

POLYMERPLACE NOTES

A plastics technology newsletter

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Machinery statistics down, Material Prices down, Energy costs up, AARGH!

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WHAT'S HAPPENING AT POLYMERPLACE.COM?

PolymerPlace was conceived as a platform to position new plastics technology and products. We offer market research, planning and business development programs customized to meet your needs. In the next couple of months we plan to launch an on-

line survey feature/service. This will offer suppliers a means to tap into valuable market information. Register on the site if you want to know when this feature will be available.

We want to keep abreast of new products and services for the plastics application development community. Please add info@polymerplace.com to your e-mail list so that we can receive information about your new products or services.

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FEATURE ARTICLE

MACHINERY STATISTICS DOWN, MATERIAL PRICES DOWN, ENERGY COSTS UP, AARGH!

We recently attended the Plastics Encounter in Cleveland, Ohio sponsored by *Plastics News*. Many of the presenters had gloomy news about the state of the Plastics Industry. In spite of figures that would indicate the US economy is growing at a 2% rate, the Chemicals and Plastics Industry is not seeing any growth. The prolonged slowdown in automotive and a nearly dead telecommunications and electronics industry has taken its toll. Capital equipment and manufacturing have been the hardest hit. SPI who is revitalizing its machinery and resin statistics gave a presentation at the Plastics Encounters that demonstrated how dismal plastics machinery sales are in 2001. In all categories of equipment there is a definite drop- anywhere from 11% to 42%. Moldbuilding is also down significantly. One speaker commented that there are approximately 2,500 mold-making establishments in North America. He predicted that half of these would not survive. The CIT Group of NJ forecasted that capacity utilization at processors would average about 74%. Any number below 80% is an indication that people have stopped buying.

Most chemical and plastics firms expected shipments to pick-up in the second quarter. In recent weeks we have spoken with a number of industry companies who have more or less written off 2001. And prices for materials that already deteriorated going into 2001, dropped even further in the second quarter. It is possible that prices could drop more before demand picks up. Resin producers have already had to cope with rapidly rising feedstock prices in markets that are shrinking as rapidly as feedstock prices are rising.

The slowed economy in the US is beginning to have a marked effect on economies in Europe and Asia. In Europe, for instance, Commerzbank recently reported that chemicals production volumes grew by only 0.3% on average in the first quarter. This data supports the fact that the slowdown in the US is now having an effect on Europe. High oil prices, high energy and gasoline prices have increased costs dramatically. Dot com failures and the aftermath of Y2000 preparation has flooded the market with loads of used equipment, which has placed computers and peripherals in less demand.

Bayer Corporation, who announced in March that it expected double-digit growth in 2001, had a very disappointing first quarter. BASF met its first quarter earnings forecast but has not projected the rest of the year. Dupont's first quarter earnings dropped 37%. Dow Chemical's first quarter earnings fell 55% and Nova Chemicals posted a loss of \$10

million for the quarter. GE Plastics had a flat first quarter when compared to the year 2000.

But there is good news in all of this...Now is a good time to do market research and real strategic planning. When times are good it is easy to put off such highly analytical and soul-searching endeavors. If you are managing to keep your head above water, use this down time to plan for your company's health and growth when the demand picks up. Because demand will pick up! Manufacturing is decidedly changing and this recession in manufacturing will weed out the weak. Now is also a good time to explore ways to improve your efficiency and time to market in your business. Do you have the right products and services for your customers?

POLYMER END-USE MARKETS

TRANSPORTATION

Last month we covered **auto color trends** in North America. **In Europe**, automotive coatings are being looked at to provide more than style. They are interested in recyclability and multi-functionality. Automotive coatings should offer more than aesthetics and corrosion resistance. For example the paint could store solar energy and transfer heat or have reflective properties that could make the car more visible at night improving safety. The BASF Coatings group predicts that blue and silver will remain important colors in Europe. Blue, all shades of green, warm yellows, brilliant yellows, intense reds, dark red, black and gray will be used in future vehicles. Tropical colors that are intense and bright represent a hot new area.

