

ACCOUNTABILITY IS KEY

*Environmental Communications Guide
for Bioplastics*



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INTRODUCTION

The emotional debate about our future in the face of increasingly serious environmental problems has left its mark. The consumer has been sensitized and is willing to contribute his or her share.

“European consumers are more and more prepared to buy goods and services which have reduced environmental impact.”

European Commission

The willingness to contribute to environmental protection goes along with an increasing demand for truthful, accurate, and easy to verify information on products that claim a reduced impact on the environment. The demand for simple information is high, especially for complex products such as bioplastics and products made thereof. However, breaking down complex properties and expert language into easily understandable claims is a challenge – particularly in the face of international standards which give strict guidelines for environmental communication.

This Environmental Communications Guide (ECG) aims at safeguarding good communication along the entire value chain of bioplastics. The guide is intended to be a practical help to marketing and communications professionals striving to present the innovation of bioplastics correctly according to the status quo and without neglecting its ample untapped potential.

The brochure is divided into two parts

Part 1: Overview of the basic rules of environmental communications and recommendations on how to handle the most important claims for bioplastic materials and products.

Part 2: Annexes provide additional background and specific information about Part 1 (glossary, list of standards, literature list, etc.).

In short, it advocates the following general guidelines for environmental communication and specific recommendations for environmental communication related to bioplastics*.

General guidelines

- Ensure that environmental claims are specific, accurate, relevant and truthful.
- Omit vague, general claims that do not fulfil these criteria, such as “green”, “sustainable”, “environmentally friendly”, “climate friendly”, and others.
- Substantiate claims – with methods and data corresponding to international standards and ideally provided and/or verified by independent third parties. Make the data available to all interested parties.
- Update substantiation and claims as required.

Recommendations regarding bioplastics

- “Biobased-claims” should be backed up by sound measurements based on approved standards (CEN/ASTM/ISO) and, ideally third party certification. They can either be made by indicating a percentage of the biobased mass content or the biobased carbon content share of a material/product.**
- Claiming biodegradability of a product without specifying this property any further is vague. Reference to the applied testing standard for measurement as well as information on environment and timeframe are required.
- If industrial compostability is claimed for a product, certification (by an independent third party) according to EN 13432 or equivalent standards should be acquired.
- “End-of-life claims shall comply with the essential requirements of the relevant European legal frameworks; for packaging the European Packaging Directive is of particular relevance. A claim for a specific end of life option can only be made if a “reasonable proportion of the consumers” has access to the corresponding facilities (European Commission). On top of the European legal framework, producers should check specific national waste legislation or agreements in place for bioplastics.

* The guidelines given here are a summarized version of chapter 3 of this brochure; the recommendations regarding bioplastics have been deduced from international standards available.

** For a definition of the terms biobased mass content and biobased carbon content, please refer to Annex 7 Glossary.



- The carbon footprint of a biobased material (cradle-to-gate) can be neutral or even negative (compared to fossil based materials). For a biobased consumer product (full life cycle – cradle to grave), however, in most cases it will be neither neutral nor negative. Therefore, it is better to claim a “reduced carbon footprint”^{*}.

The recommendations of this brochure can be applied to all forms of communication – from advertisement to website and packaging, from event to interview. They can serve as a useful tool for a company’s communications

department when projects are started (brochures, advertising campaigns etc.).

The ECG is based on the international valid standards of the ISO 14000 series – especially ISO 14021 on environmental communication and the corresponding directives of the European Commission (see Annex for more details). However, it should be noted that this guide is neither exhaustive nor legally binding. Current international and national legislation should always be checked in addition (see disclaimer and check list of literature).

2. DEFINITION BIOPLASTICS

Bioplastics are biobased, biodegradable or both.**

(European Bioplastics)

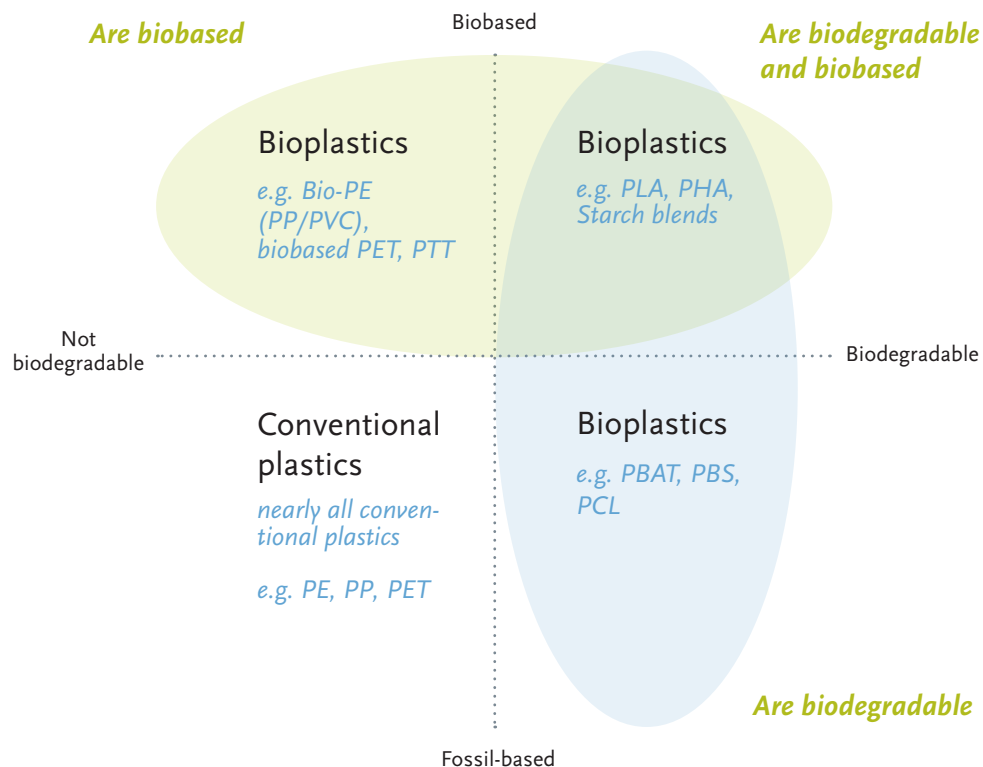


Figure 1: Material coordinate system of bioplastics, Prof. Dr. Ing. H.-J. Endres, IfBB University of Applied Sciences and Arts

* See also Annex 1 Standards and Annex 7 Glossary.

** For more information on materials as well as diverse end-of-life options for bioplastics, see Annex 3 and 4.



3. ENVIRONMENTAL CLAIMS

Chapter 3 explains in detail how the guidelines and recommendations of this brochure have been developed. The content presented in this brochure is in line with the most relevant standards, directives and regulations at international and European levels, such as

- the ISO 14020 series on “Environmental labels and declaration”,

- the Directive 2006/114/EC on Misleading and Comparative Advertising and
- the CEN/TS standard 16137:2011 on biobased carbon content.

For further information on these publications and more, please consult Annex 1 of this document.

3.1 GENERAL GUIDELINES

Environmental claims can differ slightly when formulated in a B2B or B2C context. However, there are certain basic rules that should be applied in both cases.

Make specific, measurable and consequently verifiable claims. Product claims of a general and vague nature should be omitted, such as: green, natural, sustainable, environmentally friendly, ecological, organic, and ozone-friendly.

Make distinct claims – omit misleading formulations. The European Commission’s Directive 2005/29/EC on Unfair Commercial Practices deals with misleading or ambiguous claims and defines two different situations: objective misleading practice (claim is false) and subjective misleading practice (the claim is factually correct but likely to deceive the average consumer). In most cases, a simple explanatory statement suffices to eliminate the vagueness of a claim.

Be accurate, relevant and truthful. Accuracy – Depict clearly which entity is meant (product, company, or other?).

Relevance – Claims should focus on points that are associated with the product and not in any case prohibited by law (e.g. when making a “free” claim such as CFC-free).

Truthfulness – Claims should reflect reality at the time the product shall be bought and not depict technical potential only (e.g. when it comes to end-of-life claims).

Substantiation is key. Claims should be substantiated by the producer with reference to standards, by measuring methods and by using corresponding labels. Consequently, claims will be verifiable for the customer with data readily available.

