industrially
compostable

Certification Scheme

Products made of industrially compostable materials

according to

EN 13432
if applicable, in connection with
ASTM D 6400
EN 14995
ISO 17088
ISO 18606

(October 2025)

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Foreword

Since its foundation in 1993, European Bioplastics (former IBAW) has been committed to the establishment of a legal and technical framework for supporting the introduction of bioplastics to the market. The association is the owner of the Seedling mark, which is protected by trademark law. This mark is widely acknowledged, and it creates confidence among consumers that a neutral and competent entity carefully inspected and evaluated test criteria. Thus, customers receive added value that they can take into consideration when making purchase decisions.

The certification scheme "Products made of industrially compostable materials" was created and is continuously refined in collaboration with DIN CERTCO and a dedicated committee of experts. It makes a distinction between the registration of materials, intermediates and additives and the certification of (end) products. It is continuously being further developed under the aegis of European Bioplastics in consensus with the stakeholders.

The Certification Scheme has been owned by European Bioplastics since 2012. The certification work is performed by both, DIN CERTCO (Germany) and TÜV AUSTRIA Belgium; (changed from Vinçotte in 2017). Registration/Certification clients can choose either of the certification bodies to work with to establish the conformity of their product(s) with the underlying standards. In the following, reference made to **the Certification Body** is a neutral expression for the respective certifier, chosen by a client.

Products made of industrially compostable materials are given the right to bear the industrial compostability mark upon fulfilling the requirements indicated under Section 4 according to the procedure described in this Certification Scheme. For materials, intermediates or additives, a notification of registration is issued if the requirements named under Section 4 are fulfilled.

In addition to the Certification Body's general terms and conditions, this Certification Scheme provides a basis for organisations which supply products made of compostable materials to label their products with the compostability mark, the so-called "Seedling". This proves that their products fulfill the requirements of EN 13432 as well as, if applicable, the additional/simultaneous requirements in EN 14995, ISO 18606, ISO 17088 and/or ASTM D 6400.

Acknowledged Certification Bodies

DIN CERTCO was founded in 1972 by DIN Deutsches Institut für Normung e.V. (German Institute for Standardization) for the awarding of the DIN marks and provides certification for products, persons, services and companies on the basis of DIN standards and similar specifications. As part of TÜV Rheinland (founded in 1872), which is one of the leading global players for testing, inspection and certification with more than 20,000 employees at about 500 locations in 61 countries, DIN CERTCO can offer this network to the benefit of their customers. Since 1997, at the early beginning of the seedling mark, DIN CERTCO has been the Certification Body for compostable Products. All certificate holders can be viewed on the daily updated homepage of DIN CERTCO (www.dincertco.de). DIN CERTCO owns an accreditation for product certifications according to DIN EN ISO/IEC 17065 from the German Accreditation Body DAkkS for the standards mentioned in this Certification Scheme.

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TÜV AUSTRIA Belgium, an independent Belgian inspection and certification body, took over the Vinçotte's 20-year-old bioplastic certification activities in 2017. TÜV AUSTRIA Belgium is a member of the TÜV AUSTRIA Group founded in 1872 and employing worldwide around 1700 people in more than 40 countries. TÜV AUSTRIA is a leading, impartial and independent service provider for integrated management of safety, quality, environment and resources with international orientation.
Autonomy and impartiality are the principles of our actions in the service of safety and conformity assessment.

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Amendments

The following amendments have been made to the "Products made of industrially compostable materials" Certification Scheme (July 2023):

a) Change of the total sum of the organic compounds for which biodegradability need not be determined (4)
b) Additional requirement to demonstrate ultimate biodegradability for each organic constituent present in >1%-<15% (4)
c) Alternative disintegration test for thin voluminous films (6.2.12.5)
d) Clarification on threshold for ecotoxicity testing of constituents (6.2.12.7)
e) Demonstrating ultimate biodegradability for organic constituents present in 1%-15% (6.2.14)
f) Clarification that the number of samples required for product testing is agreed on between the testing laboratory and Certification Body (7.3.1.1c); 7.3.1.2c); 7.3.2.2)
g) Specifications for laboratory-scale tests according to EN ISO 20200 (B.3)
h) Align thresholds for biodegradability testing to below 1% across the scheme

Earlier versions

"Products made of industrially compostable materials" Certification Scheme (July 2023)
“Products made of compostable materials” Certification Scheme (January 2020)
“Products made of compostable materials” Certification Scheme (January 2016)
“Products made of compostable materials” Certification Scheme (April 2012)
“Products made of compostable materials" Certification Scheme (2006-08)
“Products made of compostable materials" Certification Scheme (2002-08)
“Products made of compostable materials" Certification Scheme (2002-05)
"Products made of compostable materials" Certification Scheme (2001-07)
"Products made of compostable materials" Certification Scheme (1999-01)
"Products made of compostable materials" Certification Scheme (1998-04)
"Products made of compostable materials" Certification Scheme (1997-06)

This Certification Scheme enters into force on 1 January 2026. Certificates already in existence will remain valid. Renewals may be certified according to the previous version of the Certification Scheme for a period of maximum 12 months after entry into force. Notifications of registration already in progress before entry into force of this Certification Scheme may be certified according to the previous version of the Certification Scheme.

Content

1. Scope

This Certification Scheme applies to (end) products made of compostable materials, intermediates and additives, and, in connection with the testing foundations named below, contains all requirements on issuing the compostability mark and notifications of registration for materials, intermediates and additives.
This Certification Scheme establishes requirements that need to be met by the product, material, intermediate or additive directly, as well as requirements relating to the associated testing, monitoring and certification/registration.
If a (end) product demonstrates conformity to the criteria specified in this Certification Scheme, then a certificate will be issued for that product. Furthermore, conformity with the products made of compostable materials Certification Scheme can also be confirmed for materials, intermediates and additives in the issuance of notifications of registration and addition to the corresponding lists of certificate/notification of registration holders (see Section 6.11). The same applies to confirmations of acceptability according to Section 6.4.
There is no legal right to receive a certificate or any other confirmation of conformity.

1.1. Eligibility for Seedling certification

In general, packaging as defined within Directive 94/62/EC and which meets the requirements as laid out in this Certification Scheme, is eligible for Seedling certification. Guidance criteria for eligibility review are the scope of Directive 94/62/EC and the possibility to increase biowaste diversion to organic recycling. In general, articles that facilitate organic and agricultural material to be organically recycled are accepted for the Seedling application process by default.
Examples for products eligible for Seedling certification:

- Bio-waste bags
- Very thin plastic bags / fruit and vegetable bags
- Carrier bags
- Tea bags
- Coffee capsules, coffee pads, coffee filters
- Fruit stickers
- Cling-film (and/in combination with) stickers/labels for fresh produce
- Paper towels (wet-strength paper)
- Catering items such as cups, trays, plates, cutlery
- packaging for perishable food
- Flower wraps

The Seedling certification scheme can furthermore not be applied for materials and products made from conventional plastics containing additives promoting the oxidation of a material under certain conditions. This explicitly also includes materials made of polyolefins that are enhanced with additives that are supposed to impart biodegradability in certain environments. Additionally, any kind of additive which is used for the mentioned technologies, is not eligible for a certification with the Seedling logo.

2. Test and certification specifications

The following referenced documents are the basis for testing and certification. For dated references, only the edition citied applies. For undated references, the latest edition of the referenced document (including any amendments) applies.
Products, intermediates, materials and additives can be certified and/or registered according to the following standards (certification standards):

EN 13432 Packaging - Requirements for packaging recoverable through composting and biodegradation
EN 14995 Plastics - Evaluation of compostability - Test scheme and specifications
ISO 17088 Plastics – Organic Recycling - Specifications for compostable plastics
ASTM D6400 Standard Specification for Labeling of Plastics Designed to be Aerobically Composted in Municipal or Industrial Facilities
ISO 18606 Packaging and the environment – Organic Recycling

Certification/registration according to EN 13432 is always binding. In addition to EN 13432, certification/registration can be made according to another, or multiples of the standards named.
Laboratory testing must be performed according to the stipulations in the standards named above according to the following standards or test methods (testing standards):

EN 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
EN ISO 14852	Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium - Method by analysis of evolved carbon dioxide
EN ISO 14855-1	Determination of the ultimate aerobic biodegradability of plastic materials under controlled composting conditions -- Method by analysis of evolved carbon dioxide -- Part 1: General procedure
EN ISO 14855-2	Determination of the ultimate aerobic biodegradability of plastic materials under controlled composting conditions -- Method by analysis of evolved carbon dioxide -- Part 2: Gravimetric measurement of carbon dioxide evolved in a laboratory-scale test
ISO 15985	Plastics - Determination of the ultimate anaerobic biodegradation and disintegration under high-solids anaerobic-digestion conditions - Method by analysis of released biogas
EN ISO 16929	Plastics - Determination of the degree of disintegration of plastic materials under defined composting conditions in a pilot-scale test

EN 14045	Packaging - Evaluation of the disintegration of packaging materials in practical oriented tests under defined composting conditions; German version EN 14045:2003
EN 14046	Packaging - Evaluation of the ultimate aerobic biodegradability of packaging materials under controlled composting conditions - Method by analysis of released carbon dioxide"; German version EN 14046:2003
ASTM D 5338	Test Method for Determining Aerobic Biodegradation of Plastic Materials Under Controlled Composting Conditions
ASTM D 6866	Test Methods for Determining the Biobased Content of Solid, Liquid, and Gaseous Samples using Radiocarbon Analysis
Bundesgütegemeinschaft Kompost e.V. (Hrsg.) (Federal Quality Association Compost (ed.):	Methodenbuch zur Analyse organischer Düngemittel; Manual, of methods for analysing organic fertilisers)

- this Certification Scheme
- the General Terms and Conditions of the Certification Body
- Trademark Rules
- Trademark Usage Guidelines

The obligation to comply with laws and regulations governing the respective products is in no way affected by this Certification Scheme.

3. Definitions

For the purposes of this Certification Scheme, the following definitions shall apply:

Additive	Substances and product constituents added to a product, material or intermediate in order to, for example, generate certain properties (e.g. adhesives, antiblocking agents, printing inks).
Blank compost	Compost obtained from a parallel process according to Annex B.3 without addition of sample material.
Blend	Physical mixture of 2 or more materials without reactive process.
Certification	Proof of conformity with the requirements of the named standards as well as with this Certification Scheme for final products.
Compostable material	Material meeting the requirements of this Certification Scheme.
Continuous phase	The background phase (polymer 1) of a multiphasic system with at least one further phase (polymer 2) (e.g. blend). A blend always has two phases: a continuous phase and the dispersed phase.
Intermediate	Semifinished item optional state between material and product, e.g. laminates consisting of several layers of material. The classification of types shall be made according to Section 6.5.
Manufactured item	Material, intermediate, additive or product according to this Certification Scheme. The classification of types shall be made according to Section 6.5.
Material	Material that is (in case of polymers) primarily based on organic chain molecules and used, for example, to manufacture intermediates or products. Materials generally contain further inorganic or low molecular weight organic materials used to influence processing or application properties. Materials can also consist of constituents other than plastics. The classification of types shall be made according to Section 6.5.
PFAS	PFASs are defined as fluorinated substances that contain at least one fully fluorinated methyl or methylene carbon atom (without any H/Cl/Br/I atom attached to it), i.e. with a few noted exceptions, any chemical with at least a perfluorinated methyl

	group (–CF3) or a perfluorinated methylene group (–CF2–) is a PFAS.[1]
Product	Article that is disposed of as waste (for composting) after use, which is manufactured from polymeric materials or intermediates and frequently also contains additives. Products are not necessarily packaging. The classification of types shall be made according to Section 6.5.
Production facility	Location at which production of Manufactured item(s) is carried out according to this Certification Scheme. This is not necessarily identical to the certificate holder's address.
Pulp	Cellulose pulp, regardless of manufacturing process – mechanical or chemical, as long as it has not been chemically modified.
Registration	Proof of conformity with the requirements of the named standards as well as with this Certification Scheme for materials, intermediates (semi-finished items) and additives.

[1] For this Certification Scheme, the OECD definition of PFAS is used (OECD 2021b) to align with the definitions used in EU institutions and CEN.

4. Product requirements

According to the requirements of the underlying standards, the requirements named in the following must be fulfilled. Section 6 describes the details on providing the associated evidence.

- Compliance with the threshold values named in Table A.1 of EN 13432 and Section 6.4.1 and Section 6.4.3 of ASTM D 6400, if applicable.

- Ultimate biodegradability (90 % absolute biodegradation, or 90 % with a suitable reference substrate within not more than 6 months). Evidence must be proven via a test according to the standards named under Section 2.

- For ASTM D 6400: Chemically unmodified ligno-cellulosic substrates are permitted to fulfil the requirements of biodegradation by demonstrating > 95% of its carbon comes from biobased resources, tested by means of ASTM D 6866.

- After composting for 12 weeks, no more than 10 % of the tested material's original dry weight may be found on a > 2mm fraction sieve. Evidence must be demonstrated via a test according to the standards named under Annex B.3 (disintegration testing).

- The germination rate and plant biomass of two plant types grown in the compost containing the test substance must be higher than 90 % of the corresponding blank compost. Evidence must be demonstrated via a test according to the standards named under Annex B.3.

- For organic additives present in a manufactured item at concentrations of more than 1 % of mass referred to the manufactured item, fulfilment of the requirements according to Section 6.2.14 Registration of biodegradable additives must be proven.

- Additives present in a manufactured item at concentrations less than 1 % of mass item must be harmless for the composting process.

- Each individual organic compound at or below 1 % by dry mass are excempt from biodegradation testing, so long as the total sum of these organic compounds does not exceed 3 % by dry mass.

