

# Major Chemicals

## Paints, Coatings, and Adhesives

### Painting the Landscape with the ChemQuest Group

- **CAUTIOUS OPTIMISM.** Reasons abound for cautious optimism about the paints, coatings, and adhesives industry, according to the ChemQuest Group, which participated in the Bear Stearns chemical conference call on March 28. February was the first up month for the manufacturing index in 18 months, and tangible pricing improvements are likely to help margins in first-half 2002.
- **ISSUES IN AUTOS AND BIG BOXES.** Prudence is warranted largely due to 1) the lag effect of 0% automotive incentives and 2) the automotive refinish business, which is weakening due to negative trends in car accidents (positive for drivers, though), affecting DuPont, PPG, and BASF. Overall, automotive paint industry sales are forecast to decline by \$150-\$300 million in 2002. More storm clouds are gathering in architectural coatings with such “big boxes” as Home Depot debundling value propositions, affecting margins for paint companies.
- **SOME GOOD NEWS.** The \$16.1 billion U.S. paint and coatings industry dipped just 0.2% in 2001, driven by a large 4.4% decline in volume, but offset by a healthy 4.0% price increase that was prompted by a lag effect in raw material pass-through and product mix effect. The industry benefited from a 6.3% advance in housing starts, higher military spending, the rebuilding of public and private structures, and declining raw materials.
- **A DIFFICULT YEAR FOR ADHESIVES.** Sales and volumes for the \$9.8 billion U.S. adhesives industry dropped 5.6% and 5.7%, respectively, in 2001, which was the toughest year in at least 30. Sales in all end-markets fell off, with the exception of consumer and tape, where consumer confidence supported minimal sales growth.

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# BEAR STEARNS

## Paints and Coatings

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Paints and coatings is a \$16.1 billion industry in the United States. Despite the current recessionary economic environment, the industry declined just 0.2% in 2001, driven by a large 4.4% drop in volume, but offset by a healthy 4.0% price increase that was due primarily to a lag effect in raw material pass-through and product mix effect. Value is outpacing volume, showing that the industry is raising prices to recover lost margins. Many of the companies also maintained margins through fixed-cost reductions in capex, personnel, and inventories.

Among the positives in 2001 were the 6.3% rise in housing starts, increased military spending, the rebuilding of public and private structures, and declining raw materials in 2001. Strong growth was exhibited in the architectural markets, offset by declining volumes in both the special-purpose and product original equipment manufacturer (OEM) markets, as shown in Exhibit 1.

### Exhibit 1. U.S. Paints and Coatings Segments

	2001	2000	% Change	% Total Market
<b>Architectural Coatings</b>				
Volume (MM gal)	638	646	-1.1%	52.0%
Value (\$ MM)	6,530	6,420	1.7%	40.4%
Average Selling Price (\$/gal)	10.23	9.94	2.9%	
<b>Product OEM Coatings</b>				
Volume (MM gal)	432	453	-4.8%	35.2%
Value (\$ MM)	5,970	6,149	-2.9%	36.9%
Average Selling Price (\$/gal)	13.83	13.56	2.0%	
<b>Special-Purpose Coatings</b>				
Volume (MM gal)	157	182	-13.7%	12.8%
Value (\$ MM)	3,676	3,634	1.1%	22.7%
Average Selling Price (\$/gal)	23.45	20.00	17.3%	
<b>Total</b>				
Volume (MM gal)	1,227	1,281	-4.2%	
Value (\$ MM)	16,176	16,203	-0.2%	

Source: ChemQuest Group; Bear, Stearns & Co. Inc.

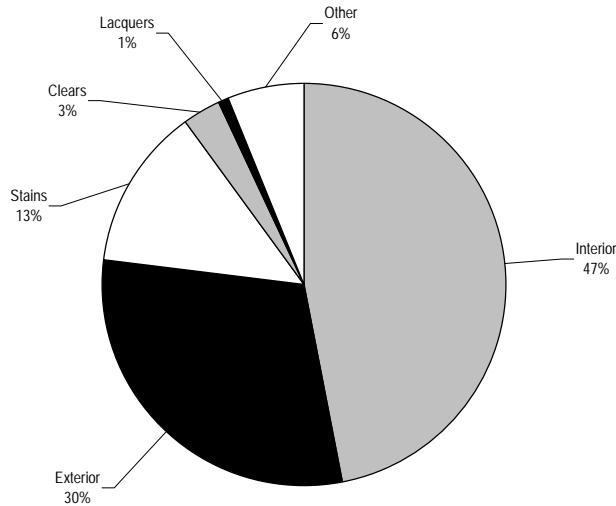
### Architectural Coatings

Architectural coatings account for 40% of the total U.S. coatings market. Consumer spending typically affects these markets via housing starts and remodeling. The largest end-markets for the architectural segment are interior and exterior surfaces. Key players include Sherwin-Williams, ICI, Valspar, RPM, and Masco.

Architectural coatings sales grew 1.7% in 2001, due primarily to higher selling prices, despite lower volumes. The housing sector is usually the hardest hit in a poor economy; however, the architectural coatings business benefited last year from robust growth in housing starts, aided in part by low mortgage rates. Exceptionally warm weather also led to increased volume as many builders continued to construct homes during the winter months. Remodeling, however, was clearly affected by rising unemployment and September 11, which played a key role in flattening activity in the second half of the year. Architectural coatings caters to several end-markets, as shown in Exhibit 2. Interior and exterior are the major end-uses, accounting for 47% and 30% of total architectural coatings sales, respectively.

## Exhibit 2. U.S. Architectural Coatings End-Markets, 2001

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Source: ChemQuest Group; Bear, Stearns & Co. Inc.

