Bonding & Crack Repair Manufacturers
  • Epoxy Chock/Grout Manufacturers
  • Polyurethane Grout for Repair Applications – % Share of End Uses
  • Polyurethane Grout – Typical Manufacturer Test Data
  • Polyurethane Grout Manufacturers

• CHAPTER 5: The Role of Adhesives and Sealants in Consumer/DIY Retail (2020–2023)
  • Main Sealant Chemistries used in DIY
  • Key Decision Makers and Influencers
  • Adhesive and Sealant VOC Limits – SCAQMD Amended Rule 1168
List of Tables

• CHAPTER 6: The Role of Adhesive Bonding in Footwear and Leather Goods (2020–2023)
  • FDRA Production Power Rankings by Country (2019)
• CHAPTER 7: The Role of Adhesives in Paper, Board & Related Products
  • Comparison of Adhesive Types
  • Waterborne Adhesives - Key Decision Criteria
  • Major Packaging Themes Driving Greater Segmentation and Higher Demand for Adhesives
  • Adhesives in Bookbinding and Graphic Art Industry
LIST OF CONTENTS

List of Tables

• CHAPTER 8: The Role of Adhesives and Sealants in Transportation Markets
  • Material Dynamics by Market
  • Global Market for Vehicle Lightweighting by Material Category, 2018-2024 ($ MM)
  • Transportation Micro Drivers and Implications
  • Value Chain Material Dynamics
  • Transportation Market Profile
  • Transportation – Overview of Joining Methods and Properties
  • Transportation End Market Polymer Uses
  • Transportation Waterborne Adhesives – Key Decision Criteria
  • Aerospace & Defense – Profile and Dynamics
  • Auto OEM Drivers of Lightweighting
  • Planned Mass-Reduction by Automaker
# List of Tables

- **CHAPTER 8: The Role of Adhesives and Sealants in Transportation Markets**
  - Automotive Sealants Use Drivers and Key Technical Requirements
  - Aerospace Sealants Use Drivers and Key Technical Requirements
  - Tractors and Heavy Equipment Sealants Use Drivers
  - Marine Sealants Use Drivers
  - Heavy Duty Truck Market Dynamics: Breakdown of Consumer Expenditures (2020)
  - Bus & Coach Industry A&S Technology Profile
  - Marine Adhesives Profile
  - Medium- & Heavy-Duty Truck A&S Technology Profile
  - Rail A&S Technology Profile
  - Trailer A&S Technology Profile
TABLE OF CONTENTS

List of Tables

• CHAPTER 11: Key Mergers and Acquisitions (2018–2020)
  • Global Adhesives Related M&A Transactions 2021-2019
• CHAPTER 12: The Role of Channels and Distribution in Adhesives and Sealants (2020–2023)
  • A&S Distributor Dynamics (2020–2023) in North America
  • WBA Channel Market Dynamics
• CHAPTER 13: A&S Regulatory Update (2020-2023)
  • California’s South Coast Air Quality Management District (SCAQMD)
  • DTSC 2021-2023 Proposed Work Plan Product Categories
  • DTSC 2021-2023 Priority Product Workplan Draft – Adhesives
List of Tables

- CHAPTER 14: Feedstock & Raw Material Value Chain Overview
  - 4 major shifts expected to impact O&G, chemicals through 2030
  - COVID-19 instills urgency for restructuring of global supply chain

- CHAPTER 15: The Role of Adhesive Bonding in 3D Printing (Bonded Assemblies, Transportation Markets, Building & Construction)
  - Attributes of Five Bondline Design Options
  - Adhesive Compatibility to VariousSurfaces
  - Three Primary Use-Cases for Adopting AM Technologies for Production
List of Tables

- CHAPTER 16: ASC A&S Member Manufacturers
  - ASC Member Manufacturers of CAULKS & SEALANTS by Market Segments
  - ASC Member Manufacturers of CAULKS & SEALANTS by Chemistry
  - ASC Member Manufacturers of ADHESIVES by Market Segment
  - ASC Member Manufacturers of ADHESIVES by Market Segment
TABLE OF CONTENTS

List of Figures

• 2021 MACRO ECONOMIC OVERVIEW
  • Weekly Economic Indicator
  • Manufacturers New Orders: Nondefense Capital Goods (Excluding Aircraft)
• CHAPTER 1: Global Adhesives and Sealants Market Size (2020)
  • 2020 Global Adhesives and Sealants Market Size
  • Global End Markets Comparison Charts
TABLE OF CONTENTS

