

# ASTM Provides Certification Services for USDA's BioPreferred Program

## Biobased Labeling Promotes Purchase of Products from Renewable Sources

BY CICELY ENRIGHT

The 2002 Farm Bill paved the way for biobased product purchasing by federal agencies through the BioPreferred program. This year, ASTM International began managing a biobased certification program that is helping to build the market for products made completely or significantly of components from renewable resources.



The next time you shop, you may have the opportunity to choose products with a distinctive new label. Dozens of products have now been approved to be labeled as biobased through the certification program for biobased products, which ASTM International oversees on behalf of the U.S. Department of Agriculture, and many more are in the pipeline.

Products certified as biobased function like their counterparts but are composed entirely or in significant part of biological products, renewable agricultural materials (including plant, animal and marine materials) or forestry materials.

Labels identifying a biobased product may promote their sale among consumers seeking to purchase goods using renewable resources. "With a plethora of labeling claims in the marketplace, consumers want to know that what they are investing their dollars in is meaningful, that it is backed by some sort of certification," says USDA Deputy Secretary Kathleen A. Merrigan. "ASTM, working with USDA, will provide that certification."

Cargill's Diza Braksmayer, who is in renewable marketing in the company's Industrial Oils and Lubricants Group, Minneapolis, Minn., and serves on the ASTM technical advisory committee for the certification program, says that the labeling initiative has value for products made by her company and by her company's customers. "Here is another way for consumers to be informed when making purchases," Braksmayer says. "If you're a consumer who's interested in using more



bioderived materials in products, this gives you that information. Otherwise you have no way of knowing.”

## THE LABELING CERTIFICATION PROGRAM

The ASTM certification program for biobased products kicked off in February 2011 following the USDA's January announcement that launched the biobased product label. Within a month of the certification program's availability, USDA had received close to 400 product applications from more than 100 manufacturers.

Kenneth Pearson, ASTM International senior vice president, says that ASTM is well-positioned to oversee the certification program. “ASTM's role in the biobased labeling program puts our strengths to work on behalf of manufacturers who want to demonstrate their commitment to renewable resources, the labs that will provide the testing and the consumers interested in buying such goods,” he says.

The certification work joins BioPreferred and its existing federal procurement program, which is also intended to increase the purchase and use of biobased goods while providing new jobs and markets. “We need to make biobased products a nationwide industry. So that's why we are working to develop government and public markets through this voluntary labeling program,” says Merrigan.

The certification program, which is voluntary, determines product and package biobased content for participants worldwide; it uses a process that requires independent laboratory testing according to ASTM D6866, Test Methods for Determining the Biobased Content of Solid, Liquid and Gaseous Samples Using Radiocarbon Analysis.

The certification process begins with an application to USDA for a product, then the completion of an agreement with ASTM. Manufacturers of accepted products provide a representative

sample, along with documentation of how that product was selected, to an accepted laboratory for D6866 testing. ASTM International reviews the test report information and notifies both USDA and the participant whether certification has been approved or denied. The biobased certification label can then be used on products successfully completing the process.

Where the individual product comes under an existing BioPreferred federal procurement program category, the specified percentage of biobased content must be achieved and is included on the label; for products outside existing categories, the minimum biobased content must be at least 25 percent. That amount is consistent with those of similar programs in Europe and Asia, according to Kate Lewis, USDA BioPreferred deputy program manager, Washington, D.C. That percentage may increase in the future, she says.

Should technical questions arise in the program or its administration, a committee consisting of manufacturers as well as representatives from USDA, Iowa State University and Committee D20 will address them. For example, the technical advisory committee has reviewed and approved the program operations manual and assists with technical issues that arise in the program.

## THE D6866 STANDARD

The standard that supports the biobased certification program is ASTM D6866. The method applies to products with carbon-based parts that can be combusted completely into carbon dioxide, and it uses radiocarbon, also known as carbon 14, or <sup>14</sup>C.

Subcommittee D20.96 on Environmentally Degradable Plastics and Biobased Products, part of Committee D20 on Plastics, developed the standard to be used in the BioPreferred federal procurement program. First approved in 2004, the most recent D6866 edition was released in April. D6866 details

two methods to quantify total biobased content:

- ▶ Method B uses accelerator mass spectrometry (that is, particle acceleration technology), and
- ▶ Method C uses liquid scintillation counter techniques on sample carbon that has been extracted and synthesized into benzene.

The method choice varies with the material and with time constraints, notes Darden Hood, a D20.96 member and president of Beta Analytic, Miami, Fla., whose lab does the D6866 testing. “For example, when you're dealing with something dangerous, you want to deal with it in very small quantities,” he says. For biobenzene, biotoluene or other volatiles, he continues, the more appropriate method would likely be the particle accelerator test, which can be used for very small quantities. For method C, the carbon/benzene method can be appropriately used in situations where a small product amount will not easily supply a representative product sample, or where the product is considered to be “dirty” with a large amount of sulfur or chlorine.

