

Standards and Labels related to Biobased Products

Developments in the 2016-2018 triennium



The aim of this report is to provide information about existing standardisation approaches for biobased products, and to monitor relevant activities shortly before and during the triennium period (2016-2018).

IEA Bioenergy

IEA Bioenergy Task 42: October 2018

Standards and Labels related to Biobased Products

Developments in the 2016-2018 triennium

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Framework and aim

Standardisation and certification for bioenergy and biofuels have been done by other IEA Bioenergy Tasks already, e.g. "Monitoring Sustainability Certification of Bioenergy" by Task 40 in 2013. However, an overview on standardisation of biobased products is still missing.

The aim of this report is to gather relevant information about existing standardisation approaches for biobased products, and to monitor relevant activities before and during the triennium period (2016-2018). This activity's focus is on products; national and/or company reporting is beyond the scope of this report. The agreed deliverable to monitor the developments is a slide-deck.

In addition to the slide-decks a brief description of the background, current standards and labels is provided together with three tables showing the current standards for biobased products, standards related to plastic products and wood plastic composite (WPC) in Europe, as well as ongoing and future standard development relevant for biobased products. Both this brief description and the slide-decks are integrated in this deliverable (D4) report.

Background

In order to cope with an increasing global population, rapid depletion of many resources, increasing environmental pressures and climate change, the world needs to radically change its approach to production, consumption, processing, storage, recycling and disposal of biological resources. Establishing a bioeconomy holds a great potential: it can maintain and create economic growth and jobs in rural, coastal and industrial areas, reduce fossil fuel dependence, and improve the economic and environmental sustainability of primary production and processing industries.

Many policies have been put in place to tackle these challenges and drive the transformation of the worldwide economy. However, the complex inter-dependencies that exist between challenges can lead to trade-offs, such as the controversy about competing uses of biomass. The latter arose from concerns about the potential impact on food security of the growing demand for renewable biological resources driven by other sectors, the use of scarce natural resources and the environment.

The bioeconomy encompasses the production of renewable biological resources and the conversion of these resources and waste streams into value added products, such as food, feed, bio-based products and bioenergy. Its sectors and industries have strong innovation potential due to their use of a wide range of sciences, enabling and industrial technologies, along with local and tacit knowledge.

Renewable materials will continue to play an important role in production processes, particularly in a circular economy. In this context, attention must be paid to the environmental and social impacts of their production, both in the EU and in non-EU countries.

Global challenges demand global solutions. This requires a global approach to more sustainable resource use and includes developing an internationally shared understanding of biomass sustainability.

Standards

Standardisation is an important tool that specifies requirements for products, services or procedures, and is used to set benchmarks and criteria to harmonise behavior in industry and society. The International Organisation for Standardisation (ISO), the European Committee for Standardisation (CEN), and national standardisation bodies are suitable platforms to bring different stakeholders together, and to agree on standards that serve the safety of humans, the environment and products. Standardisation may support national legislation by filling in legal requirements and/or gaps. Most of the standards are voluntary market agreements. Standards are tools that set out specifications and other technical information on various kinds of products, materials, services and processes. Standards provide a basis for mutual understanding among individuals, businesses, public authorities and other kind of organisations. They facilitate communication, commerce, measurement/testing and manufacturing.

An important instrument for accelerating the development of standards in Europe is the allocation of mandates. Mandates are the mechanism by which the European Commission (EC) calls upon the European standardisation bodies (CEN) to develop and adopt European standards to support European policies and legislation. In Europe, the majority of CEN's work in the area of chemical and bio-based products is conducted in response to requests from the European Commission. The following mandates are relevant for IEA Bioenergy Task 42:

M/430 – Bio-polymers and bio-lubricants

M/491 – Bio-surfactants and bio-solvents

M/492 – Bio-based products

M/547 – Algae and algae-based products or intermediates

Labels

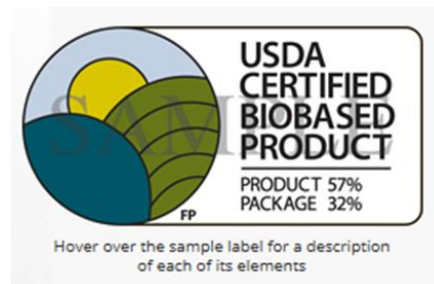
There are many biobased product and food labels in the US. In August 2018, there were 463 different "EcoLabels" across 25 industry sectors, "and new organic and sustainable ranking lists are popping up all the time." Most ecolabels are dealing with primary biomass or energy efficiency, more details are provided at <http://www.ecolabelindex.com>.

In Europe the forum for bio-based innovation in public procurement <https://www.biobasedconsultancy.com/en/database> provides an overview of bio-based products and producers for nine product categories.

The cultivation of renewable resources (usually from forestry and agriculture, sometimes from marine aquaculture) has a huge impact on the sustainability of the final biobased products (a non-exhaustive list is provided in the Slide deck - Part 1).

ISO differentiates between Type I, II and III ecolabels, of which Type I are the strongest ones. They are voluntary, multiple-criteria based, third party programmes that award a license that authorises the use of environmental labels on products indicating overall environmental preferability of a product within a particular product category based on life cycle considerations. Type II labels are self-declarations, and Type III labels do not set any thresholds and do not claim overall environmental preferability.

In the US biobased products are commercial or industrial goods (other than food or feed) determined by the U.S. Department of Agriculture (USDA) Secretary to be composed in whole or in significant part of biological products, forestry materials, or renewable domestic agricultural materials, including plant, animal, or marine materials. Procurement of biobased products is required by Section 9002 of the Farm Security and Rural Investment Act (FSRIA) of 2002, Public Law 107-171. It authorizes USDA to designate biobased products for federal procurement. The overall framework for the USDA program can be found in the U.S. Code of Federal Regulations 7 CFR 2902. Section 9002 of the 2008 Farm Bill requires federal agencies to purchase biobased products designated as Bio-Preferred, except as provided in Federal Acquisition Regulation (FAR) Part 23.404(b).



Federal agencies in the US are required to give preference to the item with the highest percentage of biobased content where purchases exceed \$10,000 per fiscal year, as prescribed by 7 CFR 2902.3. The following sections of Part 23 of the Federal Acquisition Regulation (FAR) pertain to biobased items:

- FAR 23.403 requires competitive cost-effective purchases of products that meet reasonable performance requirements and contain biobased content;
- FAR 23.404 requires agencies to have an Affirmative Procurement Program (APP) that provides guidelines for purchasing items with biobased content;
- FAR 23.406 requires the insertion of contract clauses regarding the use of USDA-designated items; and
- FAR 23.703 requires agencies to implement cost-effective green contracting preference programs, employ sustainable acquisition strategies, and consider the use of biobased products.

Specifications for procurement must require the use of biobased products in these designated item categories. Exceptions may be made when:

- There are less than two suppliers available for an item;
- The item is unreasonably priced;
- Delivery costs of the item are excessive; or
- Regular delivery cannot be guaranteed.¹

¹ <https://www.gsa.gov/governmentwide-initiatives/sustainability/buy-green-products-services-and-vehicles/buy-green-products/biobased-and-biopreferred-products>

In Europe, three multi-issue ecolabels exist of ISO 14024 type I. The EU Ecolabel, the Nordic Ecolabel, and the Blue Angel Ecolabel. Specific product categories that include biobased products under these labels are lubricants, sanitary products, food disposables, and office materials.



Due to the EU's renewable energy policy, several certification schemes for agricultural biomass are developed. Some of them have by now adapted their schemes in a way that they can be applicable also to materials, not only to energy. For wood, sustainability certification schemes (FSC and PEFC) were developed before the renewable energy policy due to concerns about unsustainable forestry practices in many parts of the world.

Organisations can use the biobased content certification scheme (Type III) to demonstrate the (minimum share of) biobased content in their products and label them with this claim. In order to be certified for the biobased content in products according to Bio-based content certification scheme, an organisation needs to be assessed by an independent authority (third party): a certification body. Only certification bodies that have entered into an agreement with NEN are allowed to do these conformity assessments for the biobased label.

The process for being granted a certificate is described in the certification roadmap, which is described for Europe at (<http://www.biobasedcontent.eu/en/certification/roadmap>). Certification audits are performed by certification bodies that have entered into agreement with NEN. Samples shall be analysed by recognised testing laboratories; some authorised laboratories in the US, China, Belgium, The Netherlands, and Germany are shown at the following link <http://www.biobasedcontent.eu/en/certification/testing-laboratories>

Existing certification of biobased content refers to biobased carbon content, and is based on the European norm EN 16785-1 "Biobased products - Biobased content - Part 1: Determination of the biobased content using the radiocarbon analysis and elemental analysis", and by the American standard ASTM 6866 "Standard Test Methods for Determining the Biobased Content of Solid, Liquid, and Gaseous Samples Using Radiocarbon Analysis", but also refers to CEN TS 16137 "Plastics – Determination of biobased carbon content".



There is a number of certifications and labels that highlight the special end-of-life options of biobased products, such as compostability, biodegradability in soil, biodegradability in seawater, etc. Biodegradability is a relevant aspect in the life cycle of specific products, particularly those made of biobased materials.

The KBBPPS: Knowledge Based Biobased Products' Pre-Standardisation reports² concluded that biodegradability tests should be further developed.