List of Figures

• CHAPTER 2: Addressable Adhesives and Sealants Market in North America (2020)
  • Breakdown of North America A&S Market by Country Charts
  • Key NA Markets by Volume
  • U.S. Adhesives Demand (2020 Volume and Value Estimates)
  • Canada Adhesives Demand (2020 Volume and Value Estimates)
  • Mexico Adhesives Demand (2020 Volume and Value Estimates)
  • North America Adhesives Demand by Country and by Sub-Segment (2020)
  • North America Sealants Demand by Country and by Sub-Segment (2020)
LIST OF FIGURES

CHAPTER 3: The Role of Adhesives and Sealants in Assembly Operations (2020–2023)

- 2020 NA Assembly Adhesives and Sealants Volume Demand and 2023 Forecast
- NA Assembly Adhesives and Sealants 3-year CAGRs by Volume and Value
- NA Assembly OEM Adhesives (Resin Share in 2020)
- Assembly OEM Sealants (Resin Share in 2020)
- Composite Bridge (OEM Assembly) Value Chain
- Composite Bridge (New Construction) Bonding – End Market Polymer Uses
- Composite Rebar (OEM Assembly) Value Chain
- Structure of a Wind Turbine Rotor Blade
- Wind’s Share of In-State Utility-Scale Electricity Generation (2020)
List of Figures

• CHAPTER 3: The Role of Adhesives and Sealants in Assembly Operations (2020–2023)
  • Composite Wind Tower (OEM Assembly) Value Chain
  • Arkema’s new wind turbine rotor blade design
  • Industry Structure Value Chain – Electronics and Electrical Adhesives

• NA Construction spending in the U.S. (in both private as well as public)
• NA Total Construction Put in Place 2019 and Forecast Growth
• U.S. value of new construction 2005-2019, with forecasts up until 2024 ($BN)
• Residential Construction Put in Place: Improvements, Multifamily, Single-family
• Divergence in residential and nonresidential will persist in 2021
• Builder Confidence & Single-Family Construction
• U.S. new residential construction 2005-2019, 2024f ($BN)
• Spending on nonresidential buildings in 2020 & 2021
• U.S. Construction Spending through 2020: Growth Despite Covid-19
• 2020 NA B&C Adhesives Volume Demand by Sub-Segment (MM lbs)
• 2020 NA B&C Sealants Volume Demand by Sub-Segment (MM lbs)
List of Figures

  - NA Construction Adhesives (Resin Share in 2020)
  - NA Construction Sealants (Resin Share in 2020)
  - Total installed value (materials + labor) by construction type, in $BN (2020–2025)
  - U.S. Roofing Demand by Product Type and Value (2020) with 2025 Forecast
  - Comparison of Residential and Commercial Markets (% Share)
  - Roofing End Market Split by Value
  - U.S. Roofing Market Share by Company
  - U.S. Roofing Demand by Product (mil squares) with 2025 Forecast
  - U.S. Commercial Roofing Demand by Product (mil squares) with 2025 Forecast
  - U.S. Commercial Roofing Demand by Market (mil squares)
  - U.S. Commercial Roofing Market Share by Roofing Supplier
List of Figures

  - New Install vs. Reroof by membrane
  - Insulation and Membrane Adhesive Attachment Diagram
  - Sample of Key Roofing Applications (Diagrams)
  - Low-Slope Commercial Roofing – NA Market Size
  - Projected Revenue Growth By Roofing Segments Through 2025
  - Low-slope Roofing Market By Material Forecast
  - Single-Ply Roofing Market By Material Forecast
  - Industry Growth Forecast – Best Case (Based on Rapid Adhesives Penetration)
  - U.S. Commercial Buildings Rising Energy Efficiency Standards Forecast by State
  - Solvent & Waterborne Membrane Bonding Adhesives Est. Market Share (2020)
  - Total installed value (materials + labor) by construction type, in $BN
TABLE OF CONTENTS

List of Figures

  • NA Flooring is Residential / Commercial (% and $ BN Value)
  • NA Flooring Volume, Value and CAGR Growth Estimates (2020–2025)
  • U.S. Flooring Adhesives Market Size Estimate ($ MM), P.A. Growth, and CAGR (2025)
  • Subflooring and Carpet Installation Adhesives (Diagram)
  • CBO’s Economic Projections for Calendar Years 2021 to 2031 (GDP vs. Potential GDP)
  • NA Channels-to-Market Value Chain ($ BN Value Split)
  • Structural Strengthening (incl. tunneling) – Resin Market
  • NA + EU O&G Pipeline Repair – Resin Market
List of Figures

- CHAPTER 5: The Role of Adhesives and Sealants in Consumer/Do-It-Yourself Retail (2020–2023)
  - 2020 NA DIY Adhesives Volume Demand (2020–2023)
  - 2020 NA DIY Sealants Volume Demand (2020–2023)
  - Consumer DIY A&S Resin Share (2020)
  - Where do consumers initiate their product search for purchasing?
  - E-commerce share of total global retail sales from 2015 to 2023
  - Projected revenue growth of leading online service verticals (2019–2021)
  - Most popular online retail in 2020 by average monthly traffic
  - IBM survey: meet consumers driving change in 2020
List of Figures