Performing any of these tests presents a challenge, according to Hood, who checks every step of each radiocarbon analysis process in his lab. “We're dealing with a measurement of a naturally occurring radioisotope, which through soft-beta ionization decays from carbon 14 (six protons and eight neutrons) to nitrogen 14 (7 protons and 7 neutrons). It is present in all recent living organisms in the extremely low concentration of only one in a trillion carbon atoms and is nondetectable in petrochemicals,” he says. “You have to be very careful to avoid cross-contamination, and you can't really measure it directly because it's too low of an amount. It must be measured as a ratio of radiocarbon to stable carbon [<sup>14</sup>C/<sup>12</sup>C or <sup>14</sup>C/<sup>13</sup>C].”

In the end, a biobased measurement means the same thing regardless of the

analyzed material (solid, liquid or gas). Hood says, “This percent applies only to carbon, eliminating the ambiguities associated with the unit ‘percent.’ Mass, volume and moisture are factored out. When you define it as biobased, the result is relating total renewable organic carbon to total organic carbon.”

## DESCRIBING BIOPREFERRED

Nine years ago, the U.S. Congress passed the Farm Security and Rural Investment Act of 2002, familiarly known as the 2002 Farm Bill. The legislation created BioPreferred — and the federal procurement program — which encourages the development, sales and marketing of biobased products, and assigned USDA as the implementing agency.

BioPreferred works to:

- ▶ Support the development of a biobased market and industrial base;
- ▶ Enhance the nation’s energy security by fostering biobased products in place of those containing more fossil energy-based products usually derived from imported oil; and
- ▶ Promote agriculture-related business, especially in rural communities and from small farmers and ranchers.

Steven Devlin, the USDA BioPreferred program director at Iowa State University, says, “The BioPreferred program is a direct response from Congress recognizing the potential economic impact a strong biobased industry can play in the United States.” Working hand in hand with USDA since BioPreferred’s inception, Iowa State has developed systems, procedures and documentation to support it; ISU has identified more than 25,000 biobased products available worldwide, collected biobased and company information, and contributed to the work on D6866.

Devlin’s group has also facilitated the testing and environmental analysis in the more than 50 USDA-designated product categories for the federal procurement program as well as informa-

tion and testing for other potential categories. More categories have been added as regulatory rounds of proposal, public comment and approval increase the product groups covered in the federal procurement program. Currently, USDA is in round 7, which identifies some 15 new product categories.

The federal procurement part of BioPreferred alerts government agencies and their contractors as to products with biobased content ranging from 7 to 95 percent in the more than 50 categories, and, in accordance with the Farm Bill, requires preferential consideration in purchasing. Current categories range from towels and water tank coatings, lubricants and cleaners to metalworking fluids and disposable containers.

With its passage almost 10 years ago, the Farm Bill also anticipated the labeling program, which, according to Lewis, is designed to build on the progress made by the federal procurement part of BioPreferred. Lewis says the timing has given what was then a nascent biobased product industry time to develop, grow and prosper, although biobased products still only number around 25,000.

When the time arrived to roll out the certification program, USDA developed a solicitation for a third-party certifier and chose to contract with ASTM International following a competitive bidding process. “We also knew we wanted a third-party organization like ASTM, a global nonprofit, to be that third-party evaluator for the products that meet our certification protocol,” Lewis says.

## GOING FURTHER

While BioPreferred, including the new labeling initiative, aims to increase the production and purchase of products with biobased content, and the program may contribute to reducing adverse health and environmental effects, the label does not equal an eco-label. According to a USDA white paper

about sustainability and BioPreferred, “Overall environmental preferability and any related claim, however, is a complex and much debated subject that requires extensive substantiation and analysis of impacts to human health and the environment over the complete life cycle of a product — from its manufacture through its use and final disposition.”

As Braksmayer puts it, BioPreferred “is a program designed to promote the use of bioderived products based on renewable feedstocks; at this time, it is not focused on the sustainability characteristics these products may bring.”

But BioPreferred may accomplish more as the market develops. “The certification and label is a tool to identify and increase the awareness, education and outreach for biobased products, which do have some environmental preferability associated with them,” says Lewis. That’s because, according to Lewis, most manufacturers take out a petroleum-sourced component, which typically comes from imported oil, and replaces it with a renewable type of carbon.

USDA plans to continue its work on possible additional environmental-related analysis in the future. “We have a lot more to do here that we are planning on doing,” Lewis says.

Braksmayer points out that the federal government provided the impetus for paper to include recycled content. The USDA’s labeling initiative, and its impact on business markets and industry, may be similar. She says, “It will take it further in a good direction.”

## TO LEARN MORE

To learn more about the BioPreferred program, visit [www.biopreferred.gov](http://www.biopreferred.gov). For more information about ASTM International’s certification program for biobased products, visit [www.astm.org/certification](http://www.astm.org/certification).