

SPE THE SPECIALIST

April 2008

Volume 35

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Section Mini-Tech

TUESDAY APRIL 22, 2008

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Sean Mertes is a Sr. Tech Service Engineer for Ashland Distribution. He has been with Ashland since 1996 and was with a custom injection molder working as a Plastics Engineer prior to joining Ashland. He graduated from South Dakota State University with a BS in Mechanical Engineering and a MS in Industrial Management. Ashland is the North American largest distributor of Thermoplastic resins and as a tech rep is responsible for maintaining business, building new business and training customers.

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Jim Fassett - Sr. Process Development Engineer

Jim began his career in the plastics industry in Indiana at 17 years old, "filling hoppers and sweeping floors". Progressed through various positions in the industry including setup supervisor, floor supervisor, shift supervisor, tooling, parts quoting, sales and sales manager, engineering manager, and quality manager; essentially every position that can be held in the injection molding industry. Became a member of GE Plastics in 1988 as a Technical Development Engineer, responsible for assisting the molder base in solving material, equipment, design and tooling issues in Wisconsin, Illinois, and some Minnesota customers.

The presentation will include best practices and general guidelines with respect to processing, equipment, set-up, trouble-shooting and problem solving. In addition time will be spent discussing screw and barrel design, residence time, radial flow, newtonian vs non-newtonian flow, molecular chains, shot size, shrinkage, decoupled molding and moisture content. Not to mention a few tricks of the trade picked-up over the years.

FOR RESERVATIONS OR QUESTIONS,

email Sean Mertes (sdmertes@ashland.com) or Jeff Voelker (jeffrey.voelker@sabic-ip.com).

If you don't have access to the internet then call Sean Mertes at 612.801.2417

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President Remarks

Paul Rothweilert

You have certainly noticed with each newsletter that the Upper Midwest Section continues to grow in many respects. So let me start by thanking those who are contributing their time and effort to making it happen – THANK YOU!



We keep adding to our membership. Each month, Richard Bopp (S22's Membership Chair) copies me on the "welcome letters" to new members. I have been impressed by the number of new members each month, and the companies they represent. I am looking forward to the meeting the new members and working with them to amplify the growth and fun that we are experiencing.

Speaking of meeting other members, I want to thank everyone that stayed after the February MiniTech for a little networking. While the main-billing is the MiniTech (and they are extremely informative) it was fun to have the chance to meet all of you in an informal atmosphere. I'm looking forward to another networking session after the MiniTech on April 22nd. For those who couldn't stay for the February networking session, make sure to join us for this one!

You will have also noticed the newsletter has grown in valuable content as well. Please make sure to read the new article titled "Considerations for Molders to Supply Medical Device Companies" and the article on bio-materials. Additional articles are under development and will be included in future newsletters, so make sure you keep checking out the newsletter. If there is a topic you would like to see, please contact our (new) Newsletter Editor, Rolly Enderes.

I would be remiss to talk about the growing value of the newsletters and not thank those who have made the newsletter possible. First I want to acknowledge the excellent work of Nancy Kochenderfer. Nancy was the Newsletter Editor for many years and the tireless-engine behind ensuring that a quality newsletter was delivered to you on time. Nancy is handing over the reigns to Rolly with this newsletter. With that, I speak for all of us when I say "Thank you Nancy!"

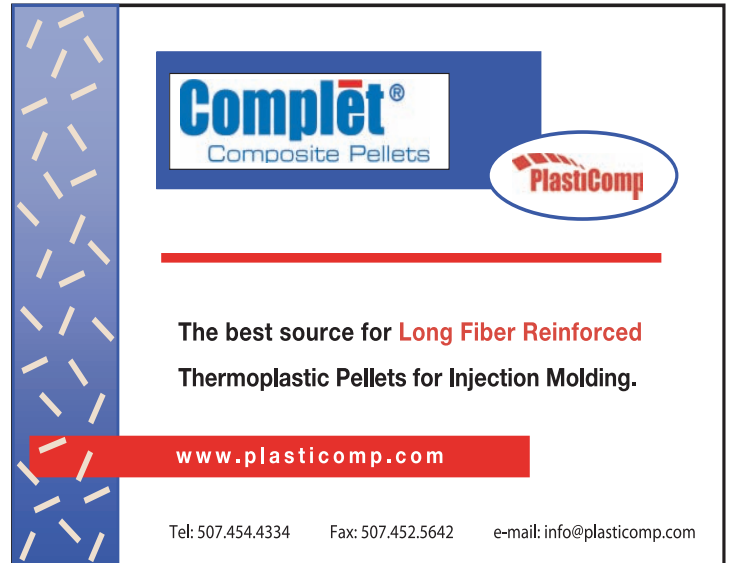
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As we head down the home stretch toward our next Mini-Tech at Hennepin Technical College on April 22, 2008, I'd like to welcome the newest Society members to join our Upper Midwest SPE Section (S-22):