Make correct comparisons. A sound comparison compares goods or services of the same product category*, and the data is derived by the same methodology.

1. If a claim is based on a percentage, comparative claims of the difference should be expressed in absolute figures. Take the example of the recycled content of packaging being increased from 4 % in (year x) to 6 %. The producer accurately claims an “additional 2 percent recycled content”. A claim in relative terms of “50 % increase in recycled content”, although accurate, would be misleading.**
2. If based on an absolute (measured) value, the comparative claim should be expressed as a relative improvement: A battery that lasted 10 hours will now last 15 hours, so the improvement is a 50 % longer life.

If the value against which the comparison is made is zero, then an absolute difference may be used.

Update your claims and substantiation. Changes in legislation or the market can make claims irrelevant or misleading. An organisation making a claim should be on top of this development and update claims and corresponding substantiation regularly.

* Where data available, comparisons regarding the most relevant alternatives should be sought.

** Please note: recycled content here refers to material derived from pre and post consumer recycling streams.



3.2 BIOPLASTIC SPECIFIC CLAIMS

The following claims are the ones most often used to describe bioplastic materials and products. If a significant difference between B2B and B2C communication is the case, specific recommendations on how to deal with the claim in each case will be given.

3.2.1 Biobased

The claim of being “biobased” is one of the major claims for the majority of bioplastic products. Without any specification, however, it raises questions such as “How large is the actual biobased part of the product?” Consequently, the term “biobased” should not be used in isolation. The biobased component of the product should be specified – an amount or percentage regarding the whole product/mass of material should be given.

Companies can either indicate the “biobased carbon content” or the “biobased mass content” of their products.* As these units differ, the numeric percentage value typically will differ as well. This must be taken into account, especially when making comparisons.

A well-established methodology to measure the biobased carbon content in materials or products is the ^{14}C method (EU: CEN/TS 16137, U.S.: ASTM 6866). Certification schemes and derived product labels based on the European and the U.S. standards are in place – for example by Belgian certifier Vinçotte or German DIN CERTCO.

As outlined, it is also possible to specify biobased-claims by indicating the biobased mass content in a material or product (percentage of biobased mass of the total mass). This method is complementary to the ^{14}C method and takes other chemical elements besides the biobased carbon into account, such as oxygen, nitrogen and hydrogen. The Association Chimie du Végétal (ACDV) is currently developing and testing a methodology.

European Bioplastics recommends focusing on existing standards and corresponding methodologies when looking for a sound claim substantiation (CEN/TS 16137, ^{14}C method).

What else should be taken into consideration?

Different companies might use different wordings for biobased-claims, such as renewable, made of plants, plant-based, and made from biomass. All these variations of a biobased claim need to be soundly backed up (see above).

Additionally, when making a claim about the sustainability of the agricultural feedstock, information on the origin and sourcing of the biomass (sustainable criteria, GMO-free or not) in the specific product should be made available to consumers. If not communicated on the actual product or its packaging, this information should be easily accessible (e.g. on a product website). Several third party sustainability schemes are available for certain agricultural feedstocks (e.g. ISCC Plus, WLC, BonSucro, etc.) while other schemes are currently being developed. European Bioplastics recommends referring to third party managed schemes when making sustainability claims regarding feedstocks for biobased materials.

Another point is that many consumers connect the property of being biobased to the property of biodegradability. This is a misconception, as the property of biodegradability is linked to the chemical structure and not to the feedstock used for the material/product. In order to prevent incorrect disposal behaviour due to this misconception, consumers should be informed about suitable recovery options for the corresponding product (e.g. “This is a biobased product. It contains 22.5 percent biobased carbon; please recycle.”).

* For a definition of the terms biobased mass content and biobased carbon content, please refer to Annex 7 Glossary.





GOOD example

B2B context: A known automotive company “A” is interested in the biobased polyamide “BIO-X®” (suitable e.g. for airbags, etc.) of the bioplastics company “X”.

Company “X” markets its polyamide as based on PA 1010 (100 percent renewable carbon content) and PA 610 (63 percent renewable carbon content). The company also specifies that the renewable carbon content is measured according to the ¹⁴C method and in line with the standard CEN/TS 16137. Furthermore, it informs its potential customer that the renewable content stems from sebacic acid derived from castor oil. The company provides a sustainability certification regarding the sourcing of the biomass used.

Company „X“ makes all this data available to company „A“ by forwarding it an Environmental Data Sheet regarding „BIO-X®“.



BAD example

A new mobile phone brand launches a mobile with a casing containing 10% biobased carbon content.

The marketing, however, advertises the mobile series in a general non-specific manner as “made from nature” – the claims are printed on the mobile’s case, packaging and are even integrated into its software.

No specification is given as to what part of the product is made from biomass. No percentage or amount is given, no standard named or methodology indicated. The product website offers general statements like “environmentally friendly product, green future, sustainable company goals”.

This is a case of misleading claims, and lack of accuracy and substantiation.



3.2.2 Biodegradable/compostable

Claims of biodegradability and compostability are widely used in the bioplastic industry. Biodegradability as a sole claim without a standard specification is misleading. If a material or product is advertised as biodegradable, further information on the timeframe, the level of biodegradation, and the surrounding conditions should be provided. Moreover, data should be made available to interested parties for verification. ISO 14021 contains additional information on how biodegradability should be communicated.

If it fits the marketing context, European Bioplastics recommends focusing on the more specific claim of compostability, and backing up the claim with corresponding standard references (ISO 17088, EN 13432 /14995

or ASTM 6400 or 6868), and certification and labelling (seedling label via Vinçotte or DIN CERTCO, OK compost label via Vinçotte; see also Annex 1 for list of labels).

Being specific and claiming compostability is not only unambiguous. It has one more clear benefit: it differentiates from products marketed as “oxo-biodegradable” or similar, as these products have not proven to fulfil the requirements of e.g. the EN 13432 and are not allowed to carry the seedling label. Using compostability claims in combination with a corresponding certification and, for example, the seedling logo, can help to minimise confusion in the market.



compostable

*The seedling-trademark
of European Bioplastics.*

Relevance of end-of-life claims

End-of-life claims in general need to be carefully checked when it comes to the communications criteria of relevance and truthfulness (chapter 3.1). At EU-level, for example, the Directive on Packaging and Packaging Waste requires packaging (including bioplastic packaging) to possess characteristics that allow at least one of the following forms of recovery: recycling, energy recovery and organic recycling. Claims on recoverability must be consistent with the recovery characteristics as shown by the relevant harmonised standards. Moreover, local legislation as well as recycling and recovery infrastructure may vary considerably. Consequently, further to substantiating claims via references to standards and certification processes, traders shall also specify how the consumer should dispose of the product. If the means of disposal outlined by the trader is not feasible due to missing infrastructure or legal requirements, the claim might not be considered as valid.

The International Chamber of Commerce determines that “end-of-life claims should only be used if conditions are available in those places where the product is sold” – theoretical options are not valid. Only if a “reasonable proportion of the consumers” has access to the respective facilities, a claim can be made.

Any means of disposal that are likely to become important or feasible in the future may be mentioned if the trader is working on a concrete project or cooperation. This kind of information, however, is rather ill-suited to short marketing claims made on the packaging of a product.

In any case, producers should carefully check national and community legislation with regard to their end-of-life arguments. For more information, see Annex 1, 4 and 5.

**GOOD example**

A producer of biowaste bags marks his product as compostable according to EN 13432 and brands it with the seedling logo (following successful certification).

He also advises the consumer to dispose of it in the bio-bin (legal requirements and corresponding infrastructure given in the region where the product is sold). The producer makes additional information on the product publicly available – including the certification number (printed under the seedling logo). His claim is, therefore, specific, relevant, truthful, soundly substantiated, and verifiable. The consumer can make a well-informed choice.

**BAD example**

The claim 'biodegradable' is printed on a conventional shopping bag. The bag manufacturer claims that the bag is biodegradable in line with international standards.