- Residues remaining in packaging or substances that may be dispatched along with the product must be suitable for composting.

- The product or materials must not contain any intentionally added per- and polyfluoroalkylated substances (PFAS) and other organic, fluorinated chemicals, and no PFAS and organic fluorinated chemicals must be used intentionally during the production process, i.e. in or on equipment coming into use with the products or materials.

– Additional, to the requirements of EN 13432 and all other applicable standards, ultimate biodegradability shall be demonstrated for each organic constituent present in >1%-15% of dry mass of the material or product as specified in 6.2.14.

5. Testing

5.1. General information

To carry out the inspections and tests necessary for the evaluation and certifications, the Certification Body requires use of testing laboratories it has recognised. Regarding documentation provided to the Certification Body, the Certification Body will decide what languages are accepted.

5.2. Types of Tests

5.2.1. Initial Test (Type Testing)

The initial test is a type test intended to establish whether the (end) product, intermediate, material or additive meets the requirements according to Section 4 of this Certification Scheme.
Section 6 shows which tests are necessary for individual cases.

5.2.2. Verification Test (Control Test)

Verification testing is performed on products, materials, intermediates and additives.

Verification testing is performed in recurring, predefined intervals and establishes whether the certified (end) product, registered material, registered intermediate and/or registered additive in production phase corresponds to the product tested during initial certification.

This must be shown in due time via a test report with positive results from a testing laboratory recognised by the Certification Body.

Test reports are assessed by the Certification Body.

For this purpose, samples of the certified/registered manufactured item are obtained from manufacturers' production facilities and provided to the Certification Body free of charge.

5.2.3. Supplementary Testing

Supplement testing is performed when supplements, expansions or additions (see Section 6.15) are intended for a certified/registered manufactured item that may have an influence on conformity with the underlying requirements.

The type and scope of supplementary testing will be determined by the Certification Body, where applicable after consultation with the testing laboratory.

5.2.4. Special test

A special test is conducted when:

- defects are detected
- the production has been suspended for a period of more than 6 months
- required by the Certification Body - reasons to be specified

- requested in writing by a third party if a particular interest in the maintenance of proper conduct of market procedures in relation to competition or quality is involved

The type and scope of special testing will be determined by the Certification Body in each individual case, where applicable after consultation with external experts.

If defects are detected in a special test, or if a special test is performed due to a prolonged break in production, then the certificate holder shall bear the costs of the examination procedure. Should the special test at the request of a third party reveal no defects, the costs shall be borne by said third party.

5.3. Sampling

The samples used for initial, verification and renewal testing are usually delivered by the manufacturer to the testing laboratory, which has been commissioned to perform the tests. The manufacturer bears the associated costs.

The number of samples required for product testing is agreed between the Certification Body and the testing laboratory unless it is already specified in the applicable test standards.

5.4. Test Procedure

Testing must be performed according to one or more of the standards named above. According to standards EN 13432, EN 14995, ISO 18606, ISO 17088 and ASTM D 6400 the following tests are required at least:

- Chemical characterisation according to Annex B.1.
- Testing of ultimate biodegradability according to Annex B.2.
- Testing of compostability under practice-relevant conditions (disintegration) and of the quality of the composts (ecotoxicity). Registration/certification is made with the maximum layer thickness determined in testing according to Annex B.3.

It will also be necessary to perform an IR spectrum in accordance with Annex C in order to identify the material.

5.5. Test Report

The testing laboratory informs the client of the test results by means of a test report. An original hard copy of it shall be submitted to the Certification Body; or a digital copy is sent by the testing laboratory.

As a rule, the test report may not be older than 6 months at the time of application. In individual cases, older test reports can be accepted if the testing laboratory confirms the validity of the results by means of a test report in writing and the manufacturer confirms that the product/material/intermediate/additive has not been changed since testing. Test reports that are more than 5 years old can generally no longer be recognised.

The test report must correspond to EN ISO/IEC 17025, and must at least contain the following information:

- Name and address of the manufacturer
- Name and address of the applicant (if different than manufacturer)
- Test basis (standards and Certification Scheme) with date of issue
- Type of test (e.g. type test, additional test, etc.)
- Test date
- Results and evaluation of test
- If testing is being performed in parallel with multiple replicates, then the individual results must also be shown.
- Name and signature of the individual responsible for the testing

6. Certification/Registration

Certification in the sense of this Certification Scheme relates to the assessment of conformity of a (end) product, intermediate, material or additive by the Certification Body based on test reports conducted by testing laboratories recognized by the Certification Body and submitted by the applicant (via hard copy or electronically submitted by testing laboratory on behalf of the applicant). In doing so, the (end) products to be certified and/or intermediates, materials or additives to be registered for conformity with the requirements named in Section 4 are examined and subsequently monitored. With this Certification Scheme being a modular system, the individual testing requirements are indicated accordingly in Section 6.2.

The right to use the compostability mark (trademark no. 8 112 856, IR: 675032, USA Nr: 2256285, CAN Nr: TMA581; owned by European Bioplastics e.V.) according to the trademark regulations is granted to the certificate holder for (end) products by issuing the corresponding certificate and a registration number (see section 6.9.2). The Trademark Rules relating to the Collective Mark and the Trademark Usage Guidelines apply.

For registered materials, intermediates and additives, the holder of the notification of registration is granted special entitlement to use the mark according to §8 (5) of the Trademark Rules. A registration number is issued upon granting the notifications of registration (see section 6.9.1).

References to manufactured items that have already been registered/certified can minimise testing expenditures. The following points shall apply:

- Should a reference be made to an (end) product that has already been certified, an additional agreement will be required with the certificate holder. References to certified products will only be possible concerning an identical product. Thus, for the certification of e.g. trays, a reference can be made to other certified trays but not to certified carrier bags.
- Upon client request, the certificate issued by the Certification Body can also name the respective national version of EN 13432, e.g. DIN EN 13432, BS EN 13432 etc.

6.1. Application for Certification/Registration

Applicants can be both manufacturers and retailers who market the products independently with the written consent of the certificate holder.

The following documents must be submitted by the applicant to the Certification Body:

- The original application for certification/registration, with a legally binding signature and company stamp.
- Completed datasheet (part of the application form).
- Written declaration recognising the rules governing logo use and the logo usage guidelines (part of the application form).
- List of production facilities, including complete addresses. If production is being carried out by companies other than the certificate holder, then the company's complete name and address must be submitted. Production can be carried out at

various locations alternatively or simultaneously. In this case, all alternative production facilities must be reported to the Certification Body upon application.
- Safety Data Sheets according to REACH for all substances being used to determine additives' suitability for composting (e.g. processing auxiliaries, printing inks, etc).

If substances' harmlessness cannot be determined using the Safety Data Sheet, then it may be necessary to perform additional tests (e.g. ecotoxicity testing). This is coordinated with the Certification Body and, if applicable, with the testing laboratories.

- If required, an up-to-date test report according to Section 5.5 (see Section 5.2.1 and Section 6.2), when the test has not been contracted by the Certification Body within the scope of an on-going certification process.
- Details on construction and layer thickness, if applicable.
- Drawings, with data on all wall and layer thicknesses (d_{max}), if applicable.
- Density or grammage or base-weight, if applicable, e.g. for paper, non-wovens, and expanded items
- Test report on an infrared transmission spectrum according to Annex C.
- Self-declaration that no PFAS or other organic, fluorinated chemicals are intentionally added or are intentionally used during the production process

Additionally for products:

- Information on intended use.
- Product samples, if requested by the Certification Body.
- Photo of the product, if requested by the Certification Body.
- List of substances, which in the course of intended use may be disposed of as waste along with the product (e.g. residual packaging contents). For each substance: Proof of suitability for biological waste processing, e.g. reference to published data, according to internationally recognised standards and/or guidelines (e.g. OECD) dealing with biodegradability and toxicological effects of the substance. Food contents will be accepted in any case.

After receipt of the application, the applicant will receive a confirmation of order from the Certification Body with a procedure number and further procedural information.

6.2. Required Tests/Documents

Depending on the composition of the (end) products being certified and/or the intermediates, materials or additives being registered, the tests named in the following will be required:

- If assessment is finished with positive results and a positive decision is made regarding the application, the registration/certification will be issued for the maximum layer thickness determined via testing according to Annex B.3 and published according to Section 6.11.
- The testing requirements for products, materials, intermediates or additives are basically identical. Therefore, the requirements named in the following apply for all manufactured items equally. Depending on composition and structure of the manufactured item, a combination of the requirements named may be necessary.

6.2.1. Manufactured items consisting of items not yet registered/certified

If certification/registration is being requested for a manufactured item consisting of a material that is not yet registered/certified, the following documents and information must be submitted along with the application form.

a) Disclosure of chemical composition (including substances at concentrations below 1 % of mass).
b) Safety Data Sheets according to REACH for all substances being used to determine substances' suitability for composting.

If substances' harmlessness cannot be determined using the Safety Data Sheet, then it may be necessary to perform additional tests (e.g. ecotoxicity testing). This is coordinated with the Certification Body and, if applicable, with the testing laboratories.

c) Test report on the chemical characterisation as specified in Annex B.1.
d) Test report on testing of ultimate biodegradability as specified in Annex B.2.

For ASTM D 6400, ISO 18606 and individual testing of each of the organic constituents present at levels between >1 to 10 % is required.
For the application of ISO 17088: For organic additives present in a manufactured item at concentrations of >1 % to 15 % of mass referred to the manufactured item, the ultimate biodegradability must be evidenced separately.

If the constituents used are different from those used for the certified basic material, an extension/amendment of the certified basic material is not possible without additional assessment.

e) Test reports on quantitative testing of disintegration under practice-relevant conditions and of the quality of the compost as specified in Annex B.3 (disintegration and ecotoxicity).
f) An infrared transmission spectrum in accordance with Annex C.
g) Self declaration that no PFAS or other organic, fluorinated chemicals are intentionally added or are intentionally used during the production process.

6.2.2. Manufactured items composed of materials already registered (Blends)

If registration/certification is being requested for a manufactured item consisting solely of materials already on the list according to Section 6.11 and no further additives are used, the following documents and information must be submitted along with the application form:

a) List of the materials used, including information on mass portions.
b) Test reports on testing of quantitative compostability under practice-relevant conditions (disintegration) as specified in Annex B.3.
c) An infrared transmission spectrum in accordance with Annex C.
d) Self declaration that no PFAS or other organic, fluorinated chemicals are intentionally added or are intentionally used during the production process.

The test for disintegration according to b) can be omitted, in case the submitted layer thickness of a blend made of two materials does not exceed the maximum layer thickness of the material with the lower maximum registered/certified layer thickness.

If a polymer different from the main polymer is used in an amount of less than 1% (biodegradable or non-biodegradable polymer), a qualitative and not quantitative disintegration test will be needed. This includes masterbatches, colour batches, and similar.

Use of colouring masterbatch or filler masterbatch with a certified carrier
If the carrier is already a constituent within the material it is used with, the maximum allowed concentration of masterbatch without the need for a new disintegration test is determined by the percentage of pigment/filler which should be limited to 3% on the final product.

If the carrier is different than the material it is used with, the maximum allowed concentration of masterbatch without the need for a new disintegration test is determined by the percentage of pigment/filler which should be limited to 3% on the final product and on the condition that the certified thickness of the product is the lowest certified thickness of the materials used (finished product and carrier). In case the thickness is higher than the lowest certified thickness, but lower than the highest certified thickness, a qualitative disintegration test will be needed.

In case the concentration of the pigment/filler is higher than 3% or the thickness is higher than the lowest certified thickness but lower that the highest certified thickness of the two materials used, a qualitative disintegration test will be needed.

Note 1: valid for certified or tested carrier
Note 2: valid for other masterbatches that do not affect the mechanical properties (e.g. lubricant)

6.2.2.1. Special Rules

The following special rules apply on the condition that the compostable properties (disintegration) of blends are determined by the properties of the continuous phase. They only refer to the registration/certification of ranges. The mixtures used for the testing needs to be defined in cooperation with the Certification Body and the testing laboratory. It needs to be representative for the continuous phase in question. If the continuous phase remains identical, different mixture proportions have no influence on compostability. The applicant must provide evidence and data on the respective continuous phase. The maximum layer thickness will be defined depending on the layer thicknesses tested.

Blend of materials from identical material groups:
For blends of registered materials that are only distinguished by molecular weight, the disintegration test according to Annex B.3 can be omitted. The requisite for this is that the manufacturing process for the materials is identical and there is registration with the same manufacturer. The maximum layer thickness is that of the material with the lowest determined

layer thickness. The condition for this is that any additives used in producing the manufactured item do not cause any chemical or structural changes.

Ranges in blends made from 2 different materials:
It is possible to register composition ranges of two different materials that have already been registered. Doing so requires disintegration tests of the various compositions and continuous phases (e.g. 20/80 and 80/20).

Provided that the range within the blend remains inside a certain threshold, some tests may be omitted. This must be determined in coordination with the Certification Body and, if applicable, the testing laboratory. This requires proof that the material forming the continuous phase does not change within the range (material B instead of material A is the continuous phase). A disintegration test is required for each continuous phase that occurs. It must be demonstrated by means of electron microscopy that there is no phase change within the requested range.

Ranges in blends made from 3 different materials:
It is possible to register composition ranges of three different materials that have already been registered. For determining maximum layer thickness, testing of the quantitative disintegration properties of a blend for each continuous phase is needed. Maximum layer thickness can be differentiated depending on the layer thickness tested for the continuous phase.

Provided that the blend range remains within a certain range, some of the tests may be omitted. This must be determined in coordination with the Certification Body and the testing laboratory. This requires proof that the continuous phase does not change within the range. A disintegration test is required for each continuous phase that occurs. It must be demonstrated by means of electron microscopy that there is no phase change within the requested range.