In Japan, there appears to be the meeting of the old and new: analog and digital, East and West, traditional and contemporary, future and retro. Such opposites are being seen in the new car designs. This is carried out in the appearance through combinations of metals and new materials. The color palette includes: whites, blacks with slight color shifts and deep tones, creamy light yellows, bright turquoise and blues ranging from pale shades to deep tones.

Note: Information for this article first appeared in *Plastic Daily News* available for subscription through the Polymerplace.com site.

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Johnson Controls Inc. has just become a supplier of complete car interiors. It recently **launched a cockpit module assembly** operation to supply Daimler Chrysler's AG's Jeep Liberty. Johnson Controls already makes door-panel modules, overhead modules and seating systems. JCI along with its competitors wants to eventually oversee the design, look and feel of vehicle interiors-coordinating the work of dozens of suppliers.

Within three to four years a carmaker could turn to a company like Johnson Controls, provide it with guidelines in terms of the prices of the total interior package and target customers, and then ask them to come up with recommendations.

The cockpit has long been considered the most complex part of the vehicle interior.

The Liberty Cockpit is based around a polycarbonate and ABS Instrument panel molded by Intertec Systems, a joint venture of JCI and Inoac of Nagoya, Japan. The cockpit is delivered complete to Toledo, Ohio with a soft-touch painted surface. Intertec was able to decrease the amount of steel in the panel by molding structural capabilities into the thermoplastic substrate. More than 35 companies supply some element of the cockpit. JCI must put the components in place to meet the customer's specific order. JCI has 204 minutes to deliver a completed module to the Liberty production line.

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A new type of **protective window glazing** is now available. The window is currently being used for side and rear windows of General Motors' Impala police vehicles. Kerr Industries Ltd produces the windows using glass from PPG Industries and a PVB (polyvinyl butyral) interlayer from Solutia. The PVB interlayer offers significant safety benefit in that it makes the window resistant to shatter and very difficult to break. "Enhanced Protective Glass" (its name) is also a deterrent to theft and vandalism. The PVB is laminated between ordinary automotive window glass under heat and pressure.. Kerr claims "Enhanced Protective Glass" has insulating qualities as well which would contribute to interior comfort.

PACKAGING

EarthShell Corp. of Santa Barbara, California is testing a hot beverage cup that is made from limestone and starch-based biodegradable polymer. EarthShell hopes to displace polystyrene foam and paper cups for hot drinks and will test the cup with a regional restaurant chain.

Several years ago EarthShell got approval from McDonald's to proceed with test marketing of a biodegradable clamshell package for Big Macs. Subsequent to that announcement, EarthShell and DuPont's Polyester unit signed an agreement to jointly develop and market additional forms of biodegradable food packaging.

EarthShell, who uses natural limestone and potato starch to produce its biodegradable polymers, says the polymer offers similar insulating properties as polystyrene foam and improved heat retention properties over paper.

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Tekni-Plex, Inc. in Somerville, New Jersey, has introduced Novinex® films, a family of **multilayer packaging films containing moisture barrier layers of cyclic olefin copolymer (COC)**. The films can be used to make thermoformed packaging elements, such as trays, blister packs and lids, for pharmaceutical, personal care, food and other products.

Novinex films are coextruded with a core of Topas® COC from Ticona and outer layers of polypropylene. Compared to films that have a moisture barrier made of polyvinylidene chloride (PVDC) or fluoropolymer, they offer excellent moisture barrier and clarity and high film yield per pound of resin. As coextruded films, they also are less likely to be contaminated than laminated films.

Michael Cain, new product development manager at Tekni-Plex. says that his company developed the new Novinex film to replace moisture-barrier, vinyl-based films used in thermoforming. It runs at similar speeds and has similar forming characteristics to films made with polyvinyl chloride (PVC). In addition, its internal barrier layer remains continuous during thermoforming, unlike the PVDC coated on PVC film that can crack as the film stretches during forming." To contact Tekni-Plex 908-722-4800.