Biodegradability reaches, however, further than only biobased products. Non-biobased products can also be biodegradable. That results in the need of further harmonisation of biodegradability standards and criteria. There are a number of biodegradability tests available. Examples of labels are in the slide-deck Part 2 and Part 4.



Plastics are a severe problem in the marine environment. Currently, there is no standard providing clear pass/fail criteria for the degradation of plastics in seawater. The US standard ASTM D7081 "Standard Specification for Non- Floating Biodegradable Plastics in the Marine Environment" has been withdrawn without replacement. However, the test methods that were referred to are still in place, but do not offer any pass/fail criteria. These methods are:

- ASTM D6691 "Standard Test Method for Determining Aerobic Biodegradation of Plastic Materials in the Marine Environment by a Defined Microbial Consortium or Natural Sea Water Inoculum";
- ASTM D 6692 "Standard Test method for Determining the Biodegradability of Radiolabelled Polymeric Plastic Materials in Seawater", and
- ASTM D7473 "Standard Test Method for Weight Attrition of Plastic Materials in the Marine Environment by Open System Aquarium Incubations".

Other standards on this issue are OECD 306 "Biodegradability in sea water" and ISO 16221 "Water quality – Guidance for determination of biodegradability in the marine environment". However, these standards are only guidelines and do not provide clear requirements for conditions and timeframes.

Vinçotte (now TÜV Austria) has developed a certification scheme based on ASTM D7081, which demands, in a simplified way, a biodegradation of at least 90% in 6 months. The corresponding label is "OK Biodegradable Marine". The certification scheme "OK Biodegradable Marine" is generally considered as premature. Being well aware of misunderstandings that can easily arise amongst consumers, the OK Biodegradable Marine certification scheme makes a clear distinction between certification of the claim of marine biodegradation and authorisation to communicate about this certification, and only for a very limited group of products, which are actually used in the marine environment (e.g. fishing lines, etc.). Authorisation to communicate on the product about the OK Biodegradable Marine certificate is allowed.

² <http://www.biobasedeconomy.eu/projects/kbbpps-knowledge-based-bio-based-products-pre-standardization> , see WP6 Biodegradation

Summary of relevant standards development in the period from 2014 until 2018

Table 1 shows an overview about standards related to biobased products in Europe (CEN/TC 411). The work was subdivided into five working groups:

1. The objective is to develop a standard on general terminology applicable to biobased products, such as bio-lubricants, bio-surfactants, biopolymers and bio-solvents. Where necessary guidance towards the development of terminology for specific biobased products and use in vertical standards should be developed for both other working groups and for users.
2. The development of standards for solvents, covering product functionality (performance), toxicity, ecotoxicity, biodegradability, safety and, if necessary, product specific and sustainability aspects not covered under another CEN/TC 411 working group. Special attention shall be paid to biobased solvents and their possible differences, if any. Biobased solvents might be discriminated by their biological origin, their life-cycle impact and their overall ecological impact. These functions therefore have to be explicitly described and made comparable.
3. The task of this Working Group is the development of methods for the determination of the biobased content of solid, liquid and gaseous products.
4. The development of horizontal standards for biobased products when it comes to sustainability criteria, life cycle analysis and issues related thereto. It is not the purpose of this standardisation work to set thresholds or default values. This is to be done by specific product standards or by political decision.
5. The development of declaration and certification tools applicable to biobased products identifying which characteristics can/should be assessed and how they should be reported. It is not in the scope to define criteria for products and/or packaging

Table 1: Standards related to biobased products in Europe

Working group	No and title	Specification	Year
Terminology	EN 16575 Bio-based products - Vocabulary	Standard	2014
Bio-solvents	CEN/TS 16766 Bio-based solvents – Requirements and test methods	Technical specification	2017
Bio-based content	CEN/TS 16721 Bio-based products – Overview of methods to determine the bio-based content	Technical specification	2014
	EN 16640 Bio-based products – bio-based carbon content – Determination of the bio-based carbon content using the radiocarbon method	Standard	2017
	EN 16785 (part1) Bio-based products – bio-based content – Determination of the bio-based content using the radiocarbon analysis and elemental analysis	Standard	2017
	EN 16785 (part2) Bio-based products – bio-based content – Determination of the bio-based content using the material balance method	Standard	2018
Sustainability criteria, LCA and related issues	CEN/TR 16957 Bio-based-products – Guidelines for Life Cycle Inventory for the End-of-life phase	Technical specification	2016
	EN 16551: Bio-based products – Sustainability criteria	Standard	2015
	EN 16560 Bio-based products – Life Cycle Assessment	Standard	2016
Certification and declaration tools	EN 16848 Bio-based products – Requirements for B-to-B communication of characteristics using Data sheet	Standard	2016
	EN 16935 Bio-based products – Requirements for Business to Consumer communication and Claim	Standard	2017

In the field of chemicals standardisation activities are ongoing, that cover biodegradable plastics, wood plastics composites (WPC) and biopolymers. Biodegradable plastics can be produced from biomass but also from fossil resources. Consequently, the related standards are valid for biobased plastics, partly-biobased plastics and fossil based plastics. Relevant standards are shown in Table 2.

Table 2: Standards related to plastic products and WPC in Europe

Working Programme	No and title	Specification	Year
CEN/TC 249/WG7	CEN/TR 17219 Plastics - Biodegradable thermoplastic mulch films for use in agriculture and horticulture - Guide for the quantification of alteration of films	Technical report	2018
	EN 17033 Plastics - Biodegradable mulch films for use in agriculture and horticulture - Requirements and test methods	Technical specification	2018
	EN 13206 Plastics - Thermoplastic covering films for use in agriculture and horticulture	Standard	2017
	EN 13655 Plastics - Thermoplastic mulch films recoverable after use, for use in agriculture and horticulture	Standard	2018
	EN 14932 Plastics - Thermoplastic stretch films for wrapping silage bales	Standard	2018
	EN 17098-1: Plastics - Barrier films for agricultural and horticultural soil disinfection by fumigation - Part 1: Specifications for barrier films	Standard	2018
	EN 17098-2: Plastics - Barrier films for agricultural and horticultural soil disinfection by fumigation - Part 2: Method for film permeability determination using a static technique	Standard	2018
CEN/TC 249/WG13	CEN/TS 17158: Composites made from cellulose based materials and thermoplastics (usually called wood polymer composites (WPC) or natural fibre composites (NFC)) - Determination of particle size of lignocelulosic material	Technical specification	2018
	EN 15534-1: +A1: Composites made from cellulose-based materials and thermoplastics (usually called wood-polymer composites (WPC) or natural fibre composites (NFC)) - Part 1: Test methods for characterisation of compounds and products	Standard	2014
	EN 15534-4: Composites made from cellulose-based materials and thermoplastics (usually called wood-polymer composites (WPC) or natural fibre composites (NFC)) - Part 4: Specifications for decking profiles and tiles	Standard	2014
	EN 15534-5: Composites made from cellulose-based materials and thermoplastics (usually called wood-polymer composites (WPC) or natural fibre composites (NFC)) - Part 5: Specifications for cladding profiles and tile	Standard	2014
	EN 15534-6: +A1: Composites made from cellulose-based materials and thermoplastics (usually called wood-polymer composites (WPC) or natural fibre composites (NFC)) - Part 6: Specifications for fencing profiles and elements	Standard	2017

There are further ongoing standardisation activities related to biobased plastics (CEN/TC 249), surface active agents (CEN/TC 276), textiles (CEN/TC 248), pulp, paper and boards (CEN/TC 172), and leather (CEN/TC 289); a selection of relevant standards under development is shown in in Table 3.

Table 3: Relevant standards under development relevant for biobased products

Working programme	No and title	Status	Year
CEN/TC 249/WG17	prEN 17228 Plastics - Bio-based polymers, plastics, and plastic products - Terminology, characteristics and communication	Under approval	2018
CEN/TC 248	prEN ISO 1833-18 Textiles - Quantitative chemical analysis - Part 18: Mixtures of silk with other protein fibres (method using sulfuric acid)	Under approval	2018
CEN/TC 248	prEN ISO 20706-1 Textiles - Qualitative and quantitative analysis of some bast fibres (flax, hemp, ramie) and their blends - Part 1: Fibre identification using microscopy methods	Under drafting	2018
CEN/TC 289	prEN ISO 20136 Leather - Determination of degradability by micro-organisms	Under drafting	2018
CEN/TC 276	prEN 17035 Surface Active Agents - Bio-based surfactants - Requirements and test methods	Under approval	2018
	Surface active agents - Bio-based surfactants - Overview on bio-based surfactants	Under drafting	2018

The standardisation work on algae and algae-based products or intermediates has just started. The newly created CEN/TC 454 'Algae and algae products' will focus on the development of the proposed new standards and other deliverables, which are to be finalised by 2021. The work on algae and algae based products is subdivided into six working groups (WG) having the following scope: WG 1: Terminology, WG2: Identification, WG 3: Productivity, WG 4: Specifications for food/feed sector applications, WG 5: Specifications for non-food/feed sector applications, WG 6: Product test methods.

Slide-deck

The slide-deck is subdivided in four parts and shows the standard development during the 2016-2018 monitoring period. It is based on presentations held at the IEA Bioenergy Task42 Progress Meetings.