He does not provide further information as to the standards he refers to and makes no data available that can substantiate his claims. Consequently, the manufacturer is misleading his clients (B2B) and consumers (B2C) by using the ambiguous claim “biodegradable” without any specification of standards, timeframe, and surrounding conditions. Secondly, the claim is not backed up soundly – customers have no opportunity to verify it.



Littering – not a problem of the product but of human behaviour

The property of biodegradability does not constitute a permit to litter. This property only enables additional means of correct disposal possible for certain materials and products. If advertising products accordingly, a clear message should be communicated to consumers who often misunderstand these properties. A clear end-of-life recommendation on a product is therefore important!

3.2.3 Environmentally friendly, sustainable, climate friendly – vague claims

Claims such as “environmentally friendly” are non-specific. When it comes to the product level (for manufacturers of bioplastics resins count as products), claims should be more clearly determined.

Empty, generalised claims, standing in isolation and without any specification, e.g. “this product is sustainable”, can easily be challenged by consumer protection institutions or NGOs and legally disputed.

3.2.4 Made with renewable energy

If a product is advertised as “produced with renewable energy”, the kind of renewable energy (such as solar power, or wind energy) as well as a percentage should be clearly mentioned. Moreover, such claims should be backed up by corresponding international standards.

3.2.5 Recyclable

End-of-life claims need to consider the availability of necessary facilities. Even if a product might technically be recyclable, claims of recyclability should not be made if the product will not meet this end-of-life solution due to a lack of collection or recycling facilities available where it is sold.

According to ISO 14021, a claim to recyclability may be conveyed either in writing or by using the Mobius Loop. Do not use symbols other than the Mobius Loop to claim recyclability.*

3.2.6 Recycled content

When making claims of recycled content, producers should only refer to material which otherwise would have ended up in the pre and post consumer waste stream. Claims of recycled input should always state the percentage of recycled material (ISO 14021). Such claims have to indicate unmistakably whether they refer to the product itself or to the packaging.

When using the Mobius Loop, make sure the symbol is accompanied by the percentage of recycled material. Do not use symbols other than the Mobius Loop to denote recycled content – this also includes similar looking symbols.*

3.2.7 Reduced carbon footprint/reduced GHG emissions

Most bioplastics are biobased – meaning they can potentially reduce GHG emissions over the life cycle of a product. Consequently, claims like “reduced emissions” or “reduced carbon footprint” are prominently used in the bioplastics industry. The term “reduced” indicates a comparative claim (see 3.1 on comparisons).

When claiming a reduction in emissions, a total amount of carbon reduction (xx tonnes per year) shall be given, the element which is meant shall be made clear (product x, 2011) and the element to which it is being compared to (product x, 2010). More information on how a carbon footprint claim should be formulated can be found in the upcoming standard ISO 14067 “Carbon footprint of products” (to be communicated in winter 2012).

* For more information, see Annex 2 List of labels – Mobius Loop.



What else should be taken into consideration?

Carbon footprint claims should be substantiated e.g. by Life Cycle Assessment (LCA) or carbon footprinting. Data should then be made available to all interested parties.*

LCA (ISO 14040/14044) and carbon footprint standards (ISO 14067, GHG Protocol for scope 3 and products, PAS 2050) do not allow the inclusion of carbon offsets in the calculation on material or product level. Offset information is therefore better completely separated from corresponding carbon claims.

“Neutral” claims, e.g. “carbon-neutral” can – in some cases – be made for bioplastics material, however, rarely for products. ISO 14021, for example, demands that a product’s complete life cycle be taken into account when making claims about its carbon balance. The pure material from which a product is made (life cycle section cradle to gate) can be advertised in a B2B context with a neutral claim if sound data backs this claim up. If the material then, however, is converted and at the end of its life disposed of (whole life cycle), neutrality in most cases cannot be claimed.

* LCA provides data specifically for the process carbon footprint which may or may not include the material carbon footprint. This means that sometimes LCA does not fully consider the key value attribute of a possible zero (material) carbon footprint arising from using biobased carbon feedstocks as opposed to fossil feedstocks. Therefore, a carbon footprint (assessing the material carbon footprint) is an important tool to provide real, verifiable, and transparent information.





GOOD example

From 2010 to 2011 company Z reduced the CO₂ emissions of the production of its product line of bioplastic bottles by 25 percent.

An LCA has been conducted and data is readily available. The bottles are now marketed in a B2C context with the claim: “25 % less CO₂ emissions” on the packaging. In more extensive product brochures /on a website an indication is also provided of the total amount of tonnes of CO₂ emissions saved by optimising their processes – “54,000 tonnes of CO₂ emissions could be saved compared to 2010”.



BAD example

A retail chain markets its new biobased (non-bio-degradable) carrier bags with the claim “carbon-neutral”.

They were informed by their supplier that the material was tested carbon-neutral due to the high amount of renewable resources (more than 70 %). A corresponding LCA (cradle to gate) is available.

Unfortunately, the supplier does not mention to the retailer that this is not a fitting claim for the end product. A separate LCA (cradle to grave) has to be prepared, and claims for the end consumer product should be based on this data. The retailer is now being criticized by NGOs for misleading claims.



3.2.8 Reduced environmental footprint

One of the upcoming relevant concepts in environmental communication recently presented by the European Commission is the “environmental footprint” of a material or product*. Environmental footprint information comprises one or more aspects of the impact a product has (e.g. water, carbon). It provides quantitative data, preferably based on an environmental life cycle analysis, and is given in absolute figures.

However, the concept is not yet very specific. There is no general agreement as to how comprehensive this information should be or how many aspects should be mentioned. This new methodology is currently the source of controversial discussions at EU level. Consequently, companies backing up their claims using this concept should be careful how they communicate the outcomes.

3.3 MEANS OF PROVIDING SUBSTANTIATION

„ It is the claimant’s responsibility to evaluate and to provide the data necessary for the verification of the claims.“

(EU Commission, DG Health & Consumer Protection: Guidelines for Making and Assessing Environmental Claims)

When selecting a method to evaluate and/or verify a claim, producers should prefer international or European standards (e.g. ISO 14020 series), followed by national standards or those industry and trade methods which have been subject to peer review. The following chapter will discuss the current state-of-play on how to substantiate environmental claims in the bioplastics industry.

3.3.1 Life Cycle Assessment (LCA)

The aim of life-cycle-thinking (LCT) is to avoid burden shifting and to create a comprehensive perspective on the environmental performance of a good or service. This means minimising impacts at one stage of the life cycle, or in a particular impact category, while helping to avoid increases elsewhere.

The key documents and directives mentioned in this brochure are referring to Life Cycle Assessments (LCA) as a relevant tool to substantiate environmental claims. In order to avoid burden shifting and to get a complete picture of a product’s impact on nature, standards underline that, if conducting an LCA, the complete life cycle shall be taken into account. ISO 14040 and 14044 standards require a critical review for comparative assertions intended to be disclosed to the public.

This brochure focuses on the communicative aspects of an LCA and will therefore not go into detail about how to conduct an assessment or how it should be conducted ideally. For further information on this point, please refer to the following documents:

- ISO 14040 and 14044 standard series on Environmental Management – Life Cycle Assessment
- OECD Draft Recommendation on Assessing the Sustainability of Bio-Based Products
- CEN mandate M492 on specifications for biobased products (issued March 2011)

An LCA can provide data

- to improve the general understanding of the life cycle of products
- to substantiate environmental and economical decisions concerning process and product improvements, selection of feedstock, the selection of waste management systems, and others
- for corporate environmental and waste management policies
- for regulatory and legislative measurements.

The results of an LCA are the basis on which

- the company decides on how to position (promote) a product in the market
- the company can identify the need to foster future developments of this product
- consumers can get more information to make their choice.

* This concept is not to be confused with the concept of carbon footprinting (carbon footprint for products – CFP), which has been in use for several years now.



Present challenges and limits when communicating LCA results

An LCA is a sophisticated process and takes many different factors such as energy, carbon and water into account. It might be seen as greenwashing to communicate single environmental aspects without taking the whole LCA into account. This is especially relevant when the end result of a product's LCA is neutral or negative compared to goods which the trader claims to be inferior to his product. If a claim considers only one or two environmental aspects of the product, the limit of this claim must be made clear and no overall benefit for the product must be implied.