There are three grades of Novinex available; each corresponds to COC layers with thicknesses of 20, 14 and 10 mils, respectively. The thicker the COC layer, the less permeable the package is to moisture.

Topas COC (ethylene-norbornene COCs) meets U.S.P. Class VI requirements and has received U.S. Food and Drug Administration (FDA) Drug and Device Master File numbers. A FDA Food Contact Substance Notification provides for their use in direct

contact with all food types under all conditions of use.
For more information on Topas contact Ticona at 1-800-833-4882 or www.ticona.com.

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CONSUMER

Cargill Dow introduced their PLA product called Nature Works in the spring of 2000. They indicated at that time one of their target markets was in the fiber area. Cargill Dow and fibers producer Unifi are making progress towards developing fabrics made from NatureWorks **fiber yarn, which is produced entirely from annually renewable sources**. Unifi says it has achieved high quality and dye uniformity in package dyed air jet textured yarns made from natural fibers. One of the application areas for this fiber would be in upholstery. Unifi has been successful in achieving commercially acceptable quality and consistency levels across several yarn counts according to Lee Gordon, their VP of Development. They have achieved great hand and performance results from the one denier per filament yarn, e.g. in fleece applications. Gordon believes that a true micro denier product will soon be possible.

According to Cargill Dow, the major benefits of NatureWorks fibers are strong resiliency, good wicking performance, UV resistance and stain removal.

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NEW POLYMER DEVELOPMENTS

Akulon Ultraflow™ is a **new PA6 product line from DSM Engineering Plastics**. Akulon Ultraflow is proven to improve melt flow in glass reinforced and unreinforced PA6 grades by up to 80%. The material can reduce injection molding cycle times by up to 25% in comparison to standard PA6 grades, with no significant loss of mechanical properties. The product is offered in unreinforced, 30%, 40%, and 50% glass fiber reinforced versions.

The superb melt flow improvements of Akulon Ultraflow are the result of DSM Engineering Plastics' proprietary method of melt flow improvement. The improved flow level of Akulon Ultraflow, in comparison to that of standard PA6 grades, translates to important benefits like cycle time reduction, freedom of design, improved surface appearance, and lower molded-in-stress and warpage combined with an excellent retention of mechanical performance levels.

The mechanical properties of Akulon Ultraflow are similar to that of standard Akulon PA6 grades. These grades can easily replace equivalent PA66 grades. Akulon PA6 grades, compared to PA66 grades, are easier to process (due to the broader processing window), have higher weld strength after welding operations, better toughness, and better surface appearance. Examples of application areas for Akulon Ultraflow include the lawn and garden industry for use in edgers, trimmers, and blowers. In addition, Akulon Ultraflow is being applied in automotive applications under-the-hood and for appearance parts.

For more information on Akulon Ultraflow, please contact Lisa Avrit by e-mail at lisa.avrit@dsm.com or by phone at (812) 435-7735.

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GE Plastics introduced Xylex™, a line of polycarbonate/polyester alloys, last month. The markets for Xylex resins include telecommunications, consumer electronics, eyewear and consumer housewares. The first major application for Xylex is in riding glasses produced by Dragon Optical of Carlsbad, CA. The glasses are designed for

skateboarding, biking, snowboarding and other action sports. Other potential Xylex applications include mobile phone covers, computer monitors, ski bindings and face shields. According to GE, Xylex will allow designers to more aggressive in their designs and graphics.