Example:
Tests required for a range of a blend of registered materials A, B and C under the assumption that the material with a share of 60 % forms the continuous phase (must be proven in the certification/registration procedure):

Determination of degradation properties with material A as continuous phase:
A/B/C = 60/20/20
Determination of degradation properties with material B as continuous phase:
A/B/C = 20/60/20
Determination of degradation properties with material C as continuous phase:
A/B/C = 20/20/60

Ranges in blends with fillers:
In case the composition of a blend with fillers which already has been tested positively on quantitative disintegration shall be amended by increasing the amount of the filler, a

qualitative disintegration testing of compostability according to Annex B.3 may be used to proof compostability under the condition that the continuous phase remains unchanged.
Example:

	Blend 1	Blend 2
Material A (polymer)	50 %	50 %
Material B (polymer)	20 %	10 %
Material C (filler)	30 %	40 %

If Blend 1 was tested positively by quantitative testing of compostability, a qualitative testing of compostability for Blend 2 may be accepted.

6.2.3. Manufactured items consisting of natural organic substances

If exclusively chemically unmodified constituents of natural origin (e.g. wood, wood fibre, cotton fibre, starch, pulp or jute) and admissible for composting according to the applicable legal statutes are used in a manufactured item, such items are accepted by the Certification Body as being biodegradable without additional testing. The following documents and information must be submitted along with the application form:

a) Disclosure of chemical composition (including additives at concentrations below 1 % of mass).
b) Safety Data Sheets according to REACH for all substances being used to determine substances' suitability for composting.

If substances' harmlessness cannot be determined using the Safety Data Sheet, then it may be necessary to perform additional tests (e.g. ecotoxicity testing). This is coordinated with the Certification Body and, if applicable, with the testing laboratories.

c) Test report on the chemical characterization as specified in Annex B.1.
d) Test reports on quantitative testing of disintegration under practice-relevant conditions and of the quality of the compost as specified in Annex B.3 (disintegration and ecotoxicity). Ecotoxicity testing is not needed if the natural substance is listed in Annex A.
e) An infrared transmission spectrum in accordance with Annex C.

If additives are being used, then the requirements according to 6.2.9 apply accordingly.

For ASTM D 6400: Ligno-cellulosic substrates are permitted to fulfil the requirements of biodegradation by demonstrating > 95% of its carbon comes from biobased resources, tested by means of ASTM D 6866

6.2.4. Manufactured items consisting of paper/recycled paper

Remark: In paper industry, fillers are called pigments.

If registration/certification is being requested for a manufactured item consisting of paper/recycled paper, then the following documents and information must be submitted along with the application form.

a) Disclosure of the paper's chemical composition and structure (including additives at concentrations below 1 % of mass).
b) Disclosure of the manufactured item's chemical composition (including additives at concentrations below 1 % of mass).
c) Safety Data Sheets according to REACH for all substances being used to determine substances' suitability for composting. If substances' harmlessness cannot be determined using the Safety Data Sheet, then it may be necessary to perform additional tests (e.g. ecotoxicity testing). This is coordinated with the Certification Body and, if applicable, with the testing laboratories or the external experts.
d) Test report on the chemical characterisation as specified in Annex B.1.
e) Test reports on quantitative testing of disintegration under practice-relevant conditions and of the quality of the compost as specified in Annex B.3 (disintegration and ecotoxicity).
f) An infrared transmission spectrum in accordance with Annex C.
g) Self declaration that no PFAS or other organic, fluorinated chemicals are intentionally added or are intentionally used during the production process.

For ASTM D 6400: Ligno-cellulosic substrates are permitted to fulfil the requirements of biodegradation by demonstrating > 95% of its carbon comes from biobased resources, tested by means of ASTM D 6866

The requirements according to 6.2.9 apply accordingly for the additives being used.
If using recycled paper, the following additional evidence is required:

- Evidence of continuous compliance with the threshold values according to Table A.1 of EN 13432 via a suitable quality assurance system.
- An additional chemical analysis performed annually according to Annex B.1 within the scope of Verification testing according to 5.2.2.

Certification/registration of manufactured items requires information on the maximum layer thickness and grammage. Both additional conditions must be fulfilled. A higher thickness of paper products, non-wovens or leaf products can be accepted during surveillance if the grammage/base-weight is still the same.

If composition ranges in paper/recycled paper shall be certified, a quantitative disintegration test is required of the manufactured item with the highest content of lignin/the hardest wood and/or applied additives in its highest concentrations. The variety of alternative compositions can be proven by quantitative disintegration based on the “theoretical” sample covering the worst case.
In case of varying parameters (e.g. lignin content, several alternative fillers, etc), several cornerstones can be considered but must be proven by means of comparative qualitative disintegration testing.

6.2.4.1. Special Rules

The following special rules have been developed to minimise testing expenditures.

Chemical pulp with ≤1 % additives, without pigmentation and without use of wet strengtheners:

- For single-sided coating, up to 50 % of the tested layer thickness of the registered polymer and up to 100 % of the tested layer thickness of the paper can be certified/registered without additional tests.
- For double-sided coating, up to 25 % of the tested layer thickness of the registered polymer and up to 100 % of the tested layer thickness of the paper can be certified/registered without additional tests.
- For single-sided coating with 2 different polymers, up to 25 % of the tested layer thickness of each polymer and up to 100 % of the tested layer thickness of the paper can be certified/registered without additional tests.
- For double-sided coating with 2 different polymers, up to 12.5 % of the tested layer thick- ness of the polymer and up to 100 % of the tested layer thickness of the paper can be certified/registered without additional tests.

Mechanical pulp with ≤1 % additives, without pigmentation and without use of wet strengtheners:

- For single-sided coating, up to 50 % of the tested layer thickness of the polymer and up to 50 % of the tested layer thickness of the paper can be certified/registered without additional tests.
- For double-sided coating, up to 25 % of the tested layer thickness of the polymer and up to 50 % of the tested layer thickness of the paper can be certified/registered without additional tests.
- For single-sided coating with 2 different polymers, up to 25 % of the tested layer thickness of each polymer and up to 50 % of the tested layer thickness of the paper can be certified/registered without additional tests.
- For double-sided coating with 2 different polymers, up to 12.5 % of the tested layer thick- ness of the polymer and up to 50 % of the tested layer thickness of the paper can be certified/registered without additional tests.

Chemical pulp with ≤1 % additives, with pigmentation and without use of wet strengtheners:

- For single-sided coating, up to 50 % of the tested layer thickness of the polymer and up to 50 % of the tested layer thickness of the paper can be certified/registered without additional tests.
- For double-sided coating, up to 25 % of the tested layer thickness of the polymer and up to 50 % of the tested layer thickness of the paper can be certified/registered without additional tests.
- For single-sided coating with 2 different polymers, up to 25 % of the tested layer thickness of each polymer and up to 50 % of the tested layer thickness of the paper can be certified/registered without additional tests.

- For double-sided coating with 2 different polymers, up to 12.5 % of the tested layer thickness of the polymer and up to 50 % of the tested layer thickness of the paper can be certified/registered without additional tests.

Recycled paper with ≤1 % additives, without pigmentation and without use of wet strengtheners
The same evaluation rules mentioned above regarding composting properties as for new paper apply.

6.2.5. Manufactured items composed of registered materials and materials indicated in Annex A

If registration/certification is being requested for a manufactured item that is intended to contain the fillers and processing auxiliaries indicated in Annex A, it is possible to register individual compositions within a predefined composition range. The following documents and information must be submitted along with the application form:

a) Disclosure of the manufactured item's chemical composition (including additives at concentrations below 1 % of mass).
b) Safety Data Sheets according to REACH for all substances being used to determine substances' suitability for composting.

If substances' harmlessness cannot be determined using the Safety Data Sheet, then it may be necessary to perform additional tests (e.g. ecotoxicity testing). This is coordinated with the Certification Body and, if applicable, with the testing laboratories.

c) The upper limit of 49 % by mass for the proportion of inorganic material and the upper limits specified in Annex A for the respective fillers or processing auxiliaries may not to be exceeded in the material as a whole.
d) Safety data sheets according to REACH are to be submitted for all materials used as specified in Annex A. Chemical characterisation has to be carried out according to Annex B.1 on the manufactured item or alternatively on all applied substances of Annex A.
e) Test reports of quantitative compostability under practice-relevant conditions (disintegration) according to Annex B.3.
f) An infrared transmission spectrum in accordance with Annex C.
g) Self-declaration that no PFAS or other organic, fluorinated chemicals are intentionally added or are intentionally used during the production process.

Should various portions of the materials named in Annex A be used, then the test must be performed using the largest portion being included in the application.

Provided no more than 3 % of mass consists of inorganic filling according to Annex A, then the disintegration test according to Annex B.3 can be omitted.

Within the separate subgroups or Sections (as per Annex A), other mixtures may, under the following conditions, be registered up to the upper limit documented in the test report:

Constituents can be fully or partially replaced by others belonging to the same subgroup – up to the approved upper limit. If the total amount replaced exceeds 10 % or exceeds the registered upper limit, a qualitative disintegration test is required.

Example: If a mixture is composed of 85 % of constituent A and 15 % of $CaCO_3$, then:

- in case 15 % $CaCO_3$ is replaced by 15 % Talcum (same subgroup, exceeding 10%), qualitative disintegration testing is required,
- in case 10 % $CaCO_3$ is replaced by 10 % Talcum (same subgroup), no disintegration testing is required,
- in case 15 % $CaCO_3$ is replaced in excess by 20 % Talcum (same subgroup but exceeding the approved upper limit of $CaCO_3$), a qualitative disintegration test is required.

6.2.6. Manufactured items with coatings

If manufactured items are coated, then the following types must be differentiated:

6.2.6.1. Coating using substances whose biodegradation has not been proven, but which have excellent water solubility and are being used in portions ≤1 % of mass.

The following documents and information must be submitted along with the application form:

a) Disclosure of the manufactured item's chemical composition (including additives at concentrations ≤1 % of mass).
b) Data on the coatings layer thickness.
c) Safety Data Sheets according to REACH for all substances being used to determine substances' suitability for composting.

If substances' harmlessness cannot be determined using the Safety Data Sheet, then it may be necessary to perform additional tests (e.g. ecotoxicity testing). This is coordinated with the Certification Body and, if applicable, with the testing laboratories.

d) An infrared transmission spectrum in accordance with Annex C.
e) Self declaration that no PFAS or other organic, fluorinated chemicals are intentionally added or are intentionally used during the production process.

For ASTM D 6400: Ligno-cellulosic substrates are permitted to fulfil the requirements of biodegradation by demonstrating > 95% of its carbon comes from biobased resources, tested by means of ASTM D 6866
Evidence of good water solubility can be provided, for example, by the Safety Data Sheet according to REACH. Alternative evidence is possible and will be evaluated by the Certification Body.

6.2.6.2. Coating using substances whose biodegradation has not been proven and are being used in portions ≤1 % of mass.

The following documents and information must be submitted along with the application form:

a) Disclosure of the manufactured item's chemical composition (including additives at concentrations ≤1 % of mass).
b) Data on the coatings layer thickness.
c) Safety Data Sheets according to REACH for all substances being used to determine substances' suitability for composting.

If substances' harmlessness cannot be determined using the Safety Data Sheet, then it may be necessary to perform additional tests (e.g. ecotoxicity testing). This is coordinated with the Certification Body and, if applicable, with the testing laboratories.

d) Test reports on testing quantitative compostability under practice-relevant conditions (disintegration) according to Annex B.3 of the coated item.
e) An infrared transmission spectrum in accordance with Annex C.
f) Self declaration that no PFAS or other organic, fluorinated chemicals are intentionally added or are intentionally used during the production process.

For ASTM D 6400: Ligno-cellulosic substrates are permitted to fulfil the requirements of biodegradation by demonstrating > 95% of its carbon comes from biobased resources, tested by means of ASTM D 6866

6.2.6.3. Coating using materials whose biodegradation has not been proven and are being used in portions >1 % of mass:

The following documents and information must be submitted along with the application form:

According to EN 13432, ASTM D 6400, ISO 18606, ISO 17088, EN 14995
For ASTM D 6400 and ISO 18606 individual testing on ultimate biodegradability of each of the organic constituents present at levels between >1 to 10 % of mass is required.
For ISO 17088, individual testing on ultimate biodegradability of each of the organic constituents present at levels between >1 to 15 % of mass is required.

When using significant organic additives according to Annex A 2.1 of EN 13432, the following tests will be required in addition to the requirements stated under Section 6.2.9.

Testing of additives:

a) Test report on the chemical characterization as specified in Annex B.1.
b) Test report on testing of ultimate biodegradability as specified in Annex B.2.

And of the coated manufactured item:

c) Test reports on quantitative testing of compostability under practice-relevant conditions and of the quality of the compost as specified in Annex B.3 (disintegration and ecotoxicity). Alternatively, the ecotoxicity testing can be performed on each single substance.
d) An infrared transmission spectrum in accordance with Annex C.

For ASTM D 6400: Ligno-cellulosic substrates are permitted to fulfil the requirements of biodegradation by demonstrating > 95% of its carbon comes from biobased resources, tested by means of ASTM D 6866

Alternatively:
According to EN 13432, EN 14995
Testing of coated manufactured item according to 6.2.1.

6.2.6.4. Coatings with materials that have already been registered with portions >1 % of mass

The following documents and information must be submitted along with the application form:

a) Disclosure of the manufactured item's chemical composition (including additives at concentrations below ≤1 % of mass).
b) Data on the coatings layer thickness.
c) Safety Data Sheets according to REACH for all substances being used to determine substances' suitability for composting.