Dawn McArthur	Dyneon	St. Paul, MN
Justin Norberg		Sioux Falls, ND
Karl Maurer	DuPont Engineering Polymers	North Branch, MN
Robert Small, Jr.		Onalaska, WI
CJ Listle		Madison, WI
Dheeraj Gupta	Beckman Coulter	Chaska, MN
Jason Hanzlik	ComDel Innovation, Inc.	Wahpeton, ND
Mark Jean	ComDell Innovation, Inc.	Wahpeton, ND
Bryan Lindquist		Ramsey, MN
Sonny Larson	Clariant	Minneapolis, MN

Each new member has been sent a welcoming letter and an invitation to take advantage of the 20% discount available for all paid Section members at the upcoming Mini-Tech. Please make sure to introduce yourself to our new members when you next see them at the Mini-Tech or our upcoming meeting.

Our next big calendar event is the SPE ANTEC which is being held in Milwaukee this year from May 5-7th at the Hilton Milwaukee Hotel and Convention Center. It would be fun to have an informal social hour (dutch treat) for all S-22 members, past-members and friends. So, if you're interested, please send me an email at Richard_C_Bopp@NatureWorksLLC.com and I'll see if we can arrange a mutually acceptable time to get together. We'd also like to recognize any Section 22 members who are presenting or moderating any of the technical sessions. So, please include a mention of your participation level, too. Hope to see you at our Mini-Tech and at ANTEC.

ENGINEER II

FOCUS/OBJECTIVES: Technical support of ongoing Fibrex Licensee production. Provide additional support for new Fibrex Licensee production development opportunities from commercialization through stabilization.

JOB RESPONSIBILITIES: The responsibilities below may include, but are not limited to:

Utilize Six Sigma/DMAIC methodologies in the development of technology building blocks for new products and manufacturing processes. (Includes process mapping, process capability, C&E matrix, FMEA, Control plan etc...)

Work with internal and external partners to identify and develop the technologies required to meet requirements as defined by customer. Work effectively in cross-functional team environments.

Use project management discipline to plan and execute work in a manner which permits objectives for safety, time, cost and quality to be met.

Compile documentation such as project documentation, equipment specifications, qualification and validation reports.

Gain experience in materials and engineering to be applied to current and future projects.

Develop and optimize technology in support of existing projects and production contracts.

Support logistics and fulfillment activities

MINIMUM QUALIFICATIONS: B.S. Engineering degree required 3 - 5 years manufacturing experience. Extrusion experience desired. Proficiency in MS Word and Excel. Good Interpersonal Skills, Strong Written and Oral Communication

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Key Responsibilities include:

- Provide technical consultation to others on specifications, statistically valid sampling plans for inspection and acceptance criteria
- Problem solving through classical & experimental design methods
- Provide hands-on technical support for Receiving Inspection personnel as required.
- Responsible for assisting in the development of inspection methods for new materials, components, and sub-assemblies
- Review incoming material and/or in-process rejections and determine appropriate corrective actions.
- Serve as part of auditing teams and as lead auditor for Supplier Quality, as required.
- Follow-up responsibility for Supplier Corrective Actions.
- Assist in the qualification, selection, and development of new suppliers as needed.
- Member of new product development teams.
- Occasional extensive travel to suppliers as required.
- Performs responsibilities required by the Quality System and other duties as assigned or requested.

Education and Experience:

Bachelor's degree in Mechanical, Material or Polymer Engineering with extrusion experience preferred. 5-8 years in medical device or similar industry. Knowledge and understanding of related quality standards including ISO, GMPs, and ASTM. Demonstrates key knowledge of specialized disciplines (experience in principals of mechanical, metallurgical, electrical, etc) which significantly contributes to material quality programs. Knowledge of statistical sampling as well as the ability to interpret technical drawings and geometric tolerances and dimensions is required.