In all cases, the requirements of ISO 14040/44 for comparative assertions intended to be disclosed to the public have to be met.

“Marketers must ensure that claims which are only based on part of the advertised product's life cycle do not mislead consumers about the product's total environmental impact.”

(UK Committee on Advertising Practice (CAP) – UK Code of non-broadcast Advertising, Sales Promotion and Direct Marketing, September 2010)

This guideline of the UK CAP is of special importance when we look at B2B and B2C communication:

- For manufacturers of bioplastic resins a part-LCA (cradle-to-gate) might be important and reasonable, as the “gate” is their point of sale.

- For all companies creating or selling the end products, a full LCA is recommended as they also have to take into account, for example, disposal solutions.

What else should be taken into consideration?

An LCA shines a spotlight on a single product and identifies the areas where it could/should be improved. LCA is not suitable for comparing products from different companies, as materials (biobased, fossil-based) and processes vary widely, and the possibility of making sound substantiated comparisons are, therefore, limited. There is also a strong element of interpretation when conducting an LCA, which further limits the comparability of two or more products' LCAs when they have been prepared by different experts.

Quite contradictory to these facts, LCA's are increasingly used as a comparative marketing tool e.g. by selecting parameters and impact categories favourable to one's product. This does not meet the intent of an LCA.

From a development point of view, innovative and rather “young” products face the disadvantage that LCAs do not take into account the potential which these materials and products have when they mature. Projections for improvements can be made and then included in LCAs.*

“The optimisation potential for bioplastics is huge. This potential should be included in the LCA, otherwise it becomes a tool which tends to hinder innovation.”

(European Bioplastics, 2012)

* For more information on the topic of LCAs also refer to the “Background Paper: Life Cycle Assessment” available for download on the European Bioplastics website www.european-bioplastic.org/publications.





GOOD example

A cosmetic brand switches its hair care line to a biobased packaging (packaging = bottles with different cap-styles). The brandowner claims “bottle = 70 % made of plants” and “30 % less carbon emissions than old bottle”.

In the fine print on the back of the bottle, the brandowner also specifies his claims by substantiating:

- 70 % biobased carbon content measured via 14C and adhering to CEN/TS 16137.
- 30 % less CO₂ emissions according to LCA „HAIRCARE Pack“ provided by independent institution „TEST“. As the LCA result of the new packaging is overall neutral compared to the old bottle, the brandowner briefly indicates this and refers to a website where an executive summary of the LCA can be downloaded. On this website, the company also outlines its plans to further reduce the impact of its packaging by tackling potential for optimization outlined in the LCA.

The claims made about this product are specified and verifiable and, therefore, a good example of communicating environmental properties.



BAD example

An organic cookie brand is switching its packaging to a biobased plastics solution. The LCA conducted is also neutral, (as in the GOOD example on the left) but decisive progress was made in the category of CO₂ emissions.

However, the company resolves to make a more general and bolder claim than would be justified by these LCA results: The new packaging is advertised as “more environmentally friendly”. This claim is underlined with the good result regarding the singular impact category emissions. The neutral overall LCA result is not mentioned.

NGOs criticize the vagueness of the communication and, upon realising the missing communication detail, they take legal steps as they consider the claims misleading for the consumer.



3.3.2 Environmental Product Declaration (EPD)

An EPD is a global, standardized (ISO 14025 Environmental declarations – principles and procedures), and LCA based (ISO 14040/14044) tool to communicate the environmental performance of a product or system.

It includes information about the environmental impact associated with a product or service, such as raw material acquisition, energy use and efficiency, content of materials and chemical substances, emissions to air, soil and water and waste generation. It also includes product and company information.

There are two documents which control how the calculations and data collection behind an EPD should be undertaken and what information the EPD must contain:

- Requirements for the EPD system (MSR): general requirements for all EPDs
- Product Category Rules (PCR): detailed requirements for each product group.

EPDs provide a set of quantitative data certified by an independent third party. The aim is to enable well founded comparisons of products and services of the same category.*

3.3.3 Certification and labelling

The excessive use of self-invented labels without sound back-up by standards and certifications can confuse and mislead the consumer. In order to provide specific and verifiable information, certification and corresponding labels should fulfil the following criteria**:

- Criteria development – there has been a wide and thorough consultation on the minimum criteria which should be met to achieve certification or a stamp of approval.
- Verification – there has been some form of independent auditing or third party verification of the scheme.
- Transparency – the process to assess whether a company or product meets the certification criteria is open and transparent.

- Label presentation – there are clear requirements on how any label is used, for example on product packaging or within advertising and marketing.
- Inspections – to make sure the requirements of certification and agreed improvements are being met.
- Available sanction – there is potential for certification to be withdrawn if conditions are not adhered to.

The last two principles stress a point also strongly endorsed by European Bioplastics - the involvement of independent third parties in the certification process and the labelling of products.

Industrial compostability can only be claimed if biodegradable products are certified according to EN 13432/14995. In accordance with this standard, the independent organisations DIN CERTCO and Vinçotte certify materials and products and award the “seedling” logo of European Bioplastics if all necessary requirements are met. The “seedling” is well established across the EU as a product identification tool that fosters both the buying decision and proper disposal (sorting). It clearly fulfils the above-mentioned requirements.

When it comes to biobased-claims, bioplastics companies can rely on the European standard CEN/TS 16137 Plastics – Determination of biobased carbon content (14C method, corresponding to U.S.-standard ASTM 6866). Labels corresponding to this standard are offered by independent certifiers Viçotte and DIN CERTCO. A method to determine the biobased mass content is currently being developed by the Association Chimie du Végétal. Initial certifications and tests are already in place (see Annex 7 Glossary for more information on biobased mass content and biobased carbon content).

Labels depicting the biobased component of materials/products shall be unambiguous, state the unit chosen (biobased carbon content or biobased mass content), give a percentage, and name the method of measurement applied.***

Furthermore, in 2011, CEN founded the Technical Committee (TC) 411 which is currently working on a standard for biobased products.

* LCA derived data can only be compared only to a certain level – please refer to chapter 3.3.1 for more information.

** British Department for the Environment, Food and Rural Affairs (DEFRA), 2010.

*** For a list of relevant labels, please consult Annex 2 of this document.





GOOD example

After their packaging has been successfully certified by e.g. Vinçotte according to EN 13432, a Dutch trader labels the packaging of fresh tomatoes with the seedling logo clearly visible.

Industrial composting facilities are widely available in the Netherlands, and he adds a disposal guideline for supermarket staff and consumers as “suitable for industrial composting/organic waste collection – no home composting”.



BAD example

A big sports brand aims to improve its packaging's carbon footprint and decides to use biobased plastic shopping bags. However, it just prints the claim “made from nature” widely on the bags and

- does not explain what exactly it means (biobased carbon content/biobased mass content; percentage?)
- does not substantiate the claim (method of measurement?)
- does not give any hints on how to treat/dispose of this bag.



A1 STANDARDS, DIRECTIVES AND REGULATIONS

There is no EU legislation specifically harmonising environmental marketing. Nevertheless, the European Commission as well as national governments, ministries, and independent institutions have issued a multitude of directives, standards and guidelines that treat environmental claims.

„The European Commission considers that the use of clear, truthful and relevant environmental claims should be promoted as a means of facilitating informed decision-making by consumers, to encourage the provisions of goods and services with lower environmental impacts, and to protect honest claimants against unfair competition by ruling out false, unclear and misleading claims.“

(EU Commission, DG Health & Consumer Protection, Guidelines for Making and Assessing Environmental Claims)

Furthermore, environmental claims are partly covered by specific community legislation, which regulates the environmental performance of a category of products and prohibits the misleading application of a claim, logo or label used in reference to this specific legislation.

This guide is the first document to focus solely on environmental communication in the bioplastics industry and the most important related claims. In the following, key standards, directives and guidelines at international and EU level will be outlined.

International standards

ISO 14020 series

The International Organisation for Standardisation (ISO) issued the ISO 14020 series on “Environmental labels and declaration” in 1999. This series is the main international guideline for relevant “green claims” publications. The standard promotes three different types of environmental labels and declarations:

- Type I environmental labelling (14024),
- Type II self-declared environmental claims (14021),
- Type III environmental declaration (14025).

