

# GREEN IS GOOD

In the 1987 movie *Wall Street*, Gordon Gekko infamously said, "Greed is good." The goal of any for-profit enterprise is to make money, certainly, but many manufacturers in the 21st century are also discovering that a focus on green can not only be beneficial for the environment, but good for business as well.

We've got so much great green-related editorial in this issue that I almost don't know where to begin. Let's start with the basics. Before venturing into the green product marketplace, it's important for manufacturers to explore what green really means. What makes a product green? Does a product's volatile organic compound (VOC) content determine whether it's green, or not? What about its recycled material content? Is a life cycle assessment (LCA) required? And who decides what can be labeled as green?

The Adhesive & Sealant Council, Inc. (ASC) is working with the industry to tackle these questions, and others. "It is important for organizations to work together to further define what sustainability and green mean for the industry and what advancements are on the horizon," writes Matt Croson, ASC president. Croson shares details regarding the ASC's ongoing green-related activities in "Defining Green" on pp. 16-17.

This issue also includes articles on waterborne adhesives ("Less is More," pp. 18-20), adhesives and sealants for green construction ("Sustainable Building Options," pp. 21-23), packaging considerations ("Green Packaging," pp. 24-25), and much more. Be sure to check out the Table of Contents on p. 5 for a full listing of articles in this issue.

I'd love to hear about your green-related products and processes. Please give me a call at (330) 336-4098 or send an e-mail to [suttons@bnpmedia.com](mailto:suttons@bnpmedia.com).




Susan Sutton is Editor-in-Chief, Integrated Media for Adhesives & Sealants Industry and Ceramic Industry magazines. If you wish to send a letter to the editor, please e-mail [suttons@bnpmedia.com](mailto:suttons@bnpmedia.com). Letters must include the sender's address, phone number and e-mail address, when possible. Letters may be edited for space and clarity.

## THIS MONTH ON [www.adhesivesmag.com](http://www.adhesivesmag.com)...



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**BAYER** recently announced that its stock has been included in the Dow Jones Sustainability World Index (DJSI World). The company is one of a handful to be included in the index every year since its inception in 1999. The index annually includes the top 10% of the companies in a given sector that best meet certain economic, ecological, ethical and social criteria. Additional information is available at [www.bayer.com](http://www.bayer.com).

The Hydrocarbon Specialty Chemical division of **CRAY VALLEY** has received approval for a 40% capacity increase for its Channelview, Texas, plant. The plant produces Poly bd<sup>®</sup> hydroxyl-terminated polybutadiene materials. The additional capacity is expected to be online by September 2011. Visit [www.crayvalley.com](http://www.crayvalley.com) for details.

**THE DOW CHEMICAL CO.** has announced the creation of 100 new full-time jobs to support the development of DOW™ POWERHOUSE™ solar shingles at its Midland, MI, facility. This is the result of continued collaboration between Dow, the state of Michigan, and the city of Midland to accelerate production of the shingles and create new, advanced manufacturing jobs that are helping make Michigan a “green tech” hub of the new U.S. economy, according to Jane Palmieri, Dow Solar general manager. Visit [www.dow.com](http://www.dow.com) for more information.

**H.B. FULLER** recently reported net income for the third quarter of 2010 of \$19 million, or \$0.38 per diluted share, compared to \$35.4 million, or \$0.72 per diluted share, in last year’s third quarter. Net income for the third quarter 2009 included a significant one-time gain related to the settlement of a lawsuit. Excluding this

**ANNOUNCEMENT**

**OMNOVA TO ACQUIRE ELIOKEM**

OMNOVA Solutions Inc. has entered into an agreement with AXA Private Equity that grants the company a period of exclusivity to acquire specialty chemicals manufacturer Eliokem International. Closing of the proposed transaction is subject to consultation with Eliokem’s Works Council in France, completion of a definitive agreement, regulatory approvals, financing and other customary conditions. OMNOVA anticipates completion of the transaction by the end of 2010.

Under the proposed transaction, OMNOVA will pay €227.5 million (approximately \$300 million) for Eliokem. OMNOVA intends to raise \$425 million of new long-term debt to fund the transaction and the repayment of all existing OMNOVA and Eliokem debt. In addition, OMNOVA intends to extend and increase the size of its unused asset-based credit facility to \$100 million and expects to have \$40 million of cash at the closing of the acquisition. The company expects the transaction to be neutral to slightly dilutive to earnings in 2011, but accretive in 2012.

For further details, visit [www.omnova.com](http://www.omnova.com).

**APPLAUSE**

**SOCIETY FOR ADHESION AND ADHESIVES ANNOUNCES MEDAL RECIPIENTS**

The Society for Adhesion and Adhesives presented a number of awards at the international Adhesion 11 conference. John Antony Bishopp, formerly of Hexcel Composites and currently managing director of consulting company Star Adhesion Ltd., received the de Bruyne Medal. The medal is named in honor of Norman de Bruyne FREng, founder of Aero Research Ltd. Constantino Creton, professor and director of Research at the Centre National de la Recherche Scientifique, was given the Wake Memorial Medal, which is awarded triennially to an individual working in the adhesion or adhesives field.

Bishopp made many contributions to the adhesives research program at Hexcel Composites during his tenure from 1963 until 2001. His role within the company became increasingly significant as his experience and expertise grew. He conducted hands-on, practical work in the development of adhesive systems, particularly brake-bonding and honeycomb adhesives, which are still used today. In later years, he was solely responsible for developmental work based, in particular, on phenolic, epoxy and bismaleimide chemistries.

Creton’s work experience includes a year at the IBM Almaden Research Center in San Jose, CA, as a post-doctoral fellow, and an 18-month spell at École Supérieure de Physique et de Chimie Industrielles (ESPCI), Paris, France, as a Swiss National Research Fund senior fellow.

For more information, phone (44) 1202-696610 or visit [www.adhesionsociety.org](http://www.adhesionsociety.org).

**ANNOUNCEMENT**

**FIVE NEW MEMBERS JOIN THE ACC**

The American Chemistry Council’s (ACC) Executive Committee has approved five companies as new regular members. In addition, seats on ACC’s Board of Directors were approved for Jim Gallogly, CEO of LyondellBasell Industries NV; and Bruce Rubin, senior vice president of External Affairs and Business Development of Braskem PP Americas. Gallogly was also appointed to serve on the association’s Executive Committee.

The new members are:

- Braskem PP Americas Inc., producer of polypropylene in the U.S.
- Galata Chemicals, producer of additives for polyvinyl chloride and other industries.
- LyondellBasell, a plastics, chemical and refining company, as well as a major process technology licensor.
- MonoSol LLC, manufacturer of water-soluble films and solutions.
- Styron LLC, producer of plastics, latex and rubber.

“The companies that joined us today are some of the largest in their product marketplace, and significantly strengthen the unified voice of our industry,” said Cal Dooley, ACC president and CEO. “In this dynamic climate, ACC’s growth continues to be driven by its refocused mission of creating business value through exceptional advocacy. Our expansion is a reflection of the results we are delivering to the entire value chain.”

Visit [www.americanchemistry.com](http://www.americanchemistry.com) for additional details.

settlement, net income in last year's third quarter was \$0.48 per diluted share.

Net revenue for the third quarter of 2010 was \$338.6 million, up 7.4% vs. the third quarter of 2009. Higher volume, higher average selling prices, and acquisitions positively impacted net revenue growth by 6.4, 2.5 and 1.6 percentage points, respectively. Unfavorable foreign currency translation reduced net revenue growth by 3.1 percentage points. Organic sales grew by 8.9% year-over-year. Find out more at [www.hbfuller.com](http://www.hbfuller.com).

**FUSION UV SYSTEMS INC.** and **DVUV HOLDINGS LLC** have announced an alliance to jointly market UV-curable powder coating systems for heat-sensitive substrates. Both firms will market and promote UV-curable powder coating application systems using Fusion's UV-curing lamp technology and DVUV HOLDINGS' solvent-free UV-cured powder coating chemistry and application technology.

"What makes this alliance so strategically important is that both firms need the other to maximize the solutions it can provide customers, many of whom expect environmentally friendly proac-

## EU AIR POLLUTANT EMISSIONS TO EXCEED LIMITS

In 2010, around half of the European Union's (EU) member states expect to surpass one or more of the legal limits set by the National Emission Ceilings Directive (NEC Directive). The annual status report recently released by the European Environment Agency (EEA) confirms that 11 countries anticipate exceeding their ceilings for nitrogen oxides (NOx)—some by more than 40%.

Several member states, including Slovenia, Sweden and the UK, expect to exceed their respective NOx ceilings by margins of less than 5%. In contrast, France and Spain expect to exceed their ceilings by 261 kilotons and 236 kilotons, respectively—equivalent to surpluses of 32% and 28%. Other countries expecting lower surpluses in absolute terms would exceed their limits by even larger margins, notably Austria (42%), Belgium (43%) and Ireland (47%).

The EU NEC Directive sets pollutant-specific and legally binding emission ceilings (limits) for four main air pollutants: sulphur dioxide (SO<sub>2</sub>), NOx, non-methane volatile organic compounds (NMVOCs) and ammonia (NH<sub>3</sub>). These pollutants harm both human health and the environment by contributing to the formation of ozone and particulate matter and leading to acidification and eutrophication. Member states must meet the NEC Directive's ceilings by 2010 in order to deliver the originally agreed health and environmental benefits.

Visit [www.eea.europa.eu](http://www.eea.europa.eu) for additional details.

tive finishing processes and solutions in the retail, healthcare, architecture, and specialty markets," said David Harbourne, Fusion UV Systems president. "Fusion and DVUV will be able to meet their most stringent requirements for speed, quality, innovation and durability, all without the production of harmful VOC emissions." For additional details, visit [www.fusionuv.com](http://www.fusionuv.com) or [www.dvuv.com](http://www.dvuv.com).

For the fourth consecutive time, **HENKEL** has been included in the Dow Jones Sustainability World Index (DJSI World) and the Dow Jones Sustainability Europe Index (DJSI Europe). Henkel was given first place in the Non-Durable Household Products category and is the only company in its sector to be included in both the DJSI World and DJSI Europe. Visit [www.henkel.com](http://www.henkel.com) for additional information.



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**IPC**—Association Connecting Electronics Industries® has opened its first office in India. Located in South Bangalore near Electronics City, IPC India, a wholly owned subsidiary of IPC, will be under the leadership of managing director Akshinthala Vijayendra. Vijayendra will initially focus on bringing additional training, conferences and services to India.

“Having Vijay working full time to support the Indian electronics industry’s needs will enable the growth and expansion of IPC certification training,” said David Bergman, IPC vice president of International Relations. Bergman said that certified IPC trainer (CIT) courses and wire harness training (IPC/WHMA-A-620, Requirements and Acceptance for Cable and Wire Harness Assemblies) are areas that major Indian EMS providers and OEMs have already identified as priority needs. Additional information is available on the association’s website at [www.ipc.org](http://www.ipc.org).

The Total Service Solutions (TSS) group of **PPG INDUSTRIES’** Aerospace business has signed a multi-year contract with Gulfstream Aerospace Corp. to provide comprehensive chemical management. Under the agreement, PPG Aerospace’s custom-designed services will support the manufacturing operations for the G450, G550 and G650 programs, including supplying PRC® brand premixed frozen sealant.

PPG services will include chemicals purchasing, warehousing and just-in-time delivery to Gulfstream, as well as quality-control documentation, inventory management, point-of-use stocking, shelf-life expiration monitoring, and environmental data collection and reporting.

In addition to administering the program, personnel at PPG’s ASC—Atlanta will provide Gulfstream with PRC premixed frozen sealant. They will mix sealant in ready-to-use cartridges that will then be frozen for just-in-time delivery to Gulfstream, and they will forecast usage, conduct quality testing, and manage inventory in freezers at Gulfstream.

Geremie Pierson will serve as TSS chemical manager for the Gulfstream project. Grace Hopson is TSS chemical management supervisor at Gulfstream’s Savannah, GA, plant, and will oversee onsite services and lead PPG’s dedicated team. Visit [www.ppg.com](http://www.ppg.com) for additional information.

**PRECISION VALVE & AUTOMATION (PVA)** has relocated to a new 115,000-square-foot facility located at One Mustang Drive in Cohoes, NY. The facility is owned by PVA and accommodates all of the company’s core functions, with the exception of its satellite sales and support offices located around the globe. All manufacturing of PVA equipment will be performed in the new facility.

The new space houses PVA’s staff, a lab and a machine shop, as well as office space for visitors. The site is designed to facilitate communication among departments. In addition, it allows potential customers to visit, demo the equipment, and see firsthand the process of building the machines.

For more information, phone (518) 371-2684 or visit [www.pva.net](http://www.pva.net).

**RPM INTERNATIONAL INC.** recently announced that its Building Solutions Group has acquired Park Dis Ticaret A.S., a leading supplier of sealants, tapes and membranes to the construction market in Turkey. Based in Istanbul, Park achieved annual sales of approximately \$10 million in 2009. The transaction is expected to be accretive to earnings within one year. For further details, visit [www.rpminc.com](http://www.rpminc.com).

Clayton, Dubilier & Rice LLC (CD&R) and CVC Capital Partners have announced a definitive agreement for CD&R to acquire a 42.5% ownership interest in **UNIVAR**. The transaction values the company at approximately \$4.2 billion. Funds advised by CVC will retain a 42.5% stake in the business. The remaining equity will be held by Univar management and other existing investors.

With revenues of \$7.2 billion, Univar is a market-leading distribution platform serving highly fragmented and diverse markets and customers. The company operates a network of 179 distribution facilities and distributes more than 11,000 products and 110,000 SKUs to over 80,000 customers in more than 100 countries. Further details are available at [www.univar.com](http://www.univar.com) or [www.cdr-inc.com](http://www.cdr-inc.com).

**VIACHEM LTD.** has announced it will provide North American sales, service, and distribution for Marubeni’s full line of vinyl resins.

“We have seen excellent results in both current customer retention and new customer growth after having transferred our F310 PVDC resin to Viachem

that we are now eager to add another of our specialty products to Viachem’s portfolio,” said Mark Mooney, Marubeni’s senior sales and marketing manager. “Viachem has proven their ability to identify new prospects and expand market share throughout the coatings industry. Our vinyl resins are suitable in many applications, and we expect Viachem to once again excel in representing Marubeni to those customers we have not reached in the past through direct sales efforts.” Visit [www.viachem.com](http://www.viachem.com) or [www.marubeni.com](http://www.marubeni.com) for details.

### PEOPLE



BECKER

**SCOTT T. BECKER** has been appointed president and CEO of Plasticolors. He previously served as president and COO of the company. Prior to joining Plasticolors, he held the position of president and CEO of Elementis Specialties’ Colorants and Additives business.

Univar has announced the appointment of **STEVE BLOCK** as president of ChemPoint.com and as vice president of Univar Inc. Block has played a significant leadership role at ChemPoint.com, serving as a member of the founding team 11 years ago and as vice president of Marketing and Sales for the past five years. In addition, he has held marketing and sales positions at Univar for over 27 years.



