



International Resins Update:

Manufacturers Struggle to Maintain Margins

by Cynthia Challenger
JCT CoatingsTech
Contributing Writer

The year 2006 should be a telling year for the resins market. After being forced to deal with significant increases in raw material and energy costs in 2005, resin producers hope to see margins return to an acceptable level this year. Other challenges that must be overcome include continued competition from emerging regions, consolidation all along the paint and coatings value chain, and increasing regulatory burdens. Many of the larger, global players in the market, while concerned about these issues, remain optimistic about opportunities for growth. Smaller companies, however, will have a more difficult time surviving in these challenging market conditions.

The global resins market is valued at approximately \$30 billion and totals 8 million metric tonnes, or 18 million pounds, according to Dan Murad, president and CEO of The ChemQuest Group, a management consulting firm located in Cincinnati, OH. The geographic breakdown follows the same breakdown as for the coatings market, with about one-third in North America, one-third in Europe, 20% in Asia, and the remainder scattered throughout the rest of the world. Growth rates for resins used in paints and coatings typically track with GDP. Therefore, in the U.S. the rate is about 2.5%, and in Western Europe it is 1-2%. China is the one region where demand is increasing significantly. The growth rate there is about 9-11%, according to ChemQuest.

MANAGING RISING COSTS

Resin producers around the globe have felt the impact of the rise in raw material and energy prices that occurred throughout 2005. While many of the raw materials for resins, such as ethylene, isocyanates, and bisphenol A have stabilized, the cost of crude oil and natural gas remains high. Most

resin manufacturers were not able to pass all of the price increases on to their customers. As a result, they began 2006 with margins compressed. "Even though resin makers have done a pretty good job of passing on price increases, with such a steep climb in prices like that experienced recently it can be very difficult to keep pace. As a result, margins are suppressed 5-10 points," says Mr. Murad. Cliff Tishler, vice president sales and market development for Solvol, Inc., adds that, "We are looking at raw material increases of 40-75% and trying to figure out how to pass on only a small portion of the increase. No one manufacturer can afford to absorb increases like we're seeing recently."

"Profit margins are suffering. Volume is up, sales dollars are up, but gross profit dollars and margins are down," concurs J.R. "Rusty" Johnson III, marketing manager, Architectural Binders with Rohm and Haas. He notes that frequent price increases have been necessary in an attempt to recover a portion of the rising costs, so that a level of profitability can be maintained that will support reinvestment for future growth. "The main issue is the growing tension between escalating costs and the ability to recover them. The industry must increase prices as needed to recover costs, maintain margins, invest in technology, and ensure a healthy future for itself."

Many are concerned because energy prices are expected to remain elevated. "I believe the high cost of energy and transportation is the main challenge we face, as this situation is expected to last. It has dramatically challenged resin manufacturers, and limited everyone's ability to invest capital in new facilities," says Frank Aranzana, vice president of Cytec Surface Specialties. "We have not seen many new investments in the recent past, outside of those in China. The industry, as a whole, will need to improve its profit margins before investing again in the new capacities required by market growth," he adds.