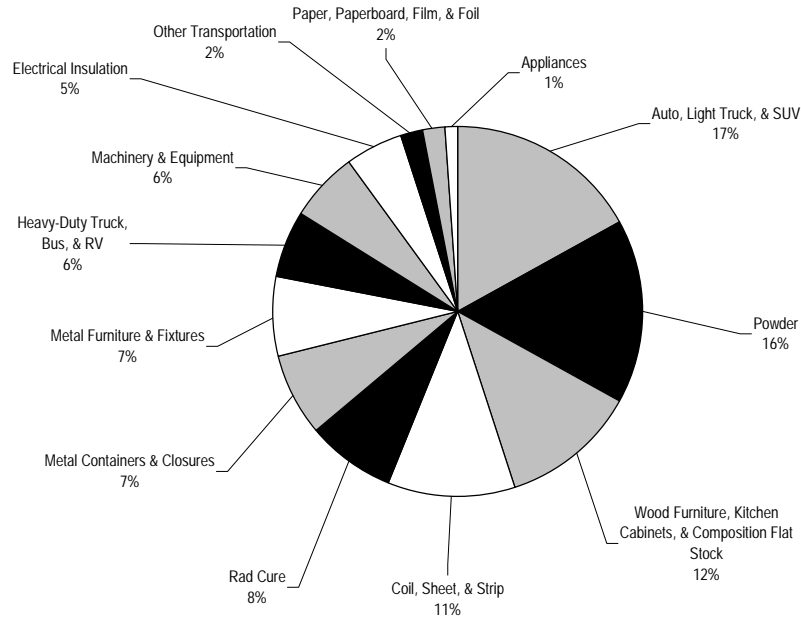
### **Product OEM Coatings**

Product OEM coatings represent 37% of the total market and are the coatings used for industrial manufacturing and production. This segment serves several industrial markets, as shown in Exhibit 3, with such diverse end-markets as autos, light trucks, and sport-utility vehicles (SUVs); powder; and wood furniture, kitchen cabinets, and composition flat stock. Heavy transportation vehicles (i.e., autos, light trucks, SUVs, heavy-duty trucks, buses, and recreational vehicles [RVs]) account for a majority of the segment, making it reliant on industrial production shipments. Key players in the business are DuPont and PPG.

Product OEM coatings declined 2.9% in 2001 due primarily to a 4.8% drop in volumes, despite a modest 2% increase in prices. Industrial production decreased for a record 18 months, leading to double-digit declines in the product OEM markets. With the automotive OEM segment likely to be affected by the sales pull-forward of 0% financing into 2001, and with pessimistic forecasts of new builds in the area of 16 million units, ChemQuest forecasts 2002 automotive paint sales to be down by \$150-\$300 million. Lower demand for heavy transportation vehicles and a production slowdown from Boeing fueled declining sales and volumes in the industrial markets. Production rates for heavy transportation and aerospace builds were at their lowest levels since 1993 and 1999, respectively.

An important trend in the industry is the technological shift from liquid coatings to powder coatings. Precoating coil is benefiting from new technologies and new applications such as metal roofing. Coil coating is expected to generate a 7%-9% compound annual growth rate. UV cure powder is the next frontier for powder coatings. Conversely, machinery and equipment exports are a threat to the product OEM industry as exports begin to slow due to a global deceleration. Plastic containers and flexible packaging also pose a threat to the metal container coatings industry.

### Exhibit 3. U.S. Product OEM Coatings End-Markets, 2001



Source: ChemQuest Group; Bear, Stearns & Co. Inc.

#### ***Special-Purpose Coatings***

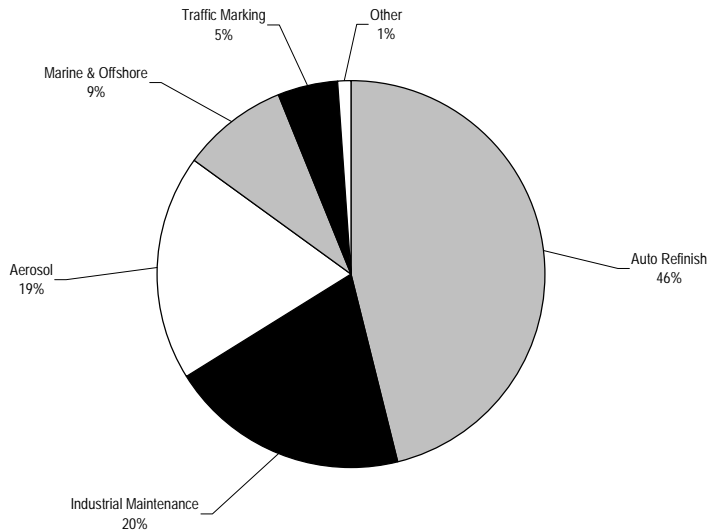
Special-purpose coatings account for 23% of the market and are used in various field-applied specialized applications, including automobile repair, aerosol paints, traffic markings and corrosion protection coatings for industrial maintenance of facilities and infrastructure. This category is heavily reliant on the auto refinish markets, which make up 46% of the total. Significant players in the special-purpose coatings markets include PPG and DuPont.

Special-purpose coatings grew 1.1% in 2001, due primarily to a substantial price increase of 17.3% and the contribution of mix effect, despite the 13.7% decline in volume. The segment experienced the steepest volume decline in the coatings markets; however, the specialized nature of the business commanded higher pricing in the difficult economic environment. Volume decreases were primarily due to a reduction in nonresidential construction, which was hurt by cutbacks in capital spending, and declining volumes in the auto refinish markets, where reduced collision rates and changes in the insurance industry have led to lower profitability for coatings suppliers. Moderate volume gains were registered in military applications.