BOURDAGE

**REAL BOURDAGE** has been named to the position of strategic marketing director for MAPEI Americas. According to the company, his executive management presence will promote attainment of MAPEI’s marketing and sales goals. Bourdage has more than 30 years of experience in the flooring industry and has held senior management positions with H.B. Fuller, TEC Specialty Products, Aqua Mix Inc. and Custom Building Products.

**MATT CALDWELL** has been named a senior sales engineer for Deacom Inc. Caldwell most recently worked at Bentley Systems, where he was in charge of hiring and training new sales staff, as well as developing and executing stra-

tegic sales campaigns. He will assume responsibility for managing prospect accounts at Deacom from business development through presentation and close.



HATHWAY

Fabrico recently announced the appointment of **BRIAN HATHWAY** to the post of Product Development engineer. In this position, he will play an active role in the new product development cycle from concept to completion. Hathway previously worked in the converting market as a manufacturing engineer.

**BRIAN KOSKI** has joined Chemsultants International as Logistics manager for the Product and Process Development business unit. He will focus on managing the overall materials supply stream of Chemsultants' pilot coating, new product scale-up and specialty contract manufacturing operations. In addition, he will provide planning, oversight, and direction for materials purchasing, sourcing, supplier relations, inventory management, and warehousing activities. Koski will report to Tom Besselman, director of Operations.



KOWALEWSKI

**LUIS KOWALEWSKI** has been appointed Dymax Sales manager, Europe. He will be responsible for the management of European sales, sales channel partners, and the customer service team. Kowalewski has over 25 years of international sales management and technical experience in Germany and Argentina.

Adherent Laboratories has hired **PAUL J. MEYER** to serve as director of Sales and Marketing. Meyer has more than 25 years of experience in the adhesives and plastics industries and previously worked for H.B. Fuller and Conwed Plastics.

Arch Chemicals Inc. has announced the election of two executive vice presidents to its senior leadership team. **JOE SHAULSON** and **LUIS FERNANDEZ-MORENO** assumed their new roles effective September 1 and will report to Michael E. Campbell, chairman, president, and CEO.

Shaulson, who previously served as senior vice president, Wood Protection

and Personal Care Ingredients, will hold the position of executive vice president for the global operations of Arch's Industrial Biocides, Personal Care Ingredients, and Performance Products businesses. Fernandez-Moreno previously served as a vice president of Dow Coating Materials for The Dow Chemical Co.

**THOMAS VENARGE** has been named president of APV Engineered Coatings®.

He most recently served as the company's vice president of manufacturing and has also been plant manager.

### Have News to Share with the Industry?

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**CALENDAR**

**NOVEMBER**

10-11 Dissimilar Materials Joining for Advanced Energy Applications seminar; EWI; Columbus, Ohio; [www.ewi.org/events](http://www.ewi.org/events)

14-18 36th International Symposium for Testing and Failure Analysis; Dallas, Texas; <http://asmcommunity.asminternational.org/content/Events/istfa/>

16-19 Greenbuild 2010; U.S. Green Building Council; Chicago; [www.greenbuildexpo.org](http://www.greenbuildexpo.org)

29-30 Chemspec Middle East; Quartz Business Media; Dubai, United Arab Emirates; [www.chemspevents.com/middle-east](http://www.chemspevents.com/middle-east)

**DECEMBER**

1-2 Test Methods for Composite Materials; Seminars For Engineers USA; Miami, FL; (800) 755-2272; [www.seminarsforengineers.com/comptest](http://www.seminarsforengineers.com/comptest)

7-9 Wind Turbine Blade Manufacture conference; Applied Market Information Ltd.; Maritim Hotel, Dusseldorf, Germany; [www.amiconferences.com](http://www.amiconferences.com)

**JANUARY 2011**

17-19 The Coatings Summit; Vincentz Network; Washington, D.C.; [www.coatings-summit.com](http://www.coatings-summit.com)

**FEBRUARY**

7-10 Medical Design & Manufacturing (MD&M) West; Canon Communications; Anaheim, CA; [www.canontradeshows.com](http://www.canontradeshows.com)

8-11 Green Manufacturing Expo; Canon Communications LLC; Anaheim, CA; [www.canontradeshows.com/expo/gmx11/ana\\_event.html](http://www.canontradeshows.com/expo/gmx11/ana_event.html)

**MARCH**

7-10 informEx 2011; United Business Media; Charlotte Convention Center; Charlotte, NC; [www.informex.com](http://www.informex.com)

13-18 Pittcon 2011; Georgia World Congress Center; Atlanta, GA; [www.pittcon.org](http://www.pittcon.org)

29-31 European Coatings Show; Vincentz Network; Nuremberg, Germany; [www.european-coatings-show.com/en/default.ashx](http://www.european-coatings-show.com/en/default.ashx)

**APRIL**

5-7 AeroDef Manufacturing 2011; SME; Anaheim Convention Center; Anaheim, CA; <http://aerodef.sme.org>

17-19 Spring Convention and Expo; Adhesive and Sealant Council, Inc. (ASC); Tampa, FL; [www.ascouncil.org](http://www.ascouncil.org)

**MAY**

3-5 Chemspec USA 2011; Quartz Business Media; Pennsylvania Convention Center; Philadelphia; [www.chemspevents.com/usa/](http://www.chemspevents.com/usa/)

9-13 PSTC Week of Learning; Hyatt Regency Grand Cypress; Orlando, FL; [www.pstc.org](http://www.pstc.org)

30-6/1 13th European PLACE Conference; TAPPI; Festpielhaus on Lake Constance; Bregenz, Austria; [www.tappi.org](http://www.tappi.org)

**OCTOBER**

16-18 2011 Fall Convention; Adhesive and Sealant Council, Inc. (ASC); Indianapolis, IN; [www.ascouncil.org](http://www.ascouncil.org)

**NOVEMBER**

1-3 2011 CHEM SHOW; Jacob K. Javits Convention Center; [www.chemshow.com](http://www.chemshow.com)

**MAY 2012**

7-10 American Coatings SHOW 2012; Vincentz Network; Indianapolis, IN; <http://www.american-coatings-show.com/en/default.ashx>

For a more detailed listing, visit [www.adhesivesmag.com](http://www.adhesivesmag.com).

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Specialty polymer supplier  
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**Eric Watson**  
Purchasing Supervisor  
**Rudolph Brothers & Co.**  
*Merlin customer for 10 years*

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# GLOBAL PRESSURE-SENSITIVE MATERIALS FORECAST

Regulatory pressure will continue to create opportunities for environmentally friendly alternatives.

By Daniel S. Murad, President and CEO, The ChemQuest Group, Inc.

It is estimated that the global pressure-sensitive materials industry will consume 47,271 million square meters in 2010 and experience 5% average annual growth rates for the next five years. The Asia Pacific region has emerged as the largest producer of pressure-sensitive materials; the region accounts for 47% of global production, primarily due to China's emergence as a low-cost producer and major exporter of commodity tapes.

Tape production accounted for 66% of all pressure-sensitive materials, while labels and graphics made up 28% and 6%, respectively (see Figure 1). In turn, the demand for pressure-sensitive adhesives (PSAs) reached \$2.4 billion globally on the merchant market. This does not reflect captive production of adhesives by tape and label producers, which would add an additional 40-50% to the total.

The regional breakdown of merchant adhesives production shown in Figure 2 illustrates the emerging dominance of Asia Pacific's producers, as they garnered 54% of the global demand. The Americas and Europe (EU 27) attained 22% and 21%, respectively, of the market share.

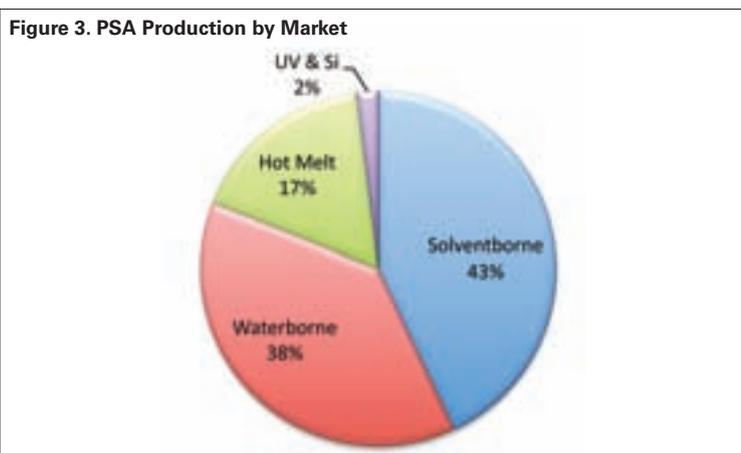
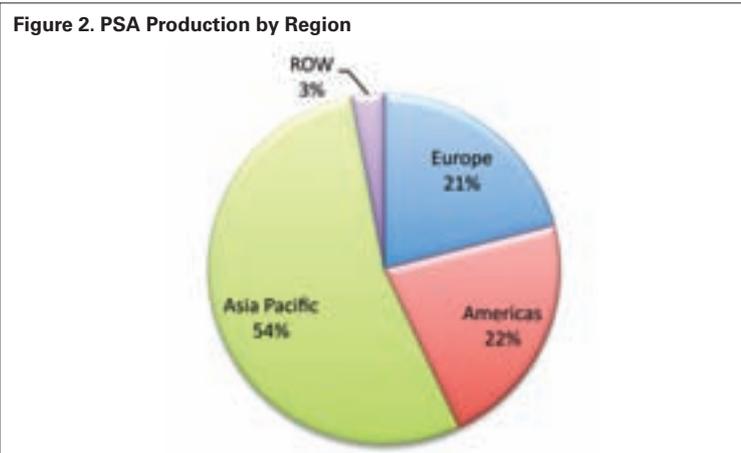
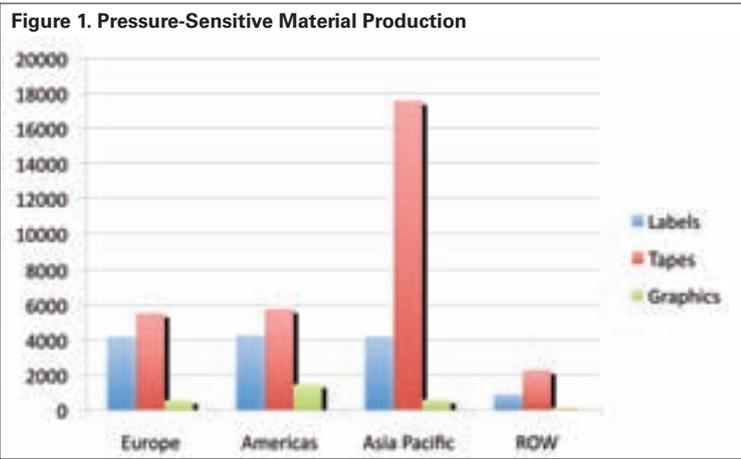
Not too surprisingly, solventborne technologies maintained their dominance with 43% share of merchant PSAs (see Figure 3). Waterborne (38%) and hot-melt (17%) technologies continued their march toward offering environmentally friendly solutions, but specialty applications remained squarely in the corner of solventborne technologies. Radiation-curing UV technologies and silicone PSAs for specialty applications (e.g., medical and electronics) made up the balance of total demand (2%).

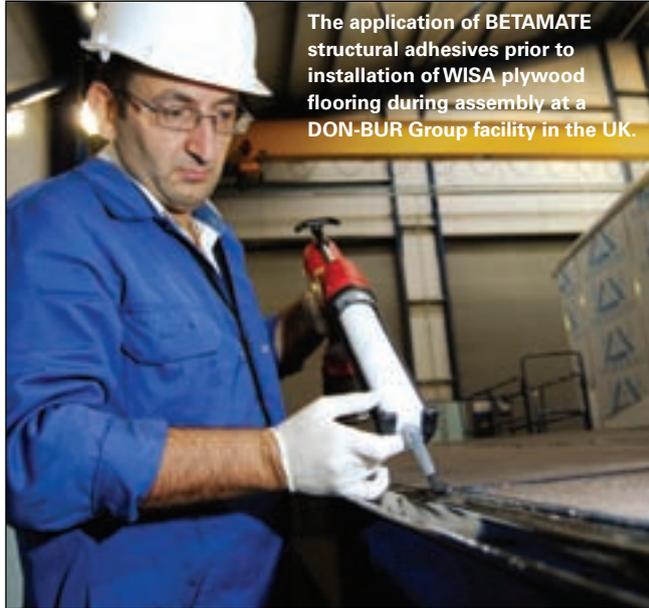
Regulatory pressure will undoubtedly continue to create opportunities for environmentally friendly alternatives. Japan is reportedly promulgating two laws, which would create "black swan" opportunities for pressure-sensitive materials and adhesives producers by the end of the decade. The first will require the industry to lower volatile organic compound (VOC) limits to less than 120 parts per million, while the second is related to post-consumer recycling and will require producers of consumer goods—from autos to electronics—to disassemble and recycle their components.



Dan Murad is president and CEO of The ChemQuest Group Inc., an international strategic management consulting firm specializing in the adhesives, sealants, and coatings industries, headquartered in Cincinnati.

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The application of BETAMATE structural adhesives prior to installation of WISA plywood flooring during assembly at a DON-BUR Group facility in the UK.



WISA plywood flooring bonded to the trailer floor using BETAMATE structural adhesives.

## ADVANCED HIGH-STRENGTH SOLUTION FOR TRAILER FLOORING

UPM and Dow Automotive Systems have developed a pioneering solution for fully bonded plywood trailer floors.

**U**PM and Dow Automotive Systems have partnered to develop a new solution for mounting floors to trailer bodies. The floor is bonded to the trailer body using the WISA® Bonded Floor Solution, a combination of WISA plywood flooring and BETAMATE™ adhesives that were developed exclusively for this solution. The system eliminates the need for mechanical fixtures while offering increased structural rigidity, improved durability, enhanced acoustics and superior corrosion protection.

Traditionally, plywood floors have to be mechanically fastened to the trailer body. The plywood flooring is joined to the body with screws or bolts, requiring the drilling of up to 200-300 screws, which can then lead to corrosion and noise, vibration, and harshness (NVH) issues. In an effort to resolve these challenges, additional sealing of the mechanical fastening is needed, adding an additional step to the mount-

ing process. Overall, mechanical fasteners limit durability while requiring attention to increased maintenance.

The “one-stop” solution developed by Dow Automotive Systems and UPM not only eliminates mechanical fixtures, but directly bonds the plywood floor to the trailer body using polyurethane adhesives. Due to the continuous bond line, the plywood flooring is as robust and secure as flooring mounted with traditional fasteners. In fact, the continuous bond line spreads loads more evenly than the point supports provided by mechanical fasteners, thereby facilitating improved joint performance.