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- Enjoy FREE Refreshments and Entertainment at the Welcome Reception on Monday, May 5, and a Networking Reception on the show floor, Tuesday, May 6.

Visit www.anteconline.com to view preliminary session details or www.plasticsencounter.com for all tradeshow details. Presentation and paper titles will be published on the ANTEC website in February. The ANTEC Advance Program will be posted to the website in February and inserted in your March issue of Plastics Engineering.

Event Highlights

Monday, May 5: Exhibit Hours: 3 p.m.-6 p.m. • Welcome Reception: 6 p.m.-8 p.m.

Plenary Speaker: Ed Barlow, President, Creating the Future, Inc.

"A Journey Through the 21st Century"

Tuesday, May 6: Exhibit Hours: 12 noon-6:30 p.m. • Networking Reception: 4:30 p.m.-6:30 p.m.

Plenary Speaker: William F. Banholzer, Corporate V.P. and CTO, The Dow Chemical Company

Challenges and Opportunities in Future Feedstocks for the Plastics Industry

Wednesday, May 7: Exhibit Hours: 10 a.m.-3 p.m.

Official ANTEC Hotel: Hilton Milwaukee City Center (Headquarters Hotel)
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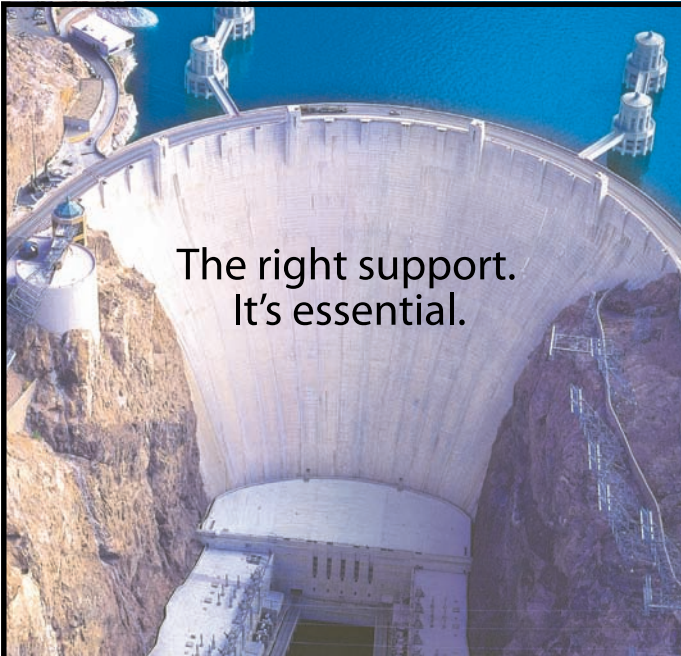
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Presidents Article continued from page 5

I also want to acknowledge our financial supporters, both the companies that have advertised with us for years, and the new advertisers that are coming on board with this newsletter. I encourage all members to make sure our advertisers know you saw their ad in this newsletter. Without them this newsletter would not be possible. (You might also consider thanking Vincent Berger for taking on the role of selling the newsletter ad space.)

Finally, I want to share with you that we are bringing all of this together on a website. On that site you will find articles, reference materials, MiniTech announcements and information on how to get the most out of being a member, in addition to links for relevant information on the National SPE Website. The website is currently under development and should be available by summer. I will keep you posted on its development through the newsletter.

See you at the April MiniTech and ANTEC in May!



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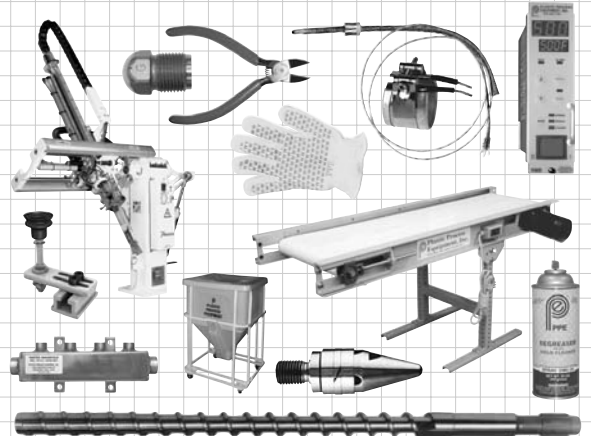


