

PAPER BIO PACK

WHAT'S THE FUTURE
OF PACKAGING IN
CENTRAL EUROPE?

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CENTRAL EUROPE European Union
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BIOCOMPACT-CE

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 **Training Package - Certification**

Contents:

1. Certification - principles
2. Certification for paper products
3. Certification for bioplastics



Part 1

Certification Principles



Certification is the formal attestation or confirmation of certain characteristics of:

- object,
- person,
- or organization.

This confirmation is often, but not always, provided by some form of external review, education, assessment, or audit.



CERTIFICATION

Common type of certification in modern society is product certification.

This refers to processes intended to determine if a product meets minimum **standards**, similar to quality assurance.



STANDARD AND CERTIFICATE

Standard	Certificate
<ul style="list-style-type: none">▪ Set of requirements that a product/service shall conform to▪ Two types:<ul style="list-style-type: none">▪ Specification (e.g. EN 13432)▪ Test method (e.g. ISO 14855)▪ Basis for certification systems	<ul style="list-style-type: none">▪ Independent confirmation that material/product conforms to specific requirements▪ Product/material verifications are based on standard test methods

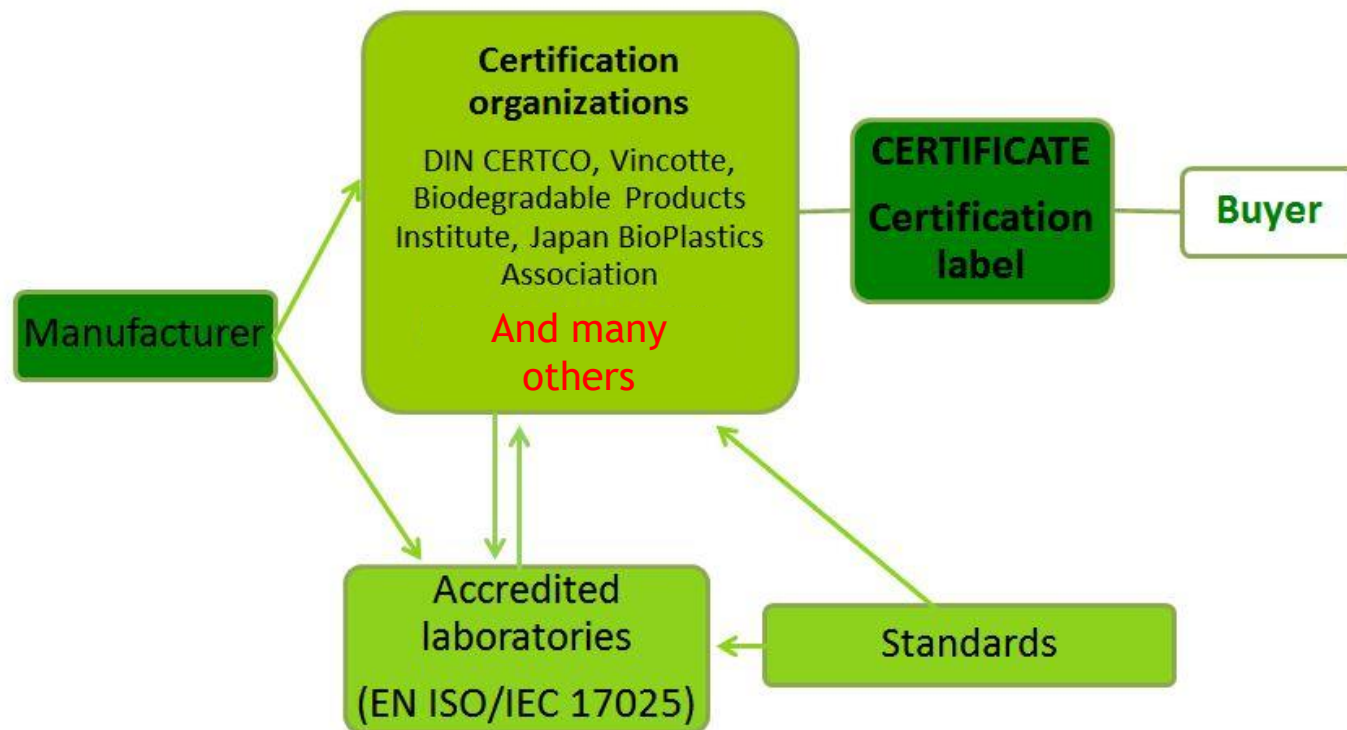


CLEAR, TRUSTED, BACKED BY SCIENCE

- **proof** issued by an **independent** authority
- based on a **certification process**, which often follows standard specification/test method
- voluntary, commercial
- a **document** and a **logo**, on-line record -> public recognition



CERTIFICATION PROCESS



Valid certificate contains a name of the certification organization and the certification number

Other claims, although also called certificates, are **not valid**.