If substances' harmlessness cannot be determined using the Safety Data Sheet, then it may be necessary to perform additional tests (e.g. ecotoxicity testing). This is coordinated with the Certification Body and, if applicable, with the testing laboratories.

d) Test reports on testing quantitative disintegration under practice-relevant conditions (disintegration) according to Annex B.3 of the coated item.
e) An infrared transmission spectrum in accordance with Annex C.

For ASTM D 6400: Ligno-cellulosic substrates are permitted to fulfil the requirements of biodegradation by demonstrating > 95% of its carbon comes from biobased resources, tested by means of ASTM D 6866

6.2.7. Manufactured items consisting of multiple layer structures made of registered materials

If registration/certification is being requested for a manufactured item consisting of multiple layers of materials already on the list according to Section 6.11 and are therefore demonstrated to be compostable (without using auxiliary materials), then the following documents and information must be submitted along with the application form:

a) Disclosure of the exact structure, including information on layer thickness of the individual coats.
b) Disclosure of the composition of each layer (including additives at concentrations ≤1 % of mass).
c) Disclosure of other additives used (including additives used at concentrations ≤1 % of mass).
d) Safety Data Sheets according to REACH for all substances being used to determine substances' suitability for composting.

If substances' harmlessness cannot be determined using the Safety Data Sheet, then it may be necessary to perform additional tests (e.g. ecotoxicity testing). This is coordinated with the Certification Body and, if applicable, with the testing laboratories.

e) List of the materials used, including information on mass portions.
f) Test reports on testing quantitative compostability under practice-relevant conditions (disintegration) according to Annex B.3.

g) An infrared transmission spectrum in accordance with Annex C.

If additives are being used, then each individual layer must fulfill the requirements of this Certification Scheme regarding biodegradability and the use of additives.

6.2.7.1. Special Rules: 2 Layers

The following special rules have been developed to minimise testing expenditures:

- Testing according to Annex B.3 (disintegration) may be omitted in the case of two-layer structures if the layer thickness of each of the two materials does not exceed half of the maximum compostable material thickness of the individual materials determined by testing in accordance to Annex B.3,

or

- If both layers have been manufactured using the same material and the maximum registered thickness of the used material is not exceeded by the two-layer structure.

Both the individual layers as well as the overall product must comply with the other requirements in Section 6. These rules apply for laminates and coextrudates, provided no adhesive is being used.

Example:
Material A is registered with a maximum layer thickness of 150 µm.
Material B is registered with a maximum layer thickness of 400 µm.

With a maximum layer thickness of 75 µm for material A and 200 µm for material B and with respecting the other requirements in Section 6, disintegration testing can be omitted.

6.2.7.2. Special rules: 3 Layers

The following special rules have been developed to minimise testing expenditures:
For three-layered structures, the test according to Annex B.3 (disintegration) can be omitted if

- the overall thickness of the three-layered structure does not exceed half of the minimum registered thickness among the three registered materials, as determined in a test according to Annex B.3.

or

- all layers have been manufactured using the same material and the maximum layer thickness of the material being used is not exceeded.

These rules apply for laminates and coextrudates, provided no adhesive is being used.

Example:
Material A is registered with a maximum layer thickness of 150 µm.
Material B is registered with a maximum layer thickness of 400 µm
Material C is registered with a maximum layer thickness of 1000 µm.

With a maximum layer thickness of the 3-layer structure of 75 µm and with respecting the other requirements in Section 6, disintegration testing can be omitted.

6.2.7.3. Special rules: multiple layers of the same material

For multiple layered structures where all layers consist of the same registered material (without additives), the test according to Annex B.3 (disintegration) can be omitted if the layer thickness of the multiple layer structure does not exceed the maximum registered layer thickness for the material being used.

6.2.7.4. Special rules: registered selfadhesive labels

Provided that a registered self-adhesive label and a registered film are combined into a finished film packaging and the following conditions are fulfilled:

- The maximum used thickness of the film must not exceed half of the registered thickness.
- The maximum applied thickness of the label must not exceed half of the thickness as specified by the notification of registration. The quantity of adhesive used per unit area must not exceed that specified by the notification of registration.
- The maximum surface area of the label does not exceed 10 % of the total surface area of the film.
- In the case of multilayer labels: In addition, the rules as in Sections 6.2.7.1 and 6.2.7.2 apply.
  No disintegration test according to Annex B.3 is required.

Provided that a registered self-adhesive label and a registered film are combined into a finished film packaging and the following conditions are fulfilled:

- The maximum surface area of the label does not exceed 10 % of the total surface area of the film.
  Then a qualitative disintegration test according to Annex B.3 is sufficient.

6.2.8. Manufactured items exceeding the maximum registered/certified layer thickness

If a manufactured item exceeds the maximum registered layer thickness of the material/intermediate/product being used, then the quantitative disintegration of the manufactured item has to be proven separately.

Additional Test Required:
Test reports on quantitative testing of disintegration under practice-relevant conditions according to Annex B.3 (disintegration).

Alternatively, a confirmation of acceptability can be issued according to Section 6.4.

6.2.9. Items consisting of manufactured items already registered/certified and non-biodegradable additives

(e.g. a printed shopping bag)

Certification/registration of manufactured items consisting of various alternative materials/intermediates/products is possible provided the Certfification Scheme's requirements have been met for all alternatives.

The other requirements according to Section 6 must be met.

6.2.9.1. Use of harmless additives with ≤1 % of mass per additive and ≤5% of mass of non-biodegradable additives

According to Annex A 2.1 of EN 13432, A 2.1 of EN 14995, 6.3.1 of ISO 18606, 6.3.2. of ASTM D 6400 and 6.3.1 of ISO 17088, organic additives whose biodegradability has not been separately determined can be used on the following conditions:

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

Required information/tests/documents:

a) List of all additives, including portions of mass.
b) Safety Data Sheets according to REACH for all substances being used to determine substances' suitability for composting.

If substances' harmlessness cannot be determined using the Safety Data Sheet, then it may be necessary to perform additional tests (e.g. ecotoxicity testing). This is coordinated with the Certification Body and, if applicable, with the testing laboratories.

c) An infrared transmission spectrum in accordance with Annex C.

6.2.9.2. Using Printing Inks

It is generally possible to use printing inks. In addition to the requirements named in Section 6.2, the printed product must also comply with the threshold values in Table A.1 of EN 13432.

No more than 1 % by mass of dry printing ink per colour (e.g. red, green, etc.) may be used, and a total of no more than 3 % by mass printing ink. Compliance with the thresholds according to Table A.1 in EN 13432 for the whole product is decisive. If the individual printing inks are tested, then 80 % of the threshold from table A.1 in EN 13432 may not be exceeded with the maximum colour quantity being requested.

Additionally, the following documents and information must be submitted along with the application form:

Safety Data Sheets according to REACH for all colours (e.g. red, yellow, etc.) being used to determine additives' suitability for composting.
If substances' harmlessness cannot be determined using the Safety Data Sheet, then it may be necessary to perform additional tests (e.g. ecotoxicity testing). This is coordinated with the Certification Body and, if applicable, with the testing laboratories.

a) For each colour used, information on heavy metal contents in the form of test reports.

b) Alternatively: Test report on the chemical characterization as specified in Annex B.1 of a printed product sample. The portions of the individual colours tested here will be defined as maximum useable colours.
c) Self declaration that no PFAS or other organic, fluorinated chemicals are intentionally added or are intentionally used during the production process.

If different colours shall be used, the maximum usable amount will be defined by the colour with the lowest possible concentration.

In the case UV/EB inks and UV/EB overprint varnishes are used, it will be necessary to test the product regarding ecotoxicity and disintegration after UV or EB curing. If the amount of UV/EB inks used is higher than 1%, then also biodegradability testing is required after the curing process.

6.2.9.3. Use of Adhesives

Remark: This does not refer to registered materials used as adhesive.

If an adhesive is being used with mass portions of ≤1 % of mass, then the following documents and information must be submitted along with the application form:

a) List of all adhesives being used, along with mass portions and a description of distribution/areas of application.
b) Safety Data Sheets according to REACH for all adhesives being used to deter- mine additives' suitability for composting.

If substances' harmlessness cannot be determined using the Safety Data Sheet, then it may be necessary to perform additional tests (e.g. ecotoxicity testing). This is coordinated with the Certification Body and, if applicable, with the testing laboratories.

c) Test reports on quantitative testing of disintegration under practice-relevant conditions (disintegration) according to Annex B.3 of the manufactured item including the adhesive.

6.2.9.4. Use of additives with more than 1 % of mass per additive and/or more than 3% of mass of additives

According to EN 13432, ASTM D 6400, ISO 18606, ISO 17088, EN 14995, when using organic additives according to Annex A 2.1 of EN 13432, A2.1 of EN 14995, 6.3.1 of ISO 18606, 6.3.1.1 of ASTM D 6400 and 6.3.1 of ISO 17088, if applicable, the following tests will be necessary in addition to the specifications given above:

Testing of additives:

a) Test report on the chemical characterisation as specified in Annex B.1.
b) Test report on testing of ultimate biodegradability as specified in Annex B.2.

And of the manufactured item:

c) Test reports on quantitative testing of disintegration under practice-relevant conditions and of the quality of the compost as specified in Annex B.3 (disintegration and ecotoxicity). Alternatively, the ecotoxicity testing can be performed on each single substance.
d) An infrared transmission spectrum in accordance with Annex C.

For ASTM D 6400 and ISO 18606, individual testing on ultimate biodegradability of each of the organic constituents present at levels between >1 to 10 % is required.

For ISO 17088, individual testing on ultimate biodegradability of each of the organic constituents present at levels between >1 to 15 % is required.

For ASTM D 6400: Ligno-cellulosic substrates are permitted to fulfil the requirements of biodegradation by demonstrating > 95% of its carbon comes from biobased resources, tested by means of ASTM D 6866
Alternatively:
According to EN 13432, EN 14995
Testing of manufactured item according to Section 6.2.1.

6.2.10. Use of fibres made of already registered/certified materials

As there are different manufacturing processes for non-woven fibre products, any change of the manufacturing process should result in the need to be re-tested for quantitative disintegration. Information on the manufacturing process shall be given for the assessment.

For the change of Avivage (finisher) if the replacement Avivage is biodegradable, no additional quantitative disintegration testing will be required. If the replacement Avivage is not biodegradable, quantitative disintegration testing will be required.

Required information/tests/documents:

a) List of all additives, including portions of mass.
b) Safety Data Sheets according to REACH for all substances being used to determine substances' suitability for composting.

If substances' harmlessness cannot be determined using the Safety Data Sheet, then it may be necessary to perform additional tests (e.g. ecotoxicity testing). This is coordinated with the Certification Body and, if applicable, with the testing laboratories.

c) Qualitative disintegration testing is sufficient if the thickness of the non- woven product does not exceed 50% of the maximum certified grammage or thickness of the polymer used to produce the non-woven article. Results are then accepted only if complete disintegration is obtained. If some fragments are remaining after 12 weeks of testing, results are not considered positive, and retesting is needed (via a quantitative disintegration test).
d) An infrared transmission spectrum in accordance with Annex C.

Remark: If additives > 1 % are used Section 6.2.9.4 applies.

6.2.11. Items consisting of materials already registered and biodegradable additives with portions over 1 % of mass of the item

Certification/registration of manufactured items consisting of various alternative materials/intermediates/products is possible provided the Certification Scheme's requirements have been met for all alternatives.

The other requirements according to Section 6.2 must be met.

If additives whose biodegradability has been individually proven according to this Certfification Scheme or that are already registered with the Certification Body are being used with more than 1 % of mass, then no separate evidence of biodegradability is necessary. Additionally, the following documents and information must be submitted along with the application form:

a) List of all additives, including portions of mass.
b) Safety Data Sheets according to REACH for all substances being used to determine substances' suitability for composting.

If substances' harmlessness cannot be determined using the Safety Data Sheet, then it may be necessary to perform additional tests (e.g. ecotoxicity testing). This is coordinated with the Certification Body and, if applicable, with the testing laboratories.

c) Test reports on testing quantitative disintegration under practice-relevant conditions and of the quality of the compost (disintegration and ecotoxity) according to Annex B.3 for all alternatives. Alternatively, the ecotoxicity testing can be tested on each individual substance.

6.2.12. Special cases for Products/Intermediates

6.2.12.1. Design Requirements

All polymer materials used in the product must comply with the maximum degradable layer thickness yielded in the test according to Annex B.3.

6.2.12.2. Hollow Body

In the case of hollow bodies with small diameter apertures, the maximum permissible wall thickness dmax is limited to 50 % of the maximum compostable material thickness determined in accordance with Annex B.3 for the material (or intermediate) being used. This applies to all hollow bodies for which the ratio of volume to aperture area yields a value for x greater than 10 cm.

The calculation is based on the following formula:

$$x = \frac{container\ volume\ (cm^3)}{aperture\ area\ (cm^2)}$$

Hollow bodies with x > 10 cm, may have wall thicknesses up to dmax, if a test report is submitted on the determination of the maximum compostable material thickness for this product in accordance with Annex B.3. Where justified further tests specified in Annex B.3 may be required after consultation with external experts.

6.2.12.3. Packaging units

Packaging units are distinguished as either easily manually separable units or not easily manually separable units.

- Easily separable units (packaging units according to EN 13432, e.g. bottles or yoghurt pots with lids). These products will be processed as a packaging unit. The calculation of potential additives will be referred to each single unit. Nevertheless, the complete and un-separated packaging unit needs to meet the requirements as well.
- Not manually separable or not easy to manually separate units (e.g. labels on packaging). These products will be processed as one unit.

