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PolymerPlace Notes

A plastics technology newsletter
By Margaret Baumann, G.H. Associates

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HIGHLIGHTS THIS MONTH

- Shows attended
- SPE Marketing & Management Division has formed partnership with Commercial Development and Marketing Association (CDMA) to develop courses and workshops
- New Bio-Technology Newsletter launched

POLYMER END-MARKETS

Packaging

- Equity investment firm Graham Partners Inc. has purchased Supreme Corq Inc., in a deal expected to help the synthetic-cork maker grow more quickly to serve a rapidly evolving industry.

Material Handling

- GI Plastek is a custom molders of larger plastic parts for diverse industries and is the molder for the new MAX³™ Container from LINPAC Materials Handling in Georgetown, Ky.

Industrial

- Quadrant EPP evaluated Techtron® PPS stock shapes and three other plastics, and found that rings made from Techtron® PPS shapes extend ring life significantly compared to acetal, polyester and generic PPS.

POLYMER/MATERIAL DEVELOPMENTS

- GLS Corporation's new VERSAFLEX® OM 6100 Series of nylon overmolding TPEs

OTHER

- Online plastics company Omnexus has relaunched its informational Web site, http://www.omnexus.com. The company offers technical information on materials, reports on trends and innovations and a polymer selector designed to help engineers choose the right plastics or elastomer grades.
- Knovel a unique technical information service targeted at R&D and Engineering is launching its Plastics Technology platform on July 20th. Many of the well-regarded technical information sources will be part of the service.

Highlights

June was a busy month for us. We attended the MDM East and also Plastics Encounter organized by Plastics News in Cleveland. Both shows were fairly well attended but the heights of trade show attendance in the 1990's is just not happening. We plan to attend the Plastics USA Tradeshow sponsored by the SPI September 28-30, 2004 and the K (Kunststoffe) show which is October 20-27th in Düsseldorf, Germany.

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The Marketing and Management Division of the Society of Plastics Engineers (SPE) announces its partnership with CDMA (Commercial Development and Marketing Association) to offer Market Research courses at SPE events. The principals of Polymerplace have been active in the SPE Marketing and Management division for a number of years.

Over the years, the Marketing and Management Division of the Society of Plastics Engineers has wanted to develop some courses or workshops to train technical personnel in marketing topics. The Marketing and Management Division has organized marketing sessions for ANTEC (SPE's annual technical meeting) and some stand-alone events. To meet the need of technical personnel to be more and more part of the development team, The Marketing and Management division of the Society of Plastics Engineers has formed a partnership with the foremost marketing and strategic planning organization serving the chemical industry, the Commercial Development and Marketing Association (CDMA).

The first course offering will be scheduled at Plastics USA on September 28th at McCormick Place in Chicago, Illinois.

Cyber Competitive Intelligence meets Plastics Technology
This is an intensive, hands-on Competitive Intelligence Methodology workshop being sponsored by the SPE/SPI, Marketing and Management division of the SPE and the Commercial Development and Marketing Association (CDMA) where scoping and proposing relevant projects, current on-line information services, patent information sources, and the basics of Multi-Term Frequency Analysis will be presented. Three modules describe useful tools for developing meaningful projects, information, and analysis that will result in relevant recommendations for business action.
Pertinent competitive intelligence case studies provided by the M&M division and attendees will be demonstrated to the attendees of the workshop. It is scheduled for September 28th, 2004 during Plastics USA at McCormick Place. The fee will be $495.00 and will include a working lunch. The workshop will be completed before the end of the show day to allow for attendees to walk the show.

The presenter of the workshop will be Bill Frye of BP Chemical -- Bill Frye has over 25 years experience in industrial market research with Amoco, BP Amoco, now BP Chemicals. He has been an instructor for CDMA for over 5 years.
To register or for more information contact Maggie Baumann at 908-832-2207.

Over the next couple of years the Marketing and Management Division is planning to offer several courses with CDMA: a course on Market research is being discussed for the GPEC (Global Plastics Environmental 2005) conference and Commercial Development Workshop for ANTEC 2005 in Boston.

