

PolymerPlace Notes

A plastics technology newsletter

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IN THIS ISSUE

- **FEATURE: Peter F. Drucker – An Authentic American Genius, by Roger F. Jones**
- **FEATURE: New Business Model for Specialty Plastics - BASF**

Polymer Markets

- **Packaging** NOVA Chemicals Corporation announced the introduction of an advanced ARCEL 730 moldable foam resin .
- **Defense/Military** You won't need super powers to repel bullets and knives, thanks to a new technology for dual protection vests that combines two leading products.
- **Personal Care/Toys** GLS Corporation, a leading compounder and marketer of TPEs has introduced VERSAFLEX ® OM 9-802CL.

Polymer/Material Developments

- Celanese Corporation announced that it has signed an agreement to sell its cycloolefin copolymer (COC) business to a joint venture of Daicel Chemical Industries Ltd. and Polyplastics Co., Ltd.
- Teknor Apex has new matte finish Flexalloy ® vinyl elastomers

Processing Developments

- MBA Polymers Inc. is the world's most advanced recycler of plastics used in durable goods.

Design and Product Development

- With help from DSM Somos ProtoFunctional stereolithography (SL) resins, European rapid prototyping service bureau Materialise NV is expanding capacity for its large-frame SL machine

What's New at Polymerplace

In November we attended the first "Radiation Processing of Polymers" conference that was sponsored by SPE (Society of Plastics Engineers) held in Philadelphia, PA. The one-day conference was organized and sponsored by the Radiation Processing of Polymers Special interest group. A variety of presentations were made covering a range

of radiation processing topics. In next month's newsletter we will summarize the topics that were addressed.

We hope you have a wonderful holiday season and a prosperous 2006.

Peter F. Drucker – An Authentic American Genius by Roger F. Jones

Peter F. Drucker died on November 11, 2005, at the age of 95. *The Wall Street Journal* carried two tributes to this great man, calling him “the most influential management thinker of the past century.” Peter Drucker was much more than a management consultant or a business school professor; he effectively defined the role of modern business management, liberating professional workers from the previously traditional, rigid command-and-control structure. He wrote dozens of books, but perhaps his most famous ones are two that were published in his early years (the 1960s), *The Effective Executive* and *Managing for Results*. A man of incredible vitality, he was still actively working full-time at Claremont University as a professor up to his death. I had the singular honor to meet Dr. Drucker in his home two and a half years ago, to obtain his permission to use some of his ideas in a book I was writing. Our brief meeting ended when a group of students arrived for a seminar that he would lead. It was a moment of inspiration I will never forget.

Professional employees, or in Drucker's terminology, “knowledge workers,” need a different form of management in order to obtain the full benefit of the contributions they can make. Executives cannot simply order knowledge workers to be creative, they have to provide a system whereby these individuals can interact and contribute to each others' thinking processes in order to create and develop genuinely new technologies. Drucker also distrusted egotistical, charismatic executives, but preferred genuine team leaders, who see their role not as ordering people around but as setting objectives and then facilitating workers' efforts to meet those objectives. Much of the American leap in technology development over the past 50 years must be credited to his ideas of how to manage this area effectively.

Drucker created the concept of management by objectives, something that is so widely accepted today that we have forgotten that the very idea did not exist 50 years ago. He made a point of telling his readers that *there is not such thing as a “profit” – there are only “costs.”* He noted that the difference between sales and costs is not a profit, but rather the cost of capital. He saw no conflict between profits and social responsibility because only the business that fails to earn the cost of capital and goes bankrupt is one that lacks social responsibility – would that today's business leaders had the backbone to say this in public more often. Drucker also had the courage to attack excessively high executive compensation because it is unnecessary to create over-the-top pay packages to attract, hold, and reward good executives. Unfortunately, these packages tend to become highly publicized and give all executive compensation a bad name.

Another great insight that Drucker had was that an emphasis on high profit margins on sales is plain wrong. Sales margins are an inconclusive and weak indicator of a company's financial health. Far more important is return on invested capital and cash flow. High margins on sales invariably attract competition and are usually short-lived. Customers can calculate what their supplier's margins are and will seek alternative sources – seeking to maximize sales margins leaves a bad taste in every customer's

mouth (see the column on the editorial page of the 11/14/05 issue of *Plastics News*, for example).