6.2.12.4. Manufactured items where the content is mainly (apart from e.g. extraction) still present in the product after use (e.g. coffee capsules, etc.)

For the purpose of this assessment, the products are defined to be composed of an outer envelope and a content. The content corresponds to the coffee, the tea or a similar substance. The outer envelope represents the part of the product containing the content.

Assessment of such type of products is to be made as follows:

- The biodegradation, ecotoxicity and material characterization on the product is made only on the outer envelope without the content (coffee, tea or similar).
- The quantitative disintegration test is made on the whole product, outer envelope with content. The quantitative disintegration test can be performed on a wet product (corresponding to an actually used coffee pad/capsule or tea bag). The testing percentages refer to the dry weight of the outer envelope as foreseen in EN 13432, also for the quantitative disintegration test. Therefore, the amount of sample material for testing is defined on the dry weight of the outer envelope. In case the amount of sample material compared to the compost is too high, the percentage of the dry weight of the outer envelope may be reduced to 0.5 % relative to the wet weight of the compost.
- No disintegration test is required for a change of content on the condition that the outer envelope remains identical and that the change of content is:
  - from coffee to tea;
  - from coffee to solubles;
  - from tea to solubles;
  - to similar content (coffee to coffee, tea to tea leaves, solubles to solubles).

  For other changes of content, a quantitative disintegration test is necessary.

The other requirements according to Section 6.2 must be met.

6.2.12.5. Thin voluminous films

It can be difficult to test disintegration of thin voluminous films (<30 µm) in a concentration of 1%. The thickness of the material impacts the disintegration, whereas the concentration does not. It is therefore possible to change the testing percentage for thin films to a concentration ranging between 0.5% and 2%. This can be discussed between the testing laboratory and the certification body. The concentration for ecotoxicity testing remains 10%.
Alternatively, the disintegration test can be carried out on a thicker film (</=50 µm) to allow for the test to function.

6.2.12.6. Disintegration testing of wet wipes

Preservatives and other additives can influence the disintegration characteristics of a non-woven, hence, the disintegration testing of a wet wipe/facial mask shall be done with additives, especially if the additives are used in a high (dry) concentration, but not only because these additives can act as preservatives. The disintegration/strength of a non-woven is dependent on the overlay of fibres in the non-woven. Adding other materials that will be part of this overlay or change the interactions between the fibres could eventually influence the disintegration characteristics.
Wipes shall be tested for disintegration in wet form, although the amount of wipes added to the test compost has to be calculated based on the dry weight of the wipe containing the additives. The quantity of product added to the compost is still determined based on the wet weight of the compost.

6.2.12.7. Ecotoxicity testing of constituents present ≤ 0.1%

Ingredients > 0.1% by dry weight must be determined to be harmless for the composting process by one or more of the following:

- Safety Data Sheet according to REACH
- Pass testing of the finished product containing that ingredient, or
- Pass testing of the individual ingredient, either tested on its own or in combination with other ingredients up to the maximum usage in the finished product in question.

Ingredients ≤ 0.1% by dry weight are not required to be tested on ecotoxicity. However, if these ingredients ≤ 0.1% dry mass sum up to more than 0.5% dry mass the following plant toxicity testing applies:

- Pass testing of the finished product containing these ingredients with their maximum intended usage, or
- Pass testing of each of these individual ingredients, either tested on their own or in combination with all the other ingredients summing up to more than 0.5% in their maximum usage.

6.2.13. Use of chemically recycled monomers to produce already certified compostable PLA

PLA made fully or partially from chemically recycled lactic acid/lactide needs to undergo the full test scope of the underlying standards and this certification scheme, showing that these requirements are met. However, biodegradation, disintegration and plant toxicity tests can be

omitted, if the molecular weights („M_w“, „M_n“), crystallinities, densities of the polymers in question are covered by existing test reports of the respective polymers already registered. Therefore, chemical characterization according to Annex B.1 and FTIR spectra according to Annex C are sufficient. However, information on potential impurities could require ecotoxicity testing as required by this certification scheme.
To avoid chemical characterization in each verification test for these grades in question, a quality management system based on standard series EN ISO 9000 ff. and a quality control system on incoming feedstock for the chemically recycled lactic acid/lactide can be submitted to the certification body.

6.2.14. Demonstrating ultimate biodegradability for organic constituents present in >1%-<15%

For each organic constituent present in >1%-<15% of dry mass of the material or product ultimate biodegradability according to Annex B.2. shall be demonstrated. The total proportion of constituents without demonstrated biodegradability shall not exceed 3% of dry mass.[2]

As an alternative to testing the single organic constituent used between >1 % and <15 % (by dry mass), the level of biodegradation can be determined using an artificial blend of the same material consisting of at least 15 % (by dry mass) of the respective single organic constituent. In case that this artificial blend can proof ultimate biodegradability within not more than 6 months via a test according to the standards named under Section 2, then the organic constituent in question is considered to be biodegradable in the context of this document and can be used at the same or lower concentration in a packaging material on the condition that the co-substrate is present as tested in the artificial blend.

6.3. Registration of biodegradable additives

Remark: This refers to the registration of biodegradable additives, which shall be used at significant concentrations (more than 1 % of mass).

For conformity assessment purposes, the following documents are to be submitted along with the application for the registration of an additive.

a) Description of chemical composition.
b) Test report on the chemical characterisation as specified in Annex B.1.
c) Test report on testing of ultimate biodegradability of the additive in accordance with one of the methods specified in Annex B.2
d) Test reports on compost quality according to Annex B.3 (ecotoxicity).
e) An infrared transmission spectrum in accordance with Annex C.
f) Selfdeclaration that no PFAS or other organic, fluorinated chemicals are intentionally added or are intentionally used during the production process.

[2] This limit shall discourage intentionally adding non-biodegradable constituents for structural purposes, while allowing the use of inks, adhesives and coatings.

6.4. Confirmations of acceptability for manufactured items

Upon request, a confirmation of acceptability may be issued for manufactured items (e.g. natural fibres) after evaluating the required test reports in accordance with the conditions as specified in this Section.

The confirmation attests that the products concerned are compostable, but that, without mechanical pretreatment, they will not in all cases disintegrate entirely in the course of a unit processing period in a composting plant. The other requirements of the Certification Scheme and of the corresponding standards must be met. Confirmation of acceptability does not imply the right to use the compostability mark. Its sole purpose is to facilitate communication between the partners at the various stages of the waste disposal process.
The following documents and information must then be submitted:

a) For conformity assessment, the documents according to Section 6.2 must be attached to the application for confirmation of acceptability. The same requirements apply for certification/registration of manufactured goods.
b) If non-registered materials are being used, then the test report as specified in Annex B.3 must be supplemented - for the purposes of documentation - by a detailed photographic record. A calculation of the weight of the specimens representing the state of degradation reached on completion of the test period specified in the relevant standard is also required.

Alternatively, a report may be submitted on an extended test that continues the composting process until the required level of 90 % degradation has been reached. In addition, recommendations on expedient methods of pre-treatment (e.g. comminution) prior to the composting process may be included in the confirmation of acceptability.
If the application is successful, a confirmation of acceptability will be issued that is valid for 3 years. The confirmation attests that the products concerned are compostable within the meaning of Section 4, but that without mechanical pre-treatment they will not in all cases disintegrate entirely in the course of one process interval at a composting plant.

6.5. Definition of types, sub-types and manufactured item families

Products, intermediates, materials and additives that largely differ from each other in significant properties relevant to certification are defined as types or models. Properties relevant to certification include, for example:

- for products/intermediates:
    - Intended use and or contents
    - Shapes
    - Product characteristics beyond differences in dimensions

Examples:
Carrierbags and waste bags are two different types.
Plates and cutlery are two different types.
Packaging for fruits and waste bags are two different types.

Packaging for food and non-food articles are two different types

- for materials:
  - Chemical structures
  - Composition
  - Compositions that cannot be defined as composition range

Ranges in connection with materials are grouped into one notification of registration.
An individual certificate will be issued for each type.

A sub-type is defined as the (end) product that is different based on dimensions. Multiple alternative subtypes are grouped into one product family of alternative dimensions.

- for products:
  - Dimensions.
  - Materials used.
  - Printing inks or print layouts used.

E.g.: Carrier bags made from different materials and with different dimensions are subtypes.

- for materials, semi-finished items:
  - Various materials used with the same additives.
  - Percentage differences for various materials used with the same additives.

No subtypes are possible for additives.

Multiple subtypes can be grouped onto one certificate/notification of registration.

6.6. Confidentiality

The members of committees set up to implement this Certification Scheme are under obligation to observe strict secrecy. The members of all participating bodies further undertake by signing a declaration of commitment not to pass on to third parties any information on products and companies they may obtain in connection with their certification activities.

6.7. Conformity Assessment

On the basis of the documents submitted, the Certification Body conducts the conformity examination. The assessment is made with the aid of the test report as to whether the product meets the requirements of the Certification Scheme and of the Standards.

The applicant shall receive written notification from the Certification Body in the event of any possible deviations.

6.8. Certification of Products / Registration of Materials, Intermediates and Additives

Composition of the registration number:

- Materials	7Wxxxx
- Intermediates	7Hxxxx
- Additives	7Zxxxx
- Confirmations of acceptability	7Xxxxx
- Products	7Pxxxx

6.9. Entitlement to use the mark

Holders of certificates and of notications of registration are granted a differentiated entitlement to use the mark. The entitlement is ruled authoritatively in the *Regulations governing Use of the Mark* of European Bioplastics. The Regulations governing the use of the mark and the Trademark usage guidelines are given to the applicant upon application or together with the certificate / notification of registration.

6.9.1. Notification of Registration for materials, intermediates and additives

Materials, intermediates and additives are registered and receive registration numbers (7Wxxxx. 7Hxxxx or 7Zxxxx). For these kinds of items, a special entitlement according to § 8 (5) of the Regulations governing Use of the Mark applies.

Materials, intermediates and additives and their respective packaging may not be labelled with the mark. The use of the trademark law-protected seedling mark is permissible for advertising purposes in accordance with the underlying rules governing the use of the mark and the trademark usage guidelines.

For each respective type, a registration number shall be issued. For design types (sub-types) of a type, the same registration number shall be issued (for information, see Section 6.5).

6.9.2. Certificate for products

After successful testing and conformity assessment of the application documents submitted, the Certification Body issues a certificate to the applicant. Upon issuance of the certificate, the applicant is granted by the trademark owner an entitlement to use trademark law-protected the Seedling mark in conjunction with the respective registration number.

Figure 1: “Seedling” compostability mark, registered trademark of European Bioplastics e.V.

Products made of compostable materials for which a right to use the compostability mark "Seedling" has been issued must be marked with the "Seedling" and the respective registration number (7Pxxxx) in accordance with the underlying rules governing the use of the logo and the trademark usage guidelines.

Logo and registration number may only be used for the product for which the certificate has been issued and that corresponds to the type-tested product.

For each respective type, a separate registration number shall be issued. For modalities (sub-types) of a type, the same registration number shall be issued (for information, see Section 6.5).

6.10. Sub-licences for certificates and notifications of registration

According to the Certification Body's General Terms and Conditions, the rules governing logo use, and the logo usage guidelines, sub-licences are required if certified products are intended to be brought onto the market on behalf of companies other than the (main) certificate holder. Holders of valid sub-licences of certificates are also entitled to use the trademark law-protected Seedling mark (see section 6.9.2). The entitlement to use the mark is dependent on both the existence of the respective (main) certificate and the validity of the sub-license.

Sub-licenses of notifications of registrations become necessary if registered materials / semi-finished items / additives shall be marketed on behalf of companies other than the holder of the (main) notification of registration. Holders of valid sub-licences of notifications of registration are also entitled to use the trademark law-protected Seedling mark (see section 6.9.1).
The entitlement to use the mark is dependent on both the existence of the respective (main) notification of registration and the validity of the sub-license.

6.10.1. Sub-licences without Self-Production

It is possible to issue sub-licences for all manufactured items as defined in this Certification Scheme. They facilitate bringing certified/registered manufactured items into circulation on behalf of the sub-licence holder. Sub-licences are dependent upon the validity of the main certificate/notifications of registration. Manufactured items may not be changed (e.g. printed) by sub-licence holders. Exceptions to this are packaging seals, batch number printing and best before dates.

Documents and information needed if the applicant is holder of the main certificate/notification of registration:

a) Application form for sub-licences with main certificate holder's stamp and signature.
b) Sub-licence holder's declaration that the main certificate holder's products enter commercial trade without being changed.

Documents and information needed if the applicant shall be the holder of the sub-licence:

a) Application form for sub-licences with sub-licence holder's stamp and signature.
b) Declaration of confirmation from the main certificate holder that a sub-licence shall be issued.

A sub-licence can be issued

- With its own individual registration number or
- With the main certificate holder's registration number.

6.10.2. Sub-licences for Production Facilities

Sub-licences for production facilities may be issued for certified/registered manufactured items. They facilitate bringing certified/registered manufactured goods into circulation on behalf of the production facility's owner. Sub-licences are dependent upon the validity of the main certificate / notifications of registration. The production facility owner must produce the manufactured items according to the specifications indicated by the holder of the main licence.

An annual verification test must be performed according to Section 7.3.1.

Documents and information needed if the applicant is holder of the main certificate/notification of registration:

a) Application form for sub-licence with main certificate holder's stamp and signature.
b) Forwarding of a datasheet completely filled out by the production facility operator accordingly.
c) Declaration from the production facility operator that the products are being manufactured according to the main certificate's stipulations.
d) An infrared transmission spectrum in accordance with Annex C for each product.
e) A measurement of thickness and grammage
f) Self declaration that no PFAS or other organic, fluorinated chemicals are intentionally added or are intentionally used during the production process.

