

PolymerPlace Notes

A plastics technology newsletter

By Margaret Baumann, G.H. Associates

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800.207.7659

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Inside PolymerPlace

It has been several months since we issued a newsletter. We plan to post a newsletter at least bimonthly. In addition to general industry developments, future newsletters will cover developments in biotechnology as it applies to polymers and nanocomposites- two technology platforms that are changing the nature of the plastics industry. We also cover major business and market trends in the industry. For example, we will be attending the K show (Kunststoffe) in Düsseldorf, Germany in late October of 2007. This show is a great showcase of emerging technology in the plastics industry.

G.H. Associates/Polymerplace is participating as a speaker in the upcoming conferences:

- Polymer Foams 2007—sponsored by AMI October 2-3, 2007- Commercial Development- Pitfalls and Best Practices—Edison NJ

- SPE Marketing Minitec –Pittsburgh, PA –October 4, 2007—Market Research in the 21st Century

SPE Conferences we will be attending although not speaking:

- TPE (Thermoplastic Elastomer) Topical Conference (September 17-19, 2007 in Akron, OH)
- Vinyltec (October 15-17, 2007 in Iselin NJ)

In addition, we will be attending the Plastics News Survival Boot Camp, September 13-14th at the Westin O'Hare in Chicago, IL. The aim of this one and half day conference is to help small and medium-sized firms to identify key challenges and recognize and implement best practices. The program is designed to give attendees some tips and ideas to “thrive” in today’s very competitive environment.

GE Plastics II by Roger F. Jones, Franklin Management International Consultants

Well, the sale of GE Plastics has finally been announced and the surprise buyer is Sabic, the Saudi Arabian government-owned oil company. This was a surprise because rumors or leaks had previously surfaced that GE management (Jeffrey Immelt) would find it politically embarrassing to have a Persian Gulf buyer take over the legacy in plastics. Presumably, this was because of all the fuss in Congress over the Dubai company that wanted to buy a number of shipping terminals in the US over a year ago. Interestingly, no such thing happened this time, probably because the Saudi’s are regarded as quasi-allies in the Middle East (although the validity of that statement would be a whole other column).

Now that it is a “done deal,” I think it is safe to say that GE Plastics will be in relatively good hands. Why? Well, the most important reason is that the company will now be backwards-integrated into feedstocks, and, the lack of integration was causing lots of problems for GE in terms of earnings predictability. Second, Sabic is becoming a serious player in polymers; following its European acquisitions and it is only one step away of being truly global. That step would be an acquisition or major investment in Asia, and it would be a good bet that there will be such an announcement in the not too far distant future. Third, Sabic is a privately held company and is very unlikely to ever become a public one, so it will never have to face being “put in play” when it has to announce any quarterly earnings hiccups. Fourth, management personnel in the company will no longer be subject to the manic short-term job rotation that GE favors, and will finally get a chance to actually learn the business as it goes through one or more economic cycles. This could lead to a rebirth of serious product and application development that have suffered in recent years as GE seemed only interested in cost cutting – and typically via technical staff reductions.

The only downside is that a true plastics pioneer, GE Plastics, is not really an American company any more. Oh, its management will still be in Pittsfield, but the strategic direction of the firm will be decided in Riyadh. That is not necessarily a bad thing, and I did point out in *The Chemical Industry and Globalization*, that both US stock market analysts and the US securities regulatory climate have driven and will continue to drive chemical companies either into private ownership (such as Koch Industries or Blackstone) or offshore stock listings (such as London or Singapore). At least the ownership issue will be settled for a long time to come. I wish the folks at GE Plastics well – they will have a relatively fresh start to show just how good they really are.

Recently, it has been announced that there will be a name change for GE Plastics effective September 2007. The new name will be Sabic Innovative Plastics. Brian Gladden who most recently was the Vice-President and General Manager of Lexan brand Polycarbonate has been named the President and Chief officer of Sabic Innovative Plastics.

I wish to thank many of you readers for buying *The Chemical Industry and Globalization* in the past six months. ACS reports that it has sold two-thirds of the first printing during this period, a

near record. SPE is also offering the book through its on-line bookstore, with a discount for members. This is still a topic of great interest to people in industry; I have been invited to speak on it at the Pittsburgh SPE Minitex in September.

Polymer Markets

Transportation

Siemens VDO has adopted Hostaform[®] EC140XF acetal copolymer (POM) from Ticona, the engineering polymers business of Celanese Corporation, to dissipate electrostatic charge in the fuel supply unit of the Ford Transit. This POM is an extended-use, conductive grade developed for auto fuel systems, especially those that handle aggressive fuel blends at elevated temperature.

The Siemens application involves a POM holder for the contact system of a fuel level indicator and the lever arm/float assembly mounted to it. This system must operate over the life of the car in various fuels at service temperatures from -40 to +80 °C, which reflects the increased thermal requirements of diesel engines.