Peter Drucker enjoyed a long and productive life – American businesses (and non-profit organizations, too) – have been immensely benefited by his contributions to the philosophy of management, as has our society as a whole. He was truly a visionary and an authentic American genius.

New Business Model for Specialty Plastics

BASF has a new marketing model for specialties in its operating division for styrenics. The company's new global business unit Specialty Polymers & Specialty Foams brings together products which have particular properties that distinguish them from high-volume standard plastics. These products are supplied together with ancillary services. The unit includes thermoplastics such as Terluc® (MABS), Luran® S (ASA), Terblend® N (PA/ABS), Terluran® HH (high-temperature ABS) and Styroflex® (SB), and also the specialty foams Basotect® (melamine resin foam), Neopolen® (EPP, EPE) and Palusol® (alkali silicate sheet). The product line also includes the biodegradable materials Ecoflex® and Ecovio®.

BASF undertook a customer survey to establish the types of service and other additional features needed by processors of specialty plastics if they are to achieve success in their markets. The four key factors in the marketing of specialties are innovation, partnership, reliability and diversity. "The products often differ considerably in terms of their chemical composition and their uses, but what specialty foams, specialty plastics and biodegradable materials have in common is that they give customers an additional advantage, extending beyond on-time delivery of high-quality pellets" says Michael Stumpp, director of the business. "And this is the key to long-term success".

Unlike standard plastics, specialties are showing average yearly growth of at least eight percent. Much of this growth derives from the Far East, so BASF has set up the new business unit on a global basis, with a 10 percent target for annual growth of its products. This growth in the market is to be accomplished by combining these materials with industry-specific service packages, technical support, or specialized colors. The aim is that the entire package will always help customers to achieve a significant system-cost saving.

Innovation, partnership and approach are key to this new model. BASF recently began marketing of the first plastic based on renewable raw materials - Ecovio. Ecovio is composed of two completely biodegradable components: Ecoflex and polylactic acid (PLA). The source of PLA is the renewable raw material maize (corn). The main advantage of Ecovio is that the material is ready-to-use, so customers can use it directly for extrusion of biodegradable films - with no need for any extra blending or preparation work.

In another innovation, Basotect foam - previously mainly used for soundproofing - is now being used as a cleaning material. And the IR-absorbent version of Neopolen foam won a design prize for BASF customer Besto for its use in a new generation of water heaters. Specialties are mainly used in innovation-driven markets, so the business unit intends to achieve 20 percent of its sales revenue through innovation.

The PermaSkin® system is an example of successful customer collaboration right through to the final product. BASF worked with the English technology company Permacoat to develop a low-cost production method for architectural components such as wooden doors: instead of the lacquering process, the component producer can laminate the components with a film composed of high-tensile-strength Luran S, therefore eliminating the complicated painting step. In this case BASF does not just supply the Luran S but also markets the entire concept in collaboration with its four partners.

The diversity of products and services makes BASF's specialties valuable across entire industries. An example is the product line available to car manufacturers, which includes not only the specialty thermoplastics Luran S, Terluran HH and Terblend N for interior and exterior applications but also the specialty foams Basotect and Neopolen, which contribute to applications under the hood in relation to soundproofing, energy absorption, and for pedestrian protection. Another area of interest is the high growth level of the worldwide construction industry. And a specific service package has been devised for transparent products in medical technology.

The generic trademark PlasticsPlus has been introduced by the new business unit for its products with the aim of giving a recognizable face to the comprehensive range of products and services available from styrenics specialties.

Source: [BASF](#)

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Polymer Markets

Packaging

NOVA Chemicals Corporation announced the [introduction of an advanced ARCEL 730 moldable foam resin](#), featuring reduced bead size. This innovation enhances performance and expands the range of applications for this leading inter-polymer packaging material. ARCEL combines the toughness of polyethylene with the processability of polystyrene and delivers value to the entire supply chain by reducing packaging size and improving space and cube efficiency.

A 25% reduction in bead size places ARCEL resins in a size range similar to that of expandable polystyrene (EPS) beads, enabling finer molding detail, thinner part wall thickness and reduced cushion size. It also delivers greater manufacturing efficiencies through easier and faster mold fills and reduced molding scrap. Conversion to the new ARCEL 730 will be seamless from a tooling and physical properties perspective because the smaller beads contain the same polymer base as previous versions of ARCEL. This newest version of ARCEL 730 is expected to be globally available by January 2006.