- Slide-deck – Part 1: (May 2016)

Provides an overview about labels for biobased and/or compostable products, standards for agricultural feedstock, and relevant activities in the field of biobased products.

- Shows labels for biobased products and products that are compostable.
- Standards how to determine the biobased carbon content in biobased products
- Standards for renewable feedstock in different world regions
- ISO and CEN sustainability standards for bioenergy that encompasses the whole life cycle from renewable material production to its final use for energy applications
- Literature link to standard mapping for biobased products and related claims
- Provides an overview about CEN activities related to standards for biobased products (finalised standards and those that are still under development)
- Future activities towards standardisation activities linking biobased products within the concept of a circular economy.
- New standard to determine the aerobic biodegradability of plastics in marine sediments

AA2: Product Quality (Part 1)

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on behalf of IEA Task42

Content

- Biolabel examples
- Biobased Economy and Bioeconomy
- Overview feedstock standards
- Bio-based economy in Europe
- Bioenergy standards – some news
- Biobased products standards
- Circular economy -
fossil meets biobased

Bio-labels examples

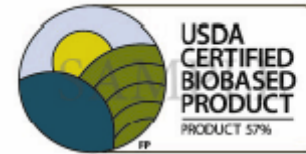


between
20 and 40 %
Biobased

between
40 and 60 %
Biobased

between
60 and 80 %
Biobased

more than 80 %
Biobased



USDA certified



DIN-CERTICO



DIN-CERTICO



Compostable logo US

Bio-based content

ECN publishes report on European Pre-Standard for Biobased Carbon Content

Thursday October 1, 2015 09:10



To reduce dependence on fossil fuels, Europe intends to transition to a biobased economy. The vision is to replace fossil feedstock for energy and products with biobased alternatives. And indeed, a growing number of products that is fully or partly biobased (such as bioplastics) enters the market.

This trend makes it ever more relevant to accurately distinguish between fossil-based products and biobased alternatives. In the [KBBPPS](#) project, a method has been developed to determine the biobased carbon content of product. Following this method, laboratory analysis can determine the percentage of biobased content in a product.

The basis for the method is radiocarbon dating, the same technique as is used to determine the age of archaeological artifacts. Fossil carbon atoms are much older than their biobased counterparts. Using radiocarbon dating, the numbers of fossil and biobased carbon atoms are counted to determine the percentage of biobased content.

In the KBBPPS consortium, ECN heads the development of the biobased carbon content determination method. The method now has the status of a pre-standard. Interlaboratory tests have now been started to determine the reliability of the method. Once these have been completed, the method will be published as an official European standard.

You can read more in our report:

[Knowledge Based Bio-based Products' Pre-Standardization Public report on horizontal standard for bio-based carbon content determination](#)

<https://www.ecn.nl/news/item/ecn-publishes-report-on-european-pre-standard-for-biobased-carbon-content>

Feedstock standards

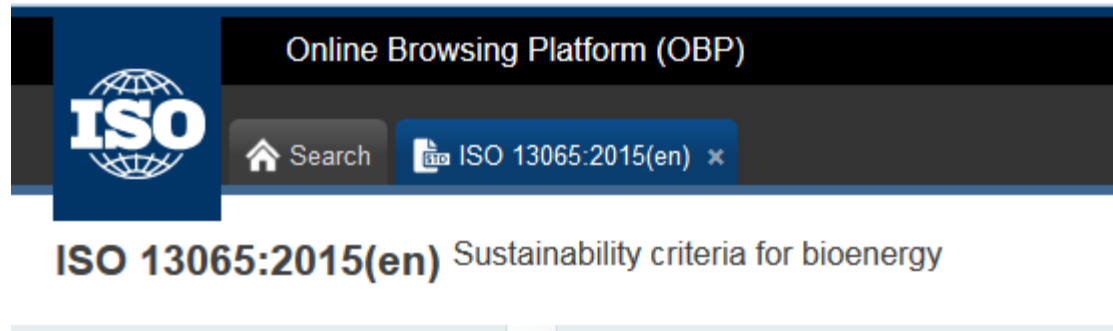


STANDARDS MAP
YOUR ROADMAP TO SUSTAINABLE TRADE

Region	Asia	Africa	Australia & Oceania	Central America, Caribbean	Europe	North/ South America	Total
Agricultural products	71	69	52	54	70	71/74	120
Biomass	37	37	29	32	36	37/38	52

Source: www.standardsmap.org , accessed 13th April 2016

Bioenergy - Standards



CEN/TC 383

Date: 2016-03

EN 16214-3:2016/prA1:2016

CEN/TC 383

Secretariat: NEN



**Proposal for developing a
Horizontal ISO Chain of Custody standard**

Chain of Custody – Transparency and
traceability – Requirements

NEN sets the standard

**Sustainability criteria for the production of biofuels and bioliquids for
energy applications — Principles, criteria, indicators and verifiers —
Part 3: Biodiversity and environmental aspects related to nature
protection purposes**

Einführendes Element — Haupt-Element — Teil 3: Teil-Titel

Élément introductif — Élément central — Partie 3 : Titre de la partie

Overview: Biobased products

PAS 600:2013



BSI Standards Publication

Bio-based products –
Guide to standards and claims

CEN

- Recognised European Standardization Body by EU legislation
- National Standardization Bodies (NSBs) from 33 countries:
 - 28 EU countries, 3 EFTA, Turkey, FYROM



CEN: Biobased products

CEN/TC411

Biobased products

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CEN/TC411/WG1

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CEN/TC411/WG2

Biosolvents

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CEN/TC411/WG3

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CEN/TC411/WG4

Sustainability, LCA

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CEN/TC411/WG5

Certification

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**DIN CEN/TR 16208:2011
(DIN SPEC 33928:2011)**
Biobased products-
overview standards

DIN EN 16575:2014
Biobased products –
Vocabulary

Fpr CEN/TS 16766
Biosolvents -
Requirements and test
methods

**DIN CEN/TS 16640
(DIN SPEC 35800)**
Determination biobased
content

**CEN/TR 16721
(DIN SPEC 35802)**
Overview methods –
Determination of the
biobased content

E DIN EN 16785
Determination of the
biobased carbon content

Working documentst
Overview mass balances
and Book & Claim methodss

E DIN EN 16760
Biobased products
Life Cycle Assessment


E DIN EN 16751
Biobased products –
Sustainability criteria

**E DIN EN 16848 B2B
reporting**
Template for B2B reporting
and communication of
characteristics

Working document
B2C communication

CEN standards work finalised

CEN/TC 411 Published Standards

Reference, Title 	Publication date
<u>CEN/TR 16721:2014</u> (WI=00411002) Bio-based products - Overview of methods to determine the bio-based content	2014-08-06
<u>CEN/TS 16640:2014</u> (WI=00411001) Bio-based products - Determination of the bio based carbon content of products using the radiocarbon method	2014-03-12
<u>CEN/TS 16766:2015</u> (WI=00411007) Bio-based solvents - Requirements and test methods	2015-03-25
<u>EN 16575:2014</u> (WI=00411003) Bio-based products - Vocabulary	2014-08-13
<u>EN 16751:2016</u> (WI=00411005) Bio-based products - Sustainability criteria	2016-04-06
<u>EN 16760:2015</u> (WI=00411006) Bio-based products - Life Cycle Assessment	2015-11-25
<u>EN 16785-1:2015</u> (WI=00411008) Bio-based products - Bio-based content - Part 1: Determination of the bio-based content using the radiocarbon analysis and elemental analysis	2015-12-16

CEN standards work in progress

CEN/TC 411 Work programme					
Project reference ▲	Status ▲▼	Initial Date	Current Stage ▲▼	Next Stage ▲▼	
<u>FprCEN/TR 16957</u> (WI=00411010) Bio-based products - Guidelines for Life Cycle Inventory (LCI) for the End-of-life phase	Under Approval	2014-10-09	2016-01-21	2016-04-21	
<u>FprEN 16848</u> (WI=00411004) Bio-based products - Template for B2B reporting and communication of characteristics - Data sheet	Under Approval	2014-05-14	2016-03-14	2016-06-16	
<u>prEN 16640</u> (WI=00411009) Bio-based products - Bio-based carbon content - Determination of the bio-based carbon content using the radiocarbon method	Under Approval	2014-07-01	2015-11-20	2016-07-20	
<u>prEN 16785-2</u> (WI=00411011) Bio-based products - Bio-based content - Part 2: Determination of the bio-based content using the material balance method	Under Approval	2015-01-05	2015-08-02	2016-04-04	
<u>prEN 16935</u> (WI=00411013) Bio-based products - B2C reporting and communication - Requirements for claims	Under Approval	2015-08-17	2016-02-19	2016-10-19	

Circular economy

Fossil- meets bio-based



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e.g. ISO 9001

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Resource Management and the Circular Economy

The move to a 'circular economy' has been identified as a significant opportunity for UK business. It will contribute towards a resource efficient and low-carbon economy, reducing costs and supply chain risks, while generating economic and social value.