With this standard series the ISO aims at:

1. Fostering accurate, verifiable, and non-misleading environmental communication.
2. Preventing or minimizing unwarranted claims.
3. Reducing marketplace confusion.
4. Increasing the consumer’s opportunity to make informed choices.
5. Supporting market forces that stimulate environmental improvements in production, process and products.
6. Facilitating international trade.

In particular, the ISO 14021 on “Self-declared environmental claims” contains detailed information on the criteria a sound environmental claim should fulfil. This standard also lists several specific claims which are relevant to bioplastics such as compostable, degradable, recyclable, and waste reduction. ISO 14021 was last amended in 2011. A consolidated version is available.

The ISO 14020 series and in particular, ISO 14021 are the standards taken up in nearly every directive or guidance document worldwide as far as environmental communication is concerned.

The ISO 14040 series on “Life Cycle Assessment” focuses on describing the principles and framework of life cycle assessments. The standard does not give specific directions for communication, however, it is important for the substantiation of claims.

ISO 14063

Another standard issued by the ISO is ISO 14063 on “Environmental management – Environmental communication” (CEN approved since 30 April 2010). This standard, however, is rather focussed on setting up communication procedures in companies and contains only a general mentioning of “the basics of environmental communications”.

ISO 14067

The ISO 14067 standard on the “Carbon footprint of products” is currently being developed and should be available by the end of 2012. Aside from providing detailed information on how to measure and report on the carbon footprint of products (CFPs), it also gives some general guidelines on how to use carbon footprint claims correctly. This standard, however, relies heavily on the standards ISO 14021 and ISO 14040.

ASTM 6866

The U.S. standard ASTM 6866 focuses on determining the biobased carbon content in materials and products. It describes how to measure certain carbon isotopes (so-called ^{14}C or radio carbon measuring method). For bioplastic companies doing business in Europe, the corresponding standard to focus on is CEN/TS 16137:2011 Plastics – Determination of biobased carbon content (see below).

**European Commission:
standards, directives and regulations**

CEN/TS 16137:2011 Plastics – Determination of biobased carbon content

This standard, from the European Committee for Standardization (CEN), specifies the calculation method for determining the biobased carbon content in monomers, polymers and plastic materials and products, based on the ^{14}C content measurement. As the CEN/TS 16137 provides a standardised set of methods, it is currently the most important guideline for substantiating marketing claims regarding a material's or product's biobased carbon content.

Directive 2006/114/EC on Misleading and Comparative Advertising

Directive 84/450/EEC on misleading advertising, which was amended by Directive 97/55/EC and then again by Directive 2006/114/EC on misleading and comparative advertising, is the main relevant legal instrument as far as claims of any kind are concerned.

“Member States shall confer upon the courts or administrative authorities powers enabling them in the civil or administrative proceedings provided for in article 11:(a) to require the trader to furnish evidence as to the accuracy of factual claims in relation to a commercial practice if, taking into account the legitimate interest of the trader and any other party to the proceedings (...).”

Directive 2005/29/EC on Unfair Commercial Practices

Directive 2005/29/EC on Unfair Commercial Practices provides a legal basis to ensure that traders use environmental claims in a credible and responsible manner.

In 2009, the EC published a guidance document regarding the implementation of Directive 2005/29/EC and focused on two main principles:

1. Based on the directive's general clause, traders must, above all, present their environmental claims in a specific, accurate and unambiguous manner;
2. Traders must have scientific evidence to support their claims and be ready to provide it in an understandable way in case the claim is challenged.

EN 13432 and EN 14995 on Industrial Composting

Plastic products can provide proof of their compostability by successfully meeting the harmonised European standards, EN 13432 or EN 14995. Those two standards define the technical specification for the compostability of bioplastics products:

EN 13432:2000 Packaging comprises: requirements for packaging recoverable through composting and biodegradation; test scheme and evaluation criteria for the final acceptance of packaging; links to the European Directive on Packaging and Packaging Waste (94/62/EC).

EN 14995:2006 Plastics comprises: Evaluation of compostability; test scheme and specifications; almost identical to EN13432, but broadens the scope of plastics when used in non-packaging applications.

Regulation (EC) No 834/2007 on Organic Labels

Organic labels are defined and regulated under Regulation (EC) No 834/2007 which includes a list of terms and abbreviations (such as “bio” or “eco”) that can be used for labelling, advertising or commercial documents of products to satisfy the requirements set out under this regulation.

National guidelines and initiatives

At national level there are also relevant guidelines and documents. Most of them refer to ISO standards and their basic principles.

National or community legislation shall be taken into account before making environmental claims about a product. If planning a product launch or campaign for bioplastic materials and products, claims can be verified by the responsible national authority.





A2 INTERNATIONAL LABELS FOR BIOPLASTICS PRODUCTS/EXAMPLE OF MULTI-LABELLING APPROACH

In the following you will find a list of internationally used labels relevant for bioplastics. However, please note that this list is not exhaustive when it comes to single product groups or to environmental labels available at national level. Furthermore, this list does not present labels specifically endorsed by European Bioplastics.

Bioplastics specific labels

	<p>Din Certco biobased certification</p> <p>Din Certco's biobased certification system is based on standard ASTM 6866. The biobased carbon content in a product is measured via the ^{14}C method and expressed as a percentage of the total carbon in the product.</p>
	<p>OK biobased</p> <p>OK biobased is a certification system that verifies the material composition of a product. The label and certification scheme of Vinçotte is based on the ^{14}C method measuring the biobased carbon content as a percentage of the total carbon contained in the product/material. This method is backed up by the international standards CEN/TS 16137, ASTM 6866.</p>
	<p>OK biodegradable SOIL</p> <p>The OK biodegradable SOIL label is awarded to products that completely biodegrade in soil.</p> <p><i>Please note – this label is not based on an international standard, but on requirements defined by the holder of the label, Vinçotte.</i></p>
	<p>OK biodegradable WATER</p> <p>Products certified for OK biodegradable WATER biodegrade in a natural fresh water environment. This does not automatically guarantee biodegradation in marine waters.</p> <p><i>Please note – this label is not based on an international standard, but on requirements defined by the holder of the label, Vinçotte.</i></p>
	<p>OK compost</p> <p>The OK compost label guarantees compliance with EN 13432, the European standard for compostability in industrial composting installations.</p> <p><i>Please note – the OK compost certification scheme and the seedling certification scheme (see below) are very similar. Furthermore, as of 1 April 2012, Vinçotte has begun to certify and award the seedling label together with German certifier DIN CERTCO.</i></p>
	<p>OK compost HOME</p> <p>Owing to the comparatively smaller volume of waste involved, the temperature in a garden compost heap is clearly lower and less constant than in an industrial composting environment. Consequently, composting in the garden is a more difficult, slower-paced process. Vinçotte developed the OK compost HOME label to certify complete biodegradability in the light of specific requirements.</p> <p><i>Please note – this label is not based on an international standard, but on requirements defined by the holder of the label, Vinçotte.</i></p>
	<p>Seedling</p> <p>The compostability label “seedling” is connected to the standard EN 13432/EN 14995 and a certification process managed by the independent institutions DIN Certco and Vinçotte. Bioplastics products carrying the seedling fulfil every criteria laid down in the EN 13432 regarding compostability.</p>

Other labels

	<p>BioPreferred label</p> <p>The United States Department of Agriculture's Certified Biobased Product label assures the consumer that a product or package contains a verified amount of renewable biological ingredients. The label is linked to the US standard ASTM 6866 which is the US equivalent of the EU standard CEN/TS 16137:2011 Plastics – Determination of biobased carbon content (see Annex 1).</p>
	<p>Carbon Footprint of products (CFP)</p> <p>The CFP system displays the carbon footprint of products on the packaging, allowing consumers to obtain reliable information about GHG emissions and make informed decisions. The goal of the CFP system is to allow consumers to take the first step towards reducing emissions by promoting the purchase of the products with the lowest carbon footprint. Note: CFP labels are available in a number of variations.</p>
	<p>International Sustainability & Carbon Certification System (ISCC)</p> <p>The ISCC system is based on the European Renewable Energy Directive (RED). Originally focusing on biofuels, ISCC recently introduced a new certification system for food, feed, technical/chemical (e.g. bioplastics) and other bioenergy (e.g. solid biomass) applications – ISCC PLUS. In contrast to the certification of biofuels, ISCC PLUS concentrates on land use and agricultural issues only. It omits the calculation of GHG emission savings.</p>
	<p>Mobius Loop</p> <p>Generic symbol used to inform about recycling schemes in place or to show recycled content; also sometimes used to indicate that the product can be recycled. Does not mean that the product has been certified. This logo has no owner and, therefore, is used widely – sometimes in a suggestive, misleading manner.</p>

