
Smart Care Webinar

05/17/06

MODERATOR: Hello, and welcome to the NatureWorks PLA Web Internet Seminar. This seminar on Smart Care is about handling of rigid thermoformed NatureWorks™ PLA products. I want to thank you this afternoon or this morning for joining us. My name is Mary Rosenthal, and I'm the global communications leader for NatureWorks LLC. I'll be serving today as your moderator and facilitator.

We're excited to bring you this webinar and while we want to communicate to you we also want to make sure that we hear from you. We want to make this session as interactive as possible, so please let me just explain a few of the web tool features that will make this possible. Look at your screen, and as you look below the slide presentation you will find a Q&A form. If you have a question, simply type it in and press submit. You can do this at any time during this web seminar. We'll also be collecting questions and answering those that apply to most of our audience members who are with us today in a Frequently Asked Questions session at the end of the webinar. At the very end of this web seminar, we'll be posting a list of answers to those FAQs on the Internet site, which is www.natureworksllc.com. In addition, if you have questions that are really specific to your operation, please feel free to submit them and we'll follow up with you directly. Please note that our other audience members cannot see the questions or who submitted them, so they are very confidential. For those questions we cannot get to, we'll do our best to follow up after the event.

Another point: look to the lower left hand corner and you'll find the resources section which includes a link to a number of downloadable materials that we will be discussing today. And I'll talk a bit more about what those materials are later in this web seminar.

Finally, during this web seminar you'll be prompted to provide answers to what we call a quick poll. To do so, simply click the answer on the screen that best applies to you and your company. If for any reason you have technical difficulty or get disconnected from the web seminar please log off and log back into the presentation.

We have several presenters joining us today from NatureWorks. Our first is Product Director Jim Hobbs. Jim is responsible for leading the company efforts in product management, quality, supply chain, product licensing, customer service, polylactide sales and derivative sales. Jim will provide an overview regarding the benefits of nature-based plastic packaging. He will also discuss the dramatic increase in the commercial success that we are experiencing with NatureWorks PLA thanks to the high level of interest and support from all of our partners, and we want to thank you for helping make NatureWorks PLA the success it has become in the marketplace.

After Jim will be Dan Sawyer. Dan is product development manager for Asia-Pacific. In that role, Dan leads customer-level application development and technical support for our business in Asia-Pacific. Dan is going to provide a technical perspective on the handling of NatureWorks PLA products and, in fact, all clear thermoformed plastics. In his presentation, Dan will highlight the technical attributes of clear thermoformed parts that make smart care and handling essential. He'll also discuss standard protocols for the care and handling of clear plastic

articles, and then finally share some best practices that we've collected from key partners.

This has been a learning process for us as we've gone into this journey with NatureWorks PLA. We've collected as many best practices across the globe as possible to share with you on the care and handling of NatureWorks PLA and have tried to put together a Smart Care Program that will help you be successful in protecting the value of NatureWorks PLA with your products.

One note: we are not addressing sheets and films with this web seminar as the care and handling of sheet and film is different than that of NatureWorks PLA thermoformed products and may vary by manufacturer and how the sheet and film is produced. If you do have questions, though, please submit them and we will contact you after the webinar.

Finally, to wrap up our presentation today, I'm going to provide you an overview of the tools that we have made available to help you with the smart care and handling of NatureWorks PLA-based rigid products.

Looking at the registrations that we have for today's program, it looks like we have a good cross-section of the supply chain from converters to shippers, receivers, retailers and brand owners. To help us tailor our presentation to today's attendees even more, we'd like to hear from you. As such, I'd like to introduce you to our first quick poll, and as I mentioned, to participate simply click on the answer that applies to you. The quick poll is going to be up on your screens, go ahead and answer the questions directly now. I'll read through them, we'll pause for a few seconds. There may be a little bit of delay and silence, and then we'll come back to you with what the answers are to the quick poll. Our first question today is what is your knowledge of NatureWorks PLA? Are you currently

using or handling it extensively? Are you currently using or handling it somewhat or a bit? Are you not currently using/handling but are interested in doing so in the near future? Are you not currently handling but expect to do so in the near future? Or, just none of the above? Now, I'm going to give everybody a few seconds to answer that question. So simply click the answer that applies and I'm going to pause for a few seconds and we'll preview and then give you the results of that poll.