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Councilor's Corner - *Tom McNamara*

The last Council meeting took place on January 25-26 in Savannah, GA. The main agenda items were:

- Honored Service Member (HSM) and Fellows election results
- Governance Elections
- Bylaw reading
- Policy approvals
- Section changes
- ANTEC at NPE 2009

Nine Honored Service members were elected for 2008 and eleven Fellows were elected. In addition, Society officers were elected for the 2008-2009 term, which begins at ANTEC (May 4-8). The new officers are as follows:

- President-elect – Paul Andersen
- Senior Vice President – Ken Braney
- Vice President – Jon Ratzlaff

In addition to these formal offices, the Council elected a new Chair for the Council Committee of the Whole. Brent Strong, Councilor for the Great Salt Lake Section, will hold the position for 2008-2009.

Section changes include provisional status for France, Rock Valley, and Scandinavia – with the anticipated formation of smaller independent Sections for Norway, Sweden, and Denmark. Also a new Section-in-Formation in Turkey was approved.

Some discussion took place on the proposed collocation of ANTEC with NPE in 2009. Council provided a vote of confidence on the concept, which will enable SPE staff to finalize the details of an agreement with SPI.

In the Council Committee of the Whole, a proposal for a Global Technology Library was presented and discussed. The issue is that one of the great

values of SPE membership is access to the new technology that is presented at conferences, ANTEC, EUROTECH, etc. Unless you attend every conference offered, members do not have access to the information. While immediate release of the information would destroy conference attendance, the proposed library could have current conference information added after a pre-established time period. The proposal is to set global standards for conferences that would require the information to be presented in a digital format with an abstract and in Word, PDF, or PowerPoint. This would not only allow SPE Headquarters to easily copy the information into the technical library, but also provide consistency to SPE conferences around the world. More discussion on the details needs to occur in order to implement the proposal.

I continue to work on the Student Activity Committee and our committee is working hard to assure a good experience for the attending students at ANTEC. We have a student reception planned for Sunday afternoon. The student awards luncheon is planned for Wednesday afternoon. Another possible activity for the students would be a plant tour of Bemis Corp in Wisconsin.

Also as a member of the SPE Awards committee, I would like to report that the deadline for submission has passed for the Outstanding Student Chapter (OSC) award, the Chase Plastics award, and the Husky award. All of the results have not been tabulated but we had six student chapters apply for the OSC award, three student chapters apply for the Chase Plastics award, and six Sections apply for the Husky award.

Last, I would like to invite all members to be active and participate in our upcoming Mini-Tech on April 22 at Hennepin Technical College and also make your plans to attend this year's ANTEC, which is May 4-8 in Milwaukee.

ANTEC

May 4 - 8, 2008 • Milwaukee WI

Biodegradable & Biobased

Defining “Biodegradable” and “Biobased” ...and “Compostable”

Reprinted by SPE (in February 2008 Tech Focus – Plastics 101) with the permission of the Biodegradable Products Institute (BPI)

Many are confused by the terms “biodegradable” and “biobased.” They do not mean the same thing and cannot be used interchangeably. The fact is that not all materials that come from renewable or biobased feedstocks are biodegradable. Manufacturers, and others, need to use the appropriate ASTM tests to pinpoint the percentage of a product that comes from biobased resources. Also, they must use the correct ASTM specifications to determine if the products are biodegradable or compostable.

BIOBASED

Words like *biobased* and *renewable* refer to the sources of the raw materials for products. Wood, corn, soybeans, and grasses are all forms of renewable or biobased feedstocks. The agricultural crops like corn and soybeans can be harvested every year and are *annually renewable*. These feedstocks “renew” themselves on a predictable timeframe, ranging from annually in the case of grains or grasses to as long as a human lifespan in the case of lumber from sustainably managed forests. Think of these products as *biologically based*.

The American Society for Testing and Materials (ASTM) defines a biobased material as *an organic material in which carbon is derived from a renewable resource via biological processes. Biobased materials include all plant and animal mass derived from carbon dioxide recently fixed via photosynthesis, per definition of a renewable resource.*

But note: just because a product is labeled “biobased” or contains “renewable resources” does not mean that it based entirely on renewable resources. Rather, many of these products combine petroleum-based materials with naturally based ones, in order to provide the properties that consumers desire, while at the same time reducing the overall amount of synthetic polymers contained in the product.