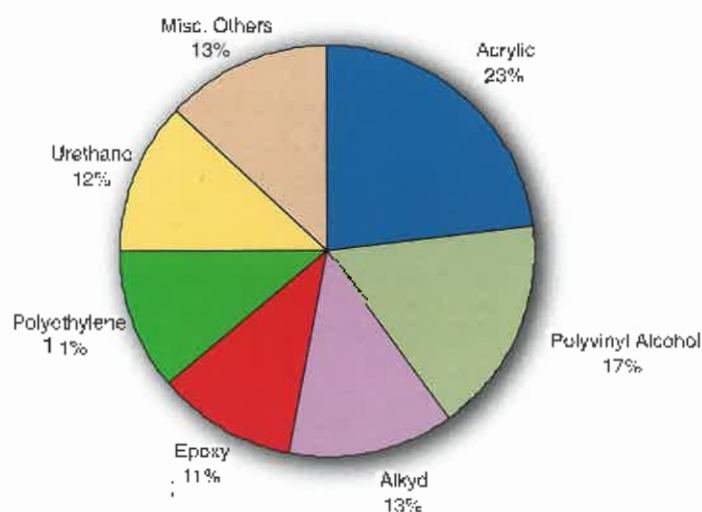
Many companies have worked hard to absorb some of the price increases by improving their efficiency of operations. "At Eliokem, we have made major efforts to counter raw material and energy increases by improving productivity wherever possible. Despite these significant efforts, we have been obliged to pass on several price increases in 2005," says Valerie Johnson, communications manager with Eliokem. Being flexible has also been key for the company. "To manage shortages of supply, notably for acrylate monomers, we strengthened our relationships with some suppliers, approved new suppliers in various parts of the world, and accepted significant price increases. This flexibility enabled us to avoid putting any of our existing customers on allocation."

Other companies have focused on developing lower cost formulations to keep overall prices down. The BASF Dispersions group has been very active in developing products that have a lower total formulated cost in use, thereby offsetting the impact of raw material increases, according to Heidi Alderman, business director, Dispersions with BASF Functional Polymers Business in North America. The company has developed polymers for architectural applications that can be formulated with very low solvent levels, enabling coatings producers to both meet future VOC levels and reduce the formulation cost. In addition, BASF has developed resins that couple this low-VOC feature with improved titanium dioxide efficiency, thus providing another opportunity to optimize formulations for performance and cost.

Rising prices have also affected demand at the consumer level. "Continually increasing raw material and energy prices have the effect of making finished product prices higher, which results in dampening demand and slowing growth of the industry," comments Paul Elias, business director of Specialty Products for Sartomer Company. "In addition, higher energy costs in the form of higher home utility charges and higher gasoline costs reduce the amount of consumers' discretionary funds for other activities. Hence, other industries are also negatively impacted," he adds.

In general, all sectors of the resins market have been affected by the increasing prices. It has been more difficult to pass on price increases in the more commodity-type markets, though. In the architectural and automotive markets, large paint manufacturers often have multiple sourcing options and use their strong buying position to play suppliers against one another. "In more specialized markets where individual resins provide

Breakdown of Resins by Type



Source: The ChemQuest Group

more unique performance, however, it is easier to pass on price increases because the resins are more difficult to substitute," states Ms. Alderman. She notes that "Big Box" retailers continue to put price pressure on suppliers in the architectural coatings industry. Because their customers cannot always pass price increases on to these large retailers, it has been necessary for resin producers to absorb some of the increased costs. "Raw material and energy costs and the ability for our customers to pass on price increases to major retailers will continue to remain the greatest challenges," she stresses.

The impact of rising prices has been felt across the globe. Many do believe that the damage in the U.S. Gulf Coast caused by hurricanes Katrina and Rita led to higher natural gas prices and some shortages of materials, and that U.S. companies therefore were affected more than resin manufacturers in other parts of the world. According to Mr. Elias, the latest price increases which were precipitated by shortages caused by plant outages from hurricane damage were difficult to pass on. "Other parts of the world did not experience these supply interruptions and increases and as a result were able to maintain their prices. Hence, they were in a position to increase their market share with price stability," he notes.

The U.S. dollar-to-Euro exchange rate has also been a factor affecting the global resins market. "If oil prices, which are traded in U.S. dollars, increase, but the value of the dollar versus the Euro decreases, the impact of the increase in oil prices is offset by the currency exchange factor in the other countries. This was certainly a factor in 2003-04 when the dollar weakened, but reversed somewhat in 2005 with the strengthening of the dollar versus the Euro," explains Ms. Alderman.

Despite exchange rates and hurricanes, producers in China may not have been impacted as significantly as those in North America and Western Europe. In China, the government has helped absorb some of the increasing costs, so Chinese producers have not suffered as much and may be able to avoid the full impact of higher prices.