The results are coming in. It looks like most people have selected their answer, and based on the people that are participating today it looks like more than 53 percent are currently using or handling NatureWorks PLA. By the way, we want to thank you for that.

Now, I'd like to switch to Jim Hobbs who's going to talk to you about the success in the marketplace with NatureWorks PLA, and give you an overview of the business.

HOBBS:

Thanks, Mary. Based on the tremendous commercial growth we have experienced with NatureWorks PLA it's no surprise that many of you are familiar with the product. For those of you who are a little less familiar with NatureWorks PLA I'd like to provide a very brief overview of the benefits of nature-based plastics, and then highlight the commercial success we are experiencing in rigid thermoformed applications specifically, which is a big part of why the Smart Care Program is so important for us right now.

To hit a few top line points about who we are, NatureWorks is a stand-alone organization and we are wholly owned by Cargill. We are the largest biopolymer manufacturer in the world with an established global supply chain and product on retail shelves in North America, Europe, and of course Asia-Pacific. With oil prices surging between \$70 and \$75 US a

barrel, our always compelling value proposition and story is becoming even more attractive. NatureWorks originates from one of the most abundant crops in the world: that being field corn. So instead of tapping the oil reserves to get the carbon used to make most plastics, we actually harvest the carbon grown annually in farmers' fields through the process of photosynthesis. In addition to its better source, once NatureWorks PLA is used, it can be disposed of in any standard waste system from industrial compost to mechanical recycling and incineration.

At our manufacturing facility, we start with dextrose, which is just a simple corn sugar. Through fermentation, we create a polymer that is marketed under the brand name NatureWorks for our packaging applications and Ingeo for PLA that is sold into fibre applications. More information on the manufacturing process can be found on our Web site.

In addition to the price and performance parity of NatureWorks PLA, it offers our customers a more stable solution for the longer term. In addition, we have implemented programs such as our bottles buy-back initiative in North America and a feedstock source options program that is widely used in Europe. We have also taken steps to completely offset the energy use of manufacturing operations through the buy-back of green energy credits, and in the process have created the world's first greenhouse-gas-neutral plastic. You might be asking – this is good background, but how does it really relate to proper shipping and handling of NatureWorks PLA?

Our growth means that more and more companies are using and handling NatureWorks PLA or NatureWorks PLA-based products, and as such it is important for us all to practise good handling and shipping procedures to preserve the value that is received through the use of NatureWorks PLA.

NatureWorks PLA-based packaging and goods are on thousands of store shelves globally and is already competing on price and performance with petroleum-based material such as PET. As a result, more and more product is going into the marketplace, and more and more parties are getting involved in getting products packaged in NatureWorks PLA to market.

For the purposes of today's discussion, we will be focusing on NatureWorks PLA's serviceware, rigid containers and bottles. The bulk of today's clear plastic applications are in cold-filled single-use food-related applications such as the ones you see on this slide. We are finding success around the globe with major retailers driving adoptions and pulling more and more product through the supply chain. Here is what a few of them had to say.

In North America, Wal-Mart and Sam's Club are a few of the retailers currently using NatureWorks PLA and Del Monte Fresh Produce is packaging cut fruit in our rigid containers. In Europe, major consumer brands including Marks & Spencer in the UK and Delhaize in Belgium are seeing strong sales by choosing a solution so closely aligned with their corporate philosophies. Also in Europe, Iper was an important early adopter for NatureWorks PLA and has consistently grown and expanded its product use throughout the country. And in Korea, eMart is offering a fresh packaging alternative consistent with the country's desire to better manage plastic waste.

In summary, bio-based packaging is taking off, and as it grows so does the supply chain. Given this fact, ensuring successful material management throughout the supply chain is important for everyone involved. Whenever you introduce any new material, technical care and handling is an important aspect of ensuring a successful and profitable supply chain for

everyone involved, and that is why we wanted to take this opportunity to talk about the market expansion of NatureWorks PLA and some simple steps to help you manage it in your respective operations.