Automobile and accident rates will continue to influence the special-purpose coatings markets. Car accident rates are steadily decreasing due to higher safety standards. Moreover, a negative anomaly this year was the very mild winter, which deprived auto body shops of their beloved “black gold” (iced roadways). Meanwhile, attempts by insurance agencies to control the management process of accident claims continue to threaten the industry.

#### Exhibit 4. U.S. Special-Purpose Coatings End-Markets, 2001

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Source: ChemQuest Group; Bear, Stearns & Co. Inc.

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#### INDUSTRY TRENDS

The U.S. paints and coatings industry is forecast to grow with GDP, but faces many challenges in 2002. Growth is expected to be slower in the first half of the year, at 1.5%-2.0%, with the second half projected to gain momentum, at about 3%-4% growth. A better start in the first two months for coatings and tangible pricing improvements are likely to help margins in first-half 2002.

Coatings manufacturers exposed to the automotive market will face many additional challenges. The lost benefit of 0% financing in 2001 may lower demand in the coatings industry. In fact, ChemQuest estimates that \$150-\$300 million in demand could be lost in the automotive coatings markets. The three hardest-hit companies will be the industry leaders — DuPont, PPG, and BASF.

Raw materials that are petroleum-based may continue to experience increases throughout the year. The war on terrorism drives demand in military applications; however, an attack on Iraq, should it occur, may result in escalating raw material prices for the coatings industry. Conversely, raw material suppliers of petrochemical feedstocks, monomers, and pigments (e.g., titanium dioxide [TiO<sub>2</sub>]) will likely pressure the industry to raise prices to recover lost margins. However, price hikes in cyclicals, such as the 5% increase attempted by the TiO<sub>2</sub> producers (DuPont, Millennium, NL Industries, and Kerr-McGee), will be difficult to sustain due to lower capacity utilization rates. Ultimately, that will benefit coatings manufacturers, according to ChemQuest.

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**SELECTED KEY ISSUES**

The U.S. paints and coatings industry faces several hurdles, including 1) “big-box” retailers attempting to squeeze margins from their existing suppliers; 2) pressure from raw material suppliers to raise prices; 3) increased competitive pressures; and 4) lead paint litigation.

***Big-Box Bullying***

A shift in distribution channels has led to big-box retailers (Home Depot, Lowe’s, Wal-Mart) trying to leverage their scale to squeeze margins from coatings suppliers. The success and popularity of big-box retailers has resulted in a loss of leverage for the coatings industry. The big-box factor will be a challenging obstacle for the coatings industry as large retailers try to debundle the value proposition of paint manufacturers in exchange for market share from the major coatings suppliers. Home Depot recently held a reverse auction for its colorants business, awarding the business to one player (Engelhard) for three years, which may lead to reverse auctions in binders, resins, etc. ChemQuest believes that others may follow suit, which will lead to a margin squeeze for coatings suppliers.

***Raw Material Price Hike?***

Raw material suppliers are exerting pressure to raise prices in order to recover from a weak pricing environment in 2001. As a result of the lower raw materials prices and cost reduction efforts, many coatings suppliers were able to improve margins. Chemical feedstock companies will continue to pressure the industry to recover lost prices; however, ChemQuest believes that deep cyclicals like ethylene and propylene (made by Dow, Lyondell, Millennium, ExxonMobil, Shell, etc.), along with their respective downstream intermediate monomers, such as butyl, acrylate, and methyl methacrylate (Dow, Celanese, BASF, Rohm and Haas, Total, Ineos, etc.), are stocked with oversupply positions, as capacity utilization has dipped to the 70% level.

***Growth in Size and Specialization***

Consolidation in the paints and coatings industry is likely to continue as a result of mature growth, increased competitive pressure, globalization, and government regulations. The top ten paints and coatings manufacturers control more than 50% of the market, with over 700 firms competing for niche market positions — this already reflects 65% consolidation since the mid-1970s. One notable movement is Valspar’s ascent to the global No. 7 ranking in 2001.

### Exhibit 5. Leading Paints and Coatings Producers

Rank	Company	Sales (\$ in Bil.)		Rank	Company	Sales (\$ in Bil.)	
		2000				2001	% Var
1	Akzo Nobel	5.24		1	Akzo Nobel	5.26	0.4%
2	Sherwin-Williams	5.20		2	Sherwin-Williams	5.06	-2.7%
3	PPG	4.66		3	PPG	4.41	-5.4%
4	DuPont	4.00		4	DuPont*	3.60	-10.0%
5	ICI	3.44		5	ICI	3.57	3.8%
6	BASF	2.07		6	BASF	2.13	2.9%
7	Nippon	1.60		7	Valspar	1.92	29.7%
8	Valspar	1.48		8	Nippon	1.61	0.6%
9	Sigma Kalon	1.47		9	Sigma Kalon	1.45	-1.4%
10	Kansai	1.40		10	Kansai	1.42	1.4%
11	RPM	1.04		11	RPM**	1.10	5.8%
12	Masco	0.95		12	Masco	1.05	10.5%
13	Ferro	0.81		13	Ferro**	0.92	13.6%
14	Benjamin Moore	0.78		14	Benjamin Moore	0.79	1.3%

\* Estimate of DuPont's coatings sales excluding TiO<sub>2</sub>. \*\*Coatings-only sales estimates.

Source: ChemQuest Group; Bear, Stearns & Co. Inc.

Key suppliers have also consolidated, as seen in the following exhibit.