For more information on CDMA please visit http://www.cdmaonline.org. CDMA is the world's leading professional organization dedicated to fostering, promoting and sharing business practices for long term, growth and value creation in the chemical and allied industries.
For more information on the Marketing and Management Division of SPE please visit http://www.4spe.org.

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This month, Maggie Baumann of G.H. Associates and Larry Drumm of BioLarry Consulting are launching a bi- monthly newsletter on Biotechnology in Plastics. The inaugural newsletter is available on Polymerplace.com. If you are interested in receiving the first three newsletters free please sign up at http://www.polymerplace.com . The annual subscription is $49.00 for six issues. We hope you will join us and receive our newsletter about this important emerging area which we believe will dramatically impact the chemicals and plastics industries in the near future.

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POLYMER MARKETS

Packaging

Equity investment firm Graham Partners Inc. has purchased Supreme Corq Inc., in a deal expected to help the synthetic-cork maker grow more quickly to serve a rapidly evolving industry.

Kent Washington based Supreme Corq has been shopping for a buyer to bring the capital it needs to keep pace with expanding demand for plastic wine corks.

Graham, based in Newtown Square, Pa., has been investing in companies that convert products from other materials to plastics for its portfolio.

Graham's other properties include Nailite International Inc., a maker of polypropylene home siding panels that substitute for cedar wood shingles, and National Diversified Sales Inc., a producer of plastic draining and irrigation products that substitute for cast-iron and concrete brands.

The June 7 acquisition includes two plants in Kent with about 60,000 square feet of space and a printing and coating facility in Tournai, Belgium, that opened in April. Supreme Corq has about 80 employees

This business is a relatively new one. Driven closures are those wedged into a bottle, as opposed to a twist-off top. According to estimates, about 22 billion of the wine closures were made last year, and plastic closures rapidly are gaining ground on corks. Various market research firms including G.H. Associates have estimated that this market will grow between 10-20 per cent over the next few years.

Although the company does not claim to have invented plastic corks, Supreme Corq officials said the company helped invigorate the industry after opening its plant in 1994. Founder Dennis Burns was an entrepreneur who started other injection molding businesses for hockey helmets and sunglasses before leaving each for new ventures.

The thermoplastic elastomer corks are cost-effective, recyclable, do not dry and degrade and don't affect the taste of wine the way natural corks can.

Supreme Corq's customer base includes more than 1,000 wineries, many of them in such areas as Chile, South Africa, New Zealand and Australia. The traditional European market has been slow to embrace the "plastic cork". Supreme Corq's plans include tapping into more "old world" European wineries and established U.S. retail brands.

Graham's investment will help free cash for this purpose.

Graham's equity fund has about $227 million in committed capital primarily for midsized businesses. The company is affiliated with Graham Group, a holding company that founded blow molder Graham Packaging Co. LP and Graham Machinery Group, both in York, Pa., and still has investments in both.

Material Handling

GI Plastek is a custom molders of larger plastic parts for diverse industries and is the molder for the new MAX³™ Container from LINPAC Materials Handling in Georgetown, Ky. This is unique, lightweight structural container that allows shippers of lightweight parts to increase load efficiency, reduce cost, reduce damage and enhance quality. The container is reusable, maximizes usable space in trailers, and offers a cleaner option to pallet/corrugated container combinations. It can be loaded two wide, fourteen deep and two high in a standard 53' trailer. The container also collapses at a 4.5:1 ratio, making it an extremely efficient shipping container for return transportation.

Gas Injection Molding methods were used by GI Plastek to form the container due to the large walls that had to be straight and flat in order to function properly. Sequential valve gates were also employed to offer better control over resin flow and knit lines. Polypropylene was the material of choice because it can handle both low and high temperatures and it can withstand

impacts from fork tines. This material also allows the container to hold up to stocking pressure and endure road trailer trips without buckling under stock loads. Steel tooling was used with single cavity molds for the large parts. The smaller part molds ranged from 2 - 8 cavities.

