NORTH AMERICAN POLYMERIC CONCRETE REPAIR MARKET

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Much has been written and published about the construction chemicals market in the U.S., which is estimated to be valued at close to $8.0 billion and growing at a rate of over 3.0% per year. The market encompasses a number of different products made with a vast array of different materials. This article, though, will take a closer look at a fast-growing sub-segment within this industry ï that being polymeric systems for concrete repair.

While concrete admixtures, cementitious grouts and one-component sealants make up the bulk of the products used, polymeric reactive systems are estimated to be $1.1 billion of the overall construction chemicals market. The fact that these systems are growing at two times GDP is due to the construction industry continually finding greater utility for these systems as they repair, rehabilitate and restore more and more commercial, industrial, civil and infrastructure facilities versus demolishing and rebuilding these structures.

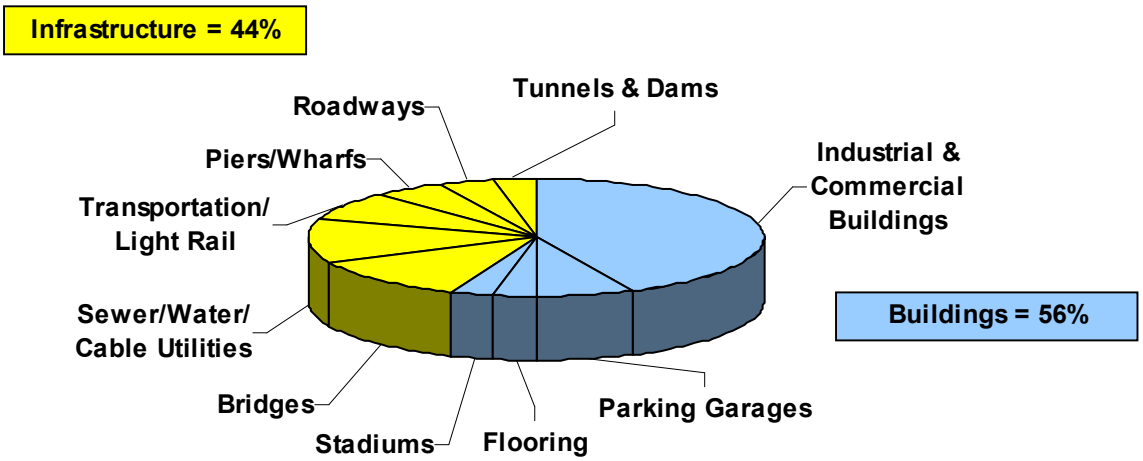
INFRASTRUCTURE ISSUES

While the use of polymeric materials to repair/restore concrete is gaining wider acceptance and thus growing in volume, the fact still remains that overall construction spending in the U.S. is still very depressed as a result of the protracted recovery. An even bigger issue, though, is the overall lack of available state and local funding to do the requisite maintenance, repair and/or replacement. According to the U.S. Treasury Department, infrastructure spending in the U.S. now stands at just 2% of GDP ï half of what it was in 1960 ï and by comparison substantially below places like China (9%) and Europe (5%). The critical problem, though, is that the great bulk of the current U.S. infrastructure was originally built for a 50-year life-cycle and is in some cases now approaching 60 years old!

In its latest report card, the American Society of Civil Engineers gave U.S. public works a ñDò grade for its current state. It calculated that the U.S. would need to spend upwards of $1.1 trillion over the next 5 years to restore roads, bridges, dams, levees and other infrastructure to good condition. At the same time, maintenance costs have increased far faster than state and local tax revenues. This situation is further exacerbated by an inability to borrow money due to existing high debt obligations and/or very high borrowing costs as a result of low bond ratings. Last year, the U.S. government proposed a $50 billion infrastructure ñbankò (in addition to money already allocated to infrastructure in the earlier stimulus packages) support the revitalization of 150,000 miles of roads, 4,000 miles of rail and 150 miles of runways. The problem is that these funds are targeted at the

state and local levels where the financial strain to balance budgets is most acute and where borrowing more money is not always feasible (see Figure #1). The end result has been delays or cancellations of projects.

Figure #1 Market Segmentation for Polymeric Concrete Repair Systems



A POTENTIAL SOLUTION

Given all current economic forecasts, the near-term future looks cloudy for both new commercial and civil construction in the U.S. The one thing that remains favorable, though, is the fact that using polymeric systems has been proven to be a very cost-effective method to repair, restore and rehabilitate concrete structures versus more traditional practices utilizing mechanical and/or cementitious materials. While there is currently a much broader acceptance due to a longer history of successful usage of these polymeric materials to repair and restore concrete in Europe, acceptance here has been lower by comparison, but is significantly increasing. The combination of their cost-effectiveness and the financial pragmatism behind repairing versus rebuilding is the underlying reason why the use of these types of repair systems is forecasted to grow at 6+% annually in the coming years despite the projected softness in new construction activity.