The United States Department of Agriculture (USDA) has the task of defining the percentage of renewable resources in a product that is necessary in order for the product to be called “biobased.” ASTM D6866-“Standard Test Methods for Determining the Biobased Content of Natural Range Materials Using Radiocarbon and Isotope Ratio Mass Spectrometry Analysis”- is a method that accurately determines the percentage of the product that comes from renewable resources.

BIODEGRADABLE

If, under the right conditions, the microbes in the environment can break down a material and use it as a food source, that material is called *biodegradable*. Biodegradation is a process that can take place in many environments, including soils, compost sites, water treatment-facilities, marine environments, and even the human body. This process converts carbon into energy and maintains life. Not all materials are biodegradable under all conditions. Some are susceptible to the microbes found in a wastewater-treatment plant, while others need the conditions and microbes found in a compost pile or in soils.

For plastics to biodegrade, they must go through a two-step process. First, the long polymer chains are shortened or “cut” at the carbon-carbon bonds. This process can be started by heat, moisture, microbial enzymes, or other environmental conditions, depending upon the polymer. This is called “degradation,” and you know it is taking place because the plastics become weak and fragment easily. This first step is *not* a sign of biodegradation!

The second step takes place when the shorter carbon chains pass through the cell walls of the microbes and are used as an energy source. This is biodegradation-when the carbon chains are used as a food source and are converted into water, biomass, carbon dioxide, or methane (depending upon whether process takes place under aerobic or anaerobic conditions).

WHAT IS A COMPOSTABLE MATERIAL?

When products are designed to be composted, they should meet ASTM Standard D6400 (for Compostable Plastics) or ASTM D6868 (for Compostable Packaging). Products that meet the requirements in these two specifications will:

Disintegrate rapidly during the composting process (so no large plastic fragments remain on the composter’s screens when the process is finished).

Biodegrade quickly under the composting conditions.

Not reduce the value or utility of the finished compost. The humus manufactured during the composting process will support plant life.

Not contain high amounts of regulated metals.

WHERE CONFUSION EXISTS

Some consumers and manufacturers believe that if a material is based on a renewable resource, then it must be biodegradable and compostable. This is not true. Some natural materials do not biodegrade; for example, some forms of cellulose are not biodegradable. The only way to know if the material or product is biodegradable or compostable is if it meets ASTM D6400 or D6868.

Conversely, many people believe that materials based on petroleum will not biodegrade or compost. Again, this is not the case. There are synthetically based plastic resins that will biodegrade and compost, just like paper and yard trimmings. All these materials meet ASTM D6400 or D6868.

Tech Focus thanks the Biodegradable Products Institute (BPI) for permission to use this article. If you have questions or comments, email the BPI at info@bpiworld.org or visit the website www.bpiworld.org



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Materials (choose all that apply)
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 Film Polystyrene
 General Interest TPEs
 Nylon Thermoset
 PET Vinyls
 Foam/Thermoplastics No Interest

Process (choose all that apply)
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Upcoming Conferences, Seminars and Events

April 13-15, 2008

Hollow Parts Conference

Shanghai, China - Contact: Jon Ratzlaff at ratzljrd@cpchem.com

May 4-8, 2008

Plastics Encounter at ANTEC™ 2008

*Midwest Express Center and Milwaukee Hilton City Center, Milwaukee WI
Contact: Leslie Kyle, 203-740-5452 or antec@4spe.org*

October 5-8, 2008

Automotive TPO Conference

Sterling Heights, Michigan

October 7-9, 2008

Annual Blow Molding Conference

*Bartlesville, Oklahoma - Chevron Phillips Chemical Technical Center
and Bartlesville Community Center*