The Max® container is longer lasting, easy to clean and can reduce overall shipping expenses. For additional information on LINPAC Materials Handling contact Kim Stone, 800-442-4892. www.LinpacMH.com

In addition to the GI Plastek injection facility in Marysville, Ohio, the company operates a structural foam plant in Wolfeboro, New Hampshire, a RIM facility in Newburyport, MA, and a DCPD/RIM operation in DeWitt, Iowa.

For additional information about this or other GI Plastek products, contact Mike Lamendola, GI Plastek 937-645-4000 or e-mail him at mlamendola@giplastiek.com.

Industrial

Retaining rings that hold 300 mm semiconductor wafers during chemical mechanical planarization (CMP) must withstand repeated exposure to harsh chemicals and abrasives. One way that semiconductor fabricators gain the stiffness, purity and toughness needed in CMP rings is to use rings machined from stock shapes provided by Quadrant Engineering Plastic Products (EPP). These shapes are made from a proprietary grade of Fortron® polyphenylene sulfide (PPS) from Ticona, the technical polymers business of Celanese.

Quadrant EPP evaluated Techtron® PPS stock shapes and three other plastics, and found that rings made from Techtron® PPS shapes extend ring life significantly compared to acetal, polyester and generic PPS. Process experience shows that rings made from Techtron®/Fortron® PPS stock shapes withstand 2,000 to 5,000 CMP cycles compared to 1,000 to 2,000 cycles for rings made of these other materials. We worked with Ticona to tailor their Fortron® PPS to the needs of this application," says Fred Sanford, North American Advanced Engineering Plastic Manager at Quadrant. "The result is a PPS stock shape used for premium retainer rings that can be machined to tighter tolerances than acetal, polyester or generic PPS. Our rings give semiconductor fabs a longer and more predictable ring life and greater dimensional control."

"These high-performing retaining rings allow fabs to tighten other variables to control thickness better across the wafer and gain greater consistency from wafer to wafer. It also allows them to predict ring replacement time more accurately, and so to optimize production cycles by scheduling maintenance with more precision. All these benefits add up to greater process reliability and more equipment uptime."

For information on Fortron® PPS, contact: Ticona, in the USA. Phone: 1-800-833-4882 or 1-908-522-7500. Email: prodinfo@ticona.com . In Europe: Ticona GmbH, Professor-Staudinger-Straße, D-65451 Kelsterbach, Germany. Phone: +49-(0)180-584-2662 (DE) or +49-(0)693-051-6299 (EU). Email: infoservice@ticona.de . Or visit: http://www.ticona.com .

For information about Quadrant EPP and the products it offers, contact: Quadrant Engineering Plastic Products, P.O. Box 14235, Reading, Pennsylvania, 19612-4235, USA. Phone: 1-610-320-6600. Or visit: http://www.quadrantepp.com .

The Quadrant Group is a global leader in the use of high-performance polymers to form semi-finished and finished products. It has net sales of over 400 million Swiss francs and employs 1,300 at 27 locations in Europe, North America and Asia. To learn more about Quadrant Engineering Plastic Products and The Quadrant Group, please visit: http://www.quadrantepp.com and http://www.quadrant.ch .

Material Developments

It is well known that nylon is a difficult material to overmold with TPEs and achieve good adhesion. Not only are there many different types of nylons (6, 6/6, among others), but they are also often modified to enhance performance for a variety of reasons. All of these factors affect adhesion significantly. Over the past 5-7 years, advancements in TPE technology have

expanded the use of soft ergonomic grips in markets that utilize nylon, including lawn and garden, hand tools and power tools. Some TPEs have been developed for these markets that bond relatively well to unmodified or glass-filled nylon materials, but they fall short when modified nylon plastics are used (heat stabilized and/or impact-modified).

GLS Corporation's new VERSAFLEX® OM 6100 Series of nylon overmolding TPEs was developed to provide a superior bond to most types of standard and modified nylons, including heat stabilized, lubricated, and impact-modified nylon products. According to company sources, these new additions to the popular product line position the VERSAFLEX® TPEs as the broadest and most innovative two-shot or insert overmolding materials available to processors today.
The new grades, specifically OM 6160 and OM 6175, offer 60 and 75 Shore A hardness values, respectively, and are available in black and natural versions. Additional characteristics of the OM6100 Series are a soft touch/rubbery feel and grip, a dull matte finish appearance, a superior surface quality with no mold marks, and excellent colorability in natural grades.