### Exhibit 6. Key Suppliers (by Order of Profitability of Segment/Technology)

Key Suppliers	Company
TiO <sub>2</sub>	DuPont, Millennium, Kerr McGee, Kronos
<b>Resins</b>	
Polyurethane	Bayer, Crompton, Dow, Avecia, Noveon, BASF
Epoxy	Dow, Resolution Performance Products, Vantico
Acrylic	Rohm and Haas, Dow, Reichhold, Eastman
Vinyls	Dow, Rohm and Haas, Air Products, Reichhold
Alkyd	Eastman, Reichhold
<b>Intermediate Monomers</b>	Rohm and Haas, Dow, Celanese, BASF, Total Fina, Ineos

Source: ChemQuest Group; Bear, Stearns & Co. Inc.

Specialization will continue to play a large role in the consolidation process. As a mature industry, paints and coatings' profitability is dictated by the segments. A focused portfolio should lead to improved margins through efficiency and new product development. The large paint companies have traditionally focused on scale in the three major segments: architectural, product OEM, and special purpose. Special purpose is one of the most profitable areas, but it is reliant on new product developments to justify the large price differential. In contrast, architectural and product OEM represent more stable earnings tied to the general economy and consumer and industrial, respectively. As a result of the specialization, DuPont exited the architectural segment years ago and currently concentrates on the automotive and OEM markets, along with PPG. The top five global suppliers by segment are shown below. We anticipate that companies will continue to specialize and grow their market share through acquisitions.

### Exhibit 7. Worldwide Coatings Share Position by Segment, 2001

Architectural	Product OEM	Special-Purpose
Sherwin-Williams	DuPont	PPG
ICI	PPG	DuPont
Akzo	Akzo	Akzo
Valspar	BASF	RPM
	Valspar	BASF

Source: ChemQuest Group; Bear, Stearns & Co. Inc.

Such companies as DuPont and PPG, which dominate the OEM markets, are likely to undertake small bolt-on acquisitions in the OEM markets and may shed coatings businesses where they do not dominate the market. PPG emphasizes the automotive market and has a modest position in architectural coatings. Similar to DuPont, PPG is also likely to make acquisitions in the OEM markets, as its share in automotive coatings may be hindered by regulatory approvals. In architectural coatings, ICI is expected to leverage its strong architectural presence. Meanwhile, we anticipate that Sherwin-Williams will grow internationally and protect its market share in stores threatened by big-box retailers.

#### ***Lead Paint Litigation***

Lead paint litigation is unlikely to affect the architectural coatings market, as there is no clear precedent linking liability to the paint manufacturers. In recent years, nearly a dozen local governments — cities, counties, and school districts — have brought suits against lead-based paint manufacturers alleging that they have created costly public health problems. Lawsuits are pending in California, New York City, St. Louis, and Rhode Island.

Precedent hinges on Rhode Island, the state with the first lead paint litigation case that seeks to recover the costs to remediate and treat the effects of lead poisoning. In April 2001, a Rhode Island judge denied a motion by paint manufacturers to dismiss lead paint litigation. However, the court dismissed a large part of the plaintiffs' claims, with the only issue remaining is whether the actions of the paint manufacturers caused a public nuisance. A Providence superior court judge has set a September 4 trial date.

We believe that lead paint litigation will not lead to large payouts by the coatings industry; rather, the likely path to recovery is the landlords who failed to remove the decayed paint on their property. An estimated 85%-90% of the lead poisoning cases are from noncompliant property owners who do not give notice of the lead poisoning, as is required by many states. According to the U.S. Department of Justice, a landlord was recently sentenced (April 2002) in Maryland to two years in prison for failing to notify tenants of the hazards associated with lead paint. The case represents the first-ever criminal prosecution related to failure to comply with the Lead Hazard Reduction Act of 1992. The Maryland verdict provides a striking example of the current legal environment for lead paint: adverse case precedent exists for the landlords, but not for the paint manufacturers.

However, we suspect that the coatings manufacturers are a victim of the “now and forever” litigious environment for many chemical companies. The media continues to compare lead paint litigation to asbestos and other high-profile product liability cases. We believe the cases lack merit and that the stocks will not react to the headlines until legal precedent exists.

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## INDUSTRY THEMES

The large players continue to differentiate themselves through three primary themes: 1) environmental and societal; 2) performance enhancements; and 3) improvements in the efficiency of the value chain.

### Exhibit 8. Primary Themes in the U.S. Paints and Coatings Industry

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Source: ChemQuest Group; Bear, Stearns & Co. Inc.

#### ***Environmental and Societal***

Environmental and societal trends include energy conservation, safety, and health. The paints and coatings industry continues to develop new technology that benefits the environment, in addition to the long-standing trend of moving from oil-based to water-based. Both BASF and Akzo-Nippon introduced reflective coatings for roofing in order to conserve energy, as the coating roofing material absorbs heat effectively. The use of coil roof as a replacement for asphalt shingles is highly profitable, with an estimated market potential of \$1 billion.

Improving safety through the coatings industry is a key growth area. The industry is gaining profitability by creating coatings that enhance night visibility; one of the more innovative of these safety developments for automotive coatings came from BASF, called Constellation Colors™.

#### ***Performance Enhancements***

Innovation is key in the industry in order to push growth beyond GDP. Performance enhancements function the same way in that they are innovative enhancements that boost profitability of a mature product. PPG has been a leader in performance enhancements in the coatings industry. PPG's Envirocrom XMR powder is a breakthrough in advance powder coatings that improves mar and scratch for

industrial applications. Moreover, PPG's FrameCoat corrosion protection has won awards for its environmentally friendly paint coat.

***Improvements in the Efficiency Value Chain***

Several companies have led the way in innovation through improvements in the efficiency value chain. DuPont recently unveiled "Tri-Coat," a white pearl automotive coating system that allows three layers of application. BASF has also improved efficiency in the value chain by its integrated coating process, which applies three coats wet on wet, thus eliminating one energy step, and creating Xfast stir-in pigment system.