Circular economy

TECHNICAL BOARD

CEN/BT by correspondence

For information and possible comments

Issue date:

2016-03-23

Simultaneous circulation to CENELEC/BT ☒

Deadline:

2016-04-19

SUBJECT

Circular Economy -- Possible Ancillary Action on Sustainable Chemicals from secondary raw materials

Plastics - Biodegradability

New ASTM Standard Tests and Supports Biodegradability of Plastics in Water

29.10.2015

Laboratories will soon be able to use a new ASTM International standard to test and better understand biodegradability of plastics in marine environments.

The new standard (soon to be published as D7991, Test Method for Determining Aerobic Biodegradation of Plastics Buried in Sandy Marine Sediment Under Controlled Laboratory Conditions) provides ways to simulate how plastics degrade in seawater-soaked sand.

- **Slide-deck – Part 2: (November 2016)**

The structure of CEN/TC411 with the respective working groups is displayed. It also shows the progress of the CEN standardisation activities TC411 in the field of biobased products.

Microplastics in the environment have gained huge interest. The integration of biodegradability and compostability might be a good opportunity for biobased products as it follows the cradle-to cradle concept and avoids the microplastic debate. Test methods to determine those functionalities (biodegradability and compostability) for different environmental compartments are shown. These methods are prerequisite for product labelling. Special environmental functionalities, such as “biodegradable in soils” are used by certification bodies.

An update (see slide deck 1) of relevant labels in the field of biobased products is provided; that encompasses relevant labels in Europe, Japan, Australia, the US but also countries and specific regions.

AA2: Product Quality (Part 2)

Heinz Stichnothe
Thünen Institute of Agricultural Technology
Braunschweig, Germany

on behalf of IEA Task42

Content

- CEN activity areas and update CEN TC 411
- Biobased products standards
- Consumer concerns
- Biodegradability – opportunity (?)
- Relation test methods and labelling
- Test methods
- Overview labels
- Summary

CEN – biobased products

OVERVIEW OF CEN TECHNICAL COMMITTEES WORKING IN THE AREA OF BIO-BASED PRODUCTS

CEN/TC 19

Gaseous and liquid fuels, lubricants and related products of petroleum, synthetic and biological origin

- Bio-lubricants (EC Mandate 430)

CEN/TC 249

Plastics

- Bio-polymers (EC Mandate 430)

CEN/TC 276

Surface Active Agents

- Bio-surfactants (EC Mandate 491)

CEN/TC 411

Bio-based products

- Horizontal standards (EC Mandate 492)
- Bio-solvents (EC Mandate 491)

CEN: Biobased products

CEN/TC411

Biobased products

Chairman: F. Petit
Sekret.: NEN (Niederlande)
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CEN/TC411/WG1

Terminology

Convenor: H. Omloo
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CEN/TC411/WG2

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CEN/TC411/WG3

Biobased content

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CEN/TC411/WG4

Sustainability, LCA

Convenor: S. Eriksson
Sekretar.: SIS (Schweden)
Maria.gustafsson@sis.se

CEN/TC411/WG5

Certification

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**DIN CEN/TR 16208:2011
(DIN SPEC 33928:2011)**
Biobased products-
overview standards

DIN EN 16575:2014
Biobased products –
Vocabulary

Fpr CEN/TS 16766
Biosolvents -
Requirements and test
methods

**DIN CEN/TS 16640
(DIN SPEC 35800)**
Determination biobased
content

**CEN/TR 16721
(DIN SPEC 35802)**
Overview methods –
Determination of the
biobased content

E DIN EN 16785
Determination of the
biobased carbon content

Working documentst
Overview mass balances
and Book & Claim methodss

E DIN EN 16760
Biobased products
Life Cycle Assessment

E DIN EN 16751
Biobased products –
Sustainability criteria

**E DIN EN 16848 B2B
reporting**
Template for B2B reporting
and communication of
characteristics

Working document
B2C communication

CEN standards work finalised

X

CEN/TC 411	(WI=00411015) Bio-based products - Oxygen content - Determination of the oxygen content using an elemental analyser	Under Drafting
CEN/TC 411	CEN/TR 16721:2014 (WI=00411002) Bio-based products - Overview of methods to determine the bio-based content	Published
CEN/TC 411	CEN/TR 16957:2016 (WI=00411010) Bio-based products - Guidelines for Life Cycle Inventory (LCI) for the End-of-life phase	Published
CEN/TC 411	CEN/TS 16640:2014 (WI=00411001) Bio-based products - Determination of the bio based carbon content of products using the radiocarbon method	Published
CEN/TC 411	CEN/TS 16766:2015 (WI=00411007) Bio-based solvents - Requirements and test methods	Published
CEN/TC 411	EN 16575:2014 (WI=00411003) Bio-based products - Vocabulary	Published
CEN/TC 411	EN 16751:2016 (WI=00411005) Bio-based products - Sustainability criteria	Published
CEN/TC 411	EN 16760:2015 (WI=00411006) Bio-based products - Life Cycle Assessment	Published
CEN/TC 411	EN 16785-1:2015 (WI=00411008) Bio-based products - Bio-based content - Part 1: Determination of the bio-based content using the radiocarbon analysis and elemental analysis	Published
CEN/TC 411	EN 16848:2016 (WI=00411004) Bio-based products - Requirements for Business to Business communication of characteristics using a Data Sheet	Published

X

CEN standards work in progress

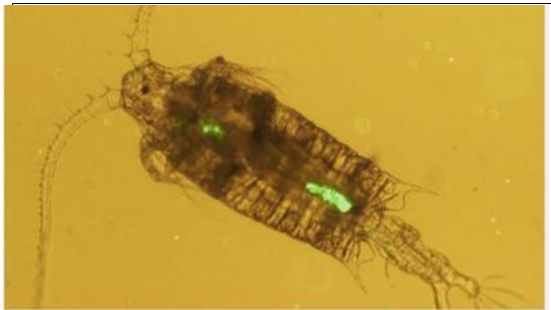
CEN/TC 411	<u>FprEN 16640</u> (WI=00411009) Bio-based products - Bio-based carbon content - Determination of the bio-based carbon content using the radiocarbon method	Under Approval
CEN/TC 411	<u>FprEN 16935</u> (WI=00411013) Bio-based products - Requirements for Business-to-Consumer communication and claims	Under Approval
CEN/TC 411	<u>prEN 16766</u> (WI=00411016) Bio-based solvents - Requirements and test methods	Under Enquiry
CEN/TC 411	<u>prEN 16785-2</u> (WI=00411011) Bio-based products - Bio-based content - Part 2: Determination of the bio-based content using the material balance method	Under Enquiry

Consumer concern

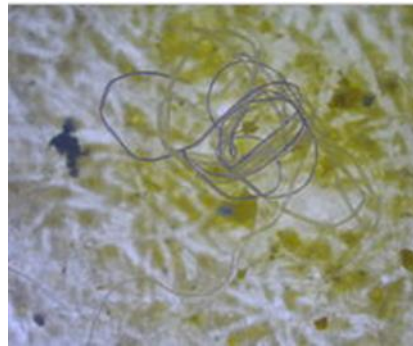
Environment

Microplastics in the sea a growing threat to human health, United Nations warns

More than a quarter of fish in markets in Indonesia and California contain plastic particles



Tiny zooplankton like this one readily ingest microplastics in marine habitats. Credit: Matthew Cole, et al., courtesy of the journal "Environmental Science & Technology."



Geophysical Research Abstracts
Vol. 18, EGU2016-17432-2, 2016
EGU General Assembly 2016
© Author(s) 2016. CC Attribution 3.0 License.



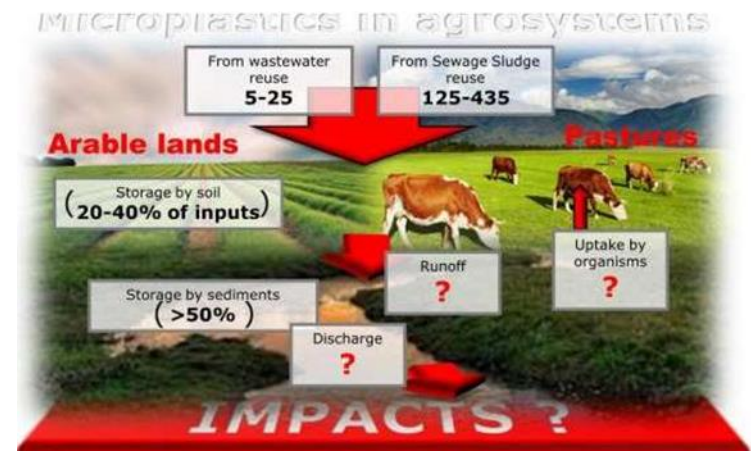
Potential risk of microplastics transportation into ground water

Pollution: Do microplastics spill on to farm soils?

Luca Nizzetto, Sindre Langaas & Martyn Futter

Affiliations | Corresponding author

Nature **537**, 488 (22 September 2016) | doi:10.1038/537488b



Estimated inputs of MPs to agrosystems (in t y^{-1} per million of people). Data in bracket are preliminary estimates obtained from model simulations.

Biodegradability – Opportunity for biobased polymers?