In addition to increasing the structural rigidity of the trailer, the new solution also provides several other end-user benefits, including improved resistance to corrosion and water absorption, improved durability, and a quieter ride. The new flooring system may also help reduce the maintenance required for the trailer. Trailer builders can

order their tailor-cut plywood floor kit from UPM, and it is delivered—along with the appropriate Dow adhesive—directly to the builder, simplifying the production process.

### ABOUT UPM

*UPM Plywood offers high-quality WISA plywood and veneer products mainly for construction, transport, and furniture industries. With approximately 2,600 employees, UPM operates six plywood mills and two veneer mills in Finland, a plywood mill in Russia, and a plywood mill in Estonia. For more information, visit [www.wisaplywood.com](http://www.wisaplywood.com).*

### ABOUT DOW AUTOMOTIVE SYSTEMS

*Dow Automotive Systems is a leading provider of polyurethanes, elastomers, films, fluids, adhesives, emissions solutions and acoustic-management materials to the global transportation industry. By working collaboratively with passenger vehicle, commercial transportation and after-market customers, Dow Automotive Systems is developing industry-leading solutions to address a wide range of critical market needs. For additional information about Dow Automotive Systems, visit [www.dowautomotive.com](http://www.dowautomotive.com).*



## H.B. FULLER HEADQUARTERS RECEIVES SUSTAINABILITY AWARD

**H**.B. Fuller Co. recently announced that its world headquarters building in St. Paul, MN, has received the 2010 AIA (American Institute of Architects) Minnesota 25-Year Award. Established by AIA Minnesota in 1981, the award recognizes exemplary architectural projects that have withstood the test of time. Designed by HGA Architects & Engineers, the H.B. Fuller building represents the mid-century efforts of the architectural profession to address environmentally responsible building and energy conservation.

Conceived in the wake of the energy crisis of 1979, the Willow Lake Laboratory was completed on the site in 1983. The building was founded by former H.B. Fuller CEO and Minnesota governor Elmer Andersen, a strong advocate of environmental sustainability, and represents responsible building and energy conservation.

Consistent with the original master plan, a corporate headquarters was added to the west side of the structure in 1995. To date, the building has had no fundamental modifications to the structure.

The building was designed specifically to address society's responsible use of natural resources and integration of the site, building, and systems. Fifty percent of the building's envelope is earth sheltered and not exposed to the north wind. The primary heating and cooling system was based on geothermal heat exchange, and the environment systems and laboratory exhaust systems use a recovery process to reheat air. The project has been awarded numerous national conservation and innovation awards due to its energy-independent structure.

The site consists of several acres of wetland habitat and a 70-acre lake. Upon completion, 97% of the site was preserved as unmodified wetland and wildlife habitat. The façade is oriented to the south-southeast for solar gain, daylighting and views, allowing scientists to be exposed to natural light from workspaces throughout the building. The laboratory backs into a hillside, consisting of a cascading three-level atrium with the entry/reception on the top level, a dining commons in the middle, and a research library on the lower level; each opens up to roof terraces.

The AIA jurors were impressed by the trueness to sustainability, not only at the time of construction but also by today's standards. "The building displays the test of time, with a cohesive plan. The detailing and care of the connections, along with the preciseness of the site, make the structure very interesting and appealing, creating a very pleasant workspace," commented one juror. "The delicacy of the skylights, layers of the structure and reflection of the site unravel in a great way. The project complements the ideas of sustainability and responsible building of its time and holds up to green building standards established 20 years after," another juror said.

"We at H.B. Fuller are proud to receive this recognition for our long-term commitment to responsible environmental stewardship," said Michele Volpi, CEO. "Our headquarters site is just another representation of our commitment to innovation and sustainability, which we strive for in our research, products, and all aspects of how we operate."

Established by AIA Minnesota in 1981, the 25-Year Award recognizes exemplary architectural projects that have withstood the test of time. Jurors for this year's 25-Year Award were John Cuninghame, FAIA, founder of Cuninghame Group Architecture; Nathan Johnson, AIA, 2009 Young Architect recipient and founder of 4RM+ULA; and Blaine Brownell, AIA, assistant professor at the University of Minnesota College of Design and founder of the design/research firm Transstudio.

### ABOUT THE COMPANY

*For more than 120 years, H.B. Fuller has been a leading global adhesives provider, focusing on perfecting adhesives, sealants, paints and other specialty chemical products to improve products and lives. Recognized for unmatched technical support and innovation, H.B. Fuller brings knowledge and strength to help its customers find precisely the right formulation for the right performance. With fiscal 2009 net revenue of \$1.235 billion, H.B. Fuller serves customers in packaging, hygiene nonwovens, paper converting, general assembly, wood working, construction and consumer businesses.*

*For more information, visit [www.HBFuller.com](http://www.HBFuller.com), [www.HBFullerStrength.com](http://www.HBFullerStrength.com), read the company's blog at [www.hbfullerstrength.com/blog](http://www.hbfullerstrength.com/blog) or follow H.B. Fuller on Twitter® at [www.twitter.com/GlueTalk](http://www.twitter.com/GlueTalk).*



# DEFINING “GREEN”

Interpreting the true meaning of “green” is going to be an industry-wide challenge.

By Matt Croson, President, The Adhesive and Sealant Council, Inc.

Consumers are often the primary drivers for product innovation and new product offerings. In today’s marketplace, the adhesive and sealant industry has witnessed a substantial increase in consumer demand for “green” products, which, in turn, has affected the entire supply chain.

The concept of sustainability is a reality for the adhesive and sealant industry, yet a member survey recently conducted by The Adhesive and Sealant Council, Inc. (ASC) indicates that members are looking for more ways to measure success. Across all of the market segments in which members are active, green is defined through a variety of ways, including scorecards, volatile organic compounds (VOCs), and lifecycle assessments (LCAs). Nevertheless, the number of organizations looking to “define success” is growing and includes all aspects of the supply chain, except one: the adhesive and sealant supplier. As green continues to evolve and affect our industry, it will become increasingly important for ASC members to actively participate in defining success.

Over the past few months, the ASC has examined the way it supports its members with respect to green and narrowed its focus to three areas: Defining Green, Exploring Future Trends, and Exchanging Information. The council began these efforts in order to assist the supply chain in understanding who and what will define green chemistries in the marketplace.

## DEVELOPING A DEFINITION

In defining green, the ASC is examining how organizations, government agencies, and other trade associations define sustainability and green in the adhesive and sealant market. To begin, the ASC conducted desktop research to evaluate existing resources and information. It was discovered that certain market segments—like building construction—have certification programs (e.g., LEED) to define what makes an overall product sustainable; however, a clear definition gap exists when it comes to specific guidelines for the adhesives and sealants that go into these final products.

In the second phase of defining green, the ASC sought the opinions of its members and implemented two quantitative surveys. The first survey was sent to a group of sealant manufacturers, which included both ASC members and nonmembers. The second survey was sent to adhesive manufacturers, suppliers and distributors that are ASC members. The purpose of the surveys was to better understand the drivers of green, as well as the perceptions of VOCs in the marketplace, and to identify who should be defining green for the adhesive and sealant industry.

Some highlights of the sealant manufacturers survey responses include:

- 88% of respondents believe that green is a lasting trend that helps drive purchasing decisions.
- 62% of respondents have products positioned as green in their portfolios.
- 52% of respondents felt that an LCA on sealants would help position products, create value across industry and enhance sustainability.
- 60% of respondents felt that VOCs are not the only metric to define green.
- 71% of respondents want additional performance-related documents for green product positioning.
- 46% of respondents felt that ASTM C24, ASTM E60 or the U.S. Green Building Council (USGBC) should define green as related to sealants, and that the council should play an active role in developing definitions.
- 75% of respondents were in favor of the ASC forming a committee to specifically work with ASTM (or another stakeholder group) to define green metrics.
- 88% felt there was a medium-to-high value for green definitions to be categorized by market segments.

The adhesive manufacturers, suppliers and distributors survey returned interesting responses as well:

- 86% of respondents believe that green is a lasting trend that helps drive purchasing decisions.

- 68% of respondents have products positioned as green in their portfolios.
- 52% of respondents felt that an LCA on adhesives would help position products, create value across industry and enhance sustainability.
- 57% of respondents felt that VOCs are not the only metric to define green.
- 65% of respondents want additional performance-related documents for green product positioning.
- 67% of respondents felt that ASTM C24 or ASTM E60 should define green as related to adhesives, and that the council should play an active role in developing definitions.
- 85% of respondents were in favor of the ASC forming a committee to specifically work with ASTM (or another stakeholder group) to define green metrics.
- 92% felt there was a medium-to-high value for green definitions to be categorized by market segments.

While the survey findings require further research to validate the opinions expressed, the results indicate a consensus among sealant and adhesive respondents on several items: green is here to stay; companies have already begun to position their products as having green attributes; an existing organization, such as ASTM, should define green technical specifications, but the ASC should work closely with that organization to best represent industry concerns; and publishing green definitions by market segment would be desired. This is encouraging data that may help define where the ASC should focus its energies.

In addition, survey results contradicted the long-accepted criterion of solely using the level of VOCs present in a product to define green. If VOCs aren't the standard, it then bears asking the question: "What is?"

### FUTURE TRENDS

When examining future trends, the ASC continually seeks to identify leaders and experts in the area of sustainability whom the industry can partner with to better understand what green means today and in the future. An important facet of this concept is a strategy to seek out leaders in the area of green chemistries who can help educate companies on how to make products greener.

One of the ways the ASC is facilitating the sharing of sustainability



Communication is essential for a better understanding of what green means today and in the future.

trends is to enhance its educational programming. A stronger focus on sustainability was evident at the fall convention held in October. In the Sustainability and Green Technology education track, 15 customers, industry leaders and outside experts shared their thoughts and visions on sustainability and how green applies to our industry. In addition, two keynote sessions addressed the concept of sustainability and its effects on the adhesive and sealant industry. The education program intentionally included a stronger representation of the end-use customer; organizations that presented included Procter & Gamble, Owens Corning, UL Environmental, Fletcher-Thompson Inc., United Soybean Board, and GlaxoSmithKline.

Through efforts to connect the adhesive and sealant supply chain with sustainability thought leaders via education, the ASC hopes to further facilitate the global discourse about green.

### INFORMATION EXCHANGE

In addition to educating the industry about future trends, a third and equally critical piece of any sustainability initiative involves communication. It is essential to communicate and promote how ASC members and the industry at large are actively addressing the emerging trend of sustainability.

To facilitate the exchange of information on this important topic, the ASC is in the early stages of developing a Sustainability Summit. This event would gather industry stakeholders together in 2011 to open a dialogue about the question, "What defines green?" and begin to examine and define metrics. It will take an industry-wide effort to find answers to that question and position the industry for future growth. One possible outcome of this meeting might be a directive for the ASC to partner with consensus-based organizations that publish performance-based standards and best practices to develop technical specifications that further define green.

### A UNITED EFFORT

Sustainability is a continually emerging trend in the adhesive and sealant industry. It is important for organizations to work together to further define what sustainability and green mean for the industry and what advancements are on the horizon. The ASC stands ready to guide and support the industry it serves on the issue of sustainability, but it will take the collective efforts of many individuals to come together to fully define what green means for the entire adhesive and sealant supply chain.

*For additional information regarding the ASC's sustainability initiative, contact the author by e-mail to [matt.croson@ascouncil.org](mailto:matt.croson@ascouncil.org).*

# LESS IS MORE

Waterborne adhesives can become even more environmentally friendly when the proper practices are applied.

By Thomas E. Rolando, Chief Technical Officer, Wisdom Adhesives

**H**ow often have we heard the term “less is more”? It is a line we use often when talking about topics such as the environment, sustainability, and the “greenness” of a particular item or concept. When it comes to adhesives—and the preservation of the environment by using less adhesive (either with a superior product technology or manufacturing technique)—the idea that “less is more” is more important than ever.

From an environmental standpoint, we have already done the bulk of the heavy lifting to make adhesive products green and environmentally friendly. We have reduced volatile organic compounds (VOCs), eliminated ozone-depleting solvents and removed nearly all volatiles. These worthy accomplishments are also environmentally responsible.

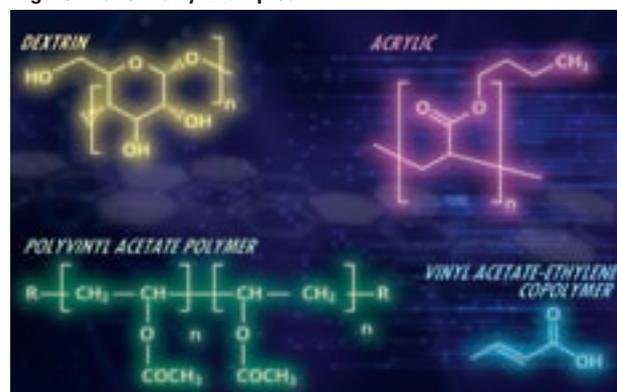
Now that we know that going green is best for our world, we need to work on fine-tuning and optimizing the effectiveness of our technologies. For example, waterborne adhesives have long been used as primary bonding products in industries such as packaging, paper converting, bookbinding, woodworking and product assembly. Traditionally, most of these end-use applications have used highly formulated polyvinyl acetate or vinyl acetate-ethylene copolymer-based products to exact a solution to the performance of the product.

## GREENNESS AND SUSTAINABILITY

Before evaluating the current state of waterborne adhesives’ greenness or sustainability, it is important to define what these concepts mean. A product’s greenness and sustainability can be defined through the following key considerations:

- Environmental impact
- Recyclability
- Concentration of VOCs

Figure 1. Chemistry Examples



**Table 1. Key Properties of Waterborne Technologies**

Waterborne Technology	Performance	Formulation Friendly	Relative Cost	Sustainability Qualities	Comments
Dextrins, sugars and related products	Low-Moderate	Moderate	Low	High	Least dependent on oil. Holds most promise for future developments.
Polyvinyl acetate	Moderate	Moderate-High	Moderate	High	Workhorse technology. Limitations on future development.
Vinyl acetate-copolymers	Moderate-High	Moderate-High	Moderate-High	Moderate-High	Mileage factors and recent advances help with sustainability.
Acrylic	High	Low-Moderate	High	Moderate	Great performance where they fit. Limited in scope and very susceptible to oil.

**Table 2. Batch vs. In-Line Process Technologies**

Process Type	Performance	User Friendly	Cost	Sustainability Qualities	Comments
Batch	Workhorse process. Has done the job for many years and will continue to do so.	Moderate	Moderate	Steel in the ground makes it useful. Little room for improvement.	Older technology. Steel in the ground already done.
In-Line	Newer technology, currently limited in scope.	High	High at first, low once developed.	Eliminates interim processes, cleaning and transferring.	Relatively new technology with kinks to be worked out.

- Use of renewable resources
- Comprehensive energy efficiency

Putting a qualitative value on green and sustainability is subjective, while determining a quantitative value is more challenging and more indicative of the greenness of the product. Giant steps have been taken to make waterborne adhesives more environmentally friendly and safe, but more work is required. The three main areas of improvement that can affect the “greenness” of a waterborne adhesive product include the chemistry of the adhesive, the production process, and the overall use of the adhesive.