## Adhesives

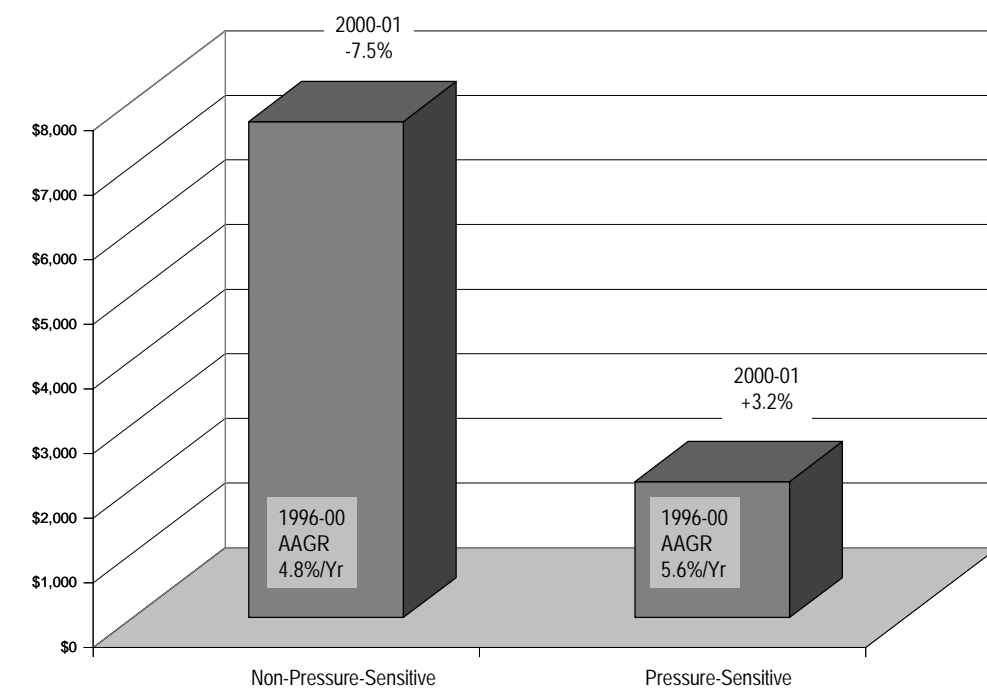
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Sales and volumes in the \$9.8 billion U.S. adhesives industry fell 5.6% and 5.7%, respectively, in 2001, which turned out to be the most difficult year in at least the past 30.

Similar to coatings, the adhesives industry is highly fragmented. Perhaps the easiest way to segment this complex industry is into its two major categories: non-pressure-sensitive adhesives and pressure-sensitive adhesives. Non-pressure-sensitive adhesives represent 78% of the total industry. In 2001, non-pressure-sensitive adhesives declined by an average rate of 7.5%. Conversely, pressure-sensitive adhesives grew 3.2%.

**Exhibit 9. Non-Pressure-Sensitive Versus Pressure-Sensitive Adhesives**

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Source: ChemQuest Group; Bear, Stearns & Co. Inc.

ChemQuest has routinely subdivided the U.S. adhesives industry into seven major market sectors, as shown in the table below.

**Exhibit 10. U.S. Adhesives Major Market Sectors**

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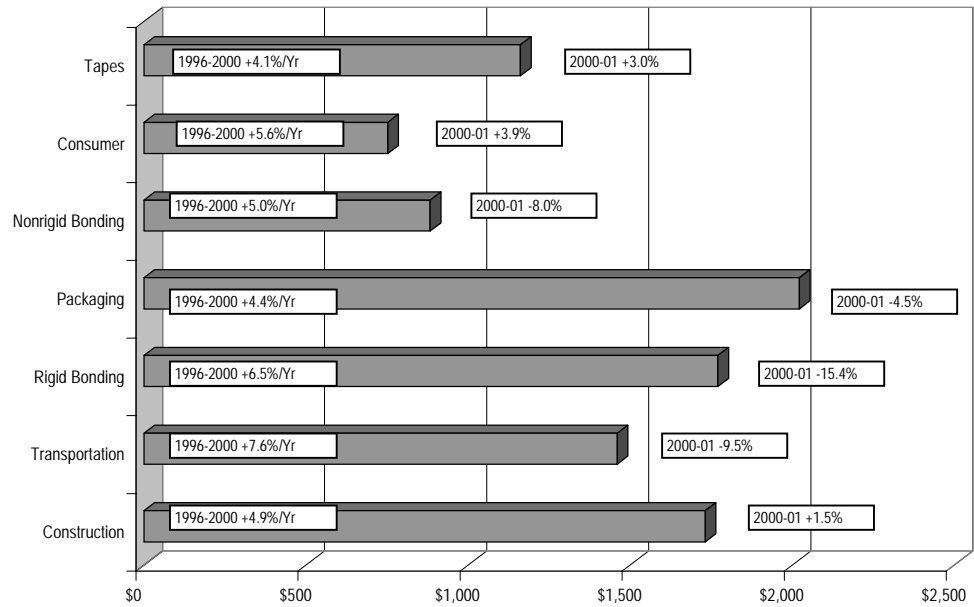
- Construction
- Transportation
- Rigid Bonding
- Packaging
- Nonrigid Bonding
- Consumer
- Tapes

Source: ChemQuest Group; Bear, Stearns & Co. Inc.

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As noted in the next exhibit, the construction sector held up reasonably well in 2001, as did the consumer and tape sectors, though growing at a slower rate than demonstrated over the past four years. The other four sectors each experienced a significant decline.