With that, I'll turn things back over to our moderator. Mary?

MODERATOR: Thanks, Jim. Before we move on we do have a question from one of our attendees today that I'd like you to answer. It is: are you, NatureWorks, seeing the same growth rate for NatureWorks PLA across all geographies? Can you talk about that for a moment?

HOBBS: Yeah, I sure can, Mary. We are seeing pretty much equal and consistent growth in each of the geographies that we closely track. So that includes Asia-Pacific, Europe and North America. And not only has the growth been very consistent but our base sales have been fairly equivalent in all three geographies and we take that as just another positive example of the momentum we're seeing spread around the world. And it also gives our customers, we believe, a chance to see what others are doing in other geographies without having to feel that they're competing necessarily with those customers.

MODERATOR: Thanks again, Jim. That was good insight. I'd like to remind everyone that we will also take time for an interactive Q&A session at the end of this web seminar. So at any time, if you have a question, please type it into the form below the slide and then just hit submit. We'll try to get to as many questions as we can during the Q&A session.

With that, I'd like to introduce our second quick poll question, and it is – and go ahead and answer this at any time: which of the following materials need to be carefully managed during shipping storage?

Polystyrene; PET; PLA; or most clear plastics including polystyrene, PET

and PLA? Go ahead and answer and we'll give everyone a few seconds now to answer, and then we'll give you the results.

The results are starting to come in. It'll just be a few more seconds.

Okay. The results show that 65 percent feel that NatureWorks PLA needs to be carefully managed during shipping and storage. But with that an additional 30 percent says that most clear plastics need to be carefully managed.

Now I want to turn the web seminar over to Dan Sawyer. Dan's going to talk more about the technical aspects of care and handling of clear plastics, such as NatureWorks PLA.

SAWYER:

Thanks, Mary. This is Dan Sawyer here in Asia. Certainly interesting results to the quick poll that you just gave. The real answer to that question is a big part of what I'll be talking about in my section of the discussion today and the correct answer really is that all clear plastics, not just NatureWorks PLA, need to have careful care and handling. So all clear plastic materials need to be carefully managed throughout the whole supply chain. Most clear rigid plastic parts are made by thermoforming rigid sheet or blowing bottles from free forms. The very processes and inputs used to create these items including heat need to be managed once the part is made to ensure that its integrity stays true from manufacture to the marketplace. Again, we are focused today on bottles, serveware and rigid containers. Care and handling is different for sheet and film and varies by sheet and film producer and process. If you have questions about sheet and film please submit those and we or our partners in Asia-Pacific or the rest of the world will get back to you as soon as we can with response to those questions on special care and handling for those materials.

There are a variety of factors that can lead to loss of product from improperly weighting loads to exposing the plastic parts to excessive temperatures. In most cases, common sense along with simple and cost-effective approaches will allow the material to be effectively managed within the supply chain. The key though is in knowing what the material is and what its specific shipping requirements are.

We've been working closely with a core group of our converters and supply chain partners as NatureWorks PLA, our material, has gained market penetration. Based on their experience and the rapidly growing use of NatureWorks PLA throughout the world, we wanted to pull their best practices and create the recommendations of smart care and handling of NatureWorks PLA that we'll be going through today. As you can see from the slide our partners are having tremendous success managing PLA at rates at or above the rates with other clear plastics.

We've found that our customers were effectively integrating product lines made from NatureWorks PLA with minimal difficulty, many just by using common sense in how they take care of the material, and here are some examples. An American customer created a distributor information sheet detailing the benefits of just-in-time delivery for the in-field packaging of fruit. One Asian customer specified that empty parts be placed on the north side of trans-Pacific shipments in order to minimize long-term heat exposure due to the sun on the side of the ship. Other customers here in Asia are using reflective blankets when they ship back to the US. An Italian customer created some on-the-box graphics indicating handling and storage recommendations. The list of best practices goes on and on. So we decided to consolidate them and put them together and summarize them for you.