**Chemistry**

An adhesive’s chemistry is an example of a classic technological battle. The use of superior chemistry formulations results in the need for less adhesive product. Most will agree that acrylic begets copolymers begets homopolymers. While exceptions do exist, the use of highly performing chemistries results in a reduction in the amount of adhesive needed (see Figure 1).

Waterborne technologies offer a range of performance, cost, greenness and sustainability qualities. Table 1 compares various waterborne technologies and their key properties. Although much progress has been made, all of the technologies

are, to a large extent, mature. The effort to produce greener and more sustainable technologies must continue.

**Production Process**

The process by which adhesives are made is a vastly untapped area that is likely constrained by existing steel in the ground. Most adhesives are produced via traditional batch processing that requires energy and hardware to make, transfer, hold, and package. The increased use of automated, less intrusive processing technologies (e.g., in-line preparation) goes a long way toward improving a product’s greenness and sustainability.

Table 2 compares the features of batch vs. in-line processing technologies. In-line mixing has yet to reach its full potential. When it does, it will provide synergistic opportunities for green and sustainable adhesive manufacturing.

**Optimizing Use**

Another area of particular concern is the amount of adhesive used for a given application. Reducing this amount has a direct benefit on the environmental impact of the product.

Economy and cost are often at the forefront of consideration by nearly every manufacturing sector worldwide.

The search for improved methods of adhesive application—and, in turn, the total amount consumed—deserves top priority. Several factors can optimize the use of an adhesive:

- Reducing the amount of adhesive applied, no matter the technology. For the most part, the amount of adhesive used on a given application can be likened to an ant carrying 100 times its weight. Adhesives have the capacity to far outreach the surfaces to which they are bonding. Therefore, a small 5% cutback in the amount can be easily attained.
- Ensuring that the adhesive is applied in the specific bonding area and matches both the surfaces being bonded and the application equipment.
- Using the latest and best equipment and know-how for applying the adhesive.
- Optimizing the overall gluing process.

The same arguments that apply to waterborne adhesives can also be made for hot-melt adhesives or other technologies. Switching to lower density hot-melts that offer better performance—such as implementing metallocene-based products vs. the more traditional ethylene-vinyl acetate (EVA) type—can readily reduce

# LESS IS MORE

Waterborne adhesives have long been used as primary bonding products in industries such as woodworking.



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the amount of adhesive used. Consider changing your mentality from cost in \$/lb to cost/unit. While the optimization of adhesive use is hardly a new concept, it is one that can be immediately deployed.

### RECENT ADVANCES

Waterborne adhesives date back to ancient Egyptian times. In the 20th century, with the advent of emulsion polymerization, advances were continually made. VAE technologies, the use of in-line mixing, and use optimization can play key roles for the development of future adhesive technologies based on renewable and sustainable materials.

**While the optimization of adhesive use is hardly a new concept, it is one that can be immediately deployed.**

The adhesives industry, for the most part, is ahead of the green curve compared to other industries. For decades, adhesive organizations have led the charge for a cleaner environment by eliminating or reducing products that were deemed harmful. Many of us have worked in careers based solely on the development of products that meet or exceed performance criteria while demonstrating green qualities. In general, the adhesives industry has been self-policing—with the help of a few (albeit major) governmental mandates.

If the goal is to reduce the usage of adhesive by 5% for the sake of the environment, it is best to start by selecting the appropriate technology, manufacturing adhesives in the most efficient manner possible, and finally optimizing the amount of adhesives in end-use applications. Self-policing has always been important for chemists, engineers, and operators who develop, manufacture, and use adhesives; it will undoubtedly take the lead in producing advanced green and sustainable adhesives.

For additional information regarding environmentally friendly waterborne adhesives, contact Wisdom Adhesives at 1575 Executive Dr., Elgin, IL 60123; (847) 841-7002; fax (847) 841-7009; or visit [www.wisdomadhesives.com](http://www.wisdomadhesives.com).



# Sustainable BUILDING OPTIONS

Adhesives, membranes and sealants play an important role in the determination of building projects' sustainability levels.

By Arthur Mintie, Director, Technical Services, LATICRETE International, Inc.

**H**ow does indoor air quality impact building occupants in a practical sense? A young student has problems breathing when he is in school. He experiences itchy eyes, a runny nose and a constant headache. When he is not in school, he does not have any of these symptoms. A young mother goes to work every day and comes home feeling lethargic; she gets plenty of rest, but she is always tired during the week or when she is at the office. When she travels, she cannot understand why she is less tired than usual—shouldn't she be more tired while traveling? These types of situations are becoming more commonplace.

In many cases, symptoms like these point to sick building syndrome, which may be the result of the off-gassing of volatile organic compounds (VOCs) that may be present in building materials. These can include chemicals, odors from fibers, or fumes from building materials as they cure and dry. Many of the building materials used in today's construction methods contain products that can cause the problems mentioned in these examples. The construction business and the materials and methods used to construct buildings seem limitless; for the purposes of this article, we will focus on the use of ceramic tile and stone, and the related adhesives, membranes, and sealants that are used to install these finish materials.

## BACKGROUND

The term "green," when used in discussions that concern buildings and construction, signifies healthy and environmentally friendly products and buildings. But it is first important to understand the evolution of the green building movement. The respiratory and allergic reactions of building occupants can be traced back to reactions that result from some of the products that are in the structure.

People are indoors approximately 70-90% of the time. With that in mind, good indoor air quality is very important. The design community has long recognized this fact and has inspired federal and state organizations to create programs that intend to target the issue of indoor air quality. Today, dozens of programs have established guidelines to address this issue. An increasing number of end users and design professionals are recognizing that a healthy building environment is an essential part of any community.

Along with the health issues of our buildings comes the sustainability and quality of building materials used. What does this actually mean? Simply put, sustainability can be defined as how long the products used in a structure will last before they have to be replaced or repaired. For example, how long will the ceramic tile finish last on a floor, as opposed to an installation

# SUSTAINABLE BUILDING OPTIONS

of carpeting or resilient flooring? It's important to note that health and sustainability issues go hand in hand since the frequency with which finishes are replaced impacts the buildings' indoor air quality.

## ENVIRONMENTALLY FRIENDLY PRODUCTS

In today's construction marketplace, the phrase "environmentally friendly product" is liberally used to describe an array of items. In truth, environmentally friendly products are those that do not harm the space that humans occupy and do not have any adverse impact on the ecology or environment during their harvesting, manufacturing, installation, curing/drying, and duration of use.

Adhesives, membranes and sealants play an important role in this regard, since they are often used in adhering or complementing many finishes. Therefore, when making the determination for whether a product is environmentally friendly or not, the following questions should be addressed:

- How are the finishes and adhesive materials manufactured?
- Does the material degrade or break down over time?
- Does the material require frequent maintenance or need to be replaced in a relatively short period of time?
- How long will it off-gas (emit harmful VOCs)?

While other flooring finish types claim sustainability and environmentally friendly characteristics, a careful study of a finish material's lifecycle cost and its physical characteristics reveals much about the product's "green composition" and impact on the building environment. What is great about ceramic tile and stone—and the adhesives used to install them—is that they are mainly composed of basic materials that are found in the earth. Not much needs to be done to a slab of marble, limestone, slate, sandstone, granite or quartz, except maybe a small alteration to its finish that can be easily accomplished by softly honing the surface or perhaps polishing it to a glimmering mirror-like finish.

The ingredients that go into ceramic tile are mainly clay and shale; these are pressed or extruded into shape and then fired at high temperatures to achieve a very dense and durable finish. Since tile is fired in kilns at extremely high temperatures, the finished product contains no VOCs that can be released into the air that we breathe.<sup>1</sup>

In addition, porcelain tile manufacturers have become so effective in their production processes that the cost of porcelain tile is actually decreasing—as opposed to the cost of other types of flooring and wall finishes, which continues to increase. In the past, when a design professional was looking for an inexpensive alternative, they accepted the drawbacks of off-gassing and short lifecycles associated with these other types of finishes (e.g., vinyl composition tile, linoleum, carpet, rubber, paint, wall covering). They no longer have to compromise. Ceramic and porcelain tiles are high-performance products. Durable, dense and easy to maintain, porcelain tiles will not easily stain, since they generally feature absorption rates of less than 0.5%. Typical latex Portland cement-based adhesives, mortars, grouts, membranes and sealants are also high-performance, environmentally friendly products that come in well below the threshold limits established by Leadership in Energy and Environmental Design (LEED).



*The beauty of ceramic tile and stone installations also provides sustainable and environmentally friendly characteristics to construction projects.*

Ceramic tile and stone is also considered clean fill. If, for any reason, tile or stone is removed (and this is usually only because the style looks dated), it can be buried in a landfill and will not harm the ecology or the environment. Unlike the adhesive mortars that are used to install resilient and wood floors or carpeting, tile and stone adhesives are typically Portland cement-based and do not pose any danger to the environment. They are inert once they harden and do not off-gas or emit any VOCs. Mineral-based finish flooring products such as tile, masonry, terrazzo, and cut stone automatically qualify for LEED credit without any indoor air quality testing requirements, per LEED IEQ Credit 4.3, addendum 4/14/2010, p. 488.<sup>2</sup>

## ABOUT VOCs

Volatile organic compounds (VOCs) are ingredients contained in building materials that may escape as they air dry or cure. As building materials cure or dry, an odor may be emitted and cause a person to develop reactions or sensitivities to the materials in a building. Everyone recognizes that new car or new carpet smell; VOCs are part of that scent. It is the off-gassing of the VOCs that creates these respiratory or allergic reactions. Some of the ingredients in building materials that off-gas are formaldehyde, ozone, particles and volatile organic compounds. Ceramic tile and stone, however, offer many benefits in the area of VOC emissions.

## DIRECT COMPARISONS

When a comparison is made of the VOCs contained in floor and wall finishing products, it is obvious to see why ceramic tile and stone is the better finish choice. Table 1 compares the types of finishes and their VOC content.<sup>3</sup> The adhesives used for the application of the materials can also contribute to the total volatile organic compounds (TVOCs) in a building environment. Table 2 lists the typical TVOCs for the adhesives used in some of these finishes.<sup>3</sup>

As indicated, the TVOC contained in a typical ceramic tile and stone installation is practically nonexistent. When compared to the other types of finishes, it is evident that ceramic tile and stone contribute to a healthier building environment. Manufacturers and promoters of the other finish types will tell us that off-gassing of the VOCs diminishes as time passes, and that is true to an extent. Many strides have been made to manufacture these types of finishes and adhesives with lower VOC content. Several of the larger building environment watchdog agencies have set stricter guidelines to ensure that this happens.<sup>4</sup> However, these types of finishes are still significantly higher in VOC content when compared to ceramic tile and stone.

With all of the green building buzz flying around these days, it can be challenging to understand which products are actually green. Several factors can help design professionals, specifiers and building owners determine which product features are truly desirable and beneficial to building occupants:

- Long product lifecycle
- No negative contribution to indoor air quality (low VOC-emitting materials)
- Green-conscious manufacturing

**Table 1. VOC Content by Finish Type**

Ceramic Tile	0.0%
Stone	0.0%
Resilient Flooring	600 g/l
Carpeting (after 24 hours of installation)	
with polypropylene backing	399 g/l
with polyvinyl chloride backing	602 g/l
with polyurethane backing	83 g/l
Wood floors treated with a lacquer finish	350 g/l
Latex-based paint (water based)	250 g/l
Vinyl wall covering	400 g/l
Fabric wall covering	400 g/l

**Table 2. Typical Adhesive TVOC Content**

Ceramic tile and stone installed with a typical latex-fortified Portland cement-based mortars	< 2.39 g/l
Multipurpose carpet and resilient flooring adhesives, including a typical carpet or resilient flooring material	
multipurpose latex adhesive	976 g/l
synthetic "low-VOC" adhesive	698 g/l



**Ceramic tile and stone flooring in a hotel atrium with plenty of foliage helps create an inviting and healthy building environment.**

- Hypoallergenic products
- Low maintenance
- Recycled material contribution
- Regionally supplied products

To help construction professionals determine compliance with LEED, a few ceramic tile and stone adhesive manufacturers have created online LEED Project Certification Assistant programs. In many cases, one just has to punch in the location of a project and make a few product selections to generate a comprehensive LEED project compliance report for the adhesives, sealants, membranes and other installation components—complete with third-party confirmation certification for a ceramic tile and stone installation.

*For more information, contact Laticrete International, Inc. at One Laticrete Park North, Bethany, CT 06524; (203) 393-0010; fax (203) 393-1296; or visit [www.laticrete.com](http://www.laticrete.com).*

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# GREEN PACKAGING

Potentially hazardous materials require more consideration when packagers are trying to reduce environmental impact.

By Jason Smith, Technical Support, Andpak Inc.; and Charles Pottier, President, Zip-Chem Products

The term “green” in contemporary parlance refers to an item or activity that demonstrates some ability to reduce its impact on the environment. In packaging, green efforts have often focused on the package and its recyclability, or the amount of recycled material used in the package. Another important aspect is the utilization of package styles that allow the maximum transfer efficiency of the product from the package to the point of use. It is also important to leave behind a package that has minimal environmental impact.

## AEROSPACE PACKAGING

Aerospace product packaging is suggested only when it makes sense for guaranteed performance, reduced contamination due to re-entry, encapsulated catalyzed material and the overall impact of minimizing the footprint of hazardous materials. Other features include transfer efficiency and dramatically reduced worker exposure.

For example, the packaging of aerospace products often requires a high-purity product environment to be maintained in the package. Also, the chemicals in the product may limit the choices available for packaging materials. In those cases where the product basically

selects the packaging material to be used, packagers must turn to other methods of reducing environmental impact.

One of the first steps when developing a package for a new material is to consider the hazards associated with that material, as well as the end use of the product. In the aerospace market, the physical demands on the vehicle often necessitate the use of chemicals that can pose hazards to the environment if spillage should occur. The packager must look to innovative designs to achieve greater transfer efficiency and ensure intended engineering performance so that the product goes from the package to the end use with as little loss to the environment as possible while continuing to meet the demands of the respective specification. Understanding the hazards of the product, as well as the final application, enables the packager to envision additional methods of achieving better transfer efficiencies.

In addition to implementing enhanced transfer efficiency, the packager must consider how residues left in the container will be best captured until the container can be suitably disposed of. The packager must also consider a package that will minimize the volume and weight remaining after the package has been



Aerosol cans are hermetically sealed, so their contents cannot leak or spill.

## The packager must consider how residues left in the container will be best captured until the container can be suitably disposed of.

used. Different municipalities dispose of hazardous waste by weight or by volume (depending on their waste treatment process), and the packager must try to reduce that environmental footprint on both accounts as well.

### REAL-LIFE APPLICATIONS

The aerosol can and the collapsible pouch and tube are examples of packaging that meets the above criteria. The aerosol can has been under scrutiny since the determination that the use of chlorofluorocarbons (CFCs) poses a threat to the destruction of the ozone layer. The phase-out of those products has created various propellants that no longer pose any threat to the ozone layer and can be widely used.