Source: [NOVA Chemicals](#)

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Defense/Military

You won't need super powers to repel bullets and knives, thanks to a new technology for dual protection vests that combines two leading products: Dyneema® high-performance polyethylene fiber from DSM for ballistic protection, and Steelskin® steel cord material from Bekaert for stab protection. Combination of these two materials offers body armor manufacturers new market opportunities by providing the lightest possible solution for

dual protection vests within the same class of protection, compared to competitive materials and technology. Law enforcement officers benefit from enhanced flexibility, which increases comfort and ease of movement.

Increased street violence often means a double threat - from both guns and knives - that conventional body armor does not fully meet. By combining Dyneema® and Steelskin® to meet customer requirements and local standards, manufacturers can develop specialized vest designs that provide superior performance, and flexibility while remaining exceptionally light weight.

Vests made with Dyneema® super-strong fiber provide superior ballistics protection at an extremely low weight. Together with high flexibility, this leads to increased comfort for the user. Steelskin®, based on Bekaert steel cord fabrics, provides stab protection against edged weapons.

Mr. Patrick Hermans, Product Market Manager Bekaert claims that Steelskin® actually blunts and damages a blade with each thrust, while Dyneema® provides exceptional energy absorption to stop the damaged knife and to minimize trauma. This unique concept meets the double threat posed by criminals, rioters and gangs armed with knives and guns."

Sioen Ireland is the current supplier of body armour to An Garda Siochana, Ireland's police. This was the first time that An Garda Siochana chose a dual purpose armour to protect against ballistic and stab threats The armour provided by Sioen is PSDB certified to protection level HG1A/KR1 (British standard) and is the lightest system currently available on the market. The Sioen armour is extremely thin and flexible and has been very well received by the force, as it offers excellent wearing and protection attributes.

Vests based on the new combination of Dyneema® and Steelskin® was displayed at the Milipol Exhibition in Paris on November 22-25, 2005.

Personal Care/Toys

GLS Corporation, a leading compounder and marketer of TPE (Thermoplastics Elastomer Compounds) has introduced VERSAFLEX® OM 9-802CL. What sets this new TPE apart from all others is its clarity and soft touch feel with the ability to provide excellent adhesion to PC, ABS, PC/ABS, and COPE at a competitive price.

According to GLS, the new TPE overmolding grade also offers easy processability and clarity at a low cost which until now have only been found in more costly performance grades.

With a Shore A hardness of 40, the new soft touch, overmolding TPE compound additionally offers easy processing and colorability. VERSAFLEX OM9-802CL requires no drying and the clarity allows for vibrant colors. A high match color consistency can be assured by ordering precolored compounds from GLS. Otherwise, typical loading from 1% to 5% of color concentrates are recommended. GLS Corporation specializes in the manufacture of application-specific custom formulated soft and ultra-soft thermoplastic elastomers (TPEs) for injection molding and extrusion. GLS has supplied specialty TPEs to the industry since 1979, and is recognized as a global leader in TPE technology solutions.

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Material Developments

Celanese Corporation announced that it has signed an agreement to sell its cycloolefin copolymer (COC) business to a joint venture of Daicel Chemical Industries Ltd. and Polyplastics Co., Ltd. As announced earlier, all production facilities and employees will be transferred to this joint venture, which will be headquartered in Germany. Daicel and Polyplastics will hold interests in the Joint Venture of 55% and 45% respectively.

Financial terms were not disclosed. Final conclusion of the deal is expected at the end of 2005, pending approval by regulatory authorities.

The COC business has approximately 100 employees at production and research facilities primarily in Oberhausen and Frankfurt, Germany, as well as in the USA.

Celanese subsidiary Ticona markets COC under the brand name Topas®.

Topas COC has had successful applications in pharmaceutical packaging and optical media but was really not a good fit with the majority of Ticona's product line. Hopefully its new owner will be able to help Topas® meet its market potential.