Smaller companies seem to be struggling more with increasing prices than larger companies. In the U.S., larger companies with more resources were able to better plan to withstand raw material shortages and have more power to pass on price increases. "On the resin producer side, in times of significant raw material shortages, it will become increasingly difficult for the non-backward integrated producers to stay viable," notes Ms. Alderman. Mr. Lishler also believes that smaller companies with more limited manufacturing capability versus the larger companies with global manufacturing are more affected. However, he cautions, "Even with multiple manufacturing sites, the economies of scale are being impacted and those indi-

vidual plants are not as efficient or cost effective as they once were."

The need to expend so much effort on managing price increases has been frustrating for resin manufacturers. "Unfortunately, this has greatly distracted the supplier-customer focus away from more constructive activities such as new product development," notes Ms. Alderman.

IMPACT OF EMERGING MARKETS

China and other emerging regions are also having a tremendous impact on resin markets worldwide. "North America is definitely affected by China because of its consumption of available raw materials and due to its exporting of lower cost alternatives into North America," says Cindy Fruth, senior market manager for Johnson Polymer.

On the one hand, the growing Chinese economy is resulting in rapidly increasing consumption of crude oil and feedstocks, including propylene, ethylene, and bisphenol A. New capacity is being built within these regions, but is in general not keeping pace with demand, according to Mr. Murad. "Prices of these feedstocks will continue to rise as demand in emerging regions outstrips supply," he notes. According to Luis Fernandez, vice president and business unit director for Architectural and Functional Coatings with Rohm and Haas Company, the dramatically increasing rate of consumption in Asia is one of the biggest drivers of raw material price increases.

On the other hand, the emerging markets offer tremendous opportunity for resin producers. Those companies in a position to become involved in these markets will experience increasing sales as demand for goods and services grows. "The increasing number of people achieving greater economic security in these emerging markets will require increased production of goods, as well as the service and R&D support," Mr. Fernandez states.

Rohm and Haas is building a technical center in Shanghai, China, so the company can service the needs of the growing Chinese middle class and ensure that it is developing products in tune with, and appropriate for, these growing local markets. BASF has taken this protective approach for some time, and already has multiple emulsion facilities in Asia, and just started up its fully integrated petrochemical facility in Nanjing, China, in 2005. The company also opened a Technical Service and R&D Center for the Dispersions business in Shanghai in 2005.

Cytec Surface Specialties has also established a position in Asia in order to develop products required by the local markets. The company has plants for the produc-

tion of polyester powder and radiation-curable resins in China and plans to add water-based resin capacity as well. Cytec also has facilities in several other countries in the region. "Resin manufacturing is capital intensive, and while labor is less costly in emerging markets, resin production is less manpower intensive than durable goods production. We are getting involved in this market not because it is a low cost region, but because it is necessary to be able to provide local support to all of our customers," Mr. Aranzana explains.

Companies are using a variety of strategies to gain a foothold in the Chinese paint and coatings industry. In general, government policies make it difficult for foreign producers to enter the market without a domestic partner of some kind. Larger, international resin manufacturers are often building facilities with joint venture partners, or are acquiring existing domestic companies. Smaller resin producers tend to establish a distributor relationship.

Many smaller companies are having a more difficult time taking advantage of these opportunities, though. For Ranbar Electrical Materials, the key question will be whether China and the Far East can support internally the increased domestic demand for resin products. "It is too expensive for us to export to China now, but if there is a shortage in the future, there might be an opportunity to export," notes Ranbar's president and COO Randall Russell.

Of course, as the Asian economies develop, many new producers within these regions are attempting to take advantage of the same opportunities as foreign companies. "Although local demand will absorb much of the local production, the real money is in exports," says Mr. Elias. "There is extreme pressure as well as tax benefits for locals to export their products. Western companies must continue to develop new products and offer better performing products for the same or lower cost. They must also find ways to protect their investment in technology and new products," he continues.

