(SAMPLE REPORT)

WIDGET ADHESIVES

IN THE U.S. ADHESIVES INDUSTRY

This market study report has been prepared by:

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WIDGET ADHESIVES - U.S. ADHESIVES INDUSTRY

This market segment includes all non-pressure sensitive and pressure sensitive widget adhesives used in the installation of widgets. This end use segment estimates 2003 demand with a historical perspective back to 2000 as well as forecasts through 2005 and 2010.

Market Size and Growth

This is a market segment in which both non-pressure sensitive and pressure sensitive adhesives find use. In 2000 the adhesive demand on all widgets totaled 141 million dry pounds, with a value at the manufacturer level of $201 million. This demand is only 2.3% of the total demand for widget adhesives in the entire U.S. adhesives industry, and 2.1% of the value.

Over the next five years, ChemQuest expects the demand for widget adhesives to grow at a compound annual growth rate of 1.8% per year. This growth rate is only 45% of the rate expected for the entire U.S. adhesives industry. In making these estimates, ChemQuest has used direct interviews with adhesive manufacturers, raw material suppliers and adhesive end users. All of ChemQuest's growth estimates reflect the likely average growth rate over the next 5-10 years, recognizing that any given year could be above or below the trend line. In order to put these growth rates into perspective, ChemQuest has assumed that U.S. GDP will grow at an average annual growth rate of 3.5% per year over the next 5-10 years.

ADHESIVE DEMAND
Widgets
(IN MILLIONS OF DRY POUNDS)

Adhesive Demand	2000	2003	2005	2010	00-05 AGR
Non-Pressure Sensitive	125.70	131.44	135.42	145.88	1.5%
Pressure Sensitive	15.14	16.99	18.34	20.46	3.9%
TOTALS	**140.84**	**148.43**	**153.76**	**166.34**	**1.8%**

ChemQuest uses "Millions of Dry Pounds" as its unit of measure in its U.S. Adhesives Industry database. For those purchasers that prefer to evaluate demand in "Thousands of Dry Metric Tons" they may use the following conversion formula: 1 Million Dry Pounds = 0.4545 Thousand Dry Metric Tons

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Formulative Technology Trends – Size and Growth

ChemQuest views non-pressure sensitive adhesives to be comprised of seven different formulative technologies, and pressure sensitive adhesives to be comprised of five different formulative technologies as shown below. These technologies are defined at the end of this report.

Non-Pressure Sensitive	Pressure Sensitive
Solvent Borne	Solvent Borne
Water Borne	Water Borne
Hot Melt	Hot Melt
Radiation Curable	Radiation Curable
Powder	Calendered
1-Part Reactive	
2-Part Systems	

The demand for non-pressure sensitive widget adhesives in this market segment totaled 126 MM dry pounds, and with a value of $174 MM. In this market segment only four of the seven possible non-pressure sensitive formulative technologies find use. Of these, water borne is the most important and accounts for 95% of the non-pressure sensitive widget adhesive demand. While important to this market segment it accounts for only 3.4% of the non-pressure sensitive water borne demand in the U.S. adhesives industry.

TECHNOLOGY TRENDS
Widgets
Non-Pressure Sensitive
(In Millions of Dry Pounds)

Technology	2000	2003	2005	2010	00-05 AGR
Solvent Borne	2.51	2.74	2.89	3.24	2.9%
Water Borne	118.79	123.90	127.43	136.90	1.4%
1-Part Non-Volatile	0.38	0.42	0.46	0.53	3.9%
2-Part Systems	4.02	4.38	4.64	5.20	2.9%
TOTALS-NPS	**125.70**	**131.44**	**135.42**	**145.88**	**1.5%**

The pressure sensitive adhesives that find use in this market segment had a demand of 15 MM dry pounds, with a value of $27 MM. are described in the table below. Only two of the five possible pressure sensitive formulative technologies find use, with hot melt adhesives dominating.

TECHNOLOGY TRENDS
Widgets
Pressure Sensitive
(In Millions of Dry Pounds)

Technology	2000	2003	2005	2010	00-05 AGR
Solvent Borne	3.03	3.40	3.67	4.09	3.9%
Hot Melt	12.11	13.59	14.67	16.37	3.9%
TOTALS-PS	**15.14**	**16.99**	**18.34**	**20.46**	**3.9%**

DEFINITIONS OF TECHNOLOGY TYPES

SOLVENT BORNE SYSTEMS - Refers to all adhesives wherein organic solvents comprise more than 50% of the volatile content (excluding 2-part solvent borne systems).

WATER BORNE SYSTEMS - Refers to all adhesives wherein water comprises more than 50% of the volatile content (excluding 2-part water borne systems).

HOT MELTS - Refers to all adhesives which are essentially solventless solid materials at ambient temperature and must be applied to the bonding surface at elevated temperatures to permit adequate flow.