Our recommendations are fairly straightforward. First of all, label boxes and specify routes for transit to ensure that the packaging is kept at normal temperatures. Next, avoid leaving the package in direct sunlight, just as you would do with other clear plastics, and schedule just-in-time delivery for field packaging, always avoiding the heat that goes along with the direct sunlight. Don't store near skylights and heaters, and store in cooler parts of the warehouse. Lastly, load and ship the material in a responsible manner.

These are the basic steps that we are advocating in our care and handling. They are easy and simple to follow and consistent with how other clear plastics should be handled. With that I'll turn it back over to our moderator, Mary Rosenthal.

MODERATOR:

Thanks, Dan. In a moment we'll introduce you to the tools that we have developed to help you better manage the care and handling of NatureWorks PLA-based products. But before we do, I'd like to introduce the final quick poll of the session. Here's the question – and go ahead and click on it at any time: which part of the supply chain needs education and/or support for handling a new material? Is it shippers; packers or fillers; storage facilities; or all of the above? We'll give everyone a few seconds to answer the question.

Here are the results: of everyone that has voted, 97 percent said all of the above, that shippers, packers and fillers and storage facilities, the complete supply chain, needs education about the care and handling of clear plastics.

With that, that's why we have developed the Smart Care Program. As with any introduction of a new material, manufacturers and converters often request information on the technical care and handling of biopolymers and

finished goods as they're incorporated and managed in an established supply chain. As good business partners, we try to work with our customers and keep them apprised of the best practices in the marketplace, for handling their thermoformed articles made of NatureWorks PLA. Now, this is a series of best practices that we have compiled from across the world. It will be a list that will be dynamic, because we continue to learn every day about new best practices with our partners and how they're helping to maintain the value of using NatureWorks PLA.

To further assist our customers, brand owners and retailers, NatureWorks is introducing a program we called Smart Care. It's a communications tool and materials to educate and inform the supply chain about the care and handling of rigid packaging and other materials made from NatureWorks PLA.

One of the core elements of the Smart Care Program are these clear icons or symbols that anyone can understand how NatureWorks PLA should be cared for. The symbols can be used individually or paired together in a manner that best fits your specific program and boxing. These four symbols include a reminder to avoid high temperatures, load and handle with care, store on lower racks in a warehouse, and like all clear plastics avoid direct sunlight.

The graphics are available to download and can be easily integrated into existing box operations or other communications mechanisms as appropriate, such as you can use them in your literature, on your Web site, and in your sales material. For those who want to implement them immediately that may need to use up existing box inventory, we're providing you with a recommended set of label printers from which you can order labels on our Smart Care Web site.

Building off of what Dan said, we've also created a one-page handling checklist outlining the best practices. This, too, is available for download and use with your customers.

To kick off the Smart Care Program is the Relax and Take Care of NatureWorks PLA Information Kit. This was created to help facilitate the responsible day to day handling of NatureWorks PLA-based goods. This kit will soon be mailed to key members of the supply chain, and it includes a copy of the checklist, a poster illustrating shipping and handling symbols that can be used in warehouses and manufacturing plants, and the symbols for the box graphics for printing on corrugated shipping boxes.

In addition, four follow-up mailings will be sent out as a reminder message to converter and co-packer warehouse and/or plant personnel during the warm months of June, July, August and September. Each mailing includes on over-sized postcards one of the four poster quadrants, and communicates an essential element in ensuring the smart care and handling of NatureWorks PLA-based products.

Finally, we have created a Web site at www.natureworkspla.com/care where materials are going to be available for download. The page is currently in the process of being translated to help you, as well, and will be translated into Mandarin, Japanese, Korean, German, Italian, French and Spanish.

Everyone benefits when natural materials for packaging, serviceware and goods are utilized in the place of petroleum-based plastics. We hope that when you follow Smart Care and handling protocols potential issues are anticipated and losses are reduced allowing you to provide the best possible product to your customers and consumers. With that, I'd like to ask if any of the other presenters have anything to add before we transition

to the Q&A session. I invite you again to submit your questions on anything that we have covered today regarding NatureWorks PLA-based Smart Care Program.