Fortunately for producers in Western Europe and North America, it is unlikely that water-based resins will be exported from these low-cost regions to any great extent. "Since most water-based dispersions contain roughly 50% water, it is too expensive to essentially ship water around the world. For economical supply, emulsion producers need to be fairly close to their customers," Ms. Alderman comments. As a result, markets for waterborne resins should not be significantly impacted by competition from these emerging markets.

It is also predicted that most paint companies are likely to limit some of their offshore purchases. "We expect the level of participa-

tion of offshore resin suppliers to continue to grow, but there becomes a point where the logistics and security of supply of these imports become barriers," says David Woodcock, market development manager, Americas, Coatings & Civil Engineering for Hexion Specialty Chemicals.

Regardless, the shift of manufacturing of durable goods to low-cost regions of the world has hurt smaller, regional players. These companies will have a difficult time supplying the global paint market. "Resin makers need to adjust their geographic footprint and have the necessary infrastructure in place so that they can serve their customers regardless of location," notes Mr. Fernandez. These regions may not be able to maintain their low-cost positions for an extended period of time, though. "With regard to Asia, we see a curve that is similar to what we saw decades before in Japan and other growing industrialized countries. It is not likely that China will be able to sustain its low-cost export position over the very long term," says Mr. Tishler.

CONSEQUENCES OF CONSOLIDATION

Consolidation activity has been high in Western Europe and North America with respect to the resins industry in recent years and is anticipated to continue. Companies are looking to expand—whether in technology or geographic reach—through acquisition. As suppliers to, and customers of, resin producers consolidate themselves and become more global, resin manufacturers must also become larger. "The resin industry remains quite fragmented despite the recent activity and needs further consolidation," Mr. Murad says.

Many resin producers feel that they must become global to stay competitive, and that expanding geo-



BASF's Nanjing Plant



INCREASING REGULATORY BURDENS

The fourth and ongoing difficulty for resin manufacturers is the need to develop low cost formulations that provide the same level of performance but meet ever more stringent regulatory requirements.

New regulations in Europe and North America require lower and lower levels of volatile organic compounds (VOCs). The REACH (registration, evaluation, and authorization of chemicals) legislation in Europe, which is scheduled to take effect in 2007, could significantly impact the paint and coatings industry as well.

Many across the chemical industry are concerned that this legislation will drive manufacturing out of Europe. "REACH could lead to significant redundancies of effort, tremendous waste of R&D assets with budgets allocated to registration rather than innovation, delayed new product development, and much lengthier commercialization times," says Mr. Murad.

All resin manufacturers support the objectives of health, safety, and environmental regulations. Many are concerned, though, about the negative impacts such legislation can have on the health of related industries and the overall economies in which they are applicable. "REACH is not yet finalized, and further improvement in terms of registration processes, authorizations, and costs could be brought before the final vote," says Ms. Johnson. While most of Eliokem's polymers will not be affected by the REACH legislation, many paint manufacturers' products will, and the company therefore supports the position held by the European Paint Manufacturers Association and the European Chemical Industry.

Many companies are concerned that the REACH legislation will significantly increase the cost of doing business in Europe. "In the end, the European consumers will pay much higher prices for the same products they have been using for many years. Companies will be discouraged from doing business in Europe and competition for local producers will diminish, resulting in even higher prices," says Mr. Elias.

Those companies that have stayed abreast of developments in the legislation will be best prepared for its implementation in the future. "Companies need to start evaluating their products to determine if REACH legislation will affect existing products, and what changes may be necessary for compliance," states Ms. Fruth. "Companies will need to include REACH legisla-

graphically through acquisitions is the most effective strategy. "As our customers consolidate, and as our customers' customers consolidate, their leverage on the supply chain increases," says Mr. Woodcock. "And we don't expect consolidation to slow any time soon, either. The bigger companies want to get bigger yet." In order to properly serve these consolidated customers, resin makers must be global in reach and well-organized to take advantage of opportunities when customers present needs, according to Mr. Woodcock.