<p>Environmental label</p> <p>Product Bioplastic</p> <p>Company Company XY</p> <p>AssoSCAI Reg. n. AE005/01</p> <ul style="list-style-type: none"> Contains 50% of renewable raw materials (ASTM D 6866) Recyclable (EN 13430)¹ Recoverable as energy (EN 13431) Compostable in an industrial plant (EN 13432)^{2,3,4} <p>Facultative claim</p> <ul style="list-style-type: none"> Intended use: carrier bags <p>This label has been prepared by Company XY, in accordance with AssoSCAI Environmental Label Rules.</p> <p>1 OTHER 2 OK compost 3 AV 4 Compostabile CIC</p> <p>www.assoscai.it</p>	<p>Multi-labelling approach</p> <p>If the product in question features more than one certified property and can carry more than one label, a multi-label approach can be a means of organising these different labels. The following example shows an anonymous version of a multi-label approach developed in Italy by AssoSCAI. The approach is in line with the ISO standard 14021 regarding environmental communications and labelling. A similar multi-labelling approach was recently standardised by CEN/TS 16398:2012 Plastics – Environmental declaration on biopolymers and bioplastics (limited to B2B relationships).</p>
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A3 BIOPLASTIC MATERIALS

Bioplastics are a family of polymers made of renewable and/or biodegradable materials covering a wide range of properties and applications.

There are three groups in the bioplastics family, each with its own individual characteristics:

1. Fully or partly biobased and non-biodegradable polymers, such as biobased PE, PET or PP (drop-ins), and such as PA, PTT or TPC-ET (technical performance polymers),
2. Polymers that are biobased and biodegradable, including PLA and PHA,
3. Polymers that are based on fossil resources and are fully biodegradable, such as PBAT or PBS.

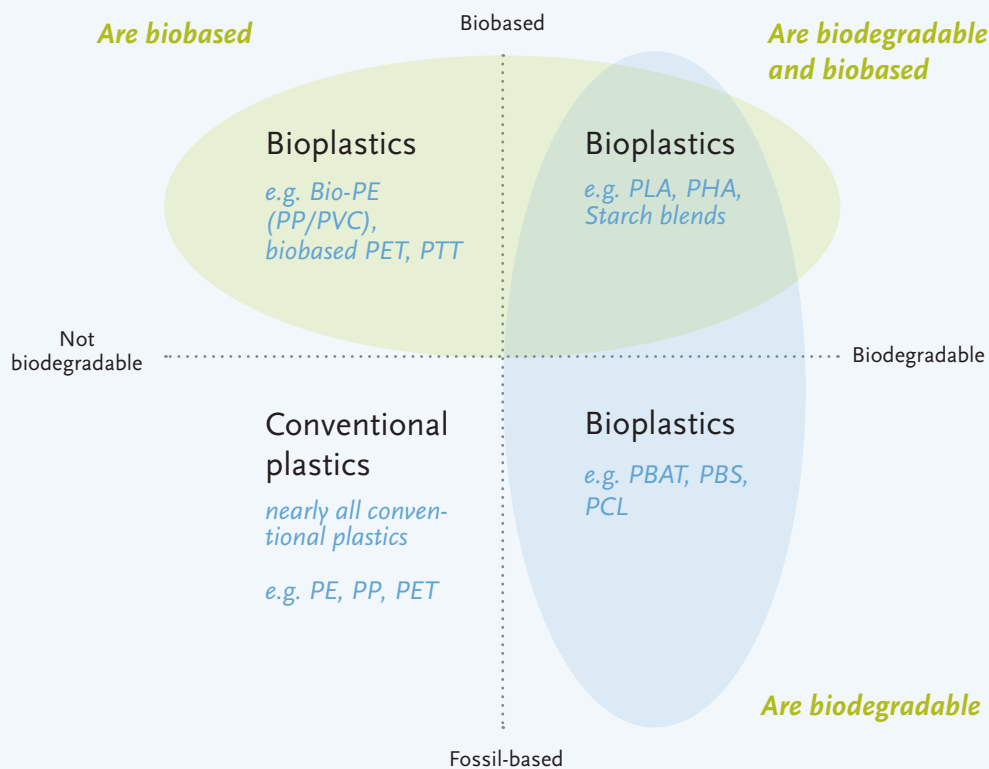


Figure 2: Material coordinate system of bioplastics, Prof. Dr. Ing. H.-J. Endres, IfBB University of Applied Sciences and Arts

A4 END-OF-LIFE SOLUTIONS FOR BIOPLASTIC PRODUCTS

As bioplastics are not one type of material but a whole family of different kinds, they can be treated in various recycling and recovery streams and offer even more options, such as industrial composting (see figure 3).

Depending on the material or product at hand, a clear end-of-life recommendation should be given (recycle, compost at home, put in the biowaste bin.). Please note: when an end-of-life claim is made, the corresponding waste management infrastructure must be in place.

Biobased but non-biodegradable materials (drop in solutions – see Annex 3) such as biobased PE or partly bio-

based PET can be recycled and treated as conventional fossil based PE and PET. They have the same material properties.

When it comes to biobased and potentially biodegradable or potentially compostable polymers, such as PLA, there is an even greater need for a clear end-of-life claim. Depending on the application, composting or recycling might be suitable solutions. However, there is not yet sufficient PLA volume in the market to introduce large scale recycling streams on an economical basis. Several research projects are, however, being undertaken to establish these streams in the near future.



Figure 3: Post-Consumer Bioplastics

A5 BIODEGRADABILITY IN DIFFERENT ENVIRONMENTS

The process of biodegradation of a material varies considerably depending on the environment in which it takes place (e.g. industrial composting plant, soil, fresh water, marine water). Conditions such as temperature, humidity and the combination of micro-organisms play an important role if a certain degradation level is required within a given timeframe.

The temperature for industrial composting might be around 60°C compared to only about 20°C in fresh water or soil.

In compost and soil one will find fungi and actinomycetes along with bacteria that assist the process of biodegradation. In fresh water or marine water only bacteria are present.

The conditions in industrial composting plants are “active” (high temperature, presence of microorganisms) and suit-

able for anaerobic digestion compared to other rather “inactive” environments. The European norm EN 13432 determines conditions for the case of industrial composting. Products tested and certified according to EN 13432 can be composted in the majority of composting plants available in the EU.

Depending on the product and its use, the product can be designed to biodegrade in different environments. However, when making claims about biodegradability rather than precise compostability claims, these claims should be specified regarding

- the standard they are referring to,
- time-frame and
- location/conditions regarding the process of biodegradation.

A6 INFORMATION GRAPH “LIFE CYCLE LOOP”

The following graph depicts an idealised life cycle of a bioplastic product.