HOBBS:

Mary, just one last comment if I could. This is Jim Hobbs. I'd just like to add that the introduction of a new polymer such as NatureWorks PLA requires different thinking when managing through the supply chain. And by no means are we at NatureWorks advocating that this is the final solution to this issue. We see this, the Smart Care Program, as one step on the way towards, again, trying to meet our customers' needs in the best way that we can. So we see this as a journey and smart care is designed to help you on this step of the journey. So it's our goal to assist all customers, brand owners and retailers in successfully using our NatureWorks-based plastics in their daily operations. We believe that smart care will help accomplish that goal. Thanks, Mary.

MODERATOR:

Thanks, Jim. And with that, we'll begin the Q&A session. Again, to submit a question, simply fill out the form below the slide and hit submit. We'll take about ten minutes for Q&A and again we'll try to use that time to answer questions that apply to a large percentage of our audience.

I have several questions that have come in during the web seminar, and I will start with the first one which I will take myself, and that question is: will you be monitoring and updating your best practice recommendations, or is this a final definitive list of recommendations?

As we continue to learn more about NatureWorks PLA in the supply chain absolutely we will be updating our recommendations, updating our Web site, updating our materials and most importantly communicating to you what we've learned. As Jim said, this is a journey, it's a journey of small steps, and we're here to work with you on the journey.

Let me go to a question here for Dan Sawyer. Dan, are there any specific handling issues that retailers need to be made aware of for bottles that are produced using PLA that are sitting on a store shelf?

SAWYER:

Yes, Mary. Bottles like the rigid thermoformed packaging have a number of steps throughout their supply chain in particular the way bottles can be made. They can be made in pre-forms, which are shipped to a bottle blower to later be blown into bottles and filled, or they can be made into pre-forms, then blown into bottles and the bottles shipped, and because those are very similar in the nature of the plastic, in the state that it's in, the care and handling should be consistent with what we would recommend for the thermoformed rigid containers, and even into the bottles, once they're filled. At all three stages, whether it's in the pre-forms or paraffins, the blown bottles before they're filled, or the filled bottles, we still would recommend that they follow the same care and handling procedures laid out in the presentation today.

MODERATOR:

Thank you. We have another question that I would like to ask Jim Hobbs: does PLA use more energy to produce and process?

HOBBS:

Thanks, Mary. We get this question quite a bit, particularly relative to PET because most of the applications we go after are a PET substitute. Actually, compared to PET, we use 68 percent less fossil fuels, and then in addition with our green credits buy-back program, we have actually really come to a place where we have a greenhouse-gas-neutral product. So, again, we see this as a journey as well. With every step in the evolution of our company we work toward being more environmentally friendly, not only with the products that we provide, but also for us as a company. So in summary, yes, it is more energy-efficient than PET, and, again, with our

program on the green credit buy-back we actually have a greenhouse-gas-neutral product.

MODERATOR: Thank you, Jim. I have another question for you, Dan: how important is it to control humidity in storage?

SAWYER: Well, humidity is another part of the equation that we watch out for. Temperature is probably the stronger driving force, but humidity, if it's set to be too high, will also accelerate the damage that can occur to any plastic material, particularly NatureWorks PLA. With PLA being that it is compostable in nature, the high heat and humidity can accelerate the composting if it's not kept in check. So humidity is important as well. Heat is probably the bigger driving force, but it's important to watch out for excessive humidity.

MODERATOR: Okay. Thank you. The next question is for Jim. This is about refrigerated trucks: are any converters using refrigerated trucks to ship parts in the summer months?

HOBBS: We do have converters that use refrigerated trucks, and actually they don't turn on the refrigerated system so what they end up doing is using the insulation factor from those refrigerated trucks in transporting the goods back and forth.

MODERATOR: Okay, very good. Here's another question, again for you, Jim: is it possible that this Smart Care Program may increase costs or price?

HOBBS: No, Mary. It's not. We see the Smart Care Program as just good product stewardship on our part. Again, our customers are our partners so we're putting this out because we feel as though we're all in this together, the success of PLA really depends on all of us so, no, we won't take any

advantage of increasing cost or price as a result of this program. This is something that we want to extend for the betterment of the industry.