Documents and information needed if the applicant shall be the holder of the sub-licence:

a) Application form for sub-licences with production facility owner's stamp and signature.
b) Declaration of consent from the main certificate holder that a sub-licence may be issued.
c) Forwarding of a datasheet completely filled out by the production facility operator.
d) An infrared transmission spectrum in accordance with Annex C for each product.
e) A measurement of thickness and grammage
f) Self declaration that no PFAS or other organic, fluorinated chemicals are intentionally added or are intentionally used during the production process.

6.11. Publication

All certificate holders can be viewed on the daily up-dated homepage of the Certification Body. Manufacturers, users and consumers use this research possibility for obtaining information on certified products.

Besides the contact details of the certificate holders (telephone, telefax, e-mail, homepage), it is also possible to view the technical data regarding dimensions and maximum layer thicknesses for the certified product and registered intermediate, material or additive.

6.12. Validity of Certificates, Notifications of registrations and Confirmations of acceptability

The certificate for products is valid for 3 years. The period of validity is shown on the certificate. On expiry of the certificate, the right to use the mark also expires.

The Confirmation of acceptability for products, intermediates and materials is valid for 3 years. The period of validity is shown on the confirmation of acceptability.

The notifications of registration for intermediates, materials and additives are valid for 6 years. The period of validity is shown on the notification of registration.

6.13. Renewal of Certificates, Notifications of registrations and Confirmations of acceptability

If the validity of certification, registration or acceptability confirmation is to remain remain valid beyond the date indicated, an application for renewal must be submitted to the Certification Body sufficiently in advance prior to validity expiring.

The manufactured item's current composition must be submitted with the application for renewal. For renewals, the Certification Body will make an assessment based on the Certification Scheme valid at the time of renewal and may request supplemental documentation.

Furthermore, if no deviations were found during the three verification tests performed within the validity, the certificate, notifications of registration may be renewed.

6.14. Expiration of certificates, notifications of registrations and confirmations of acceptability

In the event that the new Standard conformity examination according to Section 5 has not been completed before expiration of the validity period, the certificates, notifications of registration and/or confirmations of acceptability and the registration number expires without the necessity for explicit notification from the Certification Body.

Furthermore, certificates, notifications of registrations and confirmations of acceptability can expire if, for example:

- The surveillance according to Section 7 is not performed punctually or completely.
- The compostability mark is misused by the certificate holder.
- The requirements laid down in the Certfification Scheme or its accompanying documents are not fulfilled.
- The certification fees are not paid on the due date.
- The pre-requisites for the issuing of the certificate are no longer fulfilled.

6.15. Alterations/Amendments

6.15.1. Alteration/Amendment to a Product, Intermediate, material or additive

The certificate holder or holder of notification of registration is obliged to notify the Certification Body of all alterations to the manufactured item without delay. The Certification Body will, if applicable, decide after consultation with external experts the extent to which testing according to Section 5.2.3 must be performed and whether the change is significant. The respective test report shall be forwarded to the Certification Body by the testing laboratory.

Should the Certification Body determine a substantial alteration, the certificate/notification of registration with the corresponding registration number shall expire. For the modified manufactured item, a new application for initial certification authorising the use of the compostability mark or initial registration or issuance of a confirmation of acceptability may be submitted.

The certificate holder remains obliged to notify of any changes in the formal details (e.g. certificate holder or his address). Therefore, an application for those changes is to be submitted. The certificate/notification of registration will be adapted accordingly after positive assessment.

The certificate/notification of registration holder may apply to the Certification Body for an extension of the existing certificate/notification of registration/confirmation of acceptability for further design-types (sub-types) of the same type. It is for the Certification Body to decide whether these amendments require a complementary examination. The design-types shall be entered in the certificate/notification of registration/confirmation of acceptability for the already certified product and, provided that the conditions are fulfilled, shall be regarded as an integral part of it.

6.15.2. Alterations to the basic test specifications

If the basic test specifications for the certification/registration are modified, an application for the alteration of the certification/notification of registration shall be generally submitted within 6 months of receiving notification from the Certification Body, and, as a rule, after 12 months, proof of conformity with the modified examination specifications shall be submitted in the form of a positive test report, if applicable (see Section 5.2.3).

The time limit will be defined by the Certification Body and might last up to the next renewal.

6.16. Defects in products, intermediates, materials, additives

In the event that a certified product on the market is found to be defective, the certificate holder shall be summoned in writing by the Certification Body to rectify the defects.

In conjunction with the testing laboratory, the Certification Body shall decide whether it is a serious or a minor defect.

In the case of defects having a direct or indirect effect on the degradation properties (serious defects), the manufacturer must ensure that, until the defects have been rectified, the products are no longer marked with the compostability mark.

The defects must also be rectified without delay in installed products or products in storage. The manufacturer must submit proof to the Certification Body within 3 months, in the form of a test report on a special test in accordance with section 5.2.4, that the defects have been rectified and that the product in question again fulfils the stipulated requirements.

In the case of defects that have no influence on the technical safety or functionality of the product (minor defects), the manufacturer must submit suitable proof to the Certification Body within 3 months that the defects in the product in question have been rectified.

Should the manufacturer fail to observe these deadlines, he and the distributor of product will no longer be permitted to use the compostability mark.

Should grounds for complaint continue to exist, the Certification Body shall initially suspend the certificate and at the same time issue a final deadline for the rectification of the defects. Should the certificate holder fail to meet this demand, or fail to meet it within the grace period, or if it is again not possible to prove that the defects have been rectified, the certificate shall be annulled.

For holders of notifications of registrations for intermediates, materials or additives, the measures named above will apply to the effect that notifications of registrations can no longer be acquired, and delivery may no longer be made to certified buyers.

7. Surveillance

7.1. General

The constant surveillance of the certified product or the registered material, intermediate or additive is an integral component of the certification itself. Surveillance is also required for manufactured items with a Conformation of Acceptability.

7.2. Surveillance by the Manufacturer

The manufacturer must ensure, by suitable quality management measures that the product characteristics confirmed by the certification are maintained. This can be accomplished by means of an in-house factory production control (FPC) focussed on the product itself or on the production and, in addition, can be guaranteed within the framework of a quality management system (QM-System) in accordance with the Standard series EN ISO 9000 ff.

7.3. Surveillance by the Certification Body

The Certification Body examines the conformity of the product with the requirements laid down in this Certification Scheme.

The costs incurred in such tests will be charged to the certificate/notifications of registration holder on their completion. In individual cases, supplemental tests may be defined within the scope of certification/registration.

7.3.1. Verification Tests (Control Tests)

7.3.1.1. Products (including Confirmations of Acceptability)

The verification shall be performed annually.

If production is being carried out at multiple production facilities, the following additional requirements shall apply:

- The verification test is performed on products from various production facilities. If there are 3 alternative production facilities, then one sample must be alternatingly submitted from each production facility for the verification test. If there are more than 3 alternative production facilities, then samples must be submitted on an alternating basis of $\sqrt{n}$ of the production facilities for the verification test. The number is rounded up to the next integer digit.
- Samples are to be additionally marked with information regarding the corresponding production facility.

The verification test covers the following:

a) Check of identification of product with compostability mark and corresponding registration number according to the logo usage rules.
b) Check of compliance with the certified maximum admissible wall/layer thickness (d_{max}), density and/or grammage using the samples submitted. For paper products,

non-wovens or leaf products a higher thickness can be accepted as long as the grammage/base-weight is the same.

c) Checking whether all polymeric materials, intermediates and additives used in manufacturing the product and present in the product to a percentage by mass exceeding 1 % are identical with those specified in the type testing. To do this, one of the submitted samples is used to perform an infrared transmission spectrum according to Annex C. Evidence is demonstrated by comparing the results of the spectral analysis submitted during type testing with the results of the spectral analysis for verification testing. When compared, the spectra must show that the two sets of polymeric materials, intermediate and/or additives are identical to the polymer materials or intermediates and additives from type testing.

d) Performance of one chemical characterisation according to Table A.1 of EN 13432 during the validity.

e) In the case of recycled paper, the performance of a chemical analysis according to Annex B.1. (see Section 6.2.4) is required annually.

7.3.1.2. Materials/Intermediates/Additives

The verification shall be performed at intervals of two years (biannually).

If manufactured items are being produced at multiple production facilities, the following additional requirements shall apply:

- The verification test is performed on manufactured items from various production facilities. If there are 3 alternative production facilities, then one sample must be alternatingly submitted from each production facility for the verification test. If there are more than 3 alternative production facilities, then samples must be submitted on an alternating basis from $\sqrt{n}$ of the production facilities for the control test. The number is rounded up to the next integer digit.
- Samples are to be marked only with the information regarding the corresponding production facility.

The verification test covers the following:

a) Written confirmation from the manufacturer that composition has not been changed since initial registration.

b) Check of compliance with the certified maximum admissible wall/layer thickness (d_{max}) using the samples submitted (if applicable). For paper products, non-wovens or leaf products a higher thickness can be accepted as long as the grammage/base-weight is the same.

c) Checking whether all polymeric materials, intermediates and additives used in manufacturing the product and present in the product to a percentage by mass exceeding 1 % are identical with those specified in the type testing. An infrared transmission spectrum according to Annex C from one of the submitted samples is used for this purpose. Evidence is demonstrated by comparing the results of the spectral analyses submitted during type testing with the results of the spectral analyses for control testing. When compared, the spectra must show that the two sets

of polymeric materials or intermediates and additives are identical to the polymer materials or intermediates and additives from the type testing.

d) Performance of one chemical analysis according to Table A.1 of EN 13432 during the validity.
e) When using recycled paper, it will also be necessary to perform a chemical analysis according to Annex B.1. (see Section 6.2.4)

If a manufacturer holds notifications of registration for different manufactured items with identical compositions except for colours, then a verification test on one manufactured item will be sufficient. In case that a certification for one or more final product(s) based on self-owned notification of registration exists at the same time, the verification testing needs to be performed on each type according to Section 7.3.1.1.

7.3.2. Assessment of Verification Test (Control Test)

7.3.2.1. General

The conformity requirements, which are tested during verification test, must be fulfilled.

7.3.2.2. Design Requirements

If non-conformities are established during testing for compliance with the maximum permissible wall thicknesses according to Section 7, the certificate holder is required to send new samples for retesting.
If the results of the retesting comply with the requirements of the Certfification Scheme applying at the time when the certificate was issued, then no complaint will be made.

7.3.2.3. Spectra (Identification of material)

If deviations from the spectral analyses submitted with the application are established while comparing spectral analyses from the tested samples, then the holder of the certificate/notification will be requested to send a written statement. If no positive assessment can be reached based on that position statement, then new samples must be submitted for testing.

7.3.2.4. Complaints

If the requirements according to Section 7.3.2 are not met after the re-test, the validity of the certificate will be suspended. The certificate holder will be informed immediately and requested to ensure compliance with the criteria within 3 months after receipt of such notice.

While the certificate is suspended, the certificate holder is not entitled to sell manufactured items as certified/registered ones.

If a complaint is made, the verification test will be repeated within 3 months. If this re-test yields no further cause for complaint, the certificate will be set valid again. Should reason for complaints continue to exist, the certificate will be cancelled. The last re-test named will not apply as a regular verification test, but rather as a special test for which the certificate holder must cover the costs.

Annex

A. Fillers, Colours and Processing Auxiliaries

Materials that may be used in varying proportions up to the given upper limits as additives in manufacturing or processing of compostable materials according to Section 6.2.5.

Main Group 1: Fillers

Subgroup 1.1: Inorganic fillers and pigments - admixture up to a maximum of 49 %

- Aluminium silicates
- Ammonium carbonate
- Calcium carbonate
- Calcium chloride
- Dolomite
- Iron oxide (pigment)
- Gypsum
- Mica
- Graphite (pigment)
- Kaolin
- Chalk
- Sodium carbonate
- Natural silicates (not otherwise listed)
- Carbon black (pigment)
- Silicon dioxide; quartz
- Talc
- Titanium dioxide (pigment)
- Wollastonite

Subgroup 1.2: Organic fillers

Section 1.2.1: Non- modified naturally occuring native Cellulose

- Vegetable fibres

Section 1.2.2: Non-modified naturally occurring native Ligno-Cellulose

- Wood flour/wood fibres
- Vegetable fibres
- Cork
- Bark

Section 1.2.3: Non-modified naturally occuring Starch

- Starch
- Rye flour and other flours

Section 1.2.4: Non-modified naturally occuring Polyhydroxyalkanoates

- Poly (hydroxybutyrate), poly (hydroxybutyrate-co-hydroxyhexanoate), poly (3-hydroxybutyrate-co-3-hydroxyvalerate)

Main Group 2: Processing auxiliaries

Subgroup 2.1: Processing auxiliaries - admixture up to a maximum of 10 %

- Benzoic acid/sodium benzoate

- Erucic acid amide/erucic amide
- Glycerol monostearate
- Glycerol monooleate
- Natural waxes
- Polyethylene glycol (up to molecular weight 2000)
- Metal stearates, calcium stearates

Subgroup 2.2: Processing auxiliaries - admixture up to a maximum of 49 %

- Glycerin/glycerol
- Sorbite
- Citric acid ester (with linear, aliphatic chains up to a chain length of C22)
- Glycerol acetates
- Xylite

B. Tests

B.1. Chemical Characterisation

B.1.1. According to EN 13432, EN 14995, ISO 18606, ISO 17088 or ASTM D 6400

The chemical test is conducted in accordance with the requirements of EN 13432 (Table A.1).