The aerosol can provides several benefits as a packaging alternative. Aerosol cans are hermetically sealed, so their contents cannot leak or spill. This dramatically reduces the possibility of an uncontrolled release to the environment. The sealed can also prevents any product contamination, so waste from contamination can be significantly reduced. Aerosols are designed to deliver the right amount of product exactly where it is needed. Through the strategic use of attachments, the product can be delivered precisely and in a controlled manner (even to hard-to-reach places) for maximum transfer efficiencies. In addition, aerosol containers are recyclable; after the product is completely expelled from the can, the aerosol container can be recycled and the metal reused.

The collapsible pouch or tube has long been in use because it works well in meeting the objectives of the package. The collapsible nature of the package allows better transfer efficiencies compared to the traditional cans or cartridges (especially for thick materials such as greases), as well as lower disposal costs. Cans do not typically offer good transfer efficiencies, since they are dependent on the skill of the user.

While the cartridge package design provides good transfer efficiencies, the resulting container maintains the same volume empty or full. In the case where waste is measured in volumes, cartridges must be treated entirely as hazardous waste and must later be crushed in order to minimize their environmental impact.

In the packaging of aerospace products, the best "green" approach is to minimize waste and exposure to the packaged materials.

For additional information regarding green packaging, contact Andpak Inc. at 400 Jarvis Dr., Morgan Hill, CA 95037; (408) 782-2500; fax (408) 776-3538; or visit [www.andpak.com](http://www.andpak.com).



The collapsible pouch allows better transfer efficiencies compared to traditional cans or cartridges.

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#### About the principal...

Dr. Dave Dunn is President of F.L.D. Enterprises, which is located near Akron, Ohio, USA. He is a former Vice President and Director of Loctite Corporation and has consulted for many adhesives and sealants manufacturers and users in both North America and Europe. He is the author of several books and many articles, including the recent book *Adhesives and Sealants-Technology, Applications and Markets*, published by Rapra Technology Ltd. ([www.polymer-books.com](http://www.polymer-books.com)).

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# SMALL STEPS BIG STRIDES

One manufacturer is making big strides in offering environmentally friendly products.

By Cindy Stoner, Director of Segment Marketing, Intertape Polymer Group

**D**id you know that each day you take over 20,000 breaths and breathe about 25 lbs of air? Air pollution poses a serious threat to our nation's health, and Intertape Polymer Group (IPG) is taking special measures to support healthy air.

IPG produces a range of tape- and film-based products designed for industrial applications in a variety of market segments, particularly focusing on solutions that support a clean environment. The ultimate goal is to provide a total solution comprising products that are used during the manufacture, packaging, and shipping of finished goods that lowers the environmental impact (i.e., footprint) left behind.

## ECO-FRIENDLY PRODUCT DEVELOPMENT

One of IPG's recent initiatives was to develop a comprehensive range of product technologies specifically for the manufacture of wind turbines, including blade and nacelle manufacturing; tower assembly; hub, bearing, and gearbox assembly; and electrical tapes for component parts such as generators and inverters. In addition, a high-performance masking tape, Intertape® brand Orange Mask™, has been designed based on the requirements of wind blade manufacturers. The product includes an adhesive that is formulated to perform with polyester, vinyl ester, and epoxy resins, and provide adhesion to semi-permanent mold release agents.

Solar panel production also requires a variety of temporary component securing and protecting products. Many types of

filament tapes and tensilized polypropylene (TPP) products are available for applications including laminate, cable and reverse side cell fixation, as well as double-coated tapes for mounting applications.

In addition, AquaMaster™ heavy-duty reinforced membranes are used to line ponds that grow algae, which is harvested and converted into biofuel. Algae has emerged as a promising feedstock for future biofuels due to its high energy content, energy yield per acre, fast growth, and ability to grow in water of varying quality. According to the U.S. Department of Energy (DOE), algae may be able to produce 100 times more oil per acre than soybeans—currently the leading source of U.S. biodiesel—or any other terrestrial oil-producing crop.

IPG's research and development team continues to create tape and film technologies and products that are environmentally preferable, such as American® tape brand masking solutions for the automotive repair industry. American tape products perform



well with waterborne paint systems; automotive refinishers can reduce their emissions by as much as 38% by switching from solventborne to waterborne systems.

### SHIPPING SOLUTIONS

Companies can also communicate their environmental message through their shipping processes. Continuing the “green” chain drives change and creates a better future for younger and future generations.

IPG developed a product family of environmentally friendly shipping products called the Low-Environmental Impact Line from Intertape. One of the products in the line is Central™ water-activated paper tape, a biodegradable starch-based adhesive that aggressively bonds to corrugated cartons, even in dusty or dirty environments. The paper tapes’ backing is entirely biodegradable, which makes them 100% recyclable and repulpable.



In addition, OXO-biodegradable film technology is offered in iCushion™ air pillows, Exfilmplus™ shrink film, SuperFlex™ high-performance film and StretchFlex™ standard-duty stretch film. The biodegradable film contains an additive that initiates chemical breakdown of the polymer chains more quickly and completely than a standard film when in the presence of oxygen and heat or UV light. These environmentally preferable products offer solutions for companies that seek to be more responsible in their manufacturing and distribution practices.

### WHAT'S NEXT?

The future of the environmental movement, as well as planet, is in our hands. If we are willing to work together and make the environment and the well-being of everyone our top priorities, the future looks much brighter. Manufacturers unfortunately cannot eliminate all activities that affect the environment. However, a strong focus on the continual development of products and the improvement of internal sustainability activities can reduce our environmental impact—because every effort makes a difference.

For more information, visit the Green Initiative section of [www.itape.com](http://www.itape.com).

With a **MobileTag**  
go from **Print to Web**

Simply snap a photo of the mobile tag with your Smartphone, and you can conveniently go from a page in our magazine to a webpage.

**Coming January 2011**

The advertisement features a dark blue background. On the left is a smartphone displaying a home screen with various app icons. In the center is a two-page spread from a magazine; the left page has the headline "DEFINING 'GREEN'" and the right page shows a photograph of two people. A small, colorful mobile tag icon is circled in orange on the bottom right of the magazine page. On the right is another smartphone displaying a mobile website. At the bottom right, there is a white oval with an orange border containing the text "Coming January 2011".



# GREEN IS LEAN

Lean production can lead to both a greener planet and increased profits.

By Jay Arthur

**G**lobal warming, oil spills and other environmental disasters seem to be on everyone's mind these days. Business magazines write about "green" companies and movie stars drive hybrid cars in order to appear environmentally responsible. But most businesses overlook the single biggest opportunity they have to go green—simplifying, streamlining and optimizing their internal operations.

Since many businesses (even profitable ones) spend about one-third or more of their budget on waste, scrap and rework, it's reasonable to assume that eliminating that waste would reduce not only costs but various planetary problems. Reducing and eliminating waste is the goal of lean production. Waste reduction reduces consumption, which, in turn, reduces the energy required to produce the product in the first place.

## LEANING THE BUSINESS

Most of us grew up learning about Henry Ford and the concept of mass production. Mass production led to economies of scale that reduced costs—as long as the company was making a single model with no options. Today, consumers demand a customized product, regardless of whether it's a new car or a burger at their favorite restaurant.

Then along came lean (a.k.a., the Toyota Production System). Lean focuses on eliminating unnecessary delays and

movement. It creates economies of speed that reduce costs and boost profits while minimizing environmental impacts. Whereas mass production focuses on big batches, lean focuses on small batches and quick changeover. With mass production, it's easy to commit the sin of overproduction, which creates inventory that has to be warehoused and managed. Lean only creates a small batch when a customer requests it, thereby avoiding all unnecessary production or inventory. Nothing goes to the warehouse; you make it, you ship it.

It no longer makes sense to create a thousand units of a product quickly if consumers want a product customized to their needs. A business can easily end up with thousands of units that no one wants. All of the energy and materials used to create these products are wasted, and it takes energy and landfills to recycle or dispose of the product. When the economy slides into recession, mass production leads to more and more inventory that must be stored and managed.

Imagine the environmental impact that a shift from mass production to lean production could produce. If a company only prepares enough products or services to meet customer demand, it doesn't have to inventory, store, or manage a lot of raw materials or finished goods. This prevents the unnecessary movement of inventory, and reduces storage costs and overtime.



Consider the following examples. One chemical company had \$200 million in finished goods sitting in rail and shipping yards all over the planet. Managing that inventory cost a fortune. A metal fabricator recycled a million pounds of finished but flawed product every month that had to be chopped up and fed back into the furnaces. Saving the energy used to chop and melt the recycled metal could help save the planet. A magazine printer had high-speed presses that could print a million magazines in a day, but the bindery could only handle 200,000. The other 800,000 had to be stored where they could be gored or toppled by forklifts over the next five days. The simple solution was to print 250,000 the first day and 200,000 every day thereafter, making the production schedule more flexible and allowing more print jobs with less rework and overtime.

### THE TOOLS OF LEAN

To maximize the value of lean, manufacturers should strive to reduce delays and the unnecessary movement of people or materials. Two main lean tools are value stream mapping (VSM) and spaghetti diagramming. Much like a flowchart, value stream maps show the workflow from a time perspective. Spaghetti diagrams, on the other hand, show the movement of people and materials through a workspace.

On a VSM, the arrows between steps are where the product or service spends

### THE SEVEN SPEED BUMPS OF LEAN

1. Overproduction leading to excess inventory leading to environmental impacts
2. Too much inventory (inventory is evil)
3. Waiting (delay)
4. Unnecessary movement of people
5. Unnecessary movement of materials
6. Unnecessary or incorrect processing (e.g., inspection)
7. Rework to fix mistakes

most of its time. Eliminate the delays between steps to increase productivity, reduce errors and maximize profits.

On a Spaghetti diagram, calculate the distance an employee or a work product moves through the space. Often, workspaces are poorly designed, which leads to lots of unnecessary movement. To see a well-designed lean production “work cell,” visit any Subway® restaurant, where you’ll find a small oven (right-sized machine) for fresh bread, and small buckets of meats, cheeses, and vegetables. Chips and drinks are self-service.

Walking is wasteful. Ask your employees to wear pedometers for a week and record their movements. A redesign of the workspace could lead to significant savings.

### ENVIRONMENTAL IMPACT

Eliminating delays and movement while reducing batch sizes and inventory not only

speeds things up, it also reduces the chance for error by 50%. Faster production—combined with less rework cuts costs—boosts profits and reduces environmental impacts that range from the overuse of raw materials to high energy consumption.

Use the tools of lean to reduce delay and movement and benefit Mother Earth as well. Lean is not just about the bottom line, worker satisfaction, or customer satisfaction—it’s also about the future of the planet and its inhabitants.

### ABOUT THE AUTHOR

Jay Arthur, the KnowWare Man, is the author of *Double Your Profits: Plug the Leaks in Your Cash Flow and Lean Six Sigma Demystified*. He has spent the last 20 years helping companies maximize revenue through the “Lean Six Sigma System,” a collection of audio, video, books and software, and he created the “QI Macros SPC Software” for Excel.

For more information, call (888) 468-1537 or visit [www.qimacros.com/excel-spc-software.html](http://www.qimacros.com/excel-spc-software.html).



## REWARDING ENVIRONMENTAL AWARENESS

Huntsman's Los Angeles site was named southern California's Facility of the Year.

**H**untsman's Advanced Materials manufacturing site in Los Angeles was selected as the 2009 Southern California Facility of the Year in the large industry category by the California Water Environment Association (CWEA). The plant—which produces adhesives, syntactics, laminating resins, encapsulants and potting materials—supports customers in the design, fabrication, and assembly of components used in the aerospace, automotive, electronics, power, and general manufacturing industries.

### FACILITY MODERNIZATION

As part of a \$20 million modernization over the past four years, the facility has advanced production, quality control and process development capabilities. It is AS9100:2004 and ISO 9100:2000 certified.

Qualities that led the CWEA Pretreatment, Pollution Prevention, and Stormwater Subcommittee to choose Huntsman for this award included its knowledgeable and committed environmental staff; innovative processes; zero discharge of treated wastewater; preventative maintenance efforts to minimize or reuse waste materials; and a consistent record of compliance with sewer and storm water discharge requirements.

In a letter notifying Huntsman of its award, Paul D. Schmidtbauer, chairman of the Awards Subcommittee (South), noted, "Companies such as yours provide an example of how a joint commitment by management and employees to effective waste management yields results."

### ABOUT HUNTSMAN

*Huntsman is a global manufacturer and marketer of differentiated chemicals. Its operating companies manufacture products for a variety of global industries, including chemicals, plastics, automotive, aviation, textiles, footwear, paints and coatings, construction, technology, agriculture, health care, detergent, personal care, furniture, appliances and packaging. Originally known for pioneering innovations in packaging and (later) for rapid and integrated growth in petrochemicals, Huntsman today has more than 12,000 employees and operates from multiple locations worldwide. The company had 2009 revenues of approximately \$8 billion.*

### ABOUT THE CWEA

*Founded in 1927, the California Water Environment Association is a not-for-profit association of 9,000-plus professionals in the wastewater industry. The CWEA is a state member association of the Water Environment Federation, which provides technical education and training for thousands of water quality professionals who clean water and return it safely to the environment.*

*For more information, visit [www.huntsman.com](http://www.huntsman.com) or [www.cwea.org](http://www.cwea.org).*



# GREEN PRODUCT PROFILES

This feature provides a listing of green products that are offered by leading adhesive and sealant companies. Use this guide throughout the year to find sustainable, green materials from renewable ingredients. To send submissions for future installments of this feature, e-mail Teresa McPherson, managing editor, at [mcphersont@bnpmedia.com](mailto:mcphersont@bnpmedia.com).

## **BOSTIK**

### *Wood Flooring Adhesive*

Bostik's Construction & Industrial Business Unit has developed ULTRA-SET® SingleStep™, an adhesive that serves five functions in a single step. The material is a wood flooring adhesive that also provides moisture protection, sound deadening, crack isolation and mold protection.

ULTRA-SET SingleStep is a tacking formulation with very low moisture permeability. The high-performance adhesive incorporates Bostik's Thickness Control™ spacer technology to ensure proper membrane thickness between the hardwood and substrate. In addition, it features Bostik's BLOCKADE™ antimicrobial protection. The adhesive contains zero VOCs and incorporates post-consumer recycled content.

Phone: (888) 592-8558

Web: [www.bostik-us.com](http://www.bostik-us.com)

## **POLYURETHANE ADHESIVE SYSTEM**

### *The Dow Chemical Co.*

The Adhesives and Functional Polymers business unit of this company offers Mor-Free™ L75-173/C-145, a solvent-free, 100%-solids polyurethane adhesive system for flexible packaging. The two-component product is formulated as a lower cost alternative to adhesives currently on the market for

laminating and general-to-medium performance packaging applications. Converters seeking to lower production costs for packaging laminations can apply this fast-curing adhesive at room temperature; such laminates can generally be further processed in as little as six hours. Chemical curing typically requires up to five days at ambient temperatures.