MODERATOR: Dan, this question is for you: will there be a chance in the near future to create PLA-based films that are more heat-resistant?

SAWYER: Well, it's interesting you should ask that, Mary. We've had lots of questions on how PLA films fall into these categories, and we kind of held those for answering later, but I'll speak to it just a little bit here. PLA films really depend on how they're manufactured and what type of PLA film that the company is manufacturing. In some cases, PLA films are being made as shrink films for labels. We've had examples of those on the market here in Asia. Also heat-seal films for lidding structures and as well as window envelope films – all of those different films have different performance requirements in the applications and because of that they have different processes and different compositions in film, and each of those will have slightly unique storage and handling requirements. Certainly with some of the window envelope films that are made with our 40/42D grade or 40/32D grade. Those can be made to be more stable at higher temperatures, but some of the other specialty films that would be used for labels or heat-sealing could have more sensitive handling and storage requirements, so again it's kind of a case by case basis as it often is with technical issues like that.

MODERATOR: Since we're talking technical I have another question for you. Why do you suggest value 105 degrees F or 40 degrees C as the upper limit for a handling temperature for NatureWorks PLA?

SAWYER: Forty degrees C is a temperature that we know all the products will be safe. It's well below the onset of the transition from a soft material to a rigid material. It's a safe temperature that we know we won't have any

issues with deformation. We also know that at that temperature the product can be stored quite stably over long periods of time without going into compost mode, if you will.

MODERATOR: Okay, very good. Just another question and this again is for you, Dan. Are there currently any resin additives available that can be included prior to extrusion that will increase temperature capabilities?

SAWYER: Yeah, again, this is a somewhat of a case by case basis. Some of our customers here in Asia have made more heat-resistant thermoformed parts, and they've done that through a combination of additives and special processing techniques to crystallize – give the product more heat resistance, and that's possible in some cases. To date we've really struggled to produce something that gives a totally clear option, but that's something that we're still working on developing and could have in the not-so-distant future. But it's really, again, on a case by case basis depending on the requirements of the application.

MODERATOR: This one is a little bit off of the Smart Care Program but I'm going to give it to you, Jim: how do you see the influence of government regulations on NatureWorks PLA sales?

HOBBS: Government regulation has helped our sales, but when we set out with our business model for NatureWorks when the company formed originally in 2000, nowhere in our plan did we actually count on any government regulation. Most of the growth that we're seeing today is outside of it. But when it comes, we welcome it. So when we have seen it in Taiwan to some extent in Korea, in more niche-type of areas, say in Germany, we welcome it, but again it's a case where we see NatureWorks PLA being the biopolymer of the future regardless of whether or not government regulation carries it in or not.

MODERATOR:

Thank you. Well, that brings us to a close of the time that we planned for this Internet seminar and I want to thank everyone for their participation and interaction with us during the session. Again, as we said before, this is a journey of small steps and we really appreciate you participating with us in this journey and helping us make NatureWorks PLA a successful value proposition in the marketplace. I thank you very much for the insightful questions and the feedback that you gave us during this web seminar.

We are planning to post answers to the most frequently asked questions on our Web site soon and we will notify you via email when those are available. As for those questions that are very specific to an individual we'll do our best to follow up with answers directly. Of course, if you require any additional information please visit us at www.natureworkspla.com/care or contact your local account representative.

Finally, as with our past presentations, a recorded version of this presentation will be made available online shortly for your review. Please feel free to share this with others who may have missed but would have benefited from this information. Again, you will receive an e-mail notifying you when these are available.

On the behalf of Jim Hobbs, Dan Sawyer and everyone here at NatureWorks LLC we thank you for your time today. Before you exit, please take a moment to provide us with some feedback about today's session via our brief exit survey. Again, it's important for us to hear from you and hear your feedback about these types of web seminars. It'll only take a minute or so to complete. The survey will launch when you close your Internet browser.

Again, this is Mary Rosenthal and I thank you so much for your time.

END