RADIATION CURABLE SYSTEMS - Refers to all compositions whose useful bonding characteristics are developed only after exposure to a high energy radiation source, such as UV, electron beam or X-ray (IR and microwave are not radiation sources included in this technology).

POWDERS - Refers to all non-pressure sensitive adhesives applied as a powder and then heated to fuse the polymer.

1-PART REACTIVE - Refers to all non-pressure sensitive adhesives with a minimum non-volatile content of 95% and which are usually applied to bonding surfaces at ambient temperature (e.g., 1-part epoxies and urethanes, film adhesives, cyanoacrylates, anaerobics, etc.)

2-PART SYSTEMS - Refers to all non-pressure sensitive adhesives, whether solvent borne, water borne, or non-volatile types, which require the blending of two or more components shortly before use.

CALENDERED - Refers to all tackified, 100% solid, elastomeric, pressure sensitive materials manufactured with a calender.

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Raw Material Trends – Size and Growth

ChemQuest evaluates raw material trends in each market segment by force fitting all raw materials into 41 different categories and then evaluating their use in each formulative technology. These raw material categories are listed in the table below. A careful review shows that they extend from naturally occurring materials such as bitumens, casein, starches and dextrines to high value synthetics such as anaerobics and cyanoacrylates. Tackifying resins are subdivided into hydrocarbon resins, rosin derivatives and terpenes. Additionally, polyesters and urethanes are subdivided into thermoplastic (TP) and thermosetting (TS).

Raw Material Categories Evaluated

Acrylics	Cyanoacrylates	Nitrile Rubber
Structural Acrylics	Epoxies	Polychloroprene
Aminoplasts	Hydrocarbon Resins	Phenolics
Bitumens	Terpene Resins	Polyamides
Casein	Rosin Derivatives	Polyisobutylenes
Animal/Fish Products	Natural Rubber	Polyester-TP
Cellulosics	Reclaim Rubber	Polyester-TS
Anaerobics	Butyl Rubber	Polyethylenes
EVA	Urethanes-TP	Other Vinyls
Polypropylene	Urethanes-TS	Silicates
Block Copolymers	PVA	Plasticizers
S-B Copolymers	Vinyl Acetate/Ethylene	Other Polymers
Silicones	Acrylic/Vinyl Acetate	Filler
Starch/Dextrines	PVC	

The raw material categories that find use in non-pressure sensitive adhesives in this market segment are presented below. The demand in 2000, and forecasted growth through 2003, 2005 and 2010 is provided, along with the anticipated annual growth rate.

RAW MATERIAL TRENDS
Widgets
Non-Pressure Sensitive
(IN MILLIONS OF DRY POUNDS)

Raw Material	2000	2003	2005	2010	00-05 AGR
Acrylics	31.61	33.22	34.34	37.17	1.7%
Epoxies	2.06	2.27	2.42	2.76	3.3%
Hydrocarbon Resins	13.42	14.00	14.41	15.48	1.4%
Rosin Derivatives	5.77	6.02	6.20	6.66	1.4%
S-B Copolymers	13.46	14.01	14.38	15.42	1.3%
Urethanes-TS	1.50	1.61	1.69	1.87	2.4%
Vinyl Acetate/Ethylene	21.37	22.26	22.88	24.55	1.4%
Filler	36.52	38.05	39.10	41.97	1.4%
TOTALS-NPS	**125.70**	**131.44**	**135.42**	**145.88**	**1.5%**

Similarly, the raw material categories that find use in the pressure sensitive adhesives used in this market segment are listed in the table below.

RAW MATERIAL TRENDS
Widgets
Pressure Sensitive
(IN MILLIONS OF DRY POUNDS)

Raw Material	2000	2003	2005	2010	00-05 AGR
Acrylics	3.03	3.40	3.67	4.09	3.9%
Hydrocarbon Resins	4.72	5.30	5.72	6.38	3.9%
Polypropylene	3.49	3.91	4.23	4.71	3.9%
Block Copolymers	2.25	2.52	2.73	3.04	3.9%
Plasticizers	0.33	0.37	0.40	0.44	3.9%
Filler	1.32	1.48	1.60	1.79	3.9%
TOTALS-PS	**15.14**	**16.99**	**18.34**	**20.46**	**3.9%**

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Adhesive Suppliers

The adhesive suppliers to this market segment are listed below. Because of the many suppliers of adhesives to the U.S adhesives industry and the fragmented nature of this industry the list below is probably not complete. However it does include the major suppliers to this market segment.