Unlike some TPE nylon overmolds on the market which are much more suitable for multi-shot (eg, 2K or two-shot) overmolding only, the GLS VERSAFLEX® OM 6100 Series of TPEs provides much more process flexibility in that they are suitable for both insert and multi-shot injection molding processes. These products feature superior adhesion to standard and modified nylons, including glass-filled, impact-modified, lubricated, and heat stabilized grades.

The new VERSAFLEX® OM 6100 grades offer the processor many advantages. One of the most significant benefits is easy processability, with excellent flow, and a very wide processing window relative to other nylon overmolds on the market. Cycle times are much improved, including faster cooling cycles. Another significant advantage is that drying of the OM 6100 TPE is not required prior to overmolding. Pre-drying of the pre-molded nylon substrate is also not required prior to overmolding, as it is with many other nylon overmolds on the market.
For further information contact GLS at (815) 385-8500 or (800) 457-8777.
Fax: (815) 385-8533. E-mail: info@glscorp.com Web Site:http://www.glscorp.com.

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We have recently done some work on long glass fiber technology and will be including a couple of articles in the next several newsletters on what is an emerging area for structural parts and metal replacement opportunities. The article on Quadrant's new lightweight composite sheet Quadrant has developed a special class of lightweight reinforced thermoplastic composite called SymaLITE™.
With an even higher stiffness-to-weight ratio at equivalent area weight than conventional GMT, SymaLITE™ LWRT composites offer significant opportunities to reduce mass and increase decorating options while maintaining stiffness and melt reprocessability in structural and semi-structural applications. A unique mat technology and manufacturing process effectively create a long-fiber reinforced, air-permeated composite part. It is possible to "tune" the physical and mechanical properties of these sheet-form composites on the fly, providing processors with different levels of design and processing flexibility than are available with classic GMT composites.
The materials are manufactured in a special dry-production process using a patented hybrid mat technology - a high-loft fleece comprised of long glass (80 mm) and polypropylene (PP) fibers. Altering the ratio of fibers and the way the fleece is subsequently needled allows Quadrant to optimize mechanical and physical properties for a given application. The higher the glass loading of a blank going into the tool, the higher its loft and the lower its density, which in turn produces a part with higher stiffness and lower deflection.
The needled fleece is heated above the melt temperature of the polypropylene fibers, which melt and fully impregnate the glass fibers, eliminating loose glass that otherwise contributes no stiffness or strength to the final product. During the subsequent lamination step, functional or decorative layers can be attached to one or both sides of the sheet. Further consolidation puts the glass under tension and yields a thin sheet cut to customer-specified blanks. When blanks of

the composite are reheated just prior to molding, the glass, which has memory or backforce, tries to return to its initial orientation, causing the material to loft 5-6x its consolidated thickness.

SymaLITE composites are molded via low-pressure stamping or thermoforming, which offers fast cycle times and use of family tooling for increased throughput. Prototype tools can be made quickly and inexpensively - even from wood. The high-lofting fleece allows processors to use a technique called "tailored consolidation" where the density of SymaLITE materials can be reduced to one-third that of the original laminate and thickness can be varied across the finished part while maintaining the same part weight - an option not available with standard GMT or metal stampings. To have a thicker section with higher area stiffness, the tool is constructed so as not to press down as deeply into the material in selected areas. For sections where higher tensile strength is needed, the blank is more fully consolidated (pressed thinner) during molding.

Upon demolding, the stamped blank is moved by robot into a cutting unit where the individual parts are removed. Because there is no material flow, knitlines are not a problem and holes can be located relatively close to the part edge.