**Exhibit 11. Major Adhesive Market Sectors**



Source: ChemQuest Group; Bear, Stearns & Co. Inc.

Particularly hard hit were those segments that are part of the manufacturing sector of the U.S. economy. Exhibit 12 demonstrates some of the fragmentation inherent to this industry and identifies the important market segments that make up each of the seven adhesive sectors. The segments highlighted were hurt most in 2001.

## Exhibit 12. Major U.S. Adhesive Suppliers

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### Construction

Resilient Flooring  
Ceramic Tile  
Counter Tops  
**Manufactured Housing**  
Fabricated Beams & Trusses  
Carpet Layment  
Under Layment  
Panel Adhesives  
Joint Cements  
Curtain Walls  
Wall Covering  
Dry Wall Adhesives  
Roofing Adhesives  
HVAC  
Concrete

### Transportation

**Auto Exterior Trim**  
**Auto Interior Trim**  
**Auto Assembly**  
**Railroad**  
**Aircraft/Aerospace**  
**Marine**

### Rigid Bonding

**Shakeproof Fastening**  
Furniture  
Millwork  
**Appliance**  
**Houseware**  
**Electronic**  
**Machinery**  
**(Un)Supported Film**  
**Sandwich Panels**

### Packaging

Corrugated  
Cartons  
Disposables  
Bags  
Labels/Signs/Decals  
Cups  
Cigarettes  
Envelopes  
Remoistenables  
Film, Film Laminations  
Other Flexible Packaging  
Specialty Packaging  
Composite Containers

### Nonrigid Bonding

Fabric Combining  
Apparel Bonding  
Shoe Sole Attachment  
Other Shoe Adhesives  
Sport Equipment  
Bookbinding  
Rug Backing  
**Flocking Cements**  
**Filter Manufacture**

### Consumer

D-I-Y  
Model/Hobby Supplies  
School/Stationery Supplies  
Decorative Films

### Tapes

Packaging Tapes  
Electrical Tapes  
Industrial Tapes  
Surgical/Medical Tapes  
Masking Tapes  
Consumer Tapes

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Source: ChemQuest Group; Bear, Stearns & Co. Inc.

In the coming years, the U.S. adhesives industry is expected to return to its long-term trend of growing faster than GDP by 0.5%-0.8%. One factor fueling this growth is a continuing evolution of new applications for adhesives, especially those in which a mechanical fastener is being replaced by an adhesive. With an expectation that U.S. GDP will average 3.5% per year over the next five to ten years, the U.S. adhesives industry should show real growth that averages 4.0%-4.3% annually over this period.

An additional growth driver is the ongoing development of higher-performing adhesives. ChemQuest has routinely used eight different formulative technologies to define this industry, as listed in the exhibit below.

## Exhibit 13. U.S. Adhesives Formulative Technologies

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Solvent-Borne	Powder
Waterborne	1-Part Reactive
Hot Melt	2-Part Reactive
Radiation Cure	Calandered

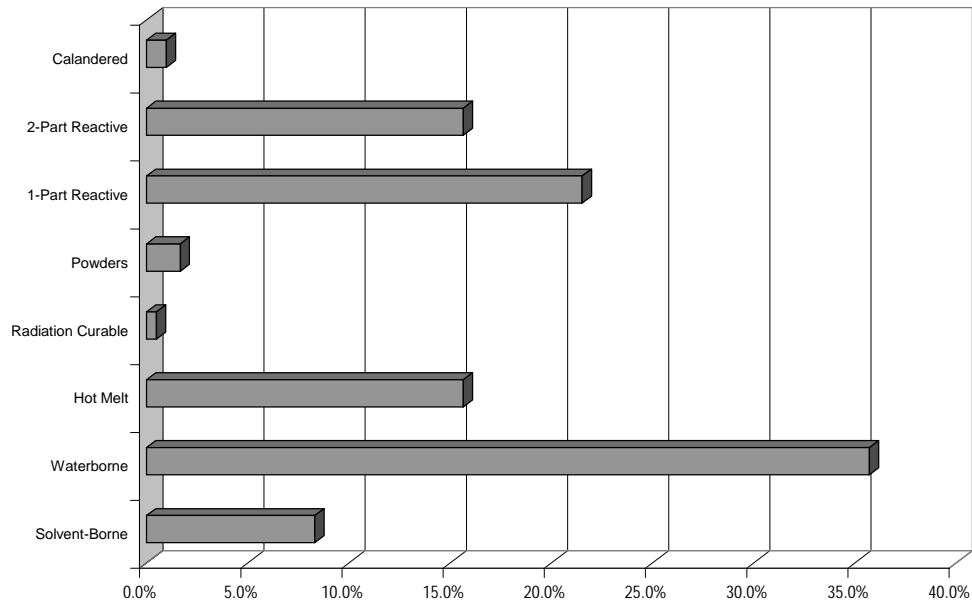
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Source: ChemQuest Group; Bear, Stearns & Co. Inc.

The following chart shows the importance of these formulative technologies to the U.S. adhesives industry. Radiation cure powder and calandered are each small niche technologies, although radiation cure enjoys a high growth rate. While solvent-borne is significant in size, it is not growing; therefore, it continues to lose market share. Waterborne has always been the dominant technology for this industry and is expected to expand at approximately the same rate as the industry. Hot melt adhesives have been a growth technology for the past 30 years, but are now reaching maturity. This group's growth over the next five to ten years will probably exceed

that of the industry by only 0.5% annually. Formulative technology is projected to grow at a yearly pace of 6.5%-7.0%.

**Exhibit 14. Importance of Formulative Technologies in the \$9.8 Billion U.S. Adhesives Industries**



Source: ChemQuest Group; Bear, Stearns & Co. Inc.