Adhesive Suppliers

AAA
BBBB
CCCCC
DDDDDD
EEEEEEEE

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Growth Opportunities– Size and Growth

ChemQuest defines a "product opportunity" as a specific raw material, used in a specific formulative technology, which then finds use in a specific market segment. Using this definition, a water borne pressure sensitive acrylic adhesive used in widget adhesives is a different product opportunity than a water borne pressure sensitive block copolymer adhesive used in widget adhesives which is also a different product opportunity than a water borne pressure sensitive block copolymer adhesive used in label adhesives.

Using this definition as a starting point, ChemQuest has defined a Growth Opportunity as a product opportunity that is growing faster than 4%/year and promises an incremental gain of at least 50,000 pounds between 2000 and 2005. Fewer than 25% of the product opportunities within the U.S. adhesives industry meet these criteria. However, when all of the growth opportunities identified by ChemQuest are considered collectively, they promise an annual growth rate of 6.6%/year, a growth rate 70 % faster than the overall industry.

Using this definition, five growth opportunities emerged in this market segment.

Raw Material	Technology	2000	2005	AGR
Acrylics	Water Borne	4.55	6.06	5.9%
Vinyl Acetate/Ethylene	Water Borne	1.66	2.42	7.8%
Rosin Derivatives	Water Borne	1.50	2.01	5.9%
S-B Copolymers	Water Borne	1.13	1.49	5.8%
Urethanes-TS	1-Part Non-Volatile	3.18	4.65	7.9%

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Commentary

The following table provides a listing of the major adhesive types commonly found in this market segment plus an approximate percent market share of this end use.

PRINCIPAL BONDING OPERATIONS
Widgets
(% Adhesive Usage)

	2000
Plastic to Metal	15%
All Plastic Widgets	32%
Built-in Widgets	42%
Widgets to Main Frame	6%
Other	5%
TOTALS	**100%**

ChemQuest recognizes that this market segment is understated. This is due to the fact that many of the adhesives described in the widget market segment are also sold to the consumer. This includes such items as x adhesives, various y adhesives and other mastics generally used in the widget markets. However, since these products are identical to the products used by the professional contractor, they have been included in the demand of the various widget market segments (e.g., x adhesives, y adhesives, etc.)

This end use category is probably the most complex market segment within the entire U.S. adhesives industry, since it deals with the broadest possible class of end users, with varying levels of sophistication and an equally broad range of product applications.

A further complicating feature for this market segment is the continuing change that is occurring in the distribution network, which carries the adhesive product to the eventual widget consumer and the professional trades people. Because of the growth of the mass merchandisers, the specialized lumberyards, plumbing supply houses, hardware stores and industrial supply houses, have diminished in importance. Indeed, many of the professional contractors, who have historically been served by these outlets, now purchase from the large chains that were established primarily to serve the widget market. Some estimates place the amount of adhesives sold directly to the contractor through these hardware/variety chains at 30% of total adhesive sales.

Since each of these outlets try to cover a broad enough product range to cover all possible applications, the distribution system and the range of product size offerings become very important. For example, widgets are supplied in 1 oz., 4 oz., 10 oz. and 32 oz. containers, and small carded offerings of a variety of adhesive products are available for rack displays in supermarkets, drug store chains and general discount stores.

The principal competition in this market is for chain store outlets and shelf space. AAAA, with its long-term consumer franchise, continues to dominate this market segment in widgets. However, BBBB is also a significant supplier of widgets.

In addition to the competition for shelf space, adhesive suppliers are also hard at work in developing more convenient dispenser packages to gain customer acceptance. For example, CCCC has improved its market share through its packaging of its epoxy adhesive products.

Direct importers of widget adhesives are not considered a factor in this adhesive end use category. This is primarily because the U.S. distribution network is complex, and access to it can be difficult due to long term relationships that have existed between the most successful distributors and the larger adhesive manufacturers.

Distribution Channels

In the non-pressure sensitive area, most of the adhesives are sold through distributors. The direct sales shown in the table below are to the large home center chains, such as A, B, C and D. We note that in nearly all widget adhesive areas where it is appropriate, the home centers have captured approximately 20% of the market.

In the pressure sensitive area, slightly more than half of the adhesives are captively produced by the widget manufacturers. Of the remainder, the bulk of the material is sold by the adhesive manufacturer directly to the widget producer, with a very small portion, which we estimate at 1%, sold through distributors.

MARKETING CHANNELS
Widgets
(% Adhesive Distribution)

	Non-Pressure 2000	**Pressure Sensitive 2000**
Captive	0%	55%
Direct	35%	44%
Indirect	65%	1%
TOTALS	**100%**	**100%**

The ChemQuest Group, Inc. *is an international strategic management consulting firm that specializes in the adhesives, sealants and coatings industries, headquartered in Cincinnati, OH., Ph (513) 469-7555 – Fax (513) 469-7779. To see how your partner in creating value can help you today, go to The ChemQuest Group, Inc. web site at* ***www.chemquest.com*** *…"**The Obvious Choice**" for your management consulting and on-line market information needs!*