STANDARDISATION OF BIOPLASTICS

WHY?

- Very **difficult to distinguish** bioplastics from “conventional” plastics
- Overcome difference in opinion
- To prevent **false advertising / greenwashing**
- Basis for
 - a guarantee for **consumers**
 - a tool for **producers**



Part 2

Certification for paper products



FOREST CERTIFICATION



- It is mainly connected to sustainable forest management, however, recently also paper for recycling has been included
- It requires the certification of an independent body



FSC 100%

Product coming only from certified FSC forest.



FSC Mix

Product containing a mix of certified materials



FSC Riciclato

Product containing only recycled material.



ENVIRONMENTAL LABELS TYPE I



Voluntary Environmental labels based on ISO 14024 with external independent certification. Several paper products may be included in these certification scheme. *The most common in Europe are Ecolabel, Der Blaue Engel and Nordic swan*

- They are based on multi-criteria parameters considering chemicals and emissions of the entire process. In the case of paper products several of them include recyclability tests as well.
- Ecolabel is available for the following :
 - Copy and Graphic paper
 - Newsprint paper
 - Tissue paper
 - Printed paper
 - Converted paper products



Ecolabel



Nordic swan



Blau Engel



ENVIRONMENTAL PRODUCT DECLARATION



- Based on life cycle analysis (LCA);
- Wide range of environmental parameters are taken into account
- They are subjected to external independent certification