B.2. Testing of Ultimate Biodegradability

Acceptance of OECD 301 a, b, c, d, e, f test results is possible under the following conditions:

- The scope of acceptance of the OECD 301 test results is as described in the OECD guideline for testing of chemicals i.e. for pure chemicals and homologues.
- The number of replicates should be according to the OECD 301, which are minimum 2.
- Only readily biodegradable chemicals are accepted (inherently biodegradable is not sufficient).
- The total maximum dry weight percentage allowed in a finished product for all the additives tested according to OECD 301 is 10 %.
- Only test reports from recognized testing laboratories will be accepted.

Acceptance of biodegradation test at 28°C:
Tests for biodegradability at a temperature of 28 °C, according to EN ISO 14855, may be accepted. The test duration may not exceed the 6 months period set down in the standard.

B.2.1. As specified in EN 13432

Testing of ultimate biodegradability is conducted in accordance with the criteria of EN 13432 by one of the following methods:

- EN ISO 14855-1 "Determination of the ultimate aerobic biodegradability of plastic materials under controlled composting conditions -- Method by analysis of evolved car- bon dioxide -- Part 1: General procedure"
- EN 14046 “Packaging - Evaluation of the ultimate aerobic biodegradability of packaging materials under controlled composting conditions - Method by analysis of released carbon dioxide”

Alternatively, one of the following methods can be used:

- EN 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"
- EN ISO 14852 “Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium – Method by analysis of evolved carbon dioxide“

B.2.2. As specified in EN 14995

If the type and properties of the material being tested permit, the controlled aerobic composting test according to EN ISO 14855 must be applied.

If alternative methods are necessary, then the following methods can be used:

- EN 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"
- EN ISO 14852 "Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium – Method by analysis of evolved carbon dioxide“

B.2.3. As specified in ISO 17088

Testing of ultimate biodegradability is conducted in accordance with the criteria of ISO 17088 by one of the following methods:

- EN ISO 14855-1 "Determination of the ultimate aerobic biodegradability of plastic materials under controlled composting conditions -- Method by analysis of evolved carbon dioxide -- Part 1: General procedure"
- EN ISO 14855-2 “Determination of the ultimate aerobic biodegradability of plastic materials under controlled composting conditions -- Method by analysis of evolved carbon dioxide -- Part 2: Gravimetric measurement of carbon dioxide evolved in a laboratory-scale test

If alternative methods are necessary, then the following methods can be used:

- EN 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"
- EN ISO 14852 "Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium – Method by analysis of evolved carbon dioxide“

B.2.4. As specified in ASTM D 6400

Testing is conducted in accordance with the methods specified in Paragraph 6.3 ASTM D 6400:

- ASTM D 5338 "Standard Test Method for Determining Aerobic Biodegradation of Plastics Materials Under Controlled Composting Conditions"
- EN ISO 14855-1 “Determination of the ultimate aerobic biodegradability of plastic materials under controlled composting conditions -- Method by analysis of evolved carbon dioxide -- Part 1: General procedure
- EN ISO 14855-2 “Determination of the ultimate aerobic biodegradability of plastic materials under controlled composting conditions -- Method by analysis of evolved

carbon dioxide -- Part 2: Gravimetric measurement of carbon dioxide evolved in a laboratory-scale test

Ligno-cellulosic substrates are permitted to fulfil the requirements of biodegradation by demonstrating > 95% of its carbon comes from biobased resources, tested by means of:

- ASTM D 6866 “Test Methods for Determining the Biobased Content of Solid, Liquid, and Gaseous Samples using Radiocarbon Analysis”

B.2.5. As specified in ISO 18606

If the type and properties of the material being tested permit, the controlled aerobic composting test according to EN ISO 14855 must be applied.

If alternative methods are necessary, then the following methods can be used:

- EN 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"
- EN ISO 14852 "Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium – Method by analysis of evolved carbon dioxide“

B.3. Testing of compostability under practice-relevant conditions and of the quality of the composts

B.3.1. As specified in EN 13432

Compostability under practice-relevant conditions (disintegration):
The following methods are available for testing compostability under practice-relevant conditions in accordance with EN 13432:

- Testing in a pilot-scale test
- Testing in a laboratory-scale test (“qualitative disintegration test”: only allowed for specific cases, see Section 6): disintegration test based on Standard EN ISO 20200 and/or EN ISO 16929, without sieving procedure, while requirements for process parameters (e.g. temperature, pH value, etc.) shall be strictly following EN ISO 16929.

The standard EN 13432 indicates the criteria for a successful test under Annex A 3 but it does not prescribe a specific method for the practical performance of the test.

The following test methods can be used for quantitative testing in a pilot-scale test:

- EN ISO 16929 "Plastics - Determination of the degree of disintegration of plastic materials under defined composting conditions in a pilot-scale test"
- EN 14045 "Packaging - Evaluation of the disintegration of packaging materials in practical oriented tests under defined composting conditions"

The following test methods are the basis for qualitative testing of disintegration:

- EN ISO 16929 “Plastics – Determination of the degree of disintegration of plastic materials under defined composting conditions in a pilot-scale test”
- EN ISO 20200: “Plastics – Determination of the degree of disintegration of plastic materials under simulated composting conditions in a laboratory-scale test”

Maximum compostable layer thickness must be determined in all cases. The optical quality of the compost prepared from biodegradable materials may not be significantly poorer than that of normal compost (testing in accordance with Methodenhandbuch zur Analyse organischer Düngemittel, chapter II, No. C1 und C3).

In addition, physical-chemical parameters must be determined according to Section 8.2 of EN 13432.

Further specifications for the laboratory-scale test (“Qualitative disintegration test”)
Test set-up of the qualitative disintegration test:
Identical to the quantitative test according to EN ISO 16929 with the below modification:

The film or sheet sample is cut into small pieces and introduced via slide frames in the composting vessel (vessel according to EN ISO 20200 or EN ISO 16929 shall be applied). Three-dimensional products are introduced as such in the composting bin or cut in pieces (e.g. 5x5x5 cm).

In case of film or sheet samples, 30 slide frames are mixed with biowaste from which at least 8 will be removed during the composting process – after 1, 2, 3, 4, 6, 8, 10 and 12 weeks. In case of three-dimensional products, the number of pieces mixed with biowaste varies depending on the weight of the pieces taking in mind that a loading concentration of 1 % on wet weight basis shall be applied. Furthermore, the pieces retrieved at each turning interval are immediately reintroduced carefully into the vessel.

Analyses of biowaste of the qualitative disintegration test:
The analyses of the biowaste and the bulking agent at start-up and in the end of the test are executed according to EN ISO 16929 or EN ISO 20200.

For laboratory-scale tests according to EN ISO 20200

- the input concentration may vary between 0.5% (for thin materials <100µm) and 2% (for thick materials ≥100µm).
- only Type 2 temperature profile (w 0-8 : 58°C, w 9-12 : 45°C) is accepted.

Temperature profile, pH value, and analyses of exhaust air of the qualitative disintegration test:
Identical to quantitative test according to EN ISO 16929.

Visual perceptions and disintegration of the qualitative disintegration test:
Identical to the quantitative test according to EN ISO 16929.

The mixture in the composting bin is regularly turned by hand (weekly during the first month and later on every 2 weeks), at which time the visual appearance of the test materials is carefully checked.

Evaluation of the qualitative disintegration:
The duration of the incubation shall be 12 weeks as described in EN ISO 16929.

Slide frames:
At the end of the test, in case of slide frames, the remaining sample still present in the slide frames is quantified by digital means (using, for instance, IrfanView). The calculation is based on the following formula:

$$x_{(\%)} = \frac{remaining\ sample\ area\ (cm^2) \times\ 100}{slide\ area\ (cm^2)}$$

The test is considered positive if the following requirements are fulfilled:

- At the end of the test at least 81 % of the test material surface within the slide has disappeared corresponding to an average of 90 % of the length and width;
- No part of the sample is still distinguishable in the compost at the end of the test.

No slide frames:
If the qualitative disintegration test is not performed in slides, the result is evaluated positive if the material is not distinguished from the compost. If necessary, additional qualitative evaluation by means of sieving may be performed.

Determining compost quality (ecotoxicity):
The criteria for the quality of composts are assessed according to Section 8, A.4 and E of EN 13432 by way of a test of the ecological toxicity with not less than two types of plants. Compost production shall be performed in line with EN ISO 16929 only, by adding 10 % testing material. The basis of determination is the (modified) OECD Guideline 208.

To assure the quality of the blank compost, the respective criteria of the OECD Guideline 208 are to be applied:

1. min. 2 weeks after 50 % of the seedlings in the control have emerged, plants are harvested and weighed
2. Validity: min 80 % of control seeds should produce healthy seedlings

Deviating from the norm, the use of minimum 50 seeds is required, if the test is performed using barley.

It is possible to test theoretical samples.

B.3.2. As specified in EN 14995

Compostability under practice-relevant conditions (disintegration):
The following methods are available for testing compostability under practice-relevant conditions in accordance with EN 14995:

- Testing in a pilot-scale test
- Testing in a laboratory-scale test (“qualitative disintegration test”: only allowed for specific cases, see Section 6): disintegration test based on Standard EN ISO 20200 and EN ISO 16929, without sieving procedure, while requirements for process parameters (e.g. temperature, pH value) shall be strictly according EN ISO 16929.

The following test methods can be used for quantitative testing in a pilot-scale test:

- EN ISO 16929 "Plastics - Determination of the degree of disintegration of plastic materials under defined composting conditions in a pilot-scale test"

The following test methods are the basis for qualitative testing of disintegration:

- EN ISO 16929 “Plastics – Determination of the degree of disintegration of plastic materials under defined composting conditions in a pilot-scale test”
- EN ISO 20200: “Plastics – Determination of the degree of disintegration of plastic materials under simulated composting conditions in a laboratory-scale test”

Maximum degradable layer thickness must be determined in all cases. The optical quality of the compost prepared from biodegradable materials may not be significantly poorer than that of normal compost (testing in accordance with Methodenhandbuch zur Analyse organischer Düngemittel, chapter II, No. C1 und C3).

In addition, physical-chemical parameters must be determined according to Section 8.2 of EN 14995.

Further specifications for the laboratory-scale test (“Qualitative disintegration test”)
Test set-up of the qualitative disintegration test:
Identical to the quantitative test according to EN ISO 16929 with the below modification:

The film or sheet sample is cut into small pieces and introduced via slide frames in the composting vessel (vessel according to EN ISO 20200 or EN ISO 16929 shall be applied). Three-dimensional products are introduced as such in the composting bin or cut in pieces (e.g. 5x5x5 cm).

In case of film or sheet samples, 30 slide frames are mixed with biowaste from which at least 8 will be removed during the composting process – after 1, 2, 3, 4, 6, 8, 10 and 12 weeks. In case of three-dimensional products, the number of pieces mixed with biowaste varies depending on the weight of the pieces taking in mind that a loading concentration of 1 % on wet weight basis shall be applied. Furthermore, the pieces retrieved at each turning interval are immediately reintroduced carefully into the vessel.

Analyses of biowaste of the qualitative disintegration test:
The analyses of the biowaste and the bulking agent at start-up and in the end of the test are executed according to EN ISO 16929 or EN ISO 20200.

For laboratory-scale tests according to EN ISO 20200

- the input concentration may vary between 0.5% (for thin materials <100µm) and 2% (for thick materials ≥100µm).
- only Type 2 temperature profile (w 0-8 : 58°C, w 9-12 : 45°C) is accepted.

Temperature profile, pH value, and analyses of exhaust air of the qualitative disintegration test:
Identical to quantitative test according to EN ISO 16929.

Visual perceptions and disintegration of the qualitative disintegration test:
Identical to the quantitative test according to EN ISO 16929.

The mixture in the composting bin is regularly turned by hand (weekly during the first month and later on every 2 weeks), at which time the visual appearance of the test materials is carefully checked.

Evaluation of the qualitative disintegration:
The duration of the incubation shall be 12 weeks as described in EN ISO 16929.

Slide frames:
At the end of the test, in case of slide frames, the remaining sample still present in the slide frames is quantified by digital means (using, for instance, IrfanView). The calculation is based on the following formula:

$$x_{(\%)} = \frac{remaining\ sample\ area\ (cm^2) \times\ 100}{slide\ area\ (cm^2)}$$

The test is considered positive if the following requirements are fulfilled:

- At the end of the test at least 81 % of the test material surface within the slide has disappeared corresponding to an average of 90 % of the length and width;
- No part of the sample is still distinguishable in the compost at the end of the test.

No slide frames:
If the qualitative disintegration test is not performed in slides, the result is evaluated positive if the material is not distinguished from the compost. If necessary, additional qualitative evaluation by means of sieving may be performed.

Determining compost quality (ecotoxicity):
The criteria for the quality of composts are assessed according to Section 8, A.4 and E of EN 13432 by way of a test of the ecological toxicity with not less than two types of plants. Compost production shall be performed in line with EN ISO 16929 only, by adding 10 % testing material. The basis of determination is the (modified) OECD Guideline 208.

To assure the quality of the blank compost, the respective criteria of the OECD Guideline 208 are to be applied:

1. min. 2 weeks after 50 % of the seedlings in the control have emerged, plants are harvested and weighed
2. Validity: min 80 % of control seeds should produce healthy seedlings

Deviating from the norm, the use of minimum 50 seeds is required, if the test is performed using barley.

It is possible to test theoretical samples.

B.3.3. As specified in ISO 17088

Compostability under practice-relevant conditions (disintegration):
The following test methods can be used for testing disintegration in a pilot-scale test:

- EN ISO 16929 "Plastics - Determination of the degree of disintegration of plastic materials under defined composting conditions in a pilot-scale test"
- Testing in a laboratory-scale test ("qualitative disintegration test": only allowed for specific cases, see Section 6): disintegration test based on Standard EN ISO 20200 and EN ISO 16929, without sieving procedure, while requirements for process parameters (e.g. temperature, pH value) shall be strictly following EN ISO 16929.