Certified Compostable Foodservice Items from Biodegradable Products Institute

Certified Compostable Foodservice Items from Biodegradable Products Institute | Eco-Cycle

List Notes

1. Information was taken directly from BPI's website and company websites. Any information omitted was not intentional. Inclusion on the list does not indicate endorsement of one company or another by Eco-Cycle, its board or staff.
2. When contacting a company or wholesaler, be sure to indicate interest in BPI Certified compostable foodservice ware and/or BPI Certified compostable bags and liners, because they may also offer similar product lines that are not compostable.
3. Many companies will offer special design and manufacturing to produce new containers (for certain size, function) if similar to other products they currently offer.
4. Only companies with a U.S. and/or Canada presence, manufacturers or distributors, are listed.

Company Website/contact information	Description of items manufactured & sold
Absolute Plastics LLC www.absoluteplastics.net Tel (252) 206-9941 Fax (252) 206-9947 Email sales@absoluteplastics.net	Look for: Absolute Plastics Items available include: hinged containers, plates, bowls, platters/trays,
Asean Corporation www.stalkmarketproducts.com Tel (503) 295-4977	Look for: Stalkmarket, Jaya, Planet Plus Items available include: plates, bowls, hot cups & lids, cold cups & lids, straws, sleeves, hinged food containers & lids, clear deli containers & lids, cutlery, trays,

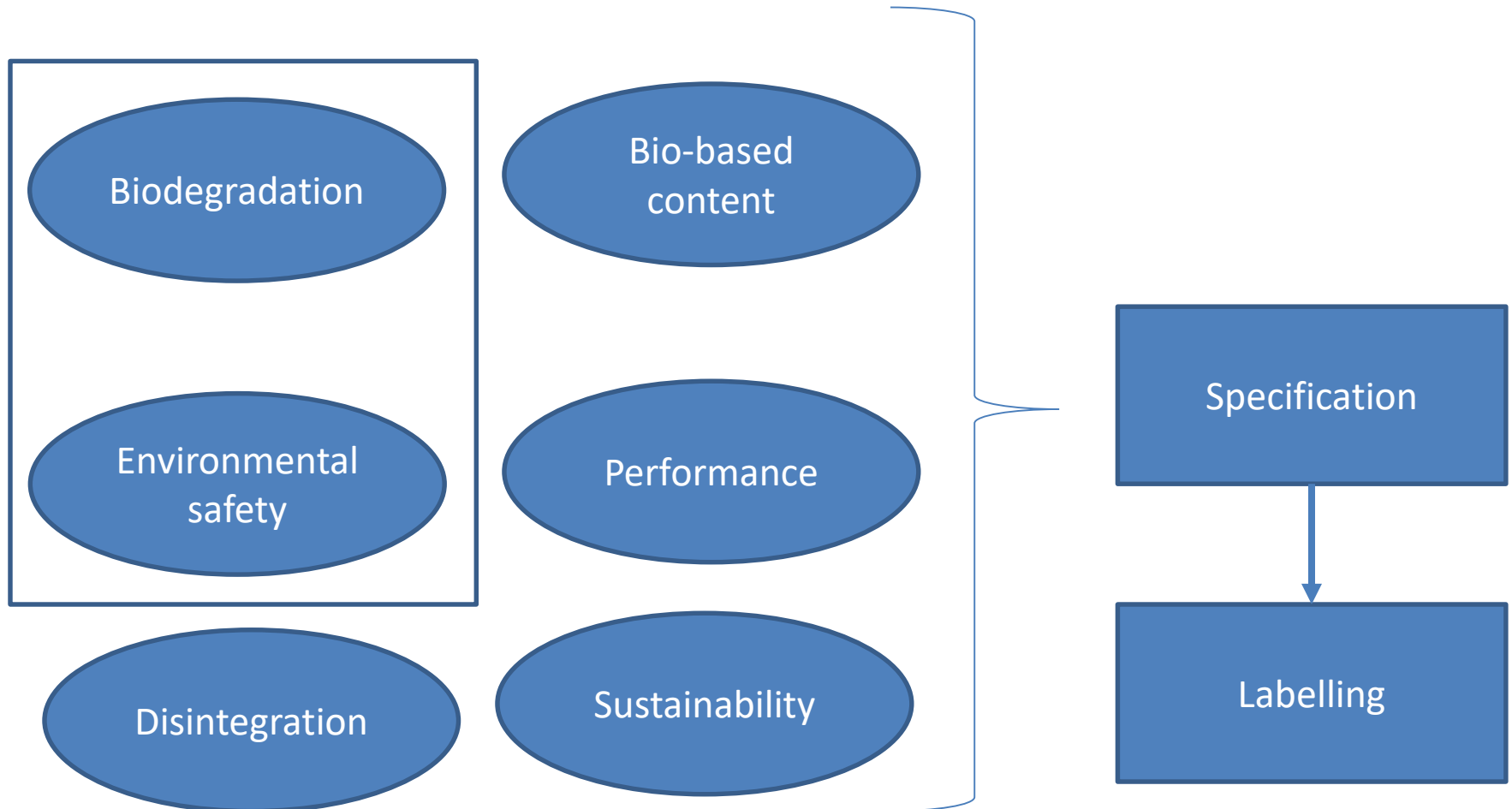
For more please look at: <http://www.ecocycle.org/specialreports/microplasticsincompost>

Biodegradability – easy?



Test methods for



- Fresh water
- Marine environment
- Anaerobic environment
- Sediment
- Soil
- Compost

Test methods -> labelling



Method - certification

	VINCOTTE	
	OK biodegradable SOIL : Initial acceptance tests	
	Doc Ref : OK10-e Edition : C Application Date : 2012-03-01 Page : 1 / 5 Replace : Edition B	
<p><u>Program OK 10</u></p> <p>Bio products – degradation in soil</p>		

	VINCOTTE	
	OK biodegradable MARINE : Initial acceptance tests	
	Doc Ref : OK12-e Edition : A ¹ Application Date : 2015-03-02 Page : 1 / 5 Replace : -	
<p align="center"><u>Program OK 12</u></p> <p align="center">Bio products – degradation in seawater</p>		

Some test methods

International standard ISO 14851: *"Determination of the ultimate aerobic biodegradability of plastic material in an aqueous medium - Method by measuring the oxygen demand in a closed respirometer"*

International standard ISO 14852: *"Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium - Method by analysis of evolved carbon dioxide"*

International standard ISO 14855: *"Determination of the ultimate aerobic biodegradability of plastic materials under controlled composting conditions - Method by analysis of evolved carbon dioxide"*

American standard ASTM D 5338: *"Standard Test Method for Determining Aerobic Biodegradation of Plastic Materials Under Controlled Composting Conditions. Incorporating Thermophilic Temperatures"*

American Standard ASTM D 6400: *"Standard Specification for Labelling of Plastics Designed to be Aerobically Composted in Municipal or Industrial Facilities"*

American standard ASTM D 6691: *"Standard Test Method for Determining Aerobic Biodegradation of Plastic Materials in the Marine Environment by a Defined Microbial Consortium or Natural Sea Water Inoculum"*

European standard EN 13193: *"Packaging. Packaging and the environment. Terminology"*

European standard EN 13137: *"Characterisation of waste. Determination of total organic carbon (TOC) in waste, sludges and sediments"*

European standard EN 13432: *"Packaging - Requirements for packaging recoverable through composting and biodegradation - Test scheme and evaluation criteria for the final acceptance of packaging"*

Document with reference OPPTS 850.1010: *"Aquatic Invertebrate Acute Toxicity Test, Freshwater Daphnids"*

Document with reference OECD 202: *"Daphnia sp., Acute Immobilisation Test"*

Document with reference OPPTS 850.1075: *"Fish Acute Toxicity Test, Freshwater and Marine"*

Document with reference OECD 203: *"Fish, Acute Toxicity Test"*

Document with reference OPPTS 850.5400: *"Algal Toxicity, Tiers I and II"*

Document with reference OECD 201: *"Freshwater Alga and Cyanobacteria, Growth Inhibition Test"*

Document with reference OECD 306: *"Biodegradability in Seawater"*

International standard ISO 16221: *"Water quality – Guidance for determination of biodegradability in the marine environment"*

International standard ISO 18830: *"Plastics – Test Method for Determining Aerobic Biodegradation of Plastic Materials sunk at the sea water / sandy sediment interface"*

More test methods

International standard ISO 17556: *"Determination of the ultimate aerobic biodegradability in soil by measuring the oxygen demand"*

International standard ISO 11266: *"Soil quality - Guidance on laboratory testing for biodegradation of organic chemicals in soil under aerobic conditions"*

International standard ISO 14851: *"Determination of the ultimate aerobic biodegradability of plastic material in an aqueous medium - Method by measuring the oxygen demand in a closed respirometer"*

International standard ISO 14852: *"Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium - Method by analysis of evolved carbon dioxide"*

European standard EN 29408: *"Water quality. Evaluation in an aqueous medium of the "ultimate" aerobic biodegradability of organic compounds: method by determining the oxygen demand in a closed respirometer"*

European standard EN 29439: *"Water quality. Evaluation in an aqueous medium of the "ultimate" aerobic biodegradability of organic compounds: method by analysis of released carbon dioxide"*

International standard ISO 9408: *"Water quality - Evaluation in aqueous medium of the "ultimate" aerobic biodegradability of organic compounds - Method by determining of the oxygen demand in a closed respirometer"*