GE Plastics is producing Xylex at plants in Mount Vernon, IN., and Bergen-op-Zoom, the Netherlands. GE hasn't decided on a location or a timetable for Asia at this time. The first-year market for Xylex is expected to be between 5 million and 10 million pounds and is planned to sell for more than \$2.00 per pound. The ratios of polycarbonate and polyester in Xylex can be altered to meet specific applications. Higher polycarbonate levels will offer better heat resistance, while higher polyester levels would improve chemical resistance and flow,

GE Plastics now has introduced two new products in the past three months. It also introduced Noryl PPX™, a polyphenylene oxide/polypropylene alloy, in March.

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Eurotech, in Washington, D.C., says it has made a major breakthrough in developing a **polyurethane foam made without the use of any isocyanates**. Eurotech, a materials development company, calls it HNIPU™ (hybrid non-isocyanate polyurethane). It says the patented process actually produces a polyurethane with improved performance properties over standard polyurethanes and it eliminates the health and safety issues associated with isocyanates.

Eurotech claims that the fundamental chemistry of HNIPU can be widely used as a basis to produce up to 50 oligomers which in turn, can create up to 200 different compounds. Eurotech believes that the material can be used in bumpers, fascia, seating, steering wheels and even coatings and sealants for the Auto Industry.

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Kuraray has recently announced will expand production capacity for its EVAL EVOH (ethylene vinyl alcohol) copolymer resin in Flanders, Belgium from 12,000 tons per year to 24,000 tons per year. EVAL is a specialty copolymer unique to Kuraray. The company says the expansion is needed to meet growing demand for the resin, which is used as a gas barrier layer, primarily in food packaging.. It is also developing non-food applications for the material, particularly in blow molded high-density polyethylene fuel tanks where it is used as a barrier layer to reduce the permeation of hydrocarbons. This product is part of a line of products that Kuraray describes as eco-friendly products with unique technology. Plans are also underway to increase production by 12,000 tons in Texas, USA following the expansion in Europe.

NEW PROCESS DEVELOPMENTS

Textron Automotive, a leading supplier of automotive components and systems, is making its new **Xtralite™ process available with licenses of its IntelliMold™ Technology**. The newly developed XtraLite technology enables licensees to significantly reduce the weight of injection molded parts without compromising surface quality.

Textron Automotive's IntelliMold™ closed-loop control technology significantly improves performance and productivity for injection molders. Adding XtraLite to Intellimold will enable users to achieve weight reductions that are comparable or even better than current microcellular foaming processes, but at a fraction of the investment. Xtralite does not require machine or mold exclusivity, or the use of additional equipment. Probably the

most significant benefit Xtralite delivers is the ability to use it to mold parts that require a class-A surface.

Intellimold is the first injection molding technology that measures and controls pressure and temperature inside the mold cavity. Intellimold is applicable in a wide range of industries, including medical products, automotive, telecommunications, electronics, aerospace, appliances, and sporting goods. Intellimold reportedly reduces cycle times, scrap and rework, shrink, warping and sinks, while offering improved surface quality and repeatability. More information on Intellimold and Xtralite can be found at www.intellimold.net.

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Milacron Inc. announced it would establish a **showroom called the Energy Resource Center in Cincinnati to demonstrate all-electric injection molding machines.** The company says that all-electric machines are two to four times more energy efficient than conventional machines. Energy use for plastics production in the US could be potentially cut by 8.9 million megawatt hours of electricity if processors converted to electric machines.

A goal of the program is to make all-electric machine technology more accessible and more affordable. Milacron is directing its message to top corporate management, financial executives, facility designers, utilities and energy aggregators and brokers.

Injection molding is an energy intensive process that by the company's estimate eats up 4 million megawatt hours of electricity per year in just the top five plastics molding states – Ohio, California, Michigan, Illinois and Pennsylvania.

One megawatt can power about 1,000 homes. All-electric machines only use energy when they are actually doing work, unlike their hydraulic counterparts that use energy even when they are idling. All-electric machines offer other environmental benefits such as elimination of hydraulic oil, reduced noise and lower air conditioning costs.

For more information on all-electric injection molding machines, go to www.all-electricsaves.com

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

www.Polymerplace.com

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