  - NA Footwear and Leather Goods Adhesives Volume and Technology Share Estimate in 2020 with 3-Year Forecast
  - Historical Divergence between U.S. Retail Footwear Prices and Supply Chain Costs (1996–2020)
List of Figures

- CHAPTER 7: The Role of Adhesives in Paper, Board & Related Products
  - Online Orders in Retail Industry by Country (Volume Leaders) through 2020
  - E-Commerce Spiking (2015 – 2020) by Value Share
  - Packaging Industry Survey Results (COVID-19 Impact)
  - 2020 Global Packaging Share by Product Type
  - U.S. Corrugated Product Shipments (1990 – 2020)
  - NA Paper, Board and Related Products Adhesives by Market Sub-Segment (MM Lb), with 3-Year Forecast
  - Paper, Board and Related Products: Adhesives Technology Share (2020)
  - Paper, Board & Related Products Adhesives (Resin Share in 2020)
  - Drivers for Adhesive Development (R&D Driver Ratings)
TABLE OF CONTENTS

List of Figures

• CHAPTER 7: The Role of Adhesives in Paper, Board & Related Products
  • Global Volumes: Retail Packaging Share by Core Industry, Packaging Material, End-Use Market
  • Global Flexible Packaging Market Volume by Region and End-Use Market (2019–2024)
  • Global Flexible Packaging by End-Use Market and Material Type (2020)
  • U.S. Flex-Pack Sales and Shipment Breakdown (2018)
  • Graphic Arts Est. Global Market Size (2020) and 2025 Forecast
  • High-Gloss Laminating For Graphic Arts Market Value (2020, 2025)
  • Global Market Value for Adhesives in High-Gloss Laminating ($ BN)
List of Figures

- CHAPTER 8: The Role of Adhesives and Sealants in Transportation Markets
  - NA Transportation Sector Est. Unit Builds Production Forecast (2020–2023)
  - 2020 NA Transportation Adhesive and Sealant Volume Demand (MM lbs), with 3-Year CAGR Estimate
  - Transportation Adhesives (Resin Share in 2020)
  - Transportation Sealants (Resin Share in 2020)
  - Global Carbon Dioxide Emissions by Region thru 2030
  - Adhesive Potential – Lightweighting by Segment ($ BN) thru 2023
  - Lightweighting Material Split by End Market (2010–2030)
  - New CAFÉ Standards (2012, 2016, 2025)
  - Future Lightweight Vehicles Material % by Curb Weight per Vehicle (2020–2040)
# TABLE OF CONTENTS

## List of Figures

- **CHAPTER 8: The Role of Adhesives and Sealants in Transportation Markets**
  - CAFÉ M.P.G. Fuel Economy Benchmarks through 2025
  - Lightweight Vehicles: The future of Structural Adhesives
  - Growth Comparison of Joint Lines Per Vehicle Currently and Beyond 2030
  - Comparison of Joining Methods with Increased Use of Mixed Materials in Vehicles (Current and Beyond 2030)
  - Boeing 787 Composition
  - Auto Vehicle Material Share Breakdowns by Weight, with CAGR forecast
  - Automotive Lightweight Materials Market Forecast (2019 – 2027)
  - Global Regulations Map for Passenger Cars by Region
  - Where is the Weight? Light Vehicle Mass Distribution
List of Figures

- CHAPTER 8: The Role of Adhesives and Sealants in Transportation Markets
  - Multi-Material Vehicles (Model Comparison of Weight Savings and Composition Differences)
  - Adhesive Drivers (Vehicle Diagram)
  - Example of Hybrid Chemical Bonding (Front Quarter Exploded View of Vehicle)
  - Net Trailer Orders (November 2020)
  - NA Marine A&S Technology Share
  - Class 8 Truck Builds (2020 – 2023) with 3-Year CAGR Estimate
List of Figures

• CHAPTER 9: The Role of Adhesives in Woodworking & Joinery (2020–2023)
  • WW & Joinery End Market and Technology Sub-Segment Volume Share (2020), with a 3-Year CAGR Estimate
  • NA WW & Joinery Volume Market Size (2023)
  • Woodworking & Joinery Adhesives (Resin Share in 2020)
  • 2019 Remodeling Impact Report (>5,000 Respondents)
  • NA Fenestration Production MM Units (2017–2021) and Homeowner Improvements ($ BN), with P.A. Growth Estimate
  • Woodworking Adhesives Technology Profile (2020)
  • Hot Melt Adhesives (Resin Share in 2020)
  • Impact of Lumber Shortage (2019–2021)
  • Q3 2020 Remodeling Market Index (RMI) by NAHB (Effect of Material Shortages)
List of Figures