International standard ISO 9439: *"Water quality - Evaluation in aqueous medium of the "ultimate" aerobic biodegradability of organic compounds - Method by analysis of released carbon dioxide"*

American standard ASTM D.5271: *"Test Method For Assessing the Aerobic Biodegradation of Plastic Materials in an Activated Sludge Wastewater-Treatment System"*

American standard ASTM D.5988: *"Standard Test Method for Determining Aerobic Biodegradation in Soil of Plastic Materials or Residual Plastic Materials After Composting"*

Document with reference OECD 301 C: *"Aquatic respirometric biodegradation test (MITI)"*

Document with reference OECD 301 B: *"CO₂ Evolution (Modified Sturm Test)"*

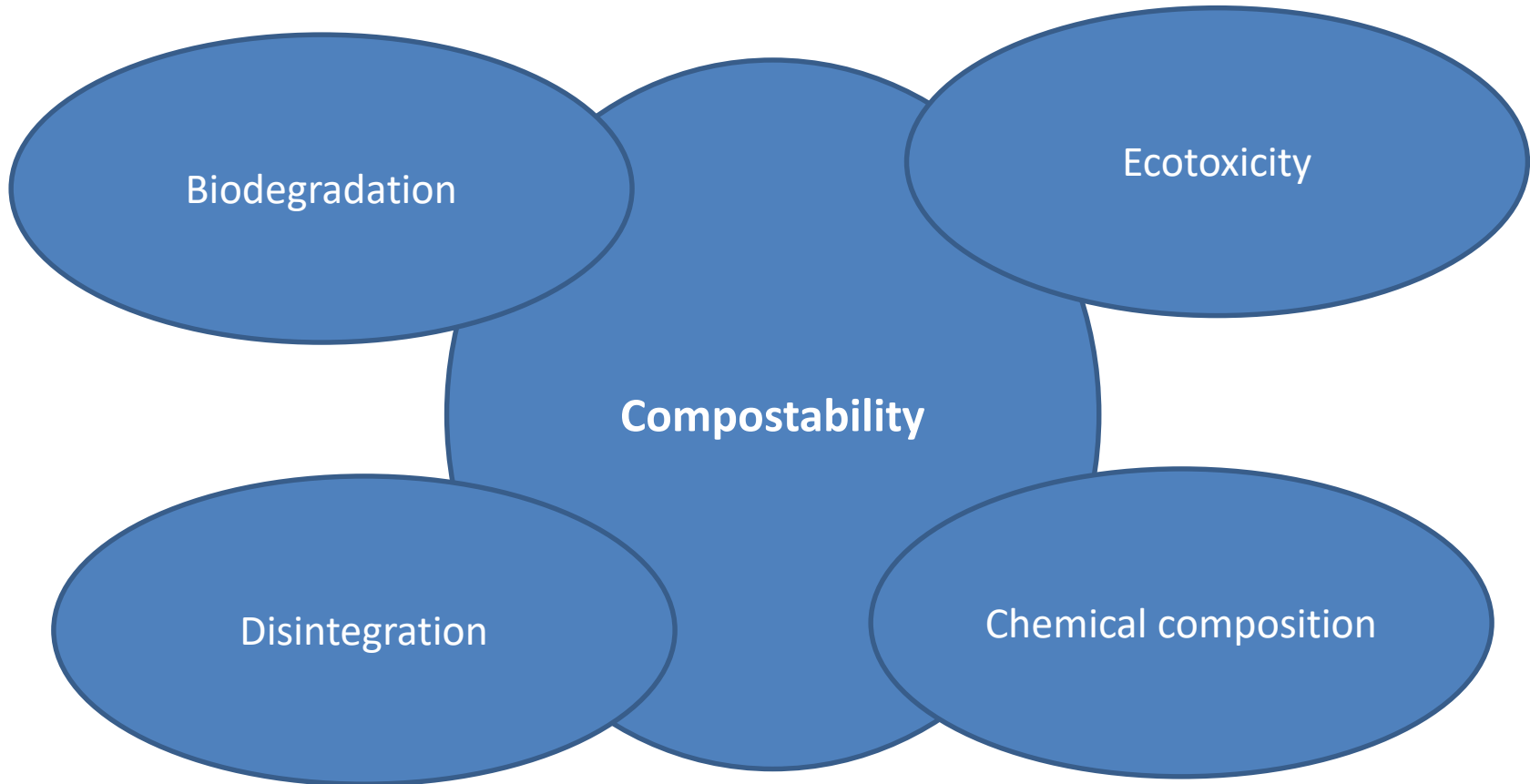
American standard ASTM D.6691: *"Standard Test Method for Determining Aerobic Biodegradation of Plastic Materials in the Marine Environment by a Defined Microbial Consortium or Natural Sea Water Inoculum"*

Document with reference OECD 208: *"Terrestrial Plant Test: Seedling Emergence and Seedling Growth Test"*



European standard EN 13193: *"Packaging. Packaging and the environment. Terminology"*






European Standard EN 13137: *"Characterisation of waste. Determination of total organic carbon (TOC) in waste, sludges and sediments"*

Compostability



Labels

Logo	Organization	Norm	Symbol
Seedling logo	European Bioplastics	EN 13432, ASTM D 6400, EN 14995 and ISO 17088	
OK compost logo	Vinçotte	EN 13432	
DIN-Geprüft Compostable logo	DIN CERTCO	EN 13432, ASTM D 6400, EN 14995, ISO 17088 and AS 4736	
Compostable logo	Biodegradable Products Institute (BPI)	ASTM D 6400 and ASTM D 6868	
Cedar Grove Composting logo	Cedar Grove	based on ASTM D6400 and ASTM D6868 with additionally mandatory full-scale test	
GreenPla logo	Japan Bioplastics Association (JBPA)	Green PLA certification scheme	

Logo	Organization	Norm	Symbol
Australian seedling logo	Australasian Bioplastics Association (ABA)	AS 4736	
National logo in Italy	Consorzio Italiano Compostatori (CIC)	based on EN 13432 with additionally mandatory full-scale test	
National logo in Finland	Jätelaitosyhdistys	EN 13432	
National logo in Sweden	SP Technical Research Institute of Sweden	SPCR 141	
National logo in Spain (Catalonia)	Departament de Medi Ambient i Habitatge	EN 13432 and EN 14995	

Summary

- CEN TC/411 progressing
- Focus were on biodegradability (consumer products as food packaging and „niche products“ such as mulching foil)
- Numerous standardised test methods testing degradation in soil still challenging
- Composting tests → Biodegradation time in natural environment (?)
- Mostly polymers, for bio-lubricants and bio-solvents room for improvements

- **Slide-deck – Part 3 (May 2017)**

Summarises the progress of TC/493. It also shows the final decision concerning indirect effects in bioenergy standards in Europe (CEN/TC 383).

Driven by the Action Plan for the circular economy in Europe the question of the use of secondary raw materials for “sustainable chemicals” appeared. That has led to an enquiry about the need for a standard for “Sustainable Chemicals”. Stakeholder consultation has taken place, the presentation contains an overview about relevant stakeholders; some stakeholders relevant for biorefinery activities are emphasised. NEN the Dutch Standardisation body has got a pre-mandate from the EU-Commission to map relevant existing standards in order to explore whether a new standard is needed for sustainable chemicals. These activities should be finalised in 2018 and reported to the EU-commission. Whether a decision will be taken in 2018 regarding the need for a standard for sustainable chemicals remains to be seen.

AA2: Product Quality (Part 3)

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on behalf of IEA Task42

CEN/TC 383: Sustainably produced biomass for energy applications

CEN/TC 383 Published Standards

Reference, Title	Publication date
<u>CEN/TS 16214-2:2014</u> (WI=00383010) Sustainability criteria for the production of biofuels and bioliquids for energy applications - Principles, criteria, indicators and verifiers - Part 2: Conformity assessment including chain of custody and mass balance	2014-01-15
<u>EN 16214-1:2012</u> (WI=00383001) Sustainability criteria for the production of biofuels and bioliquids for energy applications - Principles, criteria, indicators and verifiers - Part 1: Terminology	2012-08-29
<u>EN 16214-3:2012</u> (WI=00383009) Sustainability criteria for the production of biofuels and bioliquids for energy applications - Principles, criteria, indicators and verifiers - Part 3: Biodiversity and environmental aspects related to nature protection purposes	2012-08-29
<u>EN 16214-4:2013</u> (WI=00383008) Sustainability criteria for the production of biofuels and bioliquids for energy applications - Principles, criteria, indicators and verifiers - Part 4: Calculation methods of the greenhouse gas emission balance using a life cycle analysis approach	2013-01-16

CEN/TC 383/WG3 Biodiversity and environmental aspects

Final draft recommendation to CEN/TC 383/WG 3 regarding iLUC and indirect effects (CEN/TC 383/WG 3 N 230)

Datum des Dokumentes

2017-02-20

Aktion

Info

CEN/TC 383/WG 3 also discussed the state-of-science regarding indirect effects to see whether there are other feasible areas for standardisation at this time. Given that the EN 16214-series has so far only included topics considered in Directive 2009/28/EC, and noting that science is not unanimous regarding ILUC, WG 3 does not recommend any further work regarding indirect effects at this stage. This is also taking into consideration the recent experiences within ISO/PC 248 *Sustainability criteria for bioenergy*, where it was not possible to reach consensus regarding indirect effects. However, CEN/TC 383 could include ILUC considerations in CEN/TC 383's work as soon as more EC policy guidance exists.