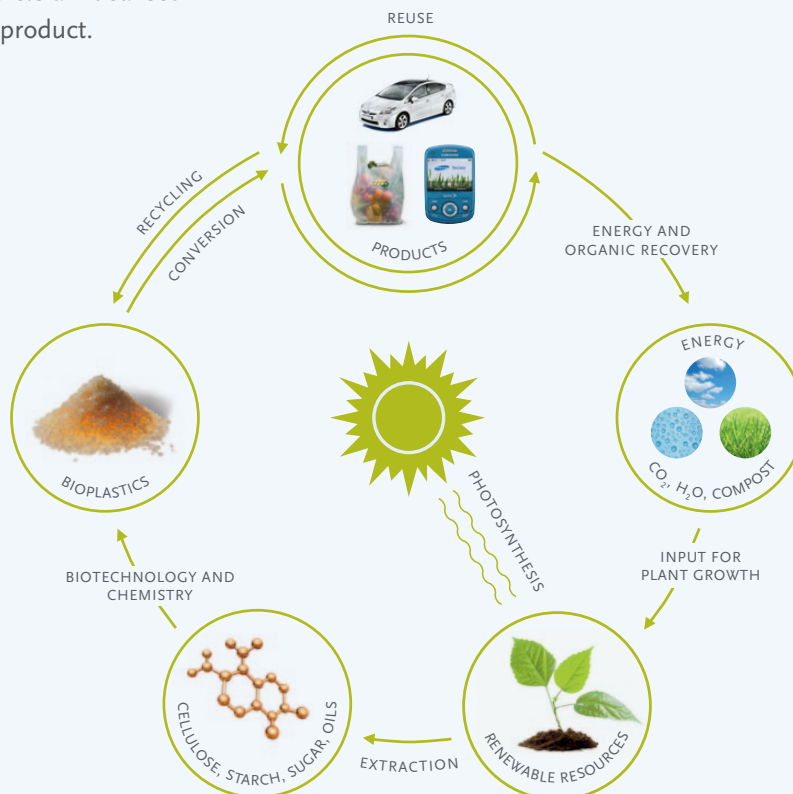


Figure 4: “Life Cycle Loop”
European Bioplastics 2011.

A7 GLOSSARY

Biobased polymer/plastic

A polymer in which constitutional units are totally or in part from biomass (CEN TR 15932). If this claim is used, a percentage should always be given to which extent the product/material is biobased. (*European Bioplastics*)

Biobased

The term biobased describes the part of a material or product that is stemming from biomass. When making a biobased-claim, the unit (biobased carbon content, biobased mass content), a percentage and the measuring method should be clearly stated.

The method used by most companies is the ¹⁴C method backed up by the European standard CEN/TS 16137 (corresponding U.S. standard ASTM 6866). The ¹⁴C method measures the amount of biobased carbon in a material or product as fraction weight (mass) or percent weight (mass) of its total organic carbon.

Another variable to describe the biobased component of a material or product is the biobased mass content. Here not only the biobased carbon but also other elements (the total

mass) are taken into account. A corresponding method of measurement is currently being developed and tested by Association Chimie du Végétal (ACDV). (*European Bioplastics*)

Biobased carbon

Biobased carbon is carbon contained in or stemming from biomass. A material or product made of fossil and renewable resources contains fossil and biobased carbon. The ¹⁴C method (based on standard CEN/TS 16137 and U.S. standard ASTM 6866) measures the amount of biobased carbon in the material or product as fraction weight (mass) or percent weight (mass) of the total organic carbon content. (SPI: "Understanding Biobased Carbon Content", *European Bioplastics*)

Biobased carbon content

The variable describing the amount of biobased carbon (in relation to fossil-based carbon) contained in a material or product. It is measured via the ¹⁴C method that adheres to CEN/TS 16137 or ASTM 6866 standard. The ¹⁴C method assesses the overall carbon contained in a material or product and expresses the biobased carbon content as fraction weight (mass) or percent weight (mass).

Terminology regarding biobased claims

The terms depicting the measured biobased component of a material or product differ throughout the world. At EU level (Technical Committee 411 of CEN), a clear terminology is currently being discussed and initial results could be provided by spring 2013. Taking into account regional (US/EU) differences and unfinished discourses, European Bioplastics recommends the following terms:

Marketing might use	Biobased carbon content	Biobased mass content
<ul style="list-style-type: none"> • made from plants • biobased • renewable resources • renewable • or similar expressions <p>If using these, a percentage and a method of measurement should be specified!</p> <p>Depending on the latter, the two specifying terms on the right should be used to properly describe and substantiate this kind of claim.</p>	<ul style="list-style-type: none"> • measured by ¹⁴C method • adheres to CEN/TS 16137 / ASTM 6866 • considers the overall carbon contained in a material/product • depicts the percentage of carbon stemming from renewable feed-stock 	<ul style="list-style-type: none"> • based on ¹⁴C method • no standard yet • certification currently developed and tested by Association Chimie du Végétal (ACDV) • considers the overall mass of a material/product • Measures biobased carbon and other chemical elements (e.g. nitrogen) of a plant

Biobased mass content

The variable describing the amount of biobased mass contained in a material or product. This method is complementary to the ^{14}C method, and furthermore, takes other chemical elements besides the biobased carbon into account, such as oxygen, nitrogen and hydrogen. A measuring method is currently being developed and tested by the Association Chimie du Végétal (ACDV). (*European Bioplastics*)

Biodegradable

Biodegradation is a chemical process in which materials, with the help of micro-organisms, degrade back into natural elements (water, carbon and compost). The process of biodegradation depends on the environmental conditions which influence it (e.g. location, temperature, humidity, etc.; see also Annex 5) and on the material or application itself. Consequently, the process and its outcome can vary considerably. Biodegradability is linked to the structure of the polymer chain; it does not depend on the origin of the raw materials.

There is currently no single, overarching standard to back up claims about biodegradability. As the sole claim of biodegradability without any additional specifications is vague, it should not be used in communications. If it is used, additional surveys/tests (e.g. timeframe or environment (soil, sea)) should be added to substantiate this claim. (*CEN/TR 15351, European Bioplastics*)

Biomass

Material of biological origin excluding material embedded in geological formations and material transformed to fossilised material. This includes organic material, e.g. trees, crops, grasses, tree litter, algae and waste of biological origin, e.g. manure. (*ISO 14067 on Quantification and Communication of Carbon Footprints, European Bioplastics*)

Carbon footprint of products**(CFP resp. PCF – Product Carbon Footprint)**

Sum of greenhouse gas emissions and removals in a product system, expressed as CO_2 equivalent, and based on a life cycle assessment. The CO_2 equivalent of a specific amount of a greenhouse gas is calculated as the mass of a given greenhouse gas multiplied by its global warming potential. (*ISO 14067 on Quantification and Communication of Carbon Footprints*)

 CO_2 neutral

Describes a material or product having a net zero carbon footprint. The amount of carbon released is balanced with an equivalent amount which is sequestered or offset, or through buying sufficient carbon credits to make up for the difference. The latter option is not allowed when communicating LCAs or carbon footprints regarding a material or product (*according to ISO 14067*).

Carbon-neutral claims are tricky, as products will not in most cases reach carbon neutrality if their complete life cycle is taken into consideration (including the end-of-life). If an assessment of a material, however, is conducted (cradle to gate), carbon neutrality might be a valid claim in a B2B context. In this case, the unit assessed in the complete life cycle has to be clarified. (*European Bioplastics*)

Compostability

A characteristic of a product, packaging or associated component that allows it to biodegrade under specific conditions (e.g. a certain temperature, timeframe, etc.). At the end of this process in an industrial composting plant, only natural products remain (water, carbon, compost). In order to make accurate and specific claims about compostability, the location (home, industrial) and timeframe need to be specified.

- Industrial composting is an established process with commonly agreed upon requirements (e.g. temperature, timeframe) for transforming biodegradable waste into stable, sanitised products to be used in agriculture. The criteria for industrial compostability of packaging have been defined in the EN 13432. Materials and products complying with this standard can be certified and subsequently labelled accordingly.
- There is currently no European standard for home composting. Regulations, national standards, or certification programmes can for example be found in Italy (UNI 11183), Belgium (Vinçotte, OK compost home label) and the United Kingdom. (*European Bioplastics*)

Corporate Social Responsibility (CSR)

The responsibility of enterprises for their impact on society. Respect for applicable legislation, and for collective agreements between social partners, is a prerequisite for meeting that responsibility. To fully meet their corporate

social responsibility, enterprises should have a process in place to integrate social, environmental, ethical, human rights and consumer concerns into their business operations and a core strategy in close collaboration with their stakeholders, with the aim of:

- maximising the creation of shared value for their owners/shareholders and for their other stakeholders and society at large;
- identifying, preventing and mitigating their possible adverse impacts.