  - Lumber Futures Prices, 2016-2020
  - Top 10 Metro Area Home Improvement Spending Projections
  - 2023 NA WW A&S Volume and Value Market Forecast
List of Figures

  - Pressure Sensitive Adhesives Volume, Value (PSA Binder Breakdown by Market)
  - Hot Melt Adhesives Volume, Value (HMA Binder Breakdown by Market)
  - Waterborne (Emulsion) Adhesives Volume, Value (WB Binder Breakdown by Market)
  - Solventborne Adhesives Volume, Value (SB Binder Breakdown by Market)
  - Reactive (Thermoset) Adhesives Volume, Value (Binder Breakdown by Market)
  - Natural (Water Soluble) Adhesives Volume, Value (Binder Breakdown by Market)
  - NA Sealants Sub-Segments By Country (2020)
CHAPTER 11: Key Mergers and Acquisitions (2018–2020)

- A&S Deal Split by volume (# of Deals)
- A&S Deal Split by value ($ BN)
- Acquiror Regional Breakdown (2005-2020)
- Corporate Strategic Acquisitions – % of Deals by Volume (2005-2020)
- Public Trading EBITDA Multiples by Sub-Sector
- Premium Valuations for Highly Strategic Assets
List of Figures

- CHAPTER 14: Feedstock & Raw Material Value Chain Overview
  - ASC Member Survey Results (14 Respondents)
  - Shortage of key intermediates following severe winter in Texas by Plant
  - Economic growth correlated to Oil Consumption
  - Crude & Cracker feedstock pricing monthly analysis (2020)
  - Crude oil prices correlated to geopolitical and economic events (1970 – 2020)
  - Refinery yield from a typical barrel of oil
  - Production, consumption, net imports of natural gas in U.S.
  - Global benzene supply, demand and pricing through 2022
  - Ethylene cost of production
  - Global Ethylene Production and Demand Outlook
  - North America Ethylene Liquid Cracking Index
LIST OF FIGURES

1. CHAPTER 14: Feedstock & Raw Material Value Chain Overview
   - Drivers of Ethylene Production Process
   - Feed Supply Chain and Tackifier Resins & Polymers
   - Monomers for tackifier resins availability for next 3 years
   - U.S. Rubber Demand by Type – $ Millions (2010-16, 2021f)
   - Butadiene: Pricing, Demand, Key Producers and End Uses
   - Propylene: Pricing, Demand, Key Producers and End Uses
   - SB (Styrene – Butadiene) Polymers for Adhesives Market Estimate through 2021
   - Acrylic Acid & Acetic Acid Value Chains
   - Acrylic Polymers – NA Market Share for Adhesives
   - Phthalate Plasticizers in Adhesives & Sealants
List of Figures

• CHAPTER 14: Feedstock & Raw Material Value Chain Overview
  • Raw Material Chain via Silicone Metal—Global Market Volume of Silicone Sealants, U.S. Silicone Demand by Application, Global Construction Sealants CAGR by Resin Type (2016–2021)
  • Fumed Silica—Metric Tons (2010–2020f)
  • Global Polyurethane Market—Regional and End Market Breakdowns
  • Polyurethanes in APAC and NA (Global Outlook)
  • NA Polyurethane Market, by Application – $ MM (2015-2021f)
  • NA Polyurethane Raw Materials Market thru 2021 ($ MM)
  • Polyurethane MDI – Raw Materials Market by Material, MDI End Uses %, MDI supply-demand and operating rate outlook (ktpa, %)
  • Polyurethane TDI – Raw Materials Market by Material, TDI End Uses %, TDI supply-demand and operating rate outlook (ktpa, %)
List of Figures

- CHAPTER 14: Feedstock & Raw Material Value Chain Overview
  - Global Polyols Market thru 2021 ($ Millions)
List of Figures

- CHAPTER 15: The Role of Adhesive Bonding in 3D Printing (Bonded Assemblies, Transportation Markets, Building & Construction)
  - Five Metal AM Technologies used across different industries and applications
  - Powder Bed Fusion Additive Manufacturing Process
  - Polymer AM Technologies used across different industries and applications
  - Visualization of Surface Finish (Metallic AM Surface Finish)
  - Elongation and shear strength for determining adhesive type for rigid and flexible bonding
  - Transportation Market AM Adoption Sub-Segment
  - Adhesive Loading Conditions
  - Bonded Joint Qualification Process
  - Legacy Part Replacement with AM