Web: [www.rohmhaas.com](http://www.rohmhaas.com)

## **AIR LEAK AND GAP SEALANT**

### *DAP Products Inc.*

The EnergySaver™ high-performance air leak and gap sealant is designed for homeowners looking to reduce energy consumption and save money through home weatherization. EnergySaver is a high-performance sealant for sealing air leaks as large as 0.5 inch and suitable for use with indoor and outdoor applications. This waterproof and weatherproof sealant features flexibility and adhesion for joint movement, allowing it to expand and contract with temperature fluctuations without cracking or shrinking. The cartridge packaging contains 45% post-consumer recycled content by weight and the shipcases are supplied through a facility that is certified by the Sustainable Forestry Initiative®.

Web: [www.dap.com](http://www.dap.com)



**PLYWOOD ADHESIVES**

**Franklin Adhesives and Polymers**

This company, a division of Franklin International, has a new line of seven CARB-compliant adhesives for plywood products. The line introduces the company's first-ever bio-modified adhesives, which use soy technology that the division developed during research funded through a grant from the United Soybean Board. In addition, two new bio-modified, one-part polyvinyl acetate (PVA) adhesives that meet ANSI/HPVA type-2 water resistance are offered: Multibond MX-100 for engineered hardwood plywood and Multibond MX-200 for direct-feed hot-press operations.

Phone: (800) 877-4583  
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Three new NovaCryl™ pressure-sensitive adhesives (PSAs) are available for the vinyl film, tape and label markets. NovaCryl PS-P 180, PS-V 700 and PS-R 50 adhesives feature varying levels of adhesion, from permanent to ultra-removable, for end uses including graphics, labeling, and removable protective films. Each PSA is free of alkyl phenol ethoxylate (APE)-type surfactants, offering a more environmentally preferred profile for certain end uses, and is available as a base polymer or a coater-ready formulation.

Web: [www.omnova.com](http://www.omnova.com)

For more information about green products and green industry news, visit the **ASI Green** microsite at [www.adhesivesmag.com/Articles/Green](http://www.adhesivesmag.com/Articles/Green).

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# IS THE RECESSION OVER?

The economic recession has clearly affected the adhesives and sealants industry—but the state of affairs could be improving.

By David P. Nick, President and CEO, DPNA International, Inc.

**H**ow has the past and current economy affected the role of the adhesives and sealants industry up to and including 2007 through 2010? What might happen by the end of 2011? Will the recession be over or will it continue?

## A BRIEF HISTORY

My parents lived through the Great Depression, and that experience shaped their lives and influenced mine. We lived a frugal life, paid cash for nearly everything, and always saved for a rainy day. Most of all, the security of our jobs or careers was believed to be protected for life. A typical progression through life entailed finding a job, doing it well, advancing in the company, and looking forward to a comfortable retirement.

Most companies during the post-Depression period operated similarly and supported this work ethic. They paid cash for raw materials; made the best product possible; hired diligent and devoted employees; paid for performance; and protected their people with good pensions, working conditions, and medical benefits. In a nutshell, that was life—back then.

My generation sought change by improving on the “old order” and discovered fast food, credit cards, “job hopping” for better pay, and constantly challenging the traditional financial “rules.” Our entire society began a foot race to see how much we could acquire in the shortest period of time and how soon we could outdo the Joneses. Our children picked up on this attitude and began running even faster in their higher quality performance running shoes (adhesive-bonded, of course).

By the late 1980s, society was living on maxed-out credit cards and bank credit was covered by increasingly risky collateral. Corporations and banks did the same and began to acquire others in order to gain greater market share and spread costs. They often paid far more than their acquisitions

were worth and used highly leveraged capital. When times got tough, they cut employees to achieve the greatest short-term positive effect on the bottom line. Even more costs could be saved by reducing benefits and extending non-secured credit to financially weak customers. The only way out of this downward spiral was to sell the company for an inflated price, invest in hedge funds, and retire to some tax shelter in the Caribbean.

This was all well and good until 2007, when the market could no longer shore up the weight of so much debt. It looked hopeless until the U.S. and other overseas industrialized country governments recognized the record economic growth of the previous seven or eight years was built on sand—and it was collapsing. Private consumer and corporate debt had risen so high that the chances of ending the crisis were nil without major financial help from the government. Our fast running shoes had finally blown out, and it was time to pay up. Industry immediately felt the ripple effect as the economic engine wheels slowed and came to a grinding “slow down”—but not a halt. This period was called a “deep recession” rather than a “depression.”

## THE ADHESIVES AND SEALANTS SECTOR

How does the recession, which began in 2007, affect the adhesive and sealant industry? That drop or thin layer of adhesive is critical to the performance of nearly everything that touches our lives. Almost every fabricated auto component is a bonded part. A car engine is held in place with fabricated rubber mounts that are made by bonding a layer of rubber between metal plates. The transmission and axles are sealed from leaks with rubber-metal lip seals and boots. Appliances, footwear and wood furniture are assembled using adhesive bonding agents.

The adhesives and sealants industry is a very significant component in our economic growth, yet it is too small to

# IS THE RECESSION OVER?

gain much notice from the financial markets, analysts, and company and industry planners. Those who participate in our industry are often the last to share in stimulus money or tax incentives. Traditionally, we are considered a cross between a specialty niche industry and a commodity provider. This is why the adhesives and sealants industry is the “affected” not the “effector” in any economic recovery scheme.

The adhesives and sealants industry is like the tail of the dog, not its body, so we must first look at which industries and market segments are showing signs of growth (and have assurance that this growth will be sustained). It is equally important to review which markets will remain in the U.S. and which are being outsourced overseas.

A quick review of the traditional market segments for adhesives and sealants and their present (2010) and likely future position (2011) is shown in Table 1. Segments listed are those that typically represent the majority of demand for adhesives and sealants in the U.S. market. The percentage ratio is a reflection of that percent that remains in the U.S. as a consumer of adhesive and sealant products vs. the products or production of finished components or final goods that are sourced overseas, bonded or sealed there, and exported back for sale in the U.S. The table illustrates the continuing change in where components are fabricated and the subsequent loss to local adhesives and sealants producers.

About 31% of adhesives and sealants sales are now going to overseas bonders/fabricators, which is constantly eroding the domestic market. When analyzing the adhesive industry, we must consider several other factors that may affect the market:

- Industrial growth
- Market segment growth or change
- Bonding surface area changes
- New product developments
- Price changes
- Customer dislocation

Other noteworthy factors that are more related to formulators influence the market as well:

- Raw material availability
- Accessible capital for expansion or modernization
- Employee layoffs
- Competitive environment
- Rising raw material prices
- Profitability
- Company financial health
- Capacity
- Customer requirements

Table 1. U.S. Sourcing Trends

	Current 2010		2011	
	Local Source	Out Source	Local Source	Out Source
<b>Adhesives</b>				
Construction	90	10	85	15
Transportation				
Auto	45	55	50	50
Bus	70	30	65	35
Truck	50	50	50	50
Marine	80	20	70	30
Rail	70	30	60	40
Aircraft	60	40	60	40
Woodworking				
Custom	90	10	80	20
Commodity	20	80	18	82
Bookbinding	90	10	85	15
Converting/Packaging	95	5	90	10
Disposable non-wovens	90	10	75	25
Flexible Packaging	90	10	90	10
Footwear				
Custom	50	50	50	50
Commodity	5	95	5	95
Pressure Sensitive				
Tapes	40	60	35	65
Labels	90	10	85	15
Signage	90	10	90	10
Adhesives	80	20	75	25
Consumer/DIY	75	25	70	30
Assembly	40	60	35	65
<b>Sealants</b>				
Construction	95	5	90	10
Transportation	45	55	45	55
Consumer/DIY	90	10	85	15
Insulated Glass	95	5	95	5
Misc Uses	60	40	60	40
<b>Total Adhesives &amp; Sealants</b>	<b>1795</b>	<b>805</b>	<b>1698</b>	<b>902</b>
<b>Percent Share</b>	<b>69.0</b>	<b>31.0</b>	<b>65.3</b>	<b>34.7</b>

Source: DPNA International, Inc.

Table 2. U.S. Gross Domestic Product 2007-2011 (%AGR)

	2007-2008	2008-2009	2009-2010	2010-2011 (est.)
U.S. GDP Growth	3.0%	-2.5%	1.8%	0.5

Source: U.S. Bureau of Economic Analysis

## CONCLUSIONS

To consider how the market is responding today, examine U.S. gross domestic product (GDP) growth in Table 2 as compared to the market segment changes shown in Table 3. The economy is showing signs of recovery, albeit slowly. Real demand, not dollar value, still lags behind 2007 values due to a number of issues that still depress the adhesives and sealants markets:

- Formulators and raw material suppliers stretching existing inventory
- Reduced demand and supply worldwide
- Reduction in value of the dollar, but no market for exports

- Severely restricted credit, making it difficult to obtain loans for expansion or daily operation
- High unemployment, rising social costs
- Reduced tax revenues, leading to reduced government services
- Rapid increases in taxes to cover shortfalls
- Severely depressed building market (all sectors)

The U.S. economy will experience a hard and long recovery process, hopefully beginning in 2010. GDP is forecast to grow about 1.4% for 2009-2011. The demand side should surpass the market in

Table 3. U.S. Market Segment Growth

		'07-'09	'09-'10	'10-'12
		% AGR	% AGR	%AGR
<b>Adhesives</b>				
Construction		↓	↓	→
Transportation				
	Auto	↓	↓	→
	Bus	↓	↓	→
	Truck	↓	↓	→
	Marine	↓	↓	↑
	Rail	→	→	↑
	Aircraft	→	↑	↑
Woodworking				
	Custom	→	→	→
	Commodity	↓	↓	→
Bookbinding		→	→	↓
Converting/Packaging		↑	↑	↑
Disposable non-wovens		→	→	↑
Flexible Packaging		↑	↑	→
Footwear				
	Custom	→	→	↓
	Commodity	↓	↓	↓
Pressure Sensitive				
	Tapes	→	→	↓
	Labels	↑	↑	→
	Signage	→	↑	↑
	Adhesives	→	→	↑
Consumer/DIY				
Assembly		→	→	↑
<b>Sealants</b>				
Construction		↓	↓	→
Transportation		↓	↓	→
Consumer/DIY		→	↑	↑
Insulated Glass		→	↑	↑
Misc Uses		↓	↑	↑

Source: DPNA International, Inc.

2007, and there will be a slow increase in all sectors except construction.

Historically, this recession is quite similar to that experienced by Japan, Singapore, Hong Kong, Taiwan, and South Korea during the 1997 Asian financial crisis. Prior to the crisis, Japan and the former “Four Tigers” experienced the greatest growth in the world—even greater than the new emerging economy of China. Today, their economies have recovered very slowly and are still a far cry from the level of growth they experienced before 1997. China, on the other hand, has grown beyond all early predictions. The U.S. is struggling to regain its pre-2007 growth and move forward. In all likelihood, this growth will be slow. Table 3 compares the U.S. adhesives and

sealants market segment growth (AGR) from 2007 through 2012.

Therefore, the answer to the question “Is the recession over?” calls for a “maybe.” It is possible that, by late 2010, adhesives and sealants sales growth will increase. The first two quarters in 2010 reinforced this conjecture by showing positive growth. It is doubtful that sales growth will reach the high of 2007 until later in 2011 or 2012. Several economists are concerned that the sign of positive growth in 2010 may dim and lead to the economy slowing and continuing to remain below 1997. This would create the “W” effect—with the magical 2007 sales level a constantly moving target.

For more information, visit [www.dpna-international.com](http://www.dpna-international.com).



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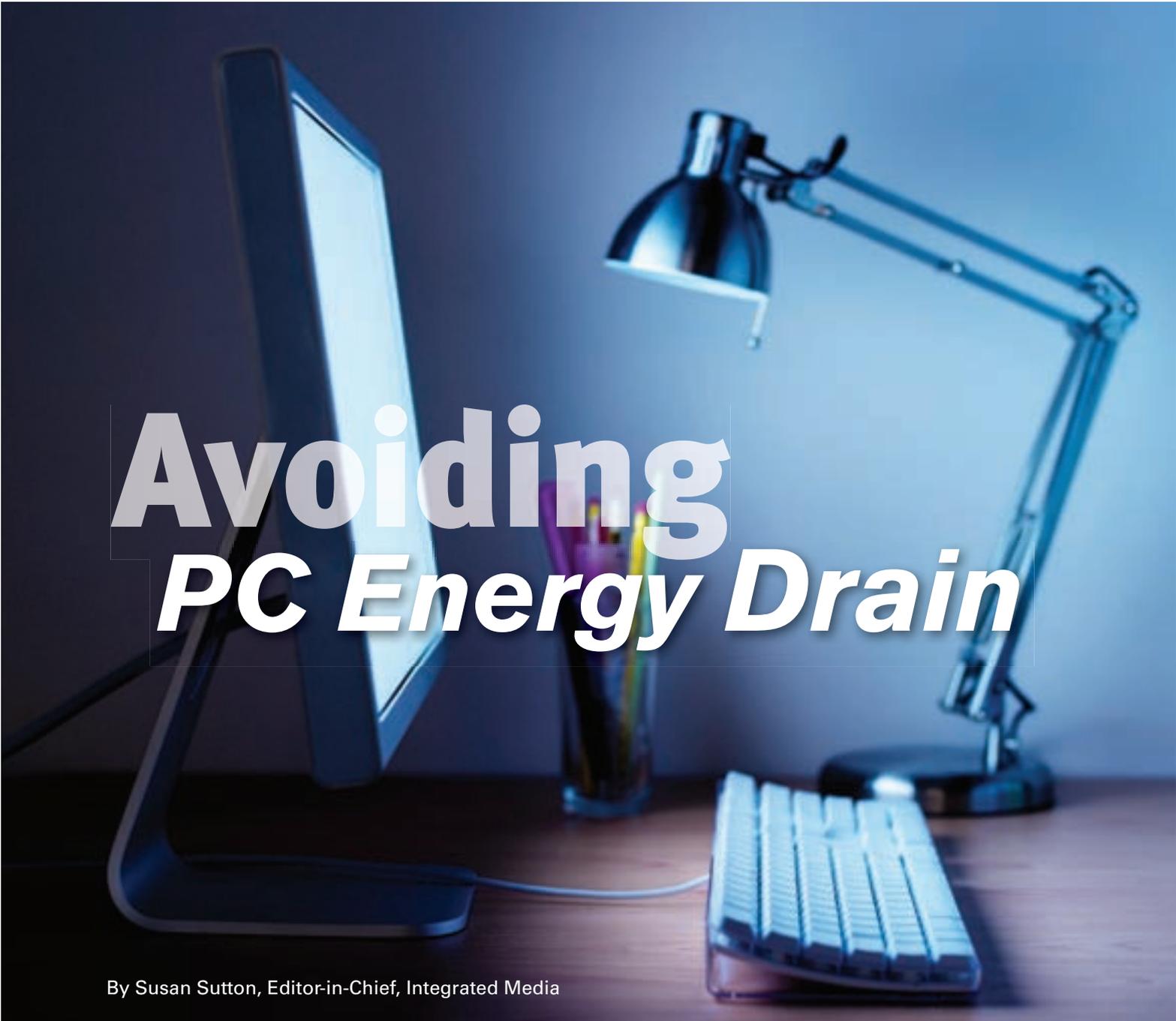
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# Avoiding PC Energy Drain

By Susan Sutton, Editor-in-Chief, Integrated Media

Controlling the energy use of your company's desktop workstations can provide cost savings while reducing environmental impact.