Driver

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

Closing the loop - An EU action plan for the Circular Economy

Bio-based materials, i.e. those based on biological resources (such as wood, crops or fibres) can be used for a wide range of products (construction, furniture, paper, food, textile, chemicals, etc...) and energy uses (e.g. biofuels). The bioeconomy hence provides alternatives to fossil-based products and energy, and can contribute to the circular economy. Bio-based materials can also present advantages linked to their renewability, biodegradability or compostability. On the other hand, using biological resources requires attention to their lifecycle environmental impacts and sustainable sourcing. The multiple possibilities for their use can also generate competition for them and create pressure on land-use. The Commission will examine the contribution of its 2012 a Bioeconomy Strategy⁴³ to the circular economy and consider updating it if necessary.

Circular economy

TECHNICAL BOARD

CEN/BT by correspondence

For information and possible comments Issue date: 2016-03-23

Simultaneous circulation to CENELEC/BT ☒ Deadline: 2016-04-19

SUBJECT

Circular Economy -- Possible Ancillary Action on Sustainable Chemicals from secondary raw materials

Pre-mandate „Sustainable Chemicals“

- Formally established 2017
- Coordinator NEN
- Standard screening worldwide
- Currently five task groups
 - Raw material
 - Production/Design
 - Production Processes
 - Consumption/Labelling
 - Recycling/End of life/waste management
- Report to the EU Commission Spring 2018
- Decision whether a new standard on sustainable chemicals is required

Strategy paper Chemical Industry 2017



Sustainability has become a vital part of many business strategies across industries, and that has prompted growing interest in the circular economy—including among European chemical companies. The advent of the circular economy is likely to lead to significant changes for the industry, along with fundamental challenges. But it could present a major opportunity for the European chemical industry, and for Europe overall.

Stakeholder consultation



EUROPEAN COMMISSION

Internal Market, Industry, Entrepreneurship and SMEs Directorate-General
Consumer, Environmental and Health Technologies
Unit D.1: REACH

Environment Directorate –General
Circular Economy and Green Grow
Unit B.2: Sustainable Chemicals

STAKEHOLDER CONSULTATION PAPER

CHEMICAL, PRODUCT, WASTE INTERFACE

INSTRUCTIONS FOR THE CONSULTATION

The present document should be read together with the Roadmap on "Analysis of the interface between chemicals, products and waste legislation and identification of policy options" which was published on 27 January 2017 at the following website:

http://ec.europa.eu/smart-regulation/roadmaps/docs/plan_2016_116_cpw_en.pdf

Due date 07/07/2017

	Stakeholders
	The Joint Research Centre of the European Commission
	Different relevant technology platforms
→	Workers (ETUI-REHS)
	The European Renewable Raw Materials Association (ERRMA)
	COPA-COGECA
	EFAR – European Federation for agricultural recycling
	EBA- European Biogas Association
	Municipal Waste Europe
→	EUROFEMA – European Organic Fertilizers Manufacturers Association
	European Biomass Industry Association
	CEPI – Confederation of European Paper Industries
	CEWEP
	Circular Economy 100 Platform
	Public Private Partnerships (PPPs)
	Joint Undertakings
	Organisations representing consumers' interests (ANEC)
	Environmental protection (ECOS)
	SMEs (NORMAPME),
→	European Chemical Industry Council (CEFIC)
→	European Bioplastics
→	European Association for BioIndustries (EuropaBio)
	Council of European Municipalities and Regions,
	EUREAU
	EURO COOP – European Community of Consumer Cooperatives
	FEAD - European Federation of Waste Management and Environmental Services
	EFRA – European Animal By-product Processing Sector
	ESPP – European Sustainable Phosphorus Platform
	ECOFI- European Consortium Organic-Based Fertilizer Industry
→	EUROSLAG – European Association of Metallurgical Slag Products and Processors
	European Biomass Industry Association
	Fédération Internationale du Recyclage (FIR),
	European Recovered Fuel Organisation (ERFO)
	CEPF - Confederation of European Forest Owners
	Fertilizer Europe
	European Compost Network
	Ellen MacArthur Foundation
	Relevant European Technology Platforms (ETPs)

- **Slide-deck – Part 4: (October 2017)**

Slide-deck 4 shows the existing and newly approved standards for biobased products. It also shows standards concerning “sustainably produced biomass for energy applications” that might be adapted in the future due to the revision of the European Energy Directive.

The ongoing activities for the pre-standardisation activity for “Sustainable chemicals from secondary raw materials” are also displayed. In 2017, Japan has updated various standards/test methods for the determination of aerobic biodegradability of chemical substances and plastic materials in different environments or conditions.

Labels for the compostability and biodegradability are shown together with the respective test methods in different countries as well as certification bodies from the US, Japan and Europe.

The biobased content can be expressed in different ways (biobased carbon content, organic matter content and biobased content); the corresponding test methods for the different claims are shown. Furthermore an example is provided for compostable and biodegradable products and several industrial sectors in the US, Japan and Europe.

AA2: Product Quality (Part 4)

Heinz Stichnothe
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Braunschweig, Germany

on behalf of IEA Task42

European ongoing Initiative

Stakeholder Conference:
‘Reinventing Plastics – Closing the Circle’
26 September 2017, Brussels

Venue

Albert Borschette Conference Centre, Room 0A, Rue Froissart 36, 1040 Brussels.

Introduction and objectives

Plastic is an important material for our economy. However, its growing production brings with it a series of challenges related to their production, use, and end-of-life that need to be addressed.

In its ‘EU action plan for the Circular Economy’ (COM (2015) 614 final), the European Commission set out a commitment to develop a plastics strategy due to be adopted in late 2017 through a Commission Communication. This strategy intends to support and complement the existing acquis and tackle the interrelated problems of fossil feedstock dependence, recycling and reuse and plastics leakage into the environment. The strategy is being informed by a number of technical studies and a wide variety of stakeholder engagement activities.

Content

- Standards biobased products
 - Finalised
 - In preparation
- Standards sustainability product biomass for energy applications
 - Finalised
 - In preparation
- Labels
- Sustainable Chemicals



Biobased products – Standards overview

CEN/TC 411 Subcommittees and Working Groups


Working group	Title
CEN/TC 411/WG 1	Terminology
CEN/TC 411/WG 2	Bio-solvents
CEN/TC 411/WG 3	Bio-based content
CEN/TC 411/WG 4	Sustainability criteria, life cycle analysis and related issues
CEN/TC 411/WG 5	Certification and declaration tools

Biobased products – Standards 1

CEN/TC 411/WG 1 Published Standards

Reference, Title 	Publication date 
<u>EN 16575:2014</u> (WI=00411003) Bio-based products - Vocabulary	2014-08-13

CEN/TC 411/WG 2 Published Standards

Reference, Title 	Publication date
<u>CEN/TS 16766:2015</u> (WI=00411007) Bio-based solvents - Requirements and test methods	2015-03-25

Biobased products – Standards 2

CEN/TC 411/WG 3 Published Standards

Reference, Title

Publication date

[CEN/TR 16721:2014](#) (WI=00411002)

Bio-based products - Overview of methods to determine the bio-based content

2014-08-06

→ [EN 16640:2017](#) (WI=00411009)

Bio-based products - Bio-based carbon content - Determination of the bio-based carbon content using the radiocarbon method

2017-02-22

→ [EN 16640:2017/AC:2017](#) (WI=00411C01)

Bio-based products - Bio-based carbon content - Determination of the bio-based carbon content using the radiocarbon method

2017-07-12

[EN 16785-1:2015](#) (WI=00411008)

Bio-based products - Bio-based content - Part 1: Determination of the bio-based content using the radiocarbon analysis and elemental analysis

2015-12-16

Biobased products – Standards 3

CEN/TC 411/WG 4 Published Standards

Reference, Title

Publication date

[CEN/TR 16957:2016](#) (WI=00411010)

Bio-based products - Guidelines for Life Cycle Inventory (LCI) for the End-of-life phase

2016-09-07

[EN 16751:2016](#) (WI=00411005)

Bio-based products - Sustainability criteria

2016-04-06

[EN 16760:2015](#) (WI=00411006)

Bio-based products - Life Cycle Assessment

2015-11-25

Biobased products – Standards 4

CEN/TC 411/WG 5 Published Standards

Reference, Title

Publication date

[EN 16848:2016](#) (WI=00411004)

Bio-based products - Requirements for Business to Business communication of characteristics using a Data Sheet

2016-11-09

→ [EN 16935:2017](#) (WI=00411013)

Bio-based products - Requirements for Business-to-Consumer communication and claims

2017-05-10

Biobased products – forthcoming

CEN/TC 411/WG 2 Work programme

Project reference ▲	Status ▲▼	Initial Date	Current Stage ▲▼	Next Stage ▲▼	Forecasted voting date
EN 16766:2017 (WI=00411016) Bio-based solvents - Requirements and test methods	Approved	2016-06-02	2017-09-06	2017-11-01	2017-01-18