Consolidation can have different consequences, though. Ms. Fruth notes that because the resin industry has excess capacity, further acquisitions should reduce the amount of excess and could have the positive effect of stabilizing prices. Others believe consolidation can harm the industry. "On the positive side, M&A strengthens product offerings, broadens supply chains, focuses resources and selling efforts and, in general, leads to stronger competitors. With fewer, larger, more focused competitors trying to grow their share, however, margins tend to be lower, thus making the industry less healthy and not as likely to reinvest in technology," Mr. Johnson explains.

For smaller companies, consolidation may lead to additional opportunities. "Larger companies are likely to reduce their product lines through consolidation. Smaller companies like Ranbar will be able to take advantage of this situation and fill those gaps with increased specialty product offerings," says Mr. Russell. Other smaller companies find that as the larger companies get larger, smaller companies have less and less ability to control sourcing of raw materials. "When we are experiencing tight supplies or allocation of raw ma-

Reactors used by Solvite

tion guidelines into all future product development," she adds.

Solvol anticipates that REACH will affect products containing NMP, fluoro-derivatives, and ethylene oxide. "Based on these expectations, we began developing a family of NMP-free polyurethane dispersions several years ago," says Mr. Tishler. The company continues to expand this line of products as the interest level increases globally. According to Ms. Alderman, BASF bases its activities on the principles of sustainable development and sees the REACH legislation as a way to continue to improve the environmental friendliness of resin products. "In most cases, BASF has anticipated tighter environmental regulations and has proactively developed products to meet future needs," she says. Examples include APFO-free dispersions, formaldehyde-free dispersions, and resins that can be formulated at low VOC levels or higher solids levels.

Increasingly strict VOC regulations are also expected to be a continued challenge for resin manufacturers around the world. The international resins market will be compacted by increasingly stringent material regulations, according to Ms. Fruth. "Technology has limitations. As regulations push for lower VOCs, technology shifts are necessary, which often pushes the boundaries of performance," she adds. Eliokem's Ms. Johnson also notes that, "These new VOC limits are compelling us to review existing formulations to adapt to the relevant legislations or to make significant investments in R&D in order to develop new products." Eliokem has developed several new resins that meet the VOC regulations in both Europe and the U.S. These products include Pliolite resins for masonry paints, Plioway resins for odorless stain-blocking primers, and Pliotec resins for water-based porch and floor paint.

PERFORMANCE AND SERVICE AT CENTER OF COMPANY ACTIVITIES

Alberdingk Boley and MeadWestvaco Specialty Chemicals announced that they are negotiating a license agreement for Alberdingk Boley to produce, sell, and distribute some of MeadWestvaco's emulsion polymer products. MeadWestvaco Specialty Chemicals Division will be discontinuing its acrylics manufacturing operations in the first quarter of 2006. Alberdingk Boley will be working with MeadWestvaco and its customers to ensure a smooth transition for the products included in the license, according to the two companies.

BASF is focused on value-added profitable growth, according to Ms. Alderman. Business portfolio management and restructuring activities in North America have led to significant annual cost savings for the company

as a whole. "We are now focusing closely on our customers' needs, and on developing and applying the best business models for our customers, and for us," she explains. "We are also tailoring our innovations more closely to the requirements of the markets that we serve." She cites BASF's new zero- to low-VOC Acronal Optive resin line for architectural coatings as an example of this approach.

Cytec Surface Specialties emphasizes providing new technologically advanced solutions which satisfy its customers' needs and globalize its business, according to Mr. Aranzana. The company focuses most specifically on environmentally friendly technologies such as energy-curable resins, powder coating resins, and water-based resins, and looks for the best chemistry for a given application. In 2005, Cytec launched more than 30 new products worldwide. Examples include ADGURE™ resins for flat panel displays, water-based resins for automotive primers and clearcoats, UV polyurethane dispersions for wood, RADCURE™ resins for plastic coatings, and UV powder coating resins for medium-density wood coatings. Also in 2005, Cytec acquired the Surface Specialties business of UCB. "The acquisition demonstrates our commitment to the paint and coatings industry. Now, we can offer our customers a more diverse portfolio of high performance products worldwide," Mr. Aranzana says.