Part 3

Certification for bioplastics

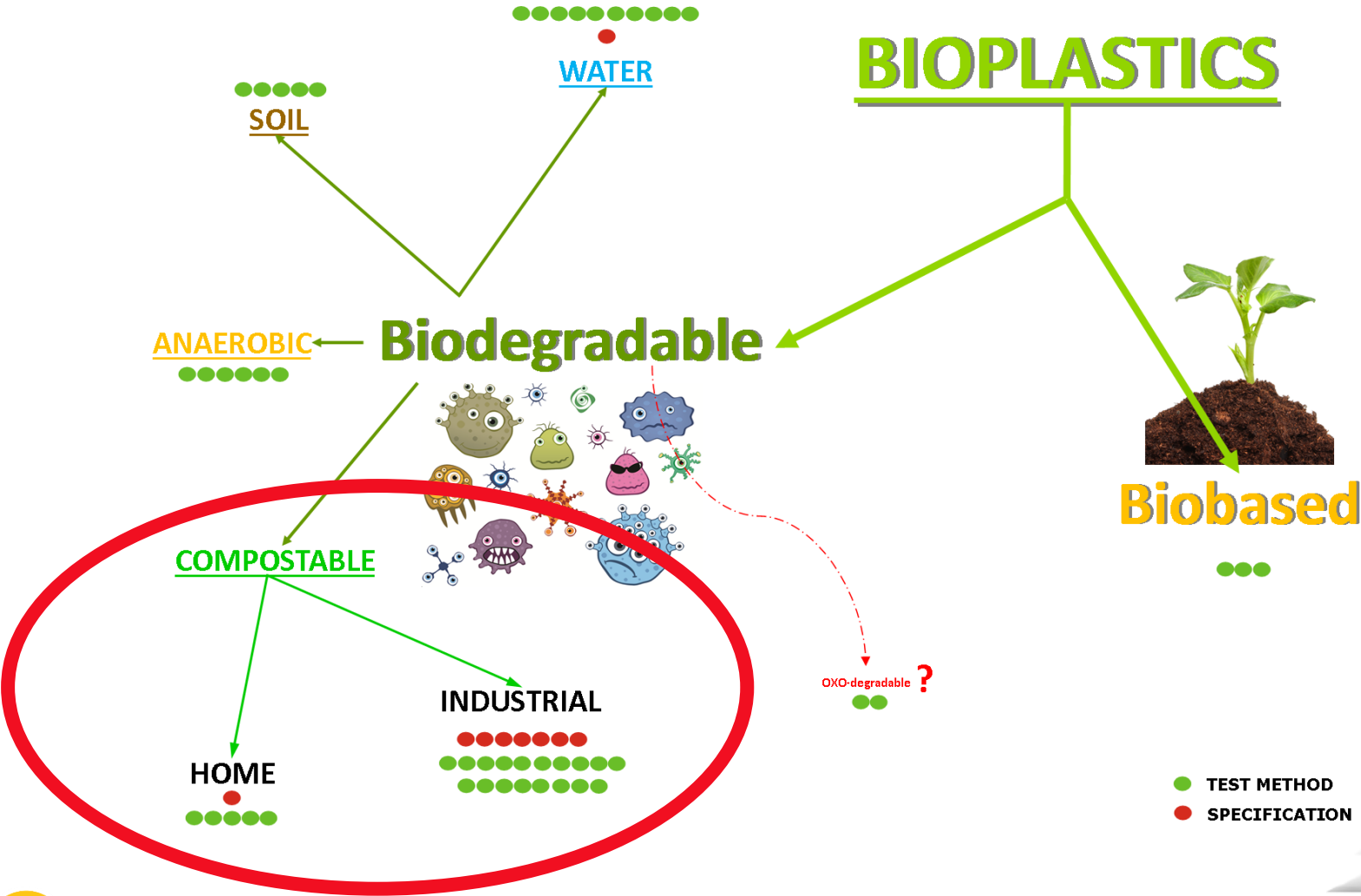


STANDARDISATION OF BIOPLASTICS

HOW?

- Developed and published by standardization organizations (ISO, CEN, ASTM, JIS, ... SIST...)
- Each standardisation organization has own standards
- CEN obligatory for EU member states
- Common to harmonize with ISO
- Standards
 - Specification (criterion: pass/fail)
 - Test method, Practice, Determination, Evaluation





CERTIFICATION FOR COMPOSTABILITY

The harmonised European **standard EN 13432** “Requirements for packaging recoverable through composting and biodegradation” requires at least 90% disintegration after twelve weeks, 90% biodegradation (CO₂ evolution) in six months, and includes tests on ecotoxicity and heavy metal content.

It is the standard for biodegradable packaging designed for treatment in industrial composting facilities and anaerobic digestion.

Standard EN 14995 describes the same requirements and tests as EN 13432, while applying not only to packaging but plastics in general.

Source: European Bioplastics



compostable



CERTIFICATION FOR COMPOSTABILITY

- First certification scheme Vinçotte, 1995
- Products **certification**
- Intermediates/additives **registration**
- Chemically unmodified materials and components of natural origin
- Organic components > 50 %
- Printing dyes - compostable
- Blends and laminates - all compostable, ½ thickness
- Certification of products made of registered materials (IR, thickness)



compostable



CERTIFICATION FOR COMPOSTABILITY

- 1. Chemical Composition**
No substance that are harmful to the environment. Level of heavy metal contents and other hazardous elements within standardized limits.
- 2. Biodegradability**
More than 90 % conversion of organic carbon into CO₂, in maximum of 180 days.
- 3. Disintegration during composting**
Quick disintegration of the material (12 weeks, sieve fraction)
- 4. Eco toxicity**
Positive results from testing of the compost quality (germination rate, biomass mass)
- 5. Labelling**
Labelling according to certification scheme, allows the inhabitants to identify and collect the waste in organic waste bins



ADDITIVES

According to EN 13432, EN 14995, ISO 18606, ASTM D 6400 and ISO 17088, organic additives whose biodegradability has not been separately determined can be used on the following conditions:

- Less than 1 % of mass per organic additive.
- Less than 5 % of mass in total of organic additives whose biodegradability has not been proven.
- Additives are harmless for the composting process.