I remember my mom regularly chastising me for leaving a light on when I left a room. I would roll my eyes, complaining that one light bulb wasn't going to make a difference, and she'd say, "It all adds up." Similarly, leaving your company's computers running around the clock—or even just all day—can create substantial unnecessary costs over time. I recently spoke with Gerald Beaulieu, director of product marketing for Kaseya, a provider of automated IT systems management software, who shared some energy-saving solutions for PCs and desktops.

#### ***Why should manufacturers be concerned with the energy use of their desktop workstations?***

It really boils down to costs, first and foremost. They might have some internal green policies just for general conservation, but

ROI and cost savings is really the number-one thing. I look at it as three different areas.

First, they can establish and manage desktop policies to limit the amount of power used, whether it's during the course of the day or overnight. Also, think about the long-term costs of PCs and desktops. Leaving them on for long periods can ultimately cause them to break down over time, leading either to costs related to equipment within the PC that needs replaced or to a brand-new desktop.

Second, additional costs in terms of the labor required for repairing or configuring new equipment and getting people up and running again also need to be considered. You've got downtime, as well as people reconfiguring and setting the systems up based on their personal preferences, and all of that can tie back

to energy use. If you can limit the amount of energy that the unit is using, you can prolong the life of the machine.

The third area is related to occasions when machines break down and the IT department needs to help to some degree. Traditionally, IT personnel would have to drive or fly to that machine somehow in order to help. Costs related to travel and time out of the office can be minimized through the use of automation software with remote access.

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**“The system can also automate and schedule the power-on at a certain time, say 30 minutes before employees arrive.”**

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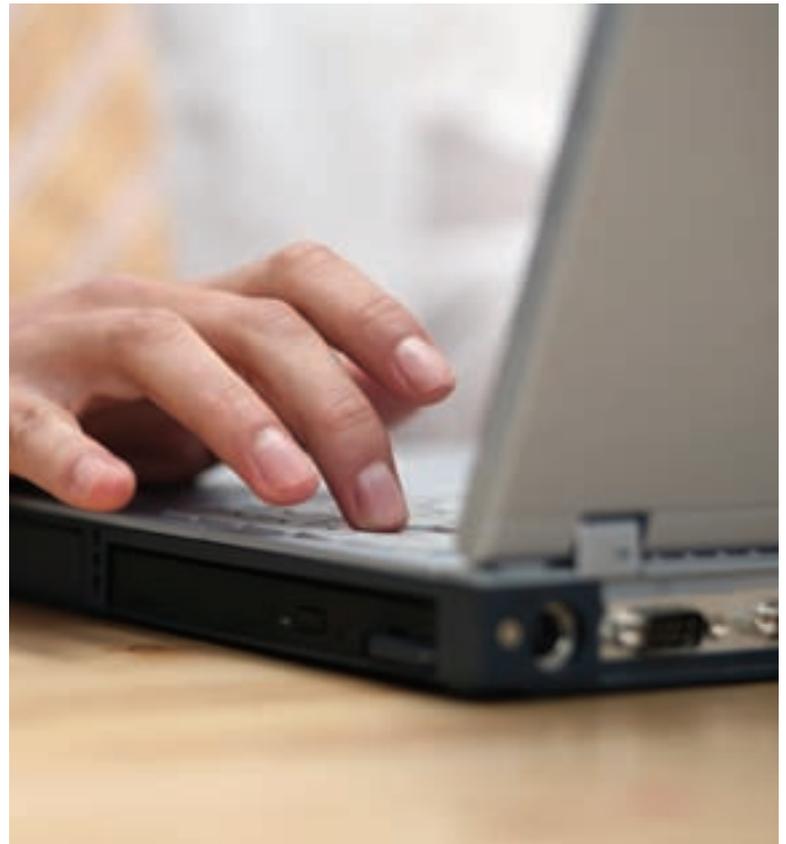
*What are some simple steps that manufacturers can take to reduce energy use and save money?*

First, try to get a good policy in place. For example, companies can establish a policy for employees to turn off their computers and monitors at the end of the day when they leave. A smaller manufacturer may not have a tremendous number of PCs; they can literally walk around or just meet with people individually. In this type of manual process, executive ownership is vital. It can't just be the IT guy; it has to be some of the key leadership—whether it's the department managers or the president, CTO or CEO—who are stressing that the company is going to abide by these policies.

Smaller manufacturers should also be aware that there are probably power management solutions within their units' operating systems. Windows® 7, in particular, has expanded quite a bit to establish very specific power-saving needs throughout the course of the day. For example, if no one has been at the PC for an hour or 15 minutes—whatever timeframe they want to set—the monitor can be set to turn off, or the unit can go into standby or hibernation mode. These are examples of that kind of manual effort that manufacturers can try to establish in a small organization that can help facilitate the policy and achieve some savings.

As the size of a company starts increasing, that scale of a manual process just doesn't work. It's important to start automating a lot of the procedures because you just can't be looking over everyone's shoulder. For every person who follows the policy, you'll have a handful of others who either deleted the e-mail or weren't paying attention. Or some employees might even change the settings to have the computer always stay on and never hibernate or go into standby mode.

Built-in functionality allows the IT administrator to push out a set of policies based on their workforce. Modules like Desktop Policy Management allow manufacturers to establish multiple policies for different situations. At some production facilities, the machines are on during the day and they don't really need to



be on at night. Or maybe workers just go back to the computer for status checks throughout the day and don't need to have it completely powered on. That desktop can then go into hibernate or standby mode for most of the day.

The nice thing, too, is if the user were to come in and override those settings, the automated system can have those settings reset on a regular basis. The administrator can also take it a step further and prevent employees from changing the settings on their own.

It's also possible to schedule automatic shut-downs and power-ups. For many businesses, come midnight or so, 90% of the machines can just be shut down. Especially at larger companies, you can't always rely on everyone turning off their machines. The system can automate the shutdown process to be scheduled for 1:00 or 2:00 a.m.

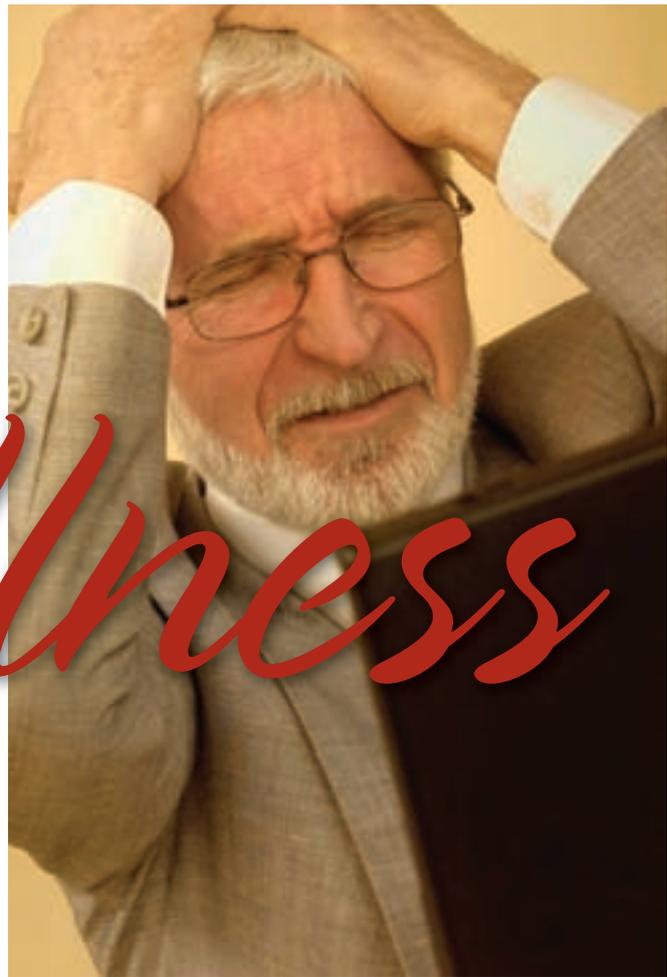
Users obviously need to stay productive, though, and manufacturers might not want employees to have to flip on the machine every morning and wait for it to boot. The system can also automate and schedule the power-on at a certain time, say 30 minutes before employees arrive, so all they need to do is log in and they're ready to go.

The flexibility to establish these policies is key. These settings might apply to only 50% of the computers, because employees' day-to-day needs might vary, or their job descriptions might be totally different. But if manufacturers can concentrate on establishing a combination of those two practices—during-the-day hibernation/standbys and night-time power-off/power-on settings—they're going to see savings.

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*For additional information regarding PC energy savings, visit [www.kaseya.com](http://www.kaseya.com).*

# Implementing Corporate Wellness Programs



Companies should shift their wellness programs' focus from short-term behavioral changes toward overall well-being.

By Rosie Ward, Ph.D., Health Management Services Manager, RJF Agencies, Inc.

Corporate wellness programs are introduced with the best of intentions. Such programs can improve employee health and engagement, foster teamwork, and add some fun to the workplace. However, while employee well-being is important, the way in which many employers go about wellness programs can lead to future problems within the company. Many wellness programs prove to be unsustainable and therefore unsuccessful. To avoid this problem, companies should shift their focus away from short-term behavioral changes toward overall well-being.

## SHIFT FROM HEALTH TO WELL-BEING

Well-being is not limited to just physical health and wellness. In fact, focusing on any one aspect leads to frustration. According to recent research from the Gallup Organization, well-being is made up of five essential elements:

- Career: how one occupies their time or likes what they do every day.
- Social: having strong relationships and love in one's life.
- Financial: effectively managing one's economic life.
- Physical: having good health and enough energy to accomplish things each day.
- Community: having a sense of engagement with the area in which one lives.

Finding a balance between all of these elements will produce an overall greater well-being and quality of life. If a company focuses

too much in one area but ignores others, its wellness program is more likely to become unsustainable.

Of all the elements, Gallup found career well-being to be the most important because it has the greatest impact. In fact, reduced career well-being and engagement has been linked to increased workplace injuries, declined mental health, and higher cholesterol. If employees do not trust management, do not have strong relationships with their coworkers, have too much on their plates, or have had wages and benefits cut, then the implementation of a wellness program that focuses on specific health behaviors will likely be met with skepticism or even resentment.

Doctors already recognize the importance of employee well-being. Consider these three questions:

- Would you describe your work as monotonous?
- How satisfied are you with your job?
- How tense or anxious have you been in the past week?

Most people think these questions are assessing stress or job satisfaction. In fact, these questions are part of a comprehensive back pain assessment used by doctors in New Zealand to predict with 83% accuracy who will be out of work for more than 30 days due to lower back pain. Of course, traditional medical questions are also part of the assessment, but job satisfaction and engagement play a significant role.

## CREATING A CULTURE THAT FOSTERS ENGAGEMENT

Most companies focus on behavior modification (e.g., smoking, physical activity, nutrition) and use incentives to get employees to comply with the desired behaviors. This is where organizations become stuck. They get participation—but not engagement.

The Gallup Organization defines engagement as people who work with passion and feel a profound connection to their company. As a result, they drive innovation and move the organization toward its goals and vision. Lack of engagement costs American businesses more than \$370 billion per year in lost productivity and has been associated with increased injury rates, declining mental health, and decreased well-being.

Even programs that achieve 80-90% participation results may not have engagement. When surveying or interviewing employees in these organizations, many will indicate they are simply “going through the motions” in order to get the incentive. Even worse, many will resent the program and feel they are forced to participate.

Research shows engagement occurs when employees know what is expected of them, feel valued, are able to leverage their strengths, are cognitively stimulated, and have quality relationships at work. Moving beyond wellness programs to create a culture that fosters engagement will be more effective in the long run by improving overall well-being, safety and the profitability of organizations.

## WHAT REALLY MOTIVATES PEOPLE?

Research consistently shows lasting change must come from within a person (i.e., intrinsic motivation). Change efforts based on extrinsic motivation (i.e., carrots and sticks) typically fail in the long run and can reduce intrinsic motivation. At best, the result is short-term behavior compliance.

Behaviors are the observable acts that are based on a person's thinking. Therefore, intrinsic motivation and effective change start from a shift in thinking. It is not really possible to motivate another person; the desire can only come from within the individual. If employees do not feel valued and trusted, they will perceive any wellness program as a manipulation and will resist change.

## SHIFT FROM “FIXING” TO “SUPPORTING”

Neuroscience research shows the brain is literally hard-wired to resist change. It behaves like a two-year-old child and pushes back when told what to do. When an individual is pushed to change, the brain sends out powerful signals that something is wrong, and these signals readily overpower any rational thought. However, when people are supported and able to work out their own solutions, the brain releases a rush of neurotransmitters like adrenaline, and they are more willing to adapt and change.

Companies are most successful when they facilitate opportunities for employees to work toward what matters to them by providing a culture and environment that supports all five areas of well-being. Successful wellness programs are a natural extension of the company culture where employees truly feel valued and career well-being is high.

Without a culture of mutual trust and respect, wellness programs and incentives are perceived as another way to manipulate employees. In fact, working to increase engagement in both the workplace and community does far more for well-being in the long term than implementing a weight management or smoking cessation program.



## GETTING STARTED

First, companies need to measure their culture to understand current employee attitudes and values, along with their perceptions of leadership, support, and company norms. These underlying attitudes are like an elephant in the room; they exist whether they are measured or not. Ignoring them won't make them go away. Instead, identifying them provides opportunities to improve. Any well-being initiative should be based on the unique needs and values of employees, not an idea another company had that was successful.

Rather than implementing a “wellness program,” implement a new “well-being benefit” of employment that employees help to create. The benefit should address all the previously mentioned areas of well-being. Well-being teams or task forces should be created to ensure this is an employee-driven benefit, not an HR or leadership initiative to cut healthcare costs.

The team should create a three- to five-year strategic plan to improve each area of well-being. Once the long-term vision for employee well-being is established, create a detailed operating plan for the next 12 months that will serve as a blueprint for where to start. For many companies, their well-being plan starts with the fundamentals of rebuilding trust, improving communication and other elements that will improve career well-being.

When companies focus on all five elements of well-being and create a culture that honors the unique needs of their employees, they will have less need to use incentives. The improved culture will allow them to harness the intrinsic healthful desires of their employees to improve well-being.