The U.S. adhesives industry is also fragmented by the large number of adhesive manufacturers that supply products to it. Some estimate the number of players to be around 600. The major suppliers to the U.S. market are listed in Exhibit 15. This industry is expected to consolidate further as big global players continue to grow through acquisition. Forbo is the only newcomer to this list, as a result of its acquisition of Swift Adhesives from Reichhold.

**Exhibit 15. Major U.S. Adhesive Suppliers, 2001**

Over \$1 Billion	Below \$1 Billion
Bostik Findley	3M Company
HB Fuller	Adco Global
Henkel	Ashland
National Starch	Avery Dennison
	Borden
	Franklin International
	Illinois Tool Works
	Lord Corporation
	Rohm and Haas
	Forbo (Swift)
	Sovereign Specialty Chemical

Source: ChemQuest Group; Bear, Stearns & Co. Inc.

A comprehensive list of recent M&A transactions in the industry are included in the appendix.

The ChemQuest Group, Inc is a management consulting firm headquartered in Cincinnati, Ohio, with offices in Boston, Massachusetts; Wilmington, Delaware; Chicago, Illinois; Columbus, Ohio; and London. It specializes in the global paints, coatings, adhesives, and sealants industries. An important component of its consultancy is providing advice and guidance for growth through acquisitions in these industries. The company can be reached at 513-469-7555 or at [www.chemquest.com](http://www.chemquest.com).

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# Appendix

## Mergers and Acquisitions

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# BEAR STEARNS

**Exhibit 16. Mergers and Acquisitions**

Date	Acquirer	Ctry	Target	Ctry	Price	Sales	Description
2001	Akzo Nobel	NET	Remaining 20% of JV	World			Akzo bought the remaining 20% of its global nonstick coatings JV with Coatings and Chemicals Corporation. The JV has plants in Des Plaines, Illinois; Fombiao, Italy; and Ahmendabad, India.
2001	Altana	GER	Sterling Technology	UK		EUR 8 MM	Electro-insulating resins and varnishes: 50 employees.
2001	Arch Chemicals	USA	ButlerMabbut & Wrighton and the Industrial Division of Humbrol Ltd.	UK		\$2.5 MM	Both will be integrated into Arch Coatings U.K. part of the firm's performance products segment.
2001	Avery Dennison	USA	Jackstadt	GER		EUR 600 MM	Self-adhesive materials. Includes 10 production sites and 2,140 employees.
2001	BASF	GER	Polycoat Systems	USA			Exclusive distributor for Dow's silicone roof coatings.
2001	Becker Powder Coatings	SWE	Rrogretto Due	ITA			Specializes in polyester powder-on-coil for aluminum curtain walling. Company will trade as Becker Polveri SpA.
2001	Boero	ITA	Attiva	ITA	L42.5 BN	L135 BN (Boero after purchase)	Purchase of JV partner in architectural and marine markets. Boero is a Genoa-based firm.
2001	Bostik Findley	USA	DAP's Durabond brand floor covering & ceramic tile installation products	USA			From RPM. Includes three manufacturing facilities in the U.S. and will give Bostik approximately 15% of the floor installation market.
2001	Buckingham Paints	UK	Philip Johnstone Group	UK			Management buyout. Independent supplier of decorative coatings.
2001	Chemetall	GER	Dinol AB's aviation business	SWE			Includes Dinitrol product range of special corrosion control products for airplanes.
2001	COIM SpA	ITA	Novacote from Stahl Group of Avecia	GER		EUR 37.8 MM	Laminating adhesives and coatings for the flexible packaging industry: 100 employees.
2001	CVC Partners & Advent International		Lafarge's Specialty Div.	FRA		FF 1.6 BN	Leader in the decorative paint sector in Europe.
2001	Degussa-Huls	GER	Laporte	UK		£400 MM	Along with the merger between Degussa-Huls and SKW Trostberg, will make it the 2nd-largest producer of fine chemicals for pharmaceutical firms.
2001	Dow	USA	EniChem	Europe		\$500 MM	Three polyurethane plants in Europe + system units and research facilities.
2001	Dudick	USA	DuPont's CorMax line	USA			Tank linings.
2001	Ferro	USA	EMCA-Remix	USA / UK		\$15 MM	Manufacturer of thick-film pasts for microelectronics. Purchased for ICI's National Starch unit.
2001	FLH Group	SWI	Pintol AG	SWI		EUR 80 MM (combined)	Wood finishes.

Source: ChemQuest Group; Bear, Stearns &amp; Co. Inc.