POLYMERIC PERFORMANCE

This market ï while somewhat finite in scope ï is quite diverse in the products used and involves such formulative chemistries as two-component acrylics, epoxies and urethanes (and various hybrids thereof). These products are typically used in any of three functional end-applications (see Figure #2):

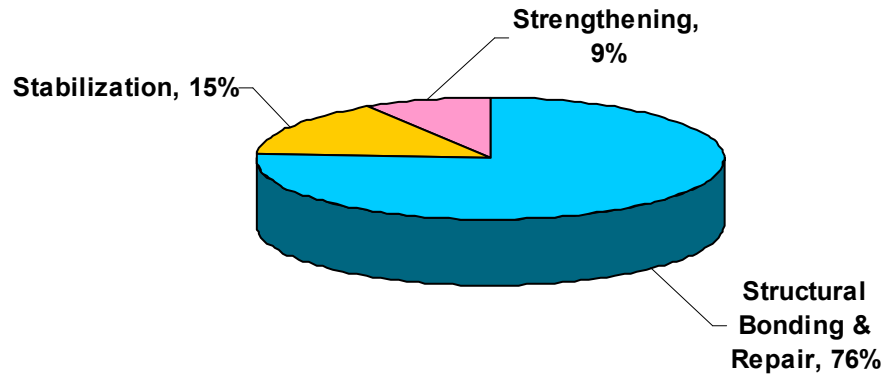
- Strengthening ï This involves restoring structural strength and integrity to concrete beams, slats, walls, columns, piers, etc. and to enhance long-term performance; fiber-reinforced polymer (FRP) systems are one of the more noteworthy products used here.

- Structural Repair & Bonding ï This involves the bonding of concrete slabs, the repair of concrete cracks and the overall restore of concrete that has deteriorated (or spalled) and been compromised due to environmental conditions; typical end-use products include epoxy or acrylic based chemical anchoring systems, or epoxy-based systems to repair cracks and/or to bond adjacent concrete slabs.

- Stabilization ï This involves providing structural stabilization to soil, as well as precision alignment of equipment under severe torque and vibration; typical products here would be hydrophilic or hydrophobic polyurethanes to stabilize walls, as well as epoxies used as a stabilizing chock under heavy equipment.

Aside from purely economic considerations, polymeric concrete repair systems also make notable contributories to a buildingôs sustainability rating. Because these systems facilitate repair and restoration versus rebuild, they significantly reduce the amount of building debris that is taken to landfill following demolition. In addition, by allowing for more repairs in existing structures, there is a reduction in the amount of new concrete needed. In that there is a tremendous amount of CO_2 generated during the production of cement (i.e. 1.4 tons of CO_2 for each ton produced), there is growing focus on reducing the overall need for new concrete by repairing what is already in place. There are also positive implications from the fact that polymeric repair systems do not use water like many typical cementitious systems.

Figure #2. Functional End-Uses for Polymeric Concrete Repair Systems



SUSTAINED GROWTH

While smaller in volume and revenue in comparison to more traditional cementitious repair materials, polymeric systems are gaining more and more recognition for their inherent performance characteristics and the value they bring to repairing, restoring and rehabilitating concrete found in any of a long list of civil or commercial structures. This wider acceptance, coupled with their cost-effectiveness, is leading engineers and architects to more frequently specify these types of polymeric systems ï leading to strong sustained growth for the foreseeable future.

About the Author

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Rick Jones joined The ChemQuest Group, Inc. as Vice President in 2006. He spent the previous twenty-nine years in the coatings and adhesives industry working for PPG Industries, Valspar Corporation, Lord Corporation and Sovereign Specialty Chemicals/Henkel Corporation. His entire career has focused on business management, marketing and technical sales within automotive, aerospace, industrial and wood markets. Rick has extensive knowledge and experience in creating successful business strategies, and successfully launching profitable sales and marketing programs for technical products into domestic and international OEM markets. Rick is a member of the Adhesives and Sealants Council, National Paint and Coatings Association, Society of Protective Coatings and RadTech. He holds a B.S. degree from Allegheny College (Meadville, PA).

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The ChemQuest Group, Inc. is a strategic management consulting firm that has been a respected source of information pertaining to the coatings, adhesives and sealants markets since 1980. It has continually monitored the changes in market size, technology developments, raw material trends and the emergence of growth opportunities in these complex, fragmented industries. The firm is ñtop-lineò focused, offering such services as strategy development, market analysis and mergers & acquisitions. ChemQuest is headquartered in Cincinnati, OH and has offices in Raleigh, NC; Columbus, OH; Boston, MA; London, England; Düsseldorf and Hamburg, Germany; Guangzhou, China; Buenos Aires, Argentina; and Cairo, Egypt.

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