CEN/TC 411/WG 3 Work programme

Project reference ▲	Status ▲▼	Initial Date	Current Stage ▲▼	Next Stage ▲▼
FprEN 16785-2 (WI=00411011) Bio-based products - Bio-based content - Part 2: Determination of the bio-based content using the material balance method	Under Approval	2015-01-05	2017-09-28	2017-11-23
(WI=00411015) Bio-based products - Oxygen content - Determination of the oxygen content using an elemental analyser	Under Drafting	2016-05-27	2016-05-27	2016-11-28

CEN/TC 383: Sustainably produced biomass for energy applications

CEN/TC 383 Published Standards

Reference, Title	Publication date
<u>CEN/TS 16214-2:2014</u> (WI=00383010) Sustainability criteria for the production of biofuels and bioliquids for energy applications - Principles, criteria, indicators and verifiers - Part 2: Conformity assessment including chain of custody and mass balance	2014-01-15
<u>EN 16214-1:2012</u> (WI=00383001) Sustainability criteria for the production of biofuels and bioliquids for energy applications - Principles, criteria, indicators and verifiers - Part 1: Terminology	2012-08-29
<u>EN 16214-3:2012</u> (WI=00383009) Sustainability criteria for the production of biofuels and bioliquids for energy applications - Principles, criteria, indicators and verifiers - Part 3: Biodiversity and environmental aspects related to nature protection purposes	2012-08-29
<u>EN 16214-4:2013</u> (WI=00383008) Sustainability criteria for the production of biofuels and bioliquids for energy applications - Principles, criteria, indicators and verifiers - Part 4: Calculation methods of the greenhouse gas emission balance using a life cycle analysis approach	2013-01-16

Update after EU-RED II required?

CEN/TC 383: Sustainably produced biomass for energy applications

CEN/TC 383 Work programme					
Project reference	Status	Initial Date	Current Stage	Next Stage	
prCEN/TS 16214-2 rev (WI=00383016) Sustainability criteria for the production of biofuels and bioliquids for energy applications - Principles, criteria, indicators and verifiers - Part 2: Conformity assessment including chain of custody and mass balance	Under Drafting	2017-09-29	2017-09-29	2018-03-29	
prEN 16214-1 rev (WI=00383015) Sustainability criteria for the production of biofuels and bioliquids for energy applications - Principles, criteria, indicators and verifiers - Part 1: Terminology	Under Drafting	2017-09-29	2017-09-29	2018-01-29	
prEN 16214-4 rev (WI=00383017) Sustainability criteria for the production of biofuels and bioliquids for energy applications - Principles, criteria, indicators and verifiers - Part 4: Calculation methods of the greenhouse gas emission balance using a life cycle analysis approach	Under Drafting	2017-09-29	2017-09-29	2018-01-29	

Pre-mandate „Sustainable Chemicals“ I

- Formally established 2017
 - Coordinator NEN
 - Standard screening worldwide
 - Currently five task groups
 - Raw material
 - Production/Design
 - Production Processes
 - Consumption/Labelling
 - Recycling/End of life/waste management
 - Report to the EU Commission Spring 2018
 - Decision whether a new standard on sustainable chemicals is required
- Work in progress
- Currently more than 1000 relevant standards are identified (worldwide)
 - Classification of the standards according to green chemistry principles

Pre-mandate „Sustainable Chemicals“

II

Relevant standards for bio-based chemicals, particularly biopolymers

- Determination of the biogenic carbon content
- Compostability
- Biodegradability in soil(s)
- Biodegradability in the marine environment
- Quality requirements recyclates

Test methods –Japan BioPlastics updated 2017

- OECD 301C (Modified MITI Test – Ready Biodegradability)
Chemical substances: Aerobic biodegradability testing method using activated sludge
- ISO 14851: Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium (Method by measuring the oxygen demand in a closed respirometer)
- ISO 14852: Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium (Method by analysis of evolved carbon dioxide)
- ISO 14855 -1: Determination of the ultimate aerobic biodegradability and disintegration of plastic materials under controlled composting conditions (Method by analysis of evolved carbon dioxide, general method)
- ISO 14855-2: Determination of the ultimate aerobic biodegradability of plastic materials under controlled composting conditions (Method by analysis of evolved carbon dioxide, gravimetric measurement)

Labels – compostability, biodegradation



US, UK, PL, NL, GER



Organic fibres,
and restricted
processing



?

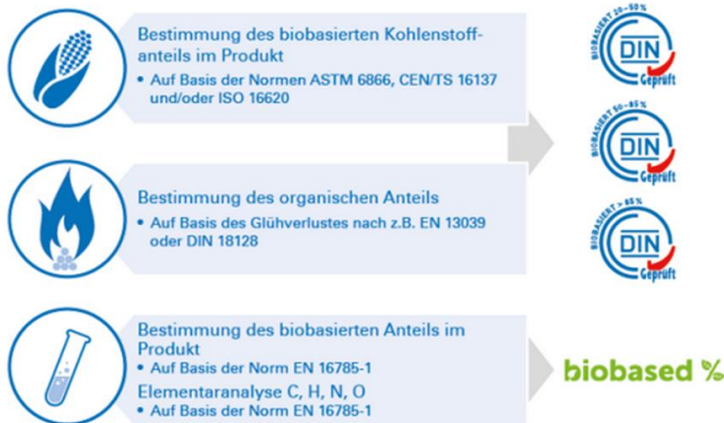
Test methods:

- ASTM D 6400 (US)
- DIN EN 13432 (Europe)
- AS 5810 (Australia)
- T51 – 800 (France)
- ASTM D 5338 (plastics, aerobic biodegradation)
- ISO 16929 (plastics disintegration)

Relevant bodies:

- BPI, US
- Vincotte, Belgium
- DIN CERTCO, Germany
- Jätelaitosyhdistys, Finland
- ADEME, France
- Japan BioPlastics Association (registration is required but not certification)





Labels – Biobased content



Biobased carbon content

Organic matter content (ignition lost)

Biobased content (elementary analysis)

			
between 20 and 40 % Biobased	between 40 and 60 % Biobased	between 60 and 80 % Biobased	more than 80 % Biobased

Product- compostable or biodegradable

Company/products listing:

<http://bpiworld.org/BPI-Public/Approved/1.html>

http://www.greengood.com/products/pla_products.htm

<https://greenpaperproducts.com/biodegradable-products.aspx>

- Food service products
- Bags
- Packaging
- Resins
- Consumer products
- Agriculture

Example 1 - GreenGood

The **GreenGood®** product line is constantly being updated with new products continuing to be developed to meet the needs of the international foodservice marketplace.

- **GreenGood®** products are environmentally-friendly disposable foodservice products.
- **GreenGood®** products are made from sustainable renewable resources that are 100% compostable.
- **GreenGood®** products are manufactured in state of the art facilities in China, that are environmentally responsible with a small Eco-footprint, and are also socially responsible to their work force.
- **GreenGood®** products carry all required U.S. and European product certifications, including FDA approval
- **GreenGood®** Ingeo® PLA products are made from NatureWorks PLA. All our Ingeo® PLA and CPLA® has passed the following standards with regard to compostability:
 - ASTM D6400 (USA)
 - BPI (USA)
 - EN 13432 (EU)
 - GreenPla (Japan)
- **GreenGood®** Sugarcane products are made from natural Sugarcane Bagasse fiber and have passed the following standards with regard to compostability:
 - ASTM D6400 (USA)
 - BPI (USA)
 - EN 13432 (EU)
 - GreenPla (Japan)

Example 2 – Certificate holders

Product description	Certificate holder	Certificate number	Bio-based content (%)	Scope	Certied since	Status	Certification Body
2K-DC Lack Durapid	Dr. Demuth Derisol Lackfarben GmbH & Co. KG	DIC-00008	9	Product	2018-05-08	Valid	DIN CERTCO GmbH
Bio-based products	Österreichische Vialit GmbH	DIC-00007	100	Product	2018-03-27	Valid	DIN CERTCO GmbH
Biofibre@Silva	Biofibre GmbH	DIC-00009	97	Product	2018-06-11	Valid	DIN CERTCO GmbH
BTI 43, BBI 50, BBII 100 and BBII 80	Bio4Pack GmbH	DIC-00002	89	Product family	2017-02-20	Valid	DIN CERTCO GmbH
CENTURY™ 1105, CENTURY™ 1107	Kraton Chemical B.V.	VIN-00007	99	Product family	2017-11-08	Valid	Vinçotte nv
Coconut Charcoal Briquettes	TOM Cococha GmbH & Co. KG	DIC-00005	100	Product	2017-11-24	Valid	DIN CERTCO GmbH
Luminy PLA L, Luminy PLA D	Total Corbion PLA B.V.	DIC-00001	100	Product family	2016-11-29	Valid	DIN CERTCO GmbH
M-PURE	Maes Dyeing and Finishing	DIC-00003	92	Product	2017-05-18	Valid	DIN CERTCO GmbH
PLA Flower Sleeve	Decowraps Europe BV	DIC-00006	96	Product	2018-01-17	Valid	DIN CERTCO GmbH

For more information look at: <http://www.biobasedcontent.eu/en/certificate-holders>



Further Information

IEA Bioenergy Task42 Website

<http://task42.ieabioenergy.com>

IEA Bioenergy website

www.ieabioenergy.com