## Exhibit 16 (cont'd). Mergers and Acquisitions

Date	Acquirer	Ctry	Target	Ctry	Price	Sales	Description
2001	Forbo	SWI	Swift Adhesives from Reichold	USA		SF 400 MM	Includes all of Swift. Forbo's adhesives sales SF230 MM concentrating on auto, shoe, packaging, and wood.
2001	Forbo-Helmetin	SPA	Sika Tivoli's footwear adhesives business	GER		EUR 1 MM	Sika intends to concentrate on structural adhesives and lamination.
2001	Geidal GmbH	GER	Wit & Janssen	GER			Feidal is to concentrate on production of building paints and wood stains at its new Oldenburg site. Duisburg sit will produce dispersion paints.
2001	Henkel	GER	Kertscher Bauchemie	GER		EUR 9 MM	Producer of building adhesives, tile adhesives, and similar professional trade products.
2001	Henkel of America	USA	Lord Corp.'s 50% interest in Liofol JV	USA			Liofol is a leading supplier of adhesives to the flexible packaging markets in the U.S. and South America.
2001	Johnson Matthey Pigments and Dispersions	USA	Engelhard's cadmium pigments business				Makes Johnson Matthey world's largest supplier of cadmium pigments.
2001	Kozite Coatings	CAN	Norjohn Custom Coatings	CAN			Expands Kozite's position in industrial coatings for metal fabricated products.
2001	Lubrizol	USA	ROSSChem	USA		\$12 MM	Antifoam and defoaming agents.
2001	Mader Group	SWI	Soficor Group	FRA		SF 140 MM	Soficor group has five plants all active in industrial coatings, while Mader concentrates on environmentally friendly technologies, UV and waterbornes. Will be under the Mader name.
2001	Manament buyout	USA	Harcros Chemicals	USA	£ 23 MM	£120 MM	10th-largest U.S. chemical distributor.
2001	Rinol AG	GER	Silidur	LUX		EUR 100 MM	Silidur is a market leader in industrial floors and floor coatings. Rinol has sales of EUR >300 million.
2001	Rohm & Haas	USA	Technical Coatings' (Ben Moore) flexible packagiing adhesive business	USA			Includes the development, production, and distribution of cold seal adhesives under the COSEAL tradename. Food and medical industries primarily.
2001	Rohm & Haas	USA	Chemetall's metal-to-rubber bonding busines	GER			Marketed under the Megum brand. Includes subsidiaries in Italy and Brazil.
2001	Schroder Ventures snd Goldman Sachs Capital Partners		Henkel's Cognis business	GER	EUR 2.6 BN	EUR 3.2 BN	Henkel's specialty chemicals business. Henkel plans to concentrate on consumer products. Cognis accounted for 23% of Henkel's sales in 2000.
2001	Sherwin-Williams	USA	Mautz Paint	USA			Regional paint firm with stores in the Midwest.
2001	Sico	CAN	Blancomme's transit and rail coatings	FRA		C\$8 MM	

Source: ChemQuest Group; Bear, Stearns &amp; Co. Inc.

## Exhibit 16 (cont'd). Mergers and Acquisitions

Date	Acquirer	Ctry	Target	Ctry	Price	Sales	Description
2001	Sico	CAN	Betoneil	CAN	\$13.5 MM	\$27 MM	Quebec manufacturer and retailer of architectural coatings.
2001	Sovereign	USA	Impag (some sales activities)	GER			Impag distributes products made by Pierce & Stevens.
2001	Spraylat	USA	Valspar's mirror coatings unit	USA			Required as part of regulatory approval of Valspar's purchase of Lilly.
2001	Uzin Utz	GER	Pallman Chemie	GER		EUR 5MM	Pallmann specializes in water-based parquet seals as well as cleaning and care products. Staff of 35.
2001	Vantico	SWI	Agumt and Atlas adhesives and tooling business	GER			From Degussa's Rohm Specialty Acrylics Unit. Business based on methacrylate, epoxy, and PU technology.
2002	Almgren & Palm	SWE	Perstorp Chemitec Resins			\$24 MM	Phenol formaldehyde and melamine resins plant.
2002	Ardex	GER	Norcros Adhesives	UK			Tile and industrial adhesives and sealants. Ardex sales: 400 million euros, with 1,250 employees.
2002	Bayer	GER	Lyonell's ADI assets	USA			Agreement in principle to purchase part of Lyondell's aliphatic diisocyanates assets, including the remaining Luxate product inventories.
2002	Clariant	SWI	Perstorp Clariant			\$45 MM	Acquires the other 50% of JV from partner Sydvensk Kemi. Persorp Clariant makes water-based emulsions.
2002	Degussa	GER	Egesil	TUK			Buys a 25% stake in a Turkish producer of precipitated silica. Part of an expansion plan in precipitated silicas for SE Europe and Middle East. Plans to acquire a majority interest.
2002	Eliokem (Littlejohn & Co. Private Equity Firm)	USA	Goodyear's Specialty Chemical Business	USA/FRA		\$120 MM	Includes resins for paints and toners. 410 employees.
2002	FinishMaster	USA	Scotty's Paint Supply	USA			FinishMaster claims to be the leading distributor of paint-related supplies to auto refinish market.
2002	International Specialty Products	USA	Degussa's Industrial Biocides business	USA			
2002	Lord Corporation	USA	Metech	USA			Supplier of thick film electronic material to become part of the electronics business unit of Lord.
2002	PPG	USA	Duron stores	USA			27 paint stores in Chicago, Indianapolis, and Columbus (Ohio).
2002	Sartomer (Atofina Subsidiary)	FRA	Rohm & Haas' Uvithane oligomers business	USA			

Source: ChemQuest Group; Bear, Stearns &amp; Co. Inc.

Companies mentioned:

Akzo Nobel N.V. (AKZOY-42)	Lyondell Chemical Co. (LYO-16)
BASF AG (BF-42)	Masco Corp. (MAS-28)
Boeing Co. (The) (BA-43)	Millennium Chemicals Inc. (MCH-14)
Celanese AG§ (CZ-22)	NL Industries Inc. (NL-16)
Dow Chemical Co.§ (DOW-33)	PPG Industries Inc. (PPG-54)
DuPont (DD-47)	Rohm and Haas Co. (ROH-39)
Engelhard Corp. (EC-32)	RPM Inc. (RPM-17)
ExxonMobil Corp. (XOM-43)	Shell Transport & Trading Co. Plc (SC-45)
Home Depot Inc.§ (HD-49)	Sherwin-Williams Co. (SHW-31)
Imperial Chemical Industries Plc (ICI-19)	Valspar Corp. (The) (VAL-46)
Kerr-McGee Corp. (KMG-61)	Wal-Mart Stores Inc. (WMT-59)
Lowe's Companies Inc. (LOW-45)	

*Above pricing is as of the market close on April 19, 2002.*

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