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Teknor Apex has developed new products in its Flexalloy® family of vinyl elastomers that provide a low-gloss finish while retaining the performance advantages of Flexalloy compounds over standard TPEs (thermoplastics elastomers) and flexible vinyl. The new compounds, the Flexalloy 9750 series have a low gloss surface that may be aesthetically desirable, as in consumer products and furniture trim. The anti-blocking properties ease handling of films such as bin liners, flexible hose and weather stripping. Flexalloy products surpass olefinic and styrenic TPEs in tear and strength and resistance to flexural fatigue. They also have much better resistance to oils and fats and wider formulation flexibility according to Teknor. They are available in shore A hardnesses from 35-80.

For more information contact: 401-725-8000 or visit www.teknorapex.com

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Process Developments

When Mike Biddle launched a company to recycle and sell plastic from complex waste streams like junked electronics and automobiles, he says, "a lot of people, including some of my board members, thought I was nuts."

Today Biddle's dream is finally taking shape--a mere 11 years after launch. [MBA Polymers Inc. is the world's most advanced recycler of plastics](#) used in durable goods. MBA raised \$30 million to develop its patented technology for extracting and recycling plastic from trashed computers, printers, mobile phones, TVs, VCRs, fax machines, refrigerators, vacuum cleaners and other forms of e-waste.

That's good news, since e-waste, of which plastic is a significant part, is accumulating rapidly--choking landfills and creating toxic plumes when incinerated. Some 100 billion pounds of plastic are used in the U.S. annually, yet only 2% to 4% of complex plastics are recycled, compared with 95% for steel and aluminum. That's because it's difficult to identify and sort engineered plastic by type and grade. At its 50,000-sq.-ft. Richmond plant, MBA figured out how to do it more affordably and efficiently and on a mass scale. In November, MBA opened the world's largest commercial-scale plastic-recycling facility for durable goods, in Guangzhou, China. The plant can process 40,000 metric tons of plastic annually. Another plant is set to open in Austria next year.

With rising oil prices, a consumer push for greener products and the growth of take-back legislation--which pressures manufacturers to recycle their end-of-life products--demand for the less expensive recycled plastic exceeds supply.

(From the Dec. 12, 2005 issue of TIME magazine)

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Design and Product Development

With help from DSM Somos ProtoFunctional stereolithography (SL) resins, European rapid prototyping service bureau Materialise NV is expanding capacity for its large-frame SL machines, after more than five years of unprecedented success with the technology.

Materialise's patented "Mammoth" technology (as it is known in-house) produces single-piece prototypes as large as 2100 x 680 x 800 mm, using Somos 9120 and Somos WaterShed 11120 resins exclusively. The resins are used for their particular ability to generate accurate, stable parts which closely mimic the performance properties of production plastics.

Today, "Our strongest demand is for automotive interior and exterior components such as dashboards and bumpers," says Materialise Prototyping Division Manager Bart Van der Schueren. (though the company regularly services a number of other industry sectors). "Large, single-piece SL parts are much more stable and rigid than units comprised of multiple smaller parts. That makes them particularly useful for functional testing."

Van der Schueren credits the use of DSM Somos ProtoFunctional stereolithography resins for much of Mammoth technology's success. "Our ability to offer these parts has been greatly facilitated by the availability of materials—specifically the polypropylene-like Somos 9120 and the ABS-like WaterShed[®] resin," he says.

Though many of Materialise's clients already have their own in-house prototyping capabilities, they often turn to the service bureau when larger prototypes are needed. Such was the case with Plastic Omnium Auto Exterior, a global leader in the design and manufacture of automobile bumpers, fenders, body panels and body modules. In 2003, the company introduced an entirely new design concept of fixing headlights to a bumper instead of onto the vehicle itself. One year later, project leaders needed a functional bumper skin prototype in order to be able to demonstrate the technology to automotive manufacturers. The demonstration bumper was finally made on one of Materialise's Mammoth machines, using Somos 9120 polypropylene-like resin.

"When we had previously needed such a large prototype, we had to make do with hand-assembled parts that took ages to get hold of, as well as a technique that did not allow us to obtain the correct thickness or technical functions," says Robert Jantet, Prototyping Manager at Plastic Omnium. "Today, we have the luxury of getting large SL parts that are much more representative delivered in record times.

Source: DSM Somos

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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 News* and newswires.

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<http://www.Polymerplace.com>

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