SymaLITE composites were developed at Quadrant's own R&D Center in Lenzburg, Switzerland. They are currently being manufactured on a new line at the company's plant in Lotte, Germany. In addition to underbody shields, these lightweight composites are ideal for numerous interior and exterior automotive components, as well as for applications in recreational vehicles, sporting goods, building & construction, lawn & garden, and more.

Quadrant Plastic Composites - an operating unit of Quadrant AG of Switzerland and a sister division to Quadrant Engineering Plastic Products of Reading, Penn. - produces, sells, and develops applications for 50% of the world's glass-mat thermoplastic (GMT) composites. Quadrant is nearly double the size of the next largest GMT producer, has the broadest product offering of any GMT supplier, and is the only GMT manufacturer with multiple manufacturing locations in multiple countries. GMT is a common replacement for steel, aluminum, and magnesium, as well as thermoplastic and thermoset composites in applications ranging from automotive lift doors to high-end office seating to cases that protect delicate electronics equipment as it is dropped from helicopters. Quadrant, which has been producing GMT composites for over 20 years, offers a wide variety of GMT product lines to meet customer needs.

For more information on Quadrant's North American products or services, please contact the company at Quadrant Plastic Composites, 42705 Grand River Avenue, Suite #201, Novi, MI 48375, USA; phone: +1.248.374.1862; or see: www.quadrantcomposites.com

Process Developments

ENVIROKARE TECH INC. announced on 17th June, 2004, an Exclusivity Agreement relating to Thermoplastic Flowforming (TPF™) Technology with NOVA Chemicals, a leading producer of plastics and petrochemicals.

This Agreement provides for an exclusivity period through August 31, 2004 for the purpose of investigating and negotiating an agreement between NOVA Chemicals and Envirokare to jointly commercialize the TPF™ technology. During this period Envirokare will not take any action to solicit, initiate, seek or encourage any inquiry or proposal or agreement with any third party relative to the use, license or sublicense of its TPF™ technology. The Agreement gives NOVA Chemicals the exclusive right to explore TPF ™ technology as a potential partner with Envirokare. In exchange for the exclusivity agreement, NOVA Chemicals has agreed to pay Envirokare $250,000 for which it will receive common stock purchase warrants entitling it to purchase $250,000 in Envirokare common stock. Dr. John Verbicky is the President and CEO of Envirokare.

Envirokare, under an exclusive license, is a marketer of the state-of-the-art TPF composite technology developed by Thermoplastic Composite Designs, Inc. (TCD). The proprietary TPF process features in-line compounding, automated low-pressure material delivery system, providing high long strand survivability rate and part forming of long-fiber reinforced large structural parts.

Other

Online plastics company Omnexus has relaunched its informational Web site, http://www.omnexus.com. The company offers technical information on materials, reports on trends and innovations and a polymer selector designed to help engineers choose the right plastics or elastomer grades.

The change was announced June 10 by Christophe Cabarry, chief operating officer of SpecialChem SA, the Paris-based company that bought Omnexus in December.

Omnexus, which formerly was based in Zurich, Switzerland, had offered material-selection services before the site was sold.

Unlike the former Omnexus, the new site will not sell resins or elastomers, Cabarry said. The informational model is similar to SpecialChem's primary site, which focuses on technical services for additives, adhesives and coatings.

The company plans to generate revenue by organizing Web seminars and selling leads generated from its platform, Cabarry said. The service will be free to processors.

We wonder if even this strategy will result in a profitable business model however we believe that the new Omnexus comes closer to meeting a market need.

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Knovel a unique technical information service targeted at R&D and Engineering is launching its Plastics technology platform on July 20th. Many of the well-regarded technical information sources will be part of the service. Textbooks from John Wiley, Hanser Gardner, William Andrews Publishing, SPEANTEC proceedings and training tools will be included. Knovel adds value through interactive tables and deep word searchability. Knovel represents tremendous potential for its subscribers to save both time and money. For more information, please contact Maggie Baumann of G.H. Associates 908-832-2207 or visit www.Knovel.com.

References: The stories in *PolymerPlace Notes* come from a variety of sources including Company Press Releases, Interviews, and trade publications, e.g. *Plastics News* and newswires.
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