Eliokem's strategy is to focus on innovation, according to Ms. Johnson. "We work hard to maintain our entrepreneurial spirit in providing high quality, industry-leading products and to continue to assist customers in the development of new value-creating concepts and applications. New product development is key to our future success." The company has also developed partnerships with external companies either for manufacturing of products or for marketing new products outside the direct scope of its technologies.

New products recently introduced by Eliokem include Hydro Pliolite EBS technology (Linulsified Binding System), an acrylic waterborne technology that enables customers to formulate water-based paints with adhesion properties close to solvent-based paints for the European market. Hydro Pliolite® facade paints are matte with a natural finish, can be formulated in a range of colors, and offer resistance to dirt pick-up, micro-organisms, and substrate alkalinity. For the U.S., Eliokem has launched Pliolite LV72, a dry acrylic resin directly soluble



in commonly used solvents as well as several exempt solvents designed to replace chlorinated rubber in swimming pool paints. The resin allows paint producers to meet stringent VOC regulations without compromising performance, according to Ms. Johnson.

Soluol celebrates its 75th year of business in 2006. The company recently invested in a new state-of-the-art facility in East Providence, RI, that will be home to Soluol's entire operations including manufacturing, R&D, applications, administration, and quality control. "This location will allow Soluol to be more efficient and realize economies of scale in nearly every function of our organization," says Mr. Tishler. The company's R&D efforts are focused on development of novel low- or zero-VOC resin technologies. In 2006, Soluol expects to launch new products targeted at meeting very specific needs in the marketplace, both in traditional and non-traditional applications for polyurethanes.

According to published reports, Apollo Management Group is preparing Hexion Specialty Chemicals for an Initial Public Offering, with the specific timing of the launch not yet disclosed. "Right now Hexion is implementing programs designed to maximize the synergies offered by the different businesses merged to form the company," notes Mr. Woodcock. As a leading producer of epoxy resins marketed under the EPON™ and EPIKOTE™ brand names, the company has geared its R&D and new product development efforts towards VOC compliance technology that offers high performance. Hexion has also developed leading-edge curing agent technology under the EPIKURE™ brand that helps aid in performance as well. "We are becoming an organization that focuses on serving growing end-markets and developing products specifically designed to meet the needs of those markets," says Mr. Woodcock. Hexion is interested in continuing to grow the business where it can leverage its market position.

Johnson Polymer continues to focus on core strengths and global product offerings while focusing on product innovations to meet VOC regulations, according to Ms. Fruth. "We are developing products that allow formulators to meet VOC regulations while maintaining the level of performance expected by the end-user," she notes.

Ranbar Electrical Materials has changed its focus to being primarily a specialty resin manufacturer, according to Mr. Russell. The company is trying to expand in products and markets that the larger companies are eliminating. Ranbar emphasizes its liquid resin technology, high quality, service, and flexibility as a small manufacturer. "We partner with our customers to find out what product needs they have and try to formulate new resins based on that information," Mr. Russell says. The company recently introduced a line of low-cost water-reducible resins that complement its existing line of products.

Sartomer is focused on working closely with its customers to develop materials that fulfill their specific performance requirements, according to Mr. Elias. "Our technical department is closely aligned with sales and marketing so that we can most effectively help our customers succeed in their markets," he notes. Sartomer acquired the UV resins business of Akzo at the end of 2004 and has since fully integrated this business into the organization. The company has also approved and begun construction of a monomer and resins manufacturing facility in China. "This new plant will supplement our supply position and offer local production of the same quality products as our U.S. and European facilities to our multi-national customers as well as local formulators," Mr. Elias states. The plant is scheduled to be operational by the middle of 2007.

As 2006 gets under way, it will be interesting to see how the year unfolds for these companies and the resins market as a whole. ■