Source: DIN CERTCO Certification Scheme



CERTIFICATION

	EN 13432, EN 14955, ISO 17088, ISO 18606	ASTM D6400	AS 4736 ind.	AS 5810 Home
Disint.	> 90 % within 12 weeks (2 mm sieve fraction)	As EN 13432	As EN 13432	Time 2 X longer than EN 13432
Heavy metals	EN 13432, Annex A	~ 10 x EN 13432 – USA ~ 3 x EN 13432 – Kanada	As EN 13432	As EN 13432
Biodeg.	> 90 % within 180 days or relative to +control	> 90 % within 180 days or relative to + control	As EN 13432	Time 2 X longer than EN 13432 (at 25 °C)
Negative effect and plant toxicity	> 90 % germination rate and biomass of two plants	As EN 13432	As EN 13432 + worm test (ASTM E 1676)	As EN 13432 + worm test (ASTM E 1676)



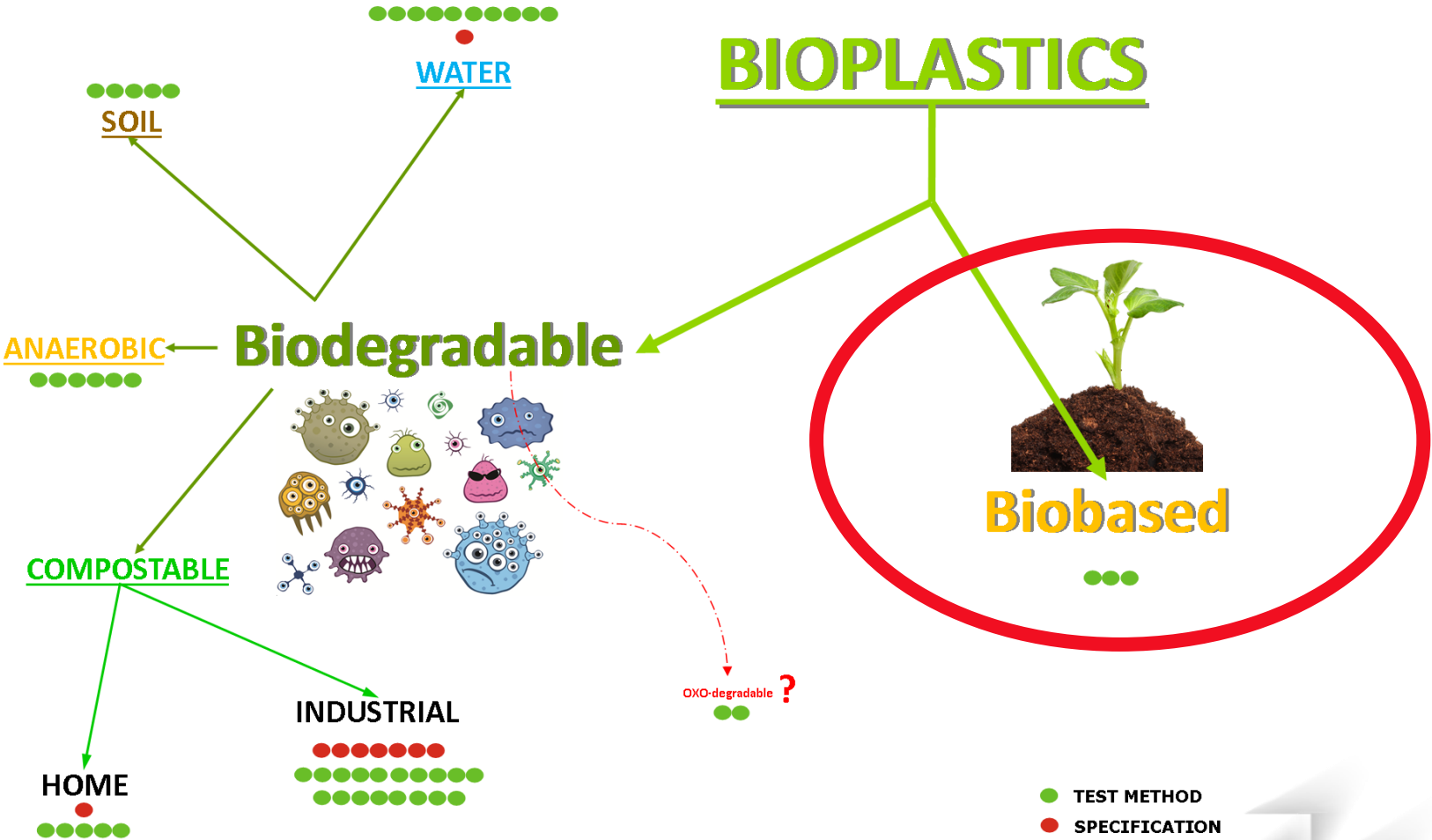
OXO-DEGRADABLE