(European Commission, COM 2011/681)

Environmental claim

A statement, symbol or graphic that indicates one or more environmental aspect(s) of a product, a component, packaging or a service. (ISO 14021 on Self-declared Environmental claims)

Environmental footprint

A multi-criteria measurement of the environmental performance of a product or goods/services providing organisation, based on a life cycle approach. (European Commission, Joint Research Center, 2011)

Environmental impact

Refers to the direct effect of socio-economic activities and natural events on the components of the environment. (OECD)

Feedstock

A commodity or raw material.

Genetically modified organism (GMO)

Organisms, such as plants and animals, whose genetic material (DNA) has been altered are called genetically modified organisms (GMOs). Food and feed which contain or consist of such GMOs, or are produced from GMOs, are called genetically modified (GM) food or feed. (European Commission)

Greenhouse gas (GHG)

Gaseous constituent of the atmosphere, both natural and anthropogenic, that absorbs and emits radiation at specific wavelengths within the spectrum of infrared radiation emitted by the earth's surface, the atmosphere, and clouds. (ISO 14064 on Greenhouse gases)

Greenwashing

The act of misleading consumers regarding the environmental practices of a company, or the environmental benefits of a product or service. (TerraChoice Group Inc, 2009)

Life cycle

The consecutive and interlinked stages of a product system from raw material acquisition, or generation of natural resources to its final disposal. (ISO 14044 on Life-Cycle Assessment)

Life cycle assessment (LCA)

Compilation and evaluation of the input, output and the potential environmental impact of a product system throughout its life cycle. (ISO 14044 on Life Cycle Assessment)

Oxo-(bio)degradable/oxo-degradable or oxo-fragmentable plastics

The underlying technology of oxo-degradability or oxo-fragmentation is based on special additives, which, if incorporated into standard resins, are purported to accelerate the fragmentation of the film products.

The process of biodegradation as defined in industry accepted standards (ASTM D6400, ASTM D6868, ASTM D7081 or EN 13432), contrary to oxo-fragmentation, results from the action of naturally-occurring micro-organisms such as bacteria, fungi, and algae. Oxo-degradable or oxo-fragmentable materials do not meet these standards. Neither do they meet the criteria defined in accepted industry standards for compostability (EN 13432). (European Bioplastics)

Offsetting

A mechanism for compensating for all, or for a part of the carbon footprint of a product through the prevention of the release of, the reduction in, or the removal of an amount of greenhouse gas emissions in a process outside the boundary of the product system.

Examples – external investment in renewable energy technologies; energy efficiency measures; afforestation/reforestation. Offsetting is not allowed in the carbon footprint of a product's quantification and thus is not reflected in any carbon footprint communication. (ISO 14021 on Self-Declared Environmental Claims and ISO 14067 on Quantification and Communication of Carbon Footprints)

Recyclable

A characteristic of goods, packaging or associated component that can be diverted from the waste stream through available processes and programmes and can be collected, processed and returned to use in the form of raw materials or goods. (ISO 14021 on Self-declared Environmental Claims)

Sustainability

A characteristic or state whereby the needs of the present population can be met without compromising the ability of future generations or populations in other locations to meet their needs. (UNEP)

Biobased does NOT necessarily mean biodegradable

Many customers – be it in a B2B or B2C context – consider the qualities biobased and biodegradable to be synonymous. There is a need for a clear differentiation: biobased simply refers to the renewable raw material/feedstock used for the material or production. Biodegradability is a property connected to the chemical structure only. Biobased and fossil-based materials may or may not be biodegradable.

A8 LITERATURE AND LINKS

International and Europe

- Eco-labels:
 - www.ecolabelindex.com: database with more than 430 eco-labels.
 - <http://ec.europa.eu/environment/ecolabel/>: website of the EU eco-label
- European Commission Mandate M/492 to CEN on the development of Standard for Bio-Based Products, 2011
- European Bioplastics*:
 - Position Paper Life Cycle Assessment, 2008
 - Position Paper Oxo-degradable Plastics, 2009
 - Fact Sheet: Industrial Composting, 2009
 - Fact Sheet: Home Composting, 2010
- European Commission, Communication on Sustainable Consumption and Production and Sustainable Industrial Policy Action Plan, 2008
- European Commission, DG Environment, Retail Forum, Eurobarometer survey on Europeans' attitude towards SCP, 2009
- European Commission, Guidance on the Implementation/Application of Directive 2005/29/EC on Unfair Commercial Practices, 2009
- European Commission, DG Health & Consumer Protection: Guidelines for Making and Assessing Environmental Claims, 2000
- European Commission, Renewed Strategy on Corporate Social Responsibility, 2011
- International Chamber of Commerce, Advertising and Marketing Practice – Consolidated ICC Code, 2011
- International Standards Organisation, ISO 14020 series on Environmental Claims
- International Standards Organisation, ISO 14040 series on Life Cycle Assessment
- International Standards Organisation, ISO 14063 standard on Environmental Communication
- International Standards Organisation, ISO 14067 standard on Quantification and Communication of Carbon Footprints (announced for end of 2012)
- International Standards Organisation, ISO 26000 standard Guidance on Social Responsibility
- OECD, Draft OECD Recommendation on Assessing the Sustainability of Bio-Based Products, 2011

*Available for download in the publications section of www.european-bioplastics.org



National

Australia

- Australian Association of National Advertisers (AANA), Environmental Claims in Advertising and Marketing Code
- Australian Competition & Consumer Commission, News for Business – Biodegradable, degradable and recyclable claims on plastic bags, 2010

Germany

- Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, BDI, Umweltbundesamt, Environmental Information for Products and Services, 2008

United Kingdom

- British Committee on Advertising Practice (CAP), Code of non-broadcast Advertising, Sales Promotion and Direct Marketing, 2010
- British Government, Department for Environment, Food and Rural Affairs, Green Claims Guidance, 2010
- British Government, Department for Environment, Food and Rural Affairs, Quick Guide to making a good Environmental Claim, 2010
- British Government, Department of Trade and Industry, Green Claims Code, June 2000
- BSI Group, PAS 2050, Specifications for the assessment of life cycle GHG emissions of goods and products, 2011

United States of America

- Federal Trade Commission Green Claims Guide 2010
- Society of the Plastics Industry, Bioplastics Council, Understanding Biobased Carbon Content, September 2011
- Society of the Plastics Industry, Bioplastics Council, Life Cycle Analysis Primer – What, Why and How, September 2011
- Society of the Plastics Industry, Bioplastics Council, Position Paper on Oxo-Biodegradables and other Degradable Additives, January 2010

Other interesting documents/sources

- Seven Sins of Greenwashing, Environmental Claims in Consumer Markets Summary Report: North America April 2009, TerraChoice Group Inc.
- Greenhouse Gas Protocol (GHG Protocol), international accounting tool to quantify GHG emissions

Other sources of information might be national or international institutions of environmental protection, consumer protection, which further a fair competition in the market and regulate advertising.

A9 ACRONYMS

ACDV	Association Chimie du Végétal
ASTM	American Society for Testing and Materials
B2B	Business to business
B2C	Business to consumer
CAP	Committee of Advertising Practice (UK)
CEN	Comité Européen de Normalisation / European Committee for Standardisation
CEN/TC	Technical committee of CEN
CEN/TR	Technical report of CEN
CEN/TS	Technical specification of CEN
CFP	Carbon footprint of products
DEFRA	Department for Environment, Food and Rural Affairs (UK)
DG	Directorate General (EU)
EC	European Commission
ECG	Environmental Communications Guide
EN	European Norm
Eol	End-of-life
EPD	Environmental Product Declaration
GHG	Greenhouse gas
GMO	Genetically modified organisms
ISCC	International Sustainability and Carbon Certification
ISO	International Standardisation Organisation
LCA	Life cycle assessment
LCT	Life cycle thinking
NGO	Non-governmental organisation
OECD	Organisation for Economic Co-operation and Development
PA	Polyamide
PBAT	Polybutylenadipate-terephthalate
PBS	Polybutylensuccinat
PCF	Product carbon footprint
PE	Polyethylene
PET	Polyethylene-terephthalate
PHA	Polyhydroxyalkanoate
PLA	Polylactic acid
PP	Polypropylene
RED	Renewable Energy Directive (Germany)
TPC-ET	Thermoplastic polyester elastomers
UNEP	United Nations Environment Programme

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