October 13-14, 2008

Engineering Properties & Structure Div. TopCon

Wilmington, Delaware, Holiday Inn Select

October 13-15, 2008

Vinyltec - Vinyl Raw Material Overview and Update

Rosemount, Illinois - Crowne Plaza Chicago O'Hare

October 20-21, 2008

SPE Co-Extrusion TopCon

Cincinnati, Ohio - Hilton Cincinnati Netherland Plaza Hotel

October 21-23, 2008

Plastics and Rubber Vietnam 2008

Ho Chi Minh City, Vietnam

Contact: Messe Dusseldorf North America, 312-781-5180 or info@mdna.com

November 4-5, 2008

SPE 2008 New Technology Symposium

Philadelphia, Pennsylvania - Renaissance Philadelphia Hotel Airport

Considerations for Molders to Supply Medical Device Companies

-Ajay Gupta - Boston Scientific, Cardiovascular - Maple Grove, MN 55311

Since medical devices are such an important industry cluster in Minnesota, it makes business sense to be in the supply chain of this growth industry. However, the medical device industry is heavily regulated, and so requires some specific skills to be in this industry. Based on my experience, I have put together the following list of additional issues that an executive of an injection molding company should think about; with some minor modifications, these would apply to other processors, equipment suppliers and resin suppliers also. While this list looks long, I am sure it is not comprehensive, and I would appreciate any feedback at guptaa@bsci.com. Once established as a reliable partner and supplier, the customers' switching costs are high, so one can expect business to be more stable and profitable.

Quality systems:

In general molders to medical device companies have to go by requirements of the customer (no set requirements to be a "medical molder"). This is defined by Code of Federal Regulations CFR21 section 820.50. Need to closely work with customer's Supplier Quality group to understand all their requirements. Need to allow regular audits/assessments by the customer and possibly by the FDA. Correlation of measurement systems with those of customer should be done. Gage R&R and other means of demonstrating capability of measurement systems may be required. Traceability and integrity ensured for all records (data, tool changes), specially if data is going to be used to obtain regulatory approvals. Processes to control documentation system for molds prints, Work Instructions etc. to ensure traceability, revisions and design history. Equipment (molder, tool, measurement systems) may require qualification and will need regular calibration. Have to inform customer of any proposed process/resin changes. Process changes may require partial or full re-qualification. May be required to provide certificate of compliance of raw material/resin used. Individual tooling identification and traceability may be required. Documentation: OEM to maintain Pre-Production Records, Operations Records, Systems Records, Complaint Handling records as per customers' requirements

Certifications (desirable)

ISO 13485 (similar to ISO 9000 but Medical specific), ISO 17025 (Lab accreditation), FDA registered facility

Project Support:

During design phase many critical dimensions may have to be provided at (or outside) the spec-

ification limits and/or parts at (or outside) process window limits. Expect more engineering time required for documentation and interacting with customers. Process Validations may be required (need to understand customers' requirements). Supporting DOEs or other experiments may be required to support validation protocols and specification limits. Should be willing to work with customers to investigate complaints/failures. Longer development cycles for projects- need healthy financials. Prototype molds may be required for R&D phase Work with resin supplier to ensure supply for product lifetime; source "challenge" resins to test resin specification limits.

Intellectual Property:

Non disclosure agreement required even to receive RFQs. May have to work with customer on part design - ownership of potential IP developed should be clearly laid out.

How to break in to the market:

Request potential customers for being added on "Approved Vendors Lists". Will require audits, financial disclosure etc. Confidentiality agreements. Prepare to communicate your quality and control systems. Communicate any specific technical or other competitive advantages Cost is a driver, even for medical devices! Be ready to commit management time for business development. . . and significant engineering time once you get the business. Supply to US Army? U.S. Army Medical Research and Material Command (USAMRMC), or through distributors like McKesson and Cardinal.

Technical:

Frequently small dimensions, unusual shapes and very tight tolerances- tooling may require more (preventive) maintenance. Part cleaning (washing) may be required to reduce particulates or contamination. Clean room could be a big selling point. Use of biocompatible pigments is a plus. Process conditions and mold design that minimize polymer degradation is a plus Part annealing may be required. It may be more critical to have low residual stress in the part Capability and experience with high-heat polymers may be needed. Use of mold release etc. may not be allowed to prevent contamination. DOE and 6-sigma skills useful for product development as well as communication.

Good luck!

TWIN CITY AREA CALENDAR

Mini Seminar April 22, 2008
Hennepin Technical Ctr, North Campus

ANTEC May 4 - 8, 2008
Milwaukee Wisconsin

Plastics Encounter Trade Show
. May 5-7, 2008
Milwaukee Wisconsin

WESTERN WISCONSIN CALENDAR

SOUTHEAST MINNESOTA CALENDAR

Golf Outing. June 9, 2008
Cedar Valley Golf Course, Winona, MN

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