Oxo-degradable plastics are made of conventional plastics (e.g. PE or PP) supplemented with additives in order to mimic biodegradation. They cannot be considered as bioplastics and have failed to prove proper biodegradability in any environment. The standards that are claimed to confirm the biodegradability of such products, most notably the US standard ASTM D6954, do not provide pass/ fail criteria, leaving these misleading claims wholly unsubstantiated.

Recently, also the test method described in ASTM D5511 has been used increasingly to prove alleged biodegradability of oxo-degradable or similar materials.

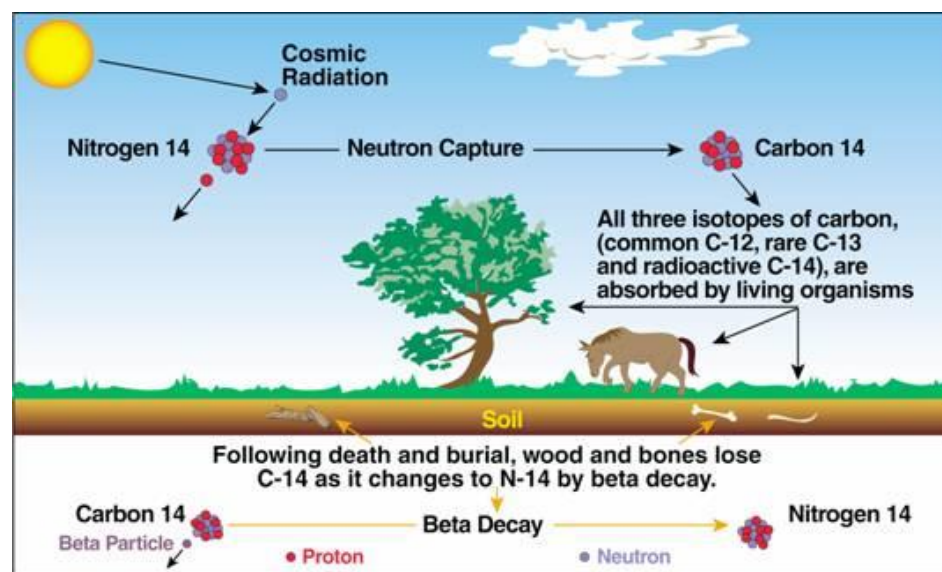
Source: European Bioplastics





BIOBASED CONTENT

- Use of **renewable resources**
- Basis: radiocarbon (^{14}C) analysis
- **Standards**
- ASTM D6866
- CEN/TS 16640 / 16785-1 & 2
- ISO/CD 16620
- Result related only to **carbon!**

