

# **FUTURE TRENDS OF PSA AND STRUCTURAL ADHESIVE TECHNOLOGIES**

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***Adhesives & Sealants Industry (ASI)***

October 2005

The US adhesives industry is poised for solid growth after lackluster performance the past four years. In a manner of speaking, the industry has yet to recover fully from the past recession. The reason lies in two key issues:

1. The industry experienced the first year-over-year decline in its long history in 2001 when revenue and volume declined 5% and 4%, respectively. This validates fundamental changes in industry structure and market dynamics brought on by geographical and regional realignment in manufacturing and overcapacity of adhesive production.
2. Following the recession, margin pressures caused by rapid escalation of raw material and energy costs due to rising oil and natural gas prices and shortages of key raw materials.

***What's in store for the upcoming five years?***

The US adhesives industry (\$11 billion and 6.5 billion dry pounds) is considered fundamentally mature due to the fact that seventy-four percent (74%) of the industry is performing at or below GDP growth. However, the remaining 26% will be the engine for future growth, which comprises of pressure sensitive adhesives (PSA) accounting for 17% of adhesive demand based on volume and structural adhesives (defined as load bearing bonds in excess of 1000psi) accounting for 9% of demand as illustrated in Table 1.



**Table 1 Growth Trends Within the U.S. Structural and Pressure Sensitive Adhesives Industries**

<b>Structural Adhesives</b>				<b>Pressure Sensitive Adhesives</b>			
	<b>2004</b>	<b>2009</b>	<b>AGR</b>		<b>2004</b>	<b>2009</b>	<b>AGR</b>
Solvent	25.0	21.6	-2.9%	Solvent	251.2	260.9	0.8%
Water	9.5	18.7	14.5%	Water	336.1	506.8	8.6%
Hot Melts	17.9	31.7	12.1%	Hot Melts	413.9	518.3	4.6%
Radiation	0.8	1.0	5.4%	Radiation	1.9	2.9	8.0%
Powders	0.0	0.0	--	Powders	0.0	0.0	--
1-Pt Non-Volatile	252.6	345.9	6.5%	1-Pt Non-Volatile	0.0	0.0	--
2-Pt Systems	238.6	310.9	5.4%	2-Pt Systems	0.0	0.0	--
				Calendared	86.5	90.9	1.0%
<b>Grand Total</b>	<b>544.4</b>	<b>729.9</b>	<b>6.0%</b>	<b>Grand Total</b>	<b>1089.7</b>	<b>1379.9</b>	<b>4.8%</b>
% of Tot. Adh.	9%	11%		% of Tot. Adh.	17%	19%	

There are six major trends affecting the future use of PSA and structural adhesives particularly against their prime competition- mechanical fasteners:

- Higher energy costs driving for reduction in weight and fuel efficiency
- Continued need for lower total applied costs
  - Improved productivity
  - Component reduction
- Standardization of Quality Processes such as Six-Sigma– Driving for more precise placement & application consistency
  - Elimination of process variables (reducing number of parts in assembly, inefficient processes)
  - Elimination of product variables
- Changes in substrates and increased utilization of dissimilar substrates in design
  - Plastics and composites
  - Hybrid metal alloys
- Miniaturization
  - Components are becoming smaller, as well as workspace to conduct assembly function
  - Weight reduction
- Automation
  - Increase use of electronics for comfort, convenience and productivity
  - Increasing utilization of robotics



End-users prefer PSAs because their key value proposition is to deliver an adhesive to a bond joint in a user-friendly, clean and efficient manner.

In closing, while the general adhesives industry will continue to grow at a 3% annual clip, these categories will gain share against their conventional counterparts. It is anticipated that PSA and structural adhesives will eventually make up 30% share of the total adhesives market. More importantly, these categories also represent a more profitable mix of products to adhesive manufacturers.



## **About the Author**



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Dan joined The ChemQuest Group, Inc. in 1996 from the Rohm & Haas Company where he was most recently European Director, Industrial Coatings. Prior to R&H, he spent thirteen years with Unocal Polymers where his career took him from technical service positions to Director of Marketing. He directed the sale of the Unocal Polymers Business to Rohm & Haas, working closely with Morgan Stanley, numerous attorneys, as well as the FTC. His entire career has been dedicated to the Coatings and Adhesives Industries. His particular strengths lie in strategic assessment and value creation on behalf of clients. He holds degrees from Wabash College (BS Chemistry) and William & Marv (MBA).

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