*For additional information regarding corporate wellness programs, contact the author at (763) 548-8861 or wardr@rjfagencies.com.*

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"This environmentally friendly technology produces no aromatic amines and, with its extended pot life, web converters can add speed to their process while reducing energy costs because curing can now be done at room temperature," said David Hatgas, director of global product management, Packaging and Converting Adhesives and Coatings.

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"Some of our customers needed a polymer that could be processed at higher temperatures. At the same time, they wanted a product that could reduce polymer incorporation time and avoid gel generation during processing," said Walter Ramirez, Ph.D., director of Technology.

Solprene 1217 was the solution proposed by Dynasol to the market for superior thermal stability—even during extreme processing conditions—without high gel generation. S-1217 can reportedly help hot-melt manufacturers increase productivity and reduce operating costs.

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Web: [www.nexam.se](http://www.nexam.se)

### REVOLYMER LTD.

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This company has applied its polymer technology to the adhesives and sealants markets with the launch of RevBond™. The material can be incorporated into bath sealants, glues, plasters and paint to improve a product's performance. The technology applies a polymer formulation that enables adhesives and sealants to be more durable, flexible, and robust in a variety of environmental conditions. The inclusion of polymers with controlled and tailored water sensitivity in adhesive and sealant formulations opens a host of new technical possibilities to the formulators and users of such products.

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Web: [www.scottbader.com/adhesives](http://www.scottbader.com/adhesives)

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Phone: (800) 877-4583

Web: [www.franklinadhesivesandpolymers.com](http://www.franklinadhesivesandpolymers.com)

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Web: [www.hbfuller.com](http://www.hbfuller.com)

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MACTac® Printing Products has announced the launch of a comprehensive line of durable film solutions. Designed to address the extreme application needs of several initial markets, including lawn and garden, chemical drums, appliance and nameplate, and wet-cell batteries, the 12 new products are tested and recognized by industry standards for superior performance despite long-term exposure to a variety of environmental elements.

"Our durable film solutions were developed with the converter and end-use requirements in mind, and the expertise and technical support backing our product development carries over to the superior and personalized customer service programs we offer our customers," said Mike Marasch, senior marketing director of MACTac Printing Products. "Our expanding durable film

solutions portfolio allows us to bring converters new ways of looking at pressure-sensitive technology as they continue to expand their businesses and pursue new revenue streams."

Phone: (800) 255-9733

Web: [www.mactac.com/rolllabel](http://www.mactac.com/rolllabel)

## MAPEI

### JOINT SEALANTS

Mapeflex™ PI and Mapeflex PI SL are now available from this company's Concrete Restoration Systems division. The polyurethane sealants offer superior adhesion to surfaces including concrete, masonry, brick, wood, steel, aluminum, painted metal and natural stone, providing flexibility for moving joints. Mapeflex PI can be used in horizontal and vertical applications for moving expansion joints of all kinds where material is applied between 1/4 and 1/2 in. (6 and 12 mm) in depth. Mapeflex PI SL is a self-leveling sealant that can be used for sealing moving horizontal joints on sidewalks, plaza decks, industrial floors, parking garages and pitch pans.

Phone: (800) 426-2734

Web: [www.mapei.com](http://www.mapei.com)

## WHITE LIGHTNING

### CAULK

3006 QUICK DRY is a siliconized acrylic latex caulk that can be painted 30 minutes after application. The professional-grade, general-purpose adhesive caulk adheres to most surfaces, including wood, drywall, glass, masonry, metal and plaster. The caulk resists mildew growth, provides a weather-tight seal and is backed by a 40-year guarantee. It features an acrylic formulation with silicone additives that provide excellent flexibility and elasticity, making it usable for joints exposed to moderate levels of wear and movement.

Web: [www.wlcaulk.com](http://www.wlcaulk.com)

## EQUIPMENT



## BROOKFIELD ENGINEERING

### FLOW TESTER SOFTWARE

Powder Flow Pro V1.1 is an updated version of Brookfield's automated software used to control its powder flow tester. Significant changes include a modified test method

designed to achieve critical consolidation of the powder sample contained in the shear cell, as well as updated data graphics and improved test formats. The software can be downloaded at no charge by customers who have purchased the company's powder flow tester.

Phone: (800) 628-8139

Web: [www.brookfieldengineering.com/products/software/-powder-flow-pro.asp](http://www.brookfieldengineering.com/products/software/-powder-flow-pro.asp)



## CHARLES ROSS & SON CO.

### MIX/DISCHARGE SYSTEM REDESIGN

This company recently completed a new design variation of its double planetary mixer and follower plate discharge system. The double planetary is typically used for the mixing and dispersion of viscous materials; the follower plate discharge system is then used to press viscous non-flowing materials from the planetary mixer mixing vessel after the mixing cycle is completed. The new design combines the double planetary with the follower plate discharge system on a common base. This configuration permits the easy movement of the mix can to the discharge platen after completion of the mixing cycle. In addition, the elevated common base allows for discharge to subsequent processing equipment or directly to packaging containers.

Phone: (631) 234-0500

Web: [www.mixers.com](http://www.mixers.com)

## GRACO INC.

### METERING SYSTEM

The new PGM metering system is a precision gear metering and dispense system for sealants and adhesives. The system, which consists of a positive-displacement gear pump and control center, provides a smooth and consistent bead dispense, even with high-viscosity materials. With high flow rates for both high-viscosity hot-melt materials and ambient materials, the PGM allows manufacturers to improve operational production capacities. The system can be used to handle high production requirements for solar panel manufacturing applications such as polyisobutylene (PIB) perimeter seal, desiccant and silicone secondary seal. In addition, it can be used for handling urethane sealants for automotive windshield manufacturing and sealants for insulated glass in the fenestration industry. With a wrist-mountable

design, the metering system can be mounted at the end of a robotic arm for an extremely accurate dispense. The system handles a range of low- to high-viscosity materials at high flow rates, including ambient, warm-melt and hot-melt materials to 400°F (204°C).

Phone: (877) 844-7226

Web: [www.graco.com](http://www.graco.com)

## MOYNO

### METERING PUMP

The Moyno® metering pump offers enhanced pumping elements and integral VFD/motor controls that can expand the scope of metering applications and enhance economical and efficient performance when metering low-flow liquids. The equipment can be used in a range of processing applications, including dosing, sampling and metering. The integral VFD/motor controls can improve metering accuracy and repeatability. The pump's progressing cavity design allows a smooth flow that is free from pulsations and variations in velocity and volume to prevent material waste or mixture imbalance. The pump is available in bare-shaft and close-coupled configurations. All models can handle fluids from clean, clear liquids to abrasive, corrosive fluids, solids in suspension and viscous materials.

Web: [www.moyno.com](http://www.moyno.com)

## NETZSCH

### GRINDING AND MIXING EQUIPMENT

Following its recent acquisition of Premier Mill, NETZSCH Premier Technologies LLC has incorporated four pieces of processing equipment to its portfolio. The PCM colloid mill disperses and emulsifies by hydraulic shear, reducing particles to their ultimate crystal size by breaking

## PRODUCT & LITERATURE

# Showcase

### Leading the Way in 2K

New catalog from Nordson EFD offers the complete line of TAH systems for meter mix and cartridge applications for two-component adhesives, including mixers, cartridges, dispensers, and valves. For a free copy, visit [www.nordsonefd.com/ads/asi-1010](http://www.nordsonefd.com/ads/asi-1010).



## WHAT'S NEW

up agglomerates. The PSM submersible basket mill is a versatile dispersion system used in many processing industries. The vertical max-shear rotor/stator mixer features a precision high-speed rotor, offering a powerful combination of mechanical and hydraulic shear with shorter mixing cycles. The model 50 laboratory dispersator produces repeatable dispersions through faster mixing action and improved motor performance.

Phone: (484) 879-2020

Web: [www.netzsch-grinding.com](http://www.netzsch-grinding.com)



### PVA

#### METER/MIX/DISPENSE SYSTEM

The MX4000 gear pump meter-mix dispensing system is designed to control non-abrasive meter-mix dispensing applications such as potting and encapsulation, conformal coating, form-in-place gasketing, laminating, sealing, and adhesive/assembly operations. Used in automotive, electronics, solar and wind energy, aerospace, and other industries, the gear pump processes a range of adhesives and sealants while providing continuous material flow with no recharging necessary.

Web: [www.pva.net](http://www.pva.net)

### UNION PROCESS

#### LAB MODEL ATTRITOR

This company has built an 05-SDM hybrid mill capable of small media milling. The model combines the features of a standard wet-grinding laboratory attritor batch mill with the added benefit of being able to handle small media milling. By adding a specially designed shaft and proprietary Delta Discs, the mill is able to use mini-media from 0.25 to 3 mm and operate at the high shaft speeds (from 300 to 3,000 RPM) required to energize small media.

Web: [www.unionprocess.com](http://www.unionprocess.com)

## RESOURCES

### BASF

#### THERMOSET COMPOSITES WEBSITE

BASF has launched a new website for its Acrodur® acrylic resin, a zero-emission acrylic thermoset resin for fibers and particles. The site provides information for manufacturers in the automotive industry that want to make high-performance composites

for demanding applications. The Acrodur acrylic resin can be used to produce high-performance nonwovens, compression-molded high-fiber composites, durable cork flooring and other construction products. The resin matrix is an acrylic polymer that is initially thermoplastic, allowing for the production of prepreg/semi-finished rollstock or blanks. It then crosslinks at temperatures above 120°C to produce a durable thermoset.

Web: [www.basf.us/acrodur](http://www.basf.us/acrodur)

### ELLSWORTH ADHESIVES

#### UK WEBSITE

This company has launched a UK website, [www.ellsworthadhesives.co.uk](http://www.ellsworthadhesives.co.uk). Visitors can request a quote on the site for thousands of products from over 50 manufacturers. Filters allow visitors to select desired properties when searching for product by name, vendor, type and physical attribute in any combination.

"This site provides our visitors with an easy, convenient and functional way to search for product and obtain competitive quotes," said John Henderson, managing director, Ellsworth Adhesives Europe. "We are also increasing the penetration of our vendor partners in Europe, which is an important strategic goal for Ellsworth and our vendors."

Web: [www.ellsworthadhesives.co.uk](http://www.ellsworthadhesives.co.uk)

### GRISWOLD™ PUMP CO.

#### ONLINE PUMP SELECTION PROGRAM

An online pump selection program can allow end users to select and evaluate the best pump for their specific needs. The first step of the program is listing the pump's operating requirements. These parameters are established by identifying the pump's design point (head and flow) and synchronous speeds. The program uses the parameters to produce a list of all the Griswold pumps that meet the requirements. Next, the program generates a performance curve that shows pump head, efficiency, horsepower and NPSHr as a function of flow rate. Once the correct pump is found, the user can click on the Pump Selection prompt, login and select the pump to be purchased.

Web: [www.griswoldpump.com/html/pumpsel.htm](http://www.griswoldpump.com/html/pumpsel.htm)



### HENKEL

#### SUSTAINABLE TOTE-RECOVERY BROCHURE

A new brochure from Henkel explains the

company's tote recovery program, including details of what customers need to know to participate. Henkel has partnered with National Container Group (NCG) to provide Henkel customers with a quick, simple way to return empty, serviceable plastic totes after use, according to Isabelle Valois, Channel Marketing and Development manager of Henkel Corp.

Web: [www.naturallyhenkel.com](http://www.naturallyhenkel.com)

### ISP

#### ELASTOMERS WEBSITE

ISP has launched a new website to help manufacturers select hot and cold styrene butadiene rubber (SBR) products. Producers of adhesives, sealants, tires, rubber goods, and other products made with SBR can use the site to review a range of SBR polymers, performance data, and end product formulations. In addition, the site outlines the company's SBR products, including hot-crosslinked, non-crosslinked and cold SBR products.

Web: [www.ispelastomers.com](http://www.ispelastomers.com)

### UNIVAR

#### CORPORATE WEBSITE

Univar has launched a new corporate website that reflects the company's global operations and its partnerships with customers and chemical suppliers. The website showcases the company's international reach and product range, and demonstrates the added value it provides to the distribution process by offering industry-specific expertise and application development capabilities. In addition, a dedicated section provides information about Univar's health and safety procedures, environmental initiatives, and product stewardship.

"As we continue to extend our international presence and embark on a more global and integrated approach to how we operate, it is vital that our website effectively communicates who we are and the expertise we offer our suppliers and customers throughout the world," said John Ederer, vice president, Global Communications & Investor Relations.

Web: [www.univar.com](http://www.univar.com)

**Have Product  
News to Share  
with the Industry?**

E-mail news releases to  
**Teresa McPherson at  
[mcphersont@bnpmedia.com](mailto:mcphersont@bnpmedia.com).**



**QUESTION:** I want to use an epoxy adhesive for a high-temperature situation, but I don't want to use a long heat cure. Can I use a fast-curing, two-part epoxy cured at room temperature?

**ANSWER:** In general, most two-part epoxies that are cured at room temperatures have a heat distortion temperature in the 60-80°C range, which means that they will lose rigidity and tend to creep in a bond-line that is under stress. However, highly filled fast-curing epoxies have been used successfully for many years in high-temperature applications such as under-the-hood auto repairs. By using metallic or metal oxide fillers, these so-called "cold welding compounds" perform very well in semi-structural bonds and repairing cracks and holes, and can withstand high temperatures for long periods of time.

**Highly filled fast-curing epoxies have been used successfully for many years in high-temperature applications.**

That being said, if you really need structural strength at high temperatures, it is necessary to get maximum crosslinking of the epoxy resin. You will definitely need to heat cure at temperatures above your anticipated in-service temperature. High temperature resistance can also be achieved by replacing part of the commonly used bisphenol A-based epoxy resin with epoxy phenol Novolac resins (EPN) or epoxy cresol Novolac resins (ECN).

**QUESTION:** I need to use a surface primer with a cyanoacrylate adhesive, but I don't want to have flammable or toxic solvents in my production area. What can I do?

**ANSWER:** One option is to pre-apply the primer off-line in a suitable area, but you have to be careful that the primer has a suitable on-part life before it loses its activity. This on-part life can vary from minutes up to several hours; consult with your adhesive supplier for the best recommendations to suit your particular situation.

**ASK DR. DAVE** Do You Have a Question for Dr. Dave?  
 Visit [www.adhesivesmag.com](http://www.adhesivesmag.com) and click on Ask Dr. Dave in the left-hand column.



Dr. Dave Dunn is a former vice president and director of Loctite Corp. and has spent many years troubleshooting adhesive and sealant problems in the adhesives, sealants, specialty rubbers, and plastics fields. Questions for publication should be directed to him at 242 Trails End, Aurora, OH 44202; (330) 562-2930; FAX (330) 247-1690; e-mail [DrDave242@windstream.net](mailto:DrDave242@windstream.net); or visit [www.fldenterprises.com](http://www.fldenterprises.com).

*Any views or opinions expressed in this column are those of the author and do not represent those of Adhesives & Sealants Industry, its staff, Editorial Advisory Board or BNP Media.*

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