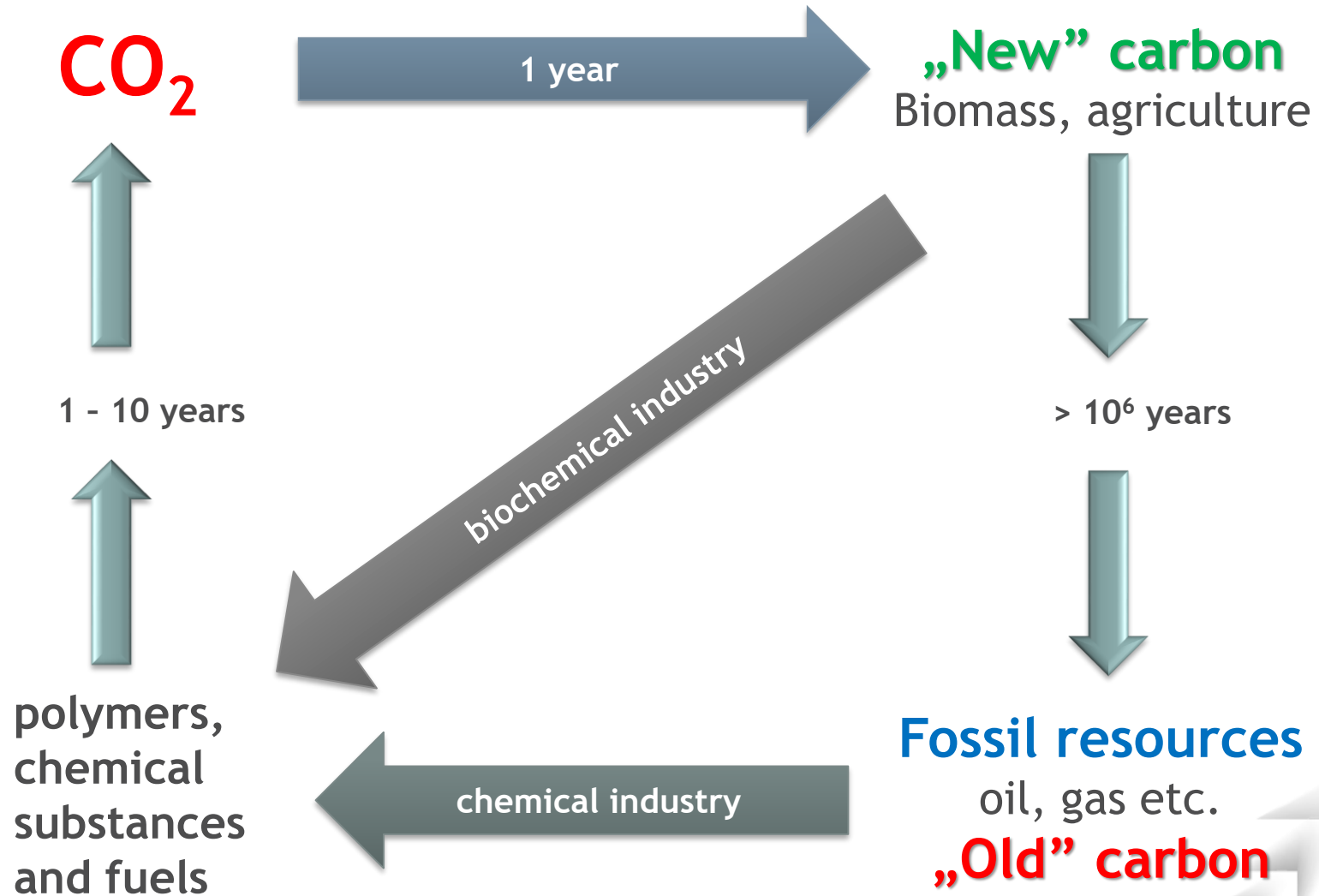


“**Carbon age**” signifies a time needed to get carbon for manufacturing a product.

- Classical plastics are manufactured from fossil resources containing fossil - old carbon.
- Plastics manufactured from renewable crops (corn, sugarcane, potatoes also farm and food production waste) contain carbon which circulates in nature for maximum a few years.



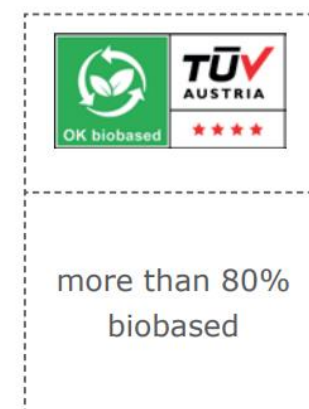
CERTIFICATION



BIOBASED CONTENT

Working Group 3 of the Technical Committee (TC) 411 of CEN has developed different standards for the measurement of the renewable content of bio-based materials, including bioplastics:

- EN 16640 „Bio-based products - Determination of the bio-based carbon content of products using the radiocarbon method“, describes how to measure the carbon isotope ^{14}C (radiocarbon method).
- The standard EN 16785-1 „Bio-based products - Bio-based content - Part 1: Determination of the bio-based content using the radiocarbon analysis and elemental analysis“ accounts for other bio-based elements in a polymer through elemental analysis.
- Part two of this standard EN 16785-2 „Bio-based products - Bio-based content - Part 2: Determination of the bio-based content using the material balance method“, describes a material balance method to determine the renewable content of a bio-based product.