Plastic fuel system components can become electrostatically charged as flowing fuel causes charge separation. The likelihood of charge build-up occurring, and thus sparking, rises as fuel systems operate at higher pressures and flow rates. Ticona's new electrostatically dissipative POM was developed to avert such charge accumulation and has been approved for fuel system use by General Motors (GM Specification GMP.POM.045). It also meets the SAE J1645 Recommended Practice for averting static charge build-up in auto fuel systems*.

"Hostaform EC140XF extends our line of fuel-resistant acetal POMs," said Dwight Smith, application development engineer. "As an advanced, conductive, carbon-black-filled acetal copolymer, it contains a proprietary stabilization system that allows it to retain high toughness in the face of long-term exposure to challenging fuels at elevated temperatures.

In addition to the Siemens VDO application, Hostaform EC140XF POM is being used in inlet check valves in passenger cars and trucks, and is under consideration for such fuel system elements as filler necks, fuel filter housings, fuel flanges, fuel pumps, vapor canisters, tank mounted valves and sending units. It can be used wherever electrostatic charge can damage sensitive electrical components or trigger thermal events, such as in all-terrain vehicles, motorcycles, personal watercraft, and pumps for flammable materials and other industrial components.

Hostaform EC140XF is based on Hostaform[®] C13031XF, which offers high chemical and impact resistance for use with diesel and gasoline fuel systems, especially those involving biodiesel fuel blends. The high acidity of these fuels makes them more reactive with standard acetals and other plastics, especially at higher temperatures. Hostaform EC140XF has been modified to emphasize use with elevated service temperatures over the long term.

For more information on Hostaform EC140XF POM, contact: Ticona, 8040 Dixie Highway, Florence, KY 41042, USA. Phone: 800-833-4882. 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: www.ticona.com.

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EIGHT DIVERSE TEKNOR APEX TPEs WIN CHRYSLER APPROVALS

Material standards issued by Chrysler for specific applications involve eight Teknor Apex TPEs representing four distinct elastomer types.

Tekron[®] styrenic block copolymers: compounds TK-1118M for high-gloss body side trim, TK-5200N for passenger airbag door covers, and TK-5600M and TK-5600K for driver airbag door covers. (Chrysler Material Standard MS-DC 242.)

Tekbond[®] bondable TPEs for overmolding: black compounds TB-6000-45 for ABS substrates and TB-6700-45 for nylon 6; the application is soft-touch components that direct air flow from dashboard vents. (MS-DB 590)

Telcar® thermoplastic polyolefin blends: compound TL-1000-92 for various applications, including passenger airbag assemblies. (MS-DB 590)

Uniprene® thermoplastic vulcanizates: compound UL-7200-73 for color-matched primary door seals. (MS-AK-91)

"To support automotive manufacturers in meeting these specifications, Teknor Apex can supply identical formulations of the approved compounds worldwide from production facilities in the U.S., Europe, Singapore, and China," said senior automotive market manager Jeffery Beach. "In addition, our technical sales specialists are prepared to work with customers looking to meet alternative specifications and can assist them in achieving the approvals necessary to win new business."

Teknor Apex's TPE automotive approvals are available at www.teknorapex.com/tpe.

Visit the web site: www.teknorapex.com. Or call 1-866-GET-TPEs (1-866-438-8737). Fax: 1-401-728-5680. E-mail: tpe@teknorapex.com.

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Consumer --More applications for Biobased polymers

There are more and more applications utilizing biobased materials in the marketplace.

- Cereplast has recently announced that its PLA based bioplastic has been specified by Green Toys for a new line of children's plastic toys. Green toys product line-up made from Cereplast biobased plastic resin brings a safe and responsible option for environmentally conscious parents. For this specific injection molding application, Cereplast is also using polylactic acid from NatureWorks. These renewable resources ensure that the cost of production remains constant while creating a material that is phthalate-free, latex-free, asbestos-free, gluten-free, and does not contain any heavy metals. It is also compostable under control conditions resulting in an environmentally friendly plastic material for a variety of applications including children's toys. Green Toys will be available in the fall of 2007 and include the Green Toys Tea Set, Indoor Gardening Kit, Cookware and Dining Set, and the Sand Play set. More information on Cereplast is available at: www.cereplast.com, and more information for Green Toys is available at: www.greentoys.com.
- Sealed Air Corporation announces the first foam tray in the U.S. created with NatureWorks® PLA (polylactic acid) polymers. The Cryovac® NatureTRAY is made entirely from corn, an annually renewable resource, and can be used for in-store packaging of beef, pork, poultry and fish, as well as produce and dry goods. The sustainable tray can be used on any standard automated in-store wrapping equipment in supermarkets.

The NatureTRAY delivers all the benefits of traditional polystyrene foam trays, but is compostable in any industrial compost facility. It is available in a range of sizes and in an all natural un-pigmented white color. Trays for processor customers are currently under development. For more information about the Cryovac® NatureTRAY, call 1-800-845-3456 or visit www.naturetray.com.

Polymer Developments

Lubrizol Advanced Materials, Inc., a subsidiary of The Lubrizol Corporation has recently introduced a soft, flexible grade of its Estane[®] Thermoplastic Polyurethane (TPU), specifically designed for applications that require the abrasion resistance of TPU and the flexibility of PVC.