The following test methods are the basis for qualitative testing of disintegration:

- EN ISO 16929 "Plastics – Determination of the degree of disintegration of plastic materials under defined composting conditions in a pilot-scale test"
- EN ISO 20200: "Plastics – Determination of the degree of disintegration of plastic materials under simulated composting conditions in a laboratory-scale test"

Maximum degradable layer thickness must be determined in all cases. The optical quality of the compost prepared from biodegradable materials may not be significantly poorer than that of normal compost (testing in accordance with Methodenhandbuch zur Analyse organischer Düngemittel, chapter II, No. C1 und C3).

Further specifications for the laboratory-scale test ("Qualitative disintegration test")
Test set-up of the qualitative disintegration test:
Identical to the quantitative test according to EN ISO 16929 with the below modification:

The film or sheet sample is cut into small pieces and introduced via slide frames in the composting vessel (vessel according to EN ISO 20200 or EN ISO 16929 shall be applied). Three-dimensional products are introduced as such in the composting bin or cut in pieces (e.g. 5x5x5 cm).

In case of film or sheet samples, 30 slide frames are mixed with biowaste from which at least 8 will be removed during the composting process – after 1, 2, 3, 4, 6, 8, 10 and 12 weeks. In case of three-dimensional products, the number of pieces mixed with biowaste varies depending on the weight of the pieces taking in mind that a loading concentration of 1 % on wet weight basis shall be applied. Furthermore, the pieces retrieved at each turning interval are immediately reintroduced carefully into the vessel.

Analyses of biowaste of the qualitative disintegration test:
The analyses of the biowaste and the bulking agent at start-up and in the end of the test are executed according to EN ISO 16929 or EN ISO 20200.

For laboratory-scale tests according to EN ISO 20200

- the input concentration may vary between 0.5% (for thin materials <100µm) and 2% (for thick materials ≥100µm).
- only Type 2 temperature profile (w 0-8 : 58°C, w 9-12 : 45°C) is accepted.

Temperature profile, pH value, and analyses of exhaust air of the qualitative disintegration test:
Identical to quantitative test according to EN ISO 16929.

Visual perceptions and disintegration of the qualitative disintegration test:
Identical to the quantitative test according to EN ISO 16929.

The mixture in the composting bin is regularly turned by hand (weekly during the first month and later on every 2 weeks), at which time the visual appearance of the test materials is carefully checked.

Evaluation of the qualitative disintegration:
The duration of the incubation shall be 12 weeks as described in EN ISO 16929.

Slide frames:
At the end of the test, in case of slide frames, the remaining sample still present in the slide frames is quantified by digital means (using, for instance, IrfanView). The calculation is based on the following formula:

$$x_{(\%)} = \frac{remaining\ sample\ area\ (cm^2) \times\ 100}{slide\ area\ (cm^2)}$$

The test is considered positive if the following requirements are fulfilled:

- At the end of the test at least 81 % of the test material surface within the slide has disappeared corresponding to an average of 90 % of the length and width;
- No part of the sample is still distinguishable in the compost at the end of the test.

No slide frames:
If the qualitative disintegration test is not performed in slides, the result is evaluated positive if the material is not distinguished from the compost. If necessary, additional qualitative evaluation by means of sieving may be performed.

Determining compost quality (ecotoxicity):
The criteria for the quality of composts are assessed according to Section 8, A.4 and E of EN 13432 by way of a test of the ecological toxicity with not less than two types of plants.

Compost production shall be performed in line with EN ISO 16929 only, by adding 10 % testing material. The basis of determination is the (modified) OECD Guideline 208.

To assure the quality of the blank compost, the respective criteria of the OECD Guideline 208 are to be applied:

1. min. 2 weeks after 50 % of the seedlings in the control have emerged, plants are harvested and weighed
2. Validity: min 80 % of control seeds should produce healthy seedlings

Deviating from the norm, the use of minimum 50 seeds is required, if the test is performed using barley.

It is possible to test theoretical samples.

Additonally, the compost quality needs to be assessed according to Section 6.4 of ISO 17088, which furthermore, i.e., additionally to the plant growth tests, requires

1. Acute earthworm test according to ISO 11268-1 (with modifications given in Annex D of ISO 17088), or
2. Chronic earthworm toxicity test according to ISO 11268-2 (with modifications specified in Annex E of ISO 17088).

An optional nitrification inhibition tests can be carried out according to ISO 15685 (with modifications specified in the Annex F of ISO 17088).

B.3.4. As specified in ASTM D 6400

Compostability under practice-relevant conditions (disintegration):
Testing of compostability under practice-relevant conditions is conducted in accordance with the method specified in Section 6.2 of ASTM D 6400:

- EN ISO 16929 "Plastics - Determination of the degree of disintegration of plastic materials under defined composting conditions in a pilot-scale test"
- EN ISO 20200: “Plastics – Determination of the degree of disintegration of plastic materials under simulated composting conditions in a laboratory-scale test”
- Testing in a laboratory-scale test (“qualitative disintegration test”: only allowed for specific cases, see Section 6): disintegration test based on Standard EN ISO 20200 and EN ISO 16929, without sieving procedure, while requirements for process parameters (e.g. temperature, pH value) shall be strictly according EN ISO 16929.

The following test methods are the basis for qualitative testing of disintegration:

- EN ISO 16929 “Plastics – Determination of the degree of disintegration of plastic materials under defined composting conditions in a pilot-scale test”
- EN ISO 20200: “Plastics – Determination of the degree of disintegration of plastic materials under simulated composting conditions in a laboratory-scale test”

The optical quality of the compost prepared from biodegradable materials may not be significantly poorer than that of normal compost (testing in accordance with Methodenhandbuch zur Analyse organischer Düngemittel, chapter II, No. C1 und C3).

Further specifications for the laboratory-scale test ("Qualitative disintegration test")
Test set-up of the qualitative disintegration test:
Identical to the quantitative test according to EN ISO 16929 with the below modification:

The film or sheet sample is cut into small pieces and introduced via slide frames in the composting vessel (vessel according to EN ISO 20200 or EN ISO 16929 shall be applied). Three-dimensional products are introduced as such in the composting bin or cut in pieces (e.g. 5x5x5 cm).

In case of film or sheet samples, 30 slide frames are mixed with biowaste from which at least 8 will be removed during the composting process – after 1, 2, 3, 4, 6, 8, 10 and 12 weeks. In case of three-dimensional products, the number of pieces mixed with biowaste varies depending on the weight of the pieces taking in mind that a loading concentration of 1 % on wet weight basis shall be applied. Furthermore, the pieces retrieved at each turning interval are immediately reintroduced carefully into the vessel.

Analyses of biowaste of the qualitative disintegration test:
The analyses of the biowaste and the bulking agent at start-up and in the end of the test are executed according to EN ISO 16929 or EN ISO 20200.

For laboratory-scale tests according to EN ISO 20200

- the input concentration may vary between 0.5% (for thin materials <100µm) and 2% (for thick materials ≥100µm).
- only Type 2 temperature profile (w 0-8 : 58°C, w 9-12 : 45°C) is accepted.

Temperature profile, pH value, and analyses of exhaust air of the qualitative disintegration test:
Identical to quantitative test according to EN ISO 16929.

Visual perceptions and disintegration of the qualitative disintegration test:
Identical to the quantitative test according to EN ISO 16929.

The mixture in the composting bin is regularly turned by hand (weekly during the first month and later on every 2 weeks), at which time the visual appearance of the test materials is carefully checked.

Evaluation of the qualitative disintegration:
The duration of the incubation shall be 12 weeks as described in EN ISO 16929.

Slide frames:

At the end of the test, in case of slide frames, the remaining sample still present in the slide frames is quantified by digital means (using, for instance, IrfanView). The calculation is based on the following formula:

$$x_{(\%)} = \frac{remaining\ sample\ area\ (cm^2) \times\ 100}{slide\ area\ (cm^2)}$$

The test is considered positive if the following requirements are fulfilled:

- At the end of the test at least 81 % of the test material surface within the slide has disappeared corresponding to an average of 90 % of the length and width;
- No part of the sample is still distinguishable in the compost at the end of the test.

No slide frames:
If the qualitative disintegration test is not performed in slides, the result is evaluated positive if the material is not distinguished from the compost. If necessary, additional qualitative evaluation by means of sieving may be performed.

Determining compost quality (ecotoxicity):
The criteria for the quality of composts are assessed according to Section 8, A.4 and E of EN 13432 by way of a test of the ecological toxicity with not less than two types of plants. Compost production shall be performed in line with EN ISO 16929 only, by adding 10 % testing material. The basis of determination is the (modified) OECD Guideline 208.

To assure the quality of the blank compost, the respective criteria of the OECD Guideline 208 are to be applied:

1. min. 2 weeks after 50 % of the seedlings in the control have emerged, plants are harvested and weighed
2. Validity: min 80 % of control seeds should produce healthy seedlings

Deviating from the norm, the use of minimum 50 seeds is required, if the test is performed using barley.

It is possible to test theoretical samples.
B 3.5 As specified in ISO 18606
Compostability under practice-relevant conditions (disintegration):
The following methods are available for testing compostability under practice-relevant conditions in accordance with ISO 18606:

- Testing in a pilot-scale test
- Testing in a composting plant under real conditions
- Testing in a laboratory-scale test (“qualitative disintegration test”: only allowed for specific cases, see below): disintegration test based on Standard EN ISO 20200 and EN ISO 16929, without sieving procedure, while requirements for process parameters (e.g. temperature, pH value) shall be strictly according EN ISO 16929.

The following test methods can be used for quantitative testing in a pilot-scale test:

- EN ISO 16929 "Plastics - Determination of the degree of disintegration of plastic materials under defined composting conditions in a pilot-scale test"
- EN ISO 20200: “Plastics – Determination of the degree of disintegration of plastic materials under simulated composting conditions in a laboratory-scale test”

The following test methods are the basis for qualitative testing of disintegration:

- EN ISO 16929 “Plastics – Determination of the degree of disintegration of plastic materials under defined composting conditions in a pilot-scale test”
- EN ISO 20200: “Plastics – Determination of the degree of disintegration of plastic materials under simulated composting conditions in a laboratory-scale test”

In case of differing results, EN ISO 16929 results shall prevail.

Further specifications for the laboratory-scale test (“Qualitative disintegration test”)
Test set-up of the qualitative disintegration test:
Identical to the quantitative test according to EN ISO 16929 with the below modification:

The film or sheet sample is cut into small pieces and introduced via slide frames in the composting vessel (vessel according to EN ISO 20200 or EN ISO 16929 shall be applied). Three-dimensional products are introduced as such in the composting bin or cut in pieces (e.g. 5x5x5 cm).

In case of film or sheet samples, 30 slide frames are mixed with biowaste from which at least 8 will be removed during the composting process – after 1, 2, 3, 4, 6, 8, 10 and 12 weeks. In case of three-dimensional products, the number of pieces mixed with biowaste varies depending on the weight of the pieces taking in mind that a loading concentration of 1 % on wet weight basis shall be applied. Furthermore, the pieces retrieved at each turning interval are immediately reintroduced carefully into the vessel.

Analyses of biowaste of the qualitative disintegration test:
The analyses of the biowaste and the bulking agent at start-up and in the end of the test are executed according to EN ISO 16929 or EN ISO 20200.

Temperature profile, pH value, and analyses of exhaust air of the qualitative disintegration test:
Identical to quantitative test according to EN ISO 16929.

Visual perceptions and disintegration of the qualitative disintegration test:
Identical to the quantitative test according to EN ISO 16929.

The mixture in the composting bin is regularly turned by hand (weekly during the first month and every 2 weeks thereafter), at which time the visual appearance of the test materials is carefully checked.

Evaluation of the qualitative disintegration:
The duration of the incubation shall be 12 weeks as described in EN ISO 16929.

Slide frames:
At the end of the test, in case of slide frames, the remaining sample still present in the slide frames is quantified by digital means (using, for instance, IMAGE J The calculation is based on the following formula:

$$x_{(\%)} = \frac{remaining\ sample\ area\ (cm^2) \times\ 100}{slide\ area\ (cm^2)}$$

The test is considered positive if the following requirements are fulfilled:

- At the end of the test at least 81 % of the test material surface within the slide has disappeared corresponding to an average of 90 % of the length and width;
- No part of the sample is still distinguishable in the compost at the end of the test.

No slide frames:
If the qualitative disintegration test is not performed in slides, the result is evaluated positive if the material is not distinguished from the compost. If necessary, additional qualitative evaluation by means of sieving may be performed.

Determining compost quality (ecotoxicity):
The criteria for the quality of composts are assessed according to Section 8, A.4 and E of EN 13432 by way of a test of the ecological toxicity with not less than two types of plants. Compost production shall be performed in line with EN ISO 16929 only, by adding 10 % testing material. The basis of determination is the (modified) OECD Guideline 208.

To assure the quality of the blank compost, the respective criteria of the OECD Guideline 208 are to be applied:

1. min. 2 weeks after 50 % of the seedlings in the control have emerged, plants are harvested and weighed
2. Validity: min 80 % of control seeds should produce healthy seedlings

Deviating from the norm, the use of minimum 50 seeds is required, if the test is performed using barley.

It is possible to test theoretical samples.

C. Infrared Transmission Spectrum

The spectrum should be recorded at least in a range between the wave numbers 4000 cm^{-1} and 650 cm^{-1}, and a transmission level from 0-100 % being indicated on the vertical axis. In addition to the paper version, the testing laboratory will also send an electronic file of the spectrum to the Certification Body, which will be entered into a spectra database.