Source: *European Bioplastics*



CERTIFICATION FOR BIOBASED CONTENT

Requirements:

- min. 50 % of organic compounds
- min. 20 % of carbon from renewable resources
- non-toxic

Result

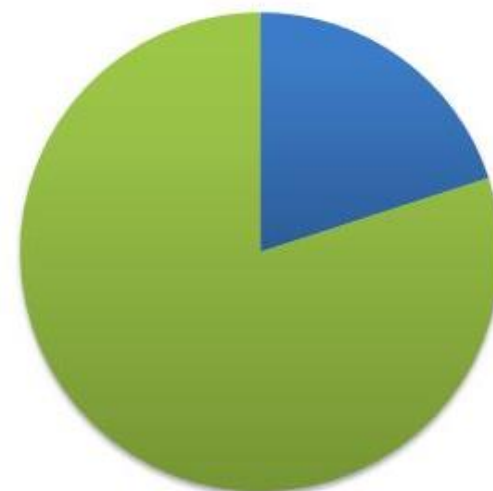
- % of renewable carbon
- No pass/fail
- Range 0 - 100 % - how much is enough?



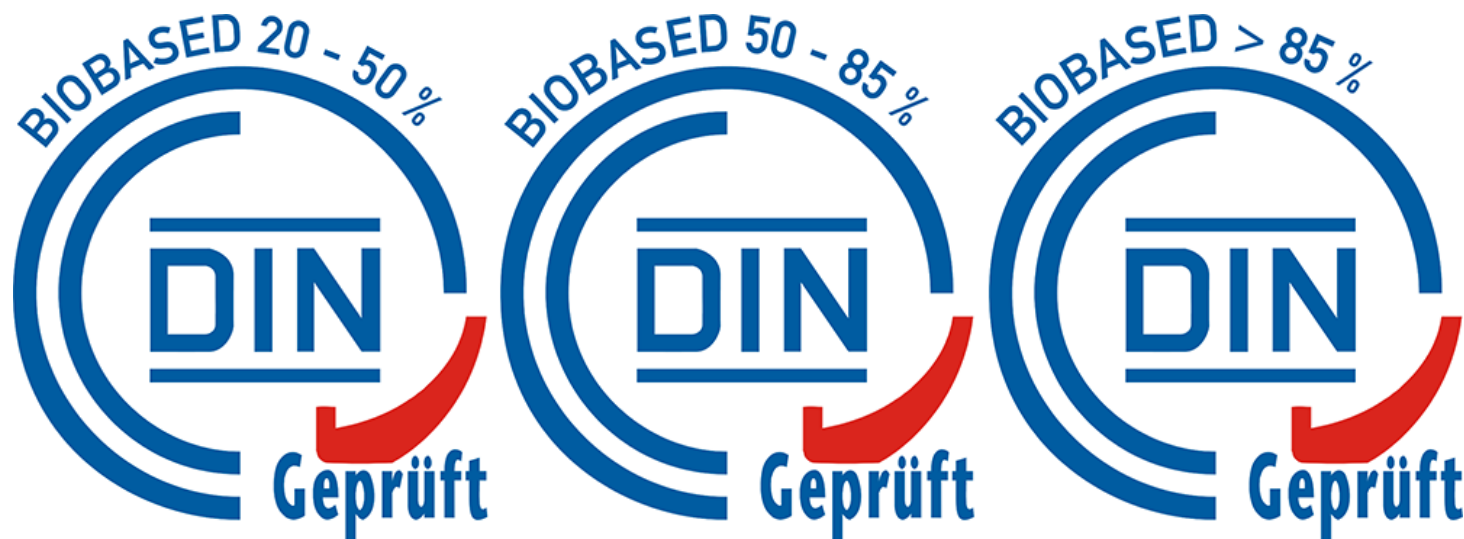
CERTIFICATION FOR BIOBASED CONTENT

This system could be used for many products **completely** or **partly** manufactured from **natural origin materials/polymers/resources** (except solid, liquid and gaseous fuel).





To apply for certification product has to contain **at least 30 % organic carbon calculated in dry matter** and **at least 20 % of organic carbon from renewable resources**.



Biobased plastics certification



Biobased plastics certification

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



CONCLUSION

- Standardization and certification of bioplastics is complex
- **Rapidly changing and difficult to keep track of changes**
- Solid basis of test methods and specifications
- **Certification has a marketable value**
- There is a strong need to inform industry and users - especially about the end of life options



THANK YOU!!



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