The new grade, Estane[®] CP80AS2 TPU, can be used in various functions of wire and cable and hose and tubing. “We are evaluating for applications where more abrasion resistance is needed, and as a blend to PVC, it improves PVC abrasion resistance while it manages the cost of overall hose,” says Ed Godlewsky, market manager, Estane Thermoplastic Polyurethanes. Estane CP80AS2 is compatible with flexible PVC, allowing easy dispersion without pre-compounding. Estane CP80AS2 is a soft polyester-type TPU with an 80A hardness that extrudes well with clarity and has successfully performed in vacuum cleaner hoses. The robust properties make the material especially suited for hoses used for mulch, sludge and liquid transfer. Estane CP 80AS2 TPU helps improve the tensile, tear, abrasion resistance and cold temperature properties of PVC. For more information about Estane[®] TPUs or to review a complete array of Lubrizol’s innovative TPU technologies, contact us at 888-234-2436. Or visit us on the Web at www.estane.com.

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Three more Bio-based polymers under development

1. Dow and Ciptalsen Comerica e Representacao Ltda are working together to use sugar cane to make Polyethylene at a new plant in Brazil. The facility will have an annual production of almost 800 million pounds of PE and is expected to begin production in 2011. This project is described as the “first worldscale polyethylene facility that will use a renewable feedstock”. The advantage of this project is that the polyethylene produced will be the same Dowlex PE that is currently made around the world. The output of this plant will likely go to the Brazilian market, which is growing.
2. Meanwhile, Braskem SA of Sao Paulo, Brazil, is also using sugar cane as the starting material for PE. The company currently converts sugar cane into ethanol. Then the firm converts ethanol into ethylene and in turn polymerizes that into HDPE resin. Braskem claims they currently produce enough of the “green polyethylene” for commercial development. By year 2009 the company expects to be operating an industrial scale plant with annual capacity of 440 million pounds. The material’s properties will be similar to HDPE manufacturing from petroleum derivatives.
3. Mitsubishi Chemical Corporation of Tokyo Japan has developed a new biodegradable plastic. They claim it can outperform PLA (polylactic acid). The new material tradenamed GS Pla is a polybutylene succinate. It is flexible, has high heat-seal strength and is permeable to oxygen and moisture. It is completely biodegradable and does so faster than polylactic acid in soil. It is more flexible and has higher tensile elongation and notched izod impact than PLA according to Mitsubishi. GS Pla can be injection-molded, cast as a film, vacuum formed, or blow-molded. It is recently introduced in Japan where it is currently finding use in agricultural applications. It is also able to be formed into a fiber, suggesting non-wovens and synthetic papers as uses. Mitsubishi’s MC Research and Innovation Business Unit is introducing GS Pla in America. The polymer has potential to be made even more environmentally-friendly by basing the monomer on biological feedstocks such as corn. For more information, call 310-373-4196 or e-mail Ken_Tasaki@m-chem.com.

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Process Developments

Recirculator Technology Introduces Second Generation “Elongator Technology”

Since 2000, Randcastle Extrusion Systems, Inc has pioneered an innovative extrusion screw technology – a recirculating elongational mixer called the “Recirculator”. This screw design achieved single screw results that competed favorably with twin screw technology especially in nano-scale compounding and specialty applications. At the same time, the “Recirculator” retains the traditional single screw advantages over twins—high stable pressures and low cost. Earlier this year Randcastle created a new generation of compounding screw using some of the same principles called the “Recirculator” to differentiate the new design which has been called the “Elongator”. The “Elongator” retains the key compounding principle—multiple elongational flow fields—and increases the forwarding for higher output. This has the additional advantages of high

output venting and decreased residence time. The “Elongator” has the twin competitive compounding technology and adds multiple thin film venting technology. The forwarding decreases the residence time, and this is beneficial for thermally sensitive materials and moisture sensitive materials.

For more information contact Randcastle Extrusion in Cedar Grove NJ at 973-239-1150 or sales@randcastle.com

Business Models...

Alliances may make sense for processors addressing changing customer needs...

An interesting business model has been announced by two plastics injection molders. GW Plastics (headquarters in Bethel VT) and ABA-PGT (headquartered in Vernon CT) have announced a working relationship for gear systems and integrated motion –transfer systems around the world. The alliance will serve automotive, office equipment, appliance, health-care and other markets. GW Plastics has done gear development in the past but is well known for its technical molding. About 90% of ABA-PGT’s sales are involved in gears and similar devices such as pulleys. Customers have asked them to offer a greater level of support as they have expanded manufacturing locations around the world. The alliance combines three facilities in the United States and China. The partnership offers six US injection molding operations and one each in Mexico and China with a total of 200 injection presses.

Typical applications for the alliance include window lift controls for vehicles, drug-delivery systems and hospital equipment for the medical industry, irrigation systems and office equipment. This move by the two firms represents an approach to growing with your customers while sustaining your core competencies. Perhaps there is an example others can take from this alliance.

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

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