TÜVRheinland®
DIN CERTCO
Precisely Right.

Certification Scheme

Products made of compostable materials for home and garden composting

according to

NF T 51-800

(Edition: October 2025)

DIN CERTCO ● Alboinstraße 56 ● 12103 Berlin
Tel: +49 30 7562-1131 ● Fax: +49 30 7562-1141 ● E-Mail: info@dincertco.de ● www.dincertco.de

Foreword

DIN CERTCO was founded in 1972 by DIN Deutsches Institut für Normung e. V., is now part of the TÜV Rheinland Group and is the certification body for issuing DIN marks and other certification marks for products, persons, services as well as companies based on DIN standards and similar specifications. Due to its independence, neutrality, competence and many years of experience, DIN CERTCO enjoys a high reputation both at home and abroad.

In order to prove the functionality of the system and our competence as a certification body, we have been accredited, certified or recognised by independent domestic and foreign bodies in both the voluntary and legally regulated areas. Our accreditations.

The "Products made of compostable materials for home and garden composting" certification scheme was created and continuously refined in collaboration with the DIN CERTCO "Biodegradable Materials" certification committee (ZA-BAW in its German abbreviation). It makes a distinction between the certification of materials and intermediates and the certification of (end) products.

In addition to DIN CERTCO's general terms and conditions, this certification scheme provides a basis for parties who provide Products made of compostable materials for home and garden composting to label their products with the ”DIN-Geprüft HOME compostable"-logo. This shows that these products fulfil all NF T51-800 requirements.

The “DIN-Geprüft” mark creates trust among consumers that a neutral and competent entity carefully inspected and evaluated test criteria. DIN CERTCO's regular monitoring additionally ensures that product quality remains intact, even when production is running. Thus, customers receive added value that they can take into consideration when making purchase decisions.

Products made of compostable materials for home and garden composting are given the right to use the ”DIN-Geprüft HOME compostable"-logo upon fulfilling the requirements indicated under Section 4 according to the procedure described in this certification scheme. For materials or intermediates, a certificate is issued if the requirements named under Section 4 are fulfilled. In this case, only the right to use the logo for marketing and advertisement purposes is granted.

All certificate holders can be viewed on the daily up-dated homepage of DIN CERTCO (www.dincertco.de).

Amendments

a) Extension of Scope (addition of additives)
b) Removal of reference to “Produkthaftungsgesetz” (6.1)
c) Restriction on intentionally added per-and polyfluoroalkylated substances (PFAs)
d) Qualitative disintegration allowance for Masterbatches use <1% and of Masterbatches with a certified carrier (6.2.2)
e) Ranges in blends with fillers (Special Rules 6.2.2.1)
f) Disintegration testing for composition ranges in paper/recycled paper (6.2.4)
g) Individual layer requirements in a multi-layered structure (6.2.8)
h) Self-adhesive labels (6.2.8.4)
i) UV/EB inks and overprint varnishes requirement (6.2.10.2)
j) Use of fibres made of already registered/certified materials (6.2.10.5)
k) Manufactured items where the content is mainly still present in the product after use (6.2.11.4)
l) Thin voluminous films (6.2.11.5)
m) Disintegration testing of wet wipes (6.2.11.6)
n) Ecotoxicity testing of constituents present <0.1% (6.2.11.7)

o) Use of chemically recycled monomers to produce already certified compostable PLA (6.2.12)
p) Addition of specification for additives certification (6.3)
q) Addition of specification for additives (6.4)
r) Measurement of thickness / grammage for sublicences for production facilities (6.5.2)
s) Validity of product certificates (6.11)
t) Changes in the design requirements (7.5.2)
u) Alternative Disintegration Standard EN 17428 (Annex B)

Previous Editions

2023-01 Products made of compostable materials for home and garden composting
2021-02 Products made of compostable materials for home and garden composting
2016-02 Products made of compostable materials for home and garden composting
2014-08 Products made of compostable materials for home and garden composting
2013-02 Products made of compostable materials for home and garden composting

Certificates already in existence will remain valid and will be changed as part of the next renewal.

Remark

The German version of this certification scheme shall be taken as authoritative. No guarantee can be given to the English translation.

CONTENTS

1. Scope

This certification scheme applies for (end) products made of compostable materials for home and garden composting, intermediates, materials and additives, in connection with the testing foundations named below, contains all requirements on issuing the mark “DIN-Geprüft HOME compostable” and certifications for materials and intermediates.

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.

If an (end) product, intermediate, material or additive demonstrates conformity to the criteria specified in this certification scheme, then a certificate will be issued for that finished item.

There is no legal right to receive a certificate or any other confirmation of conformity.

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 according to the following standard (certification standards):

NF T 51-800 Plastics – Specifications for plastics suitable for home composting

Laboratory testing must be performed according to the stipulations in the standards named above according to the following standards or test methods (testing standards):

DIN EN 13432	Requirements for packaging recoverable through composting and biodegradation
DIN 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
DIN EN ISO 14852	Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium - Method by analysis of evolved carbon dioxide
DIN 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
DIN 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 10634	Water quality – Guidance for the preparation and treatment of poorly water-soluble organic compounds for the subsequent evaluation of their biodegradability in an aqueous medium

DIN EN ISO 16929	Plastics - Determination of the degree of disintegration of plastic materials under defined composting conditions in a pilot-scale test
DIN EN 14045	Packaging - Evaluation of the disintegration of packaging materials in practical oriented tests under defined composting conditions
DIN EN ISO 20200	Plastics – Determination of the degree of disintegration of plastic materials under simulated composting conditions in a laboratory-scale test
prEN 17428	Packaging- Determination of the degree of disintegration under simulated home composting conditions
ISO 17294-2	Water quality - Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 2: Determination of 62 elements
EN 15408	Solid recovered fuels - Methods for the determination of Sulphur (S), chlorine (Cl), fluorine (F) and bromine (Br) content
EN ISO 12846	Water quality - Determination of mercury - Method using atomic absorption spectrometry (AAS) with and without enrichment (ISO 12846:2012)
ISO 4591	Plastics; film and sheeting; determination of average thickness of a sample, and average thickness and yield of a roll, by gravimetric techniques
ISO 4593	Plastics; film and sheeting; determination of thickness by mechanical scanning
OECD 208	Terrestrial plant test: 208: Seedling Emergence and Seedling Growth test
EN ISO 534	Paper and board - Determination of thickness, density and specific volume (ISO 534:2011); German version EN ISO 534:2011
EN ISO 9073-2	Textiles - Test methods for nonwovens - Part 2: Determination of thickness (ISO 9073-2:1995)
EN ISO 5084	Textiles - Determination of thickness of textiles and textile products (ISO 5084:1996)
EN ISO 536	Paper and board - Determination of grammage (ISO 536)
EN ISO 9073-1	Nonwovens - Test methods - Part 1: Determination of mass per unit area
EN ISO 12625-6	Tissue paper and tissue products - Part 6: Determination of grammage (ISO 12625-6:2016)
Federal Quality Association Compost (ed.):	Manual, of methods for analysing organic Fertilisers, soil improvement and substrates

– this certification scheme
– the General Terms and Conditions of DIN CERTCO
– the Testing-, Registration- and Certification Regulations of DIN CERTCO
– the respective schedule of fees of DIN CERTCO

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, anti-blocking agents, printing inks).
Blank compost	Compost obtained from a parallel process according to B 3 without addition of sample material.
Blend	Physical mixture of two 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. A licence to use the mark is granted.
	Proof of conformity with the requirements of the named standards as well as with this certification scheme for materials and intermediates (semi-finished items). A licence to use the mark is granted for advertisement purposes only.
Compostable material	Material meeting the requirements of this certification scheme. The classification of types shall be made according to Section 6.4.
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	Semi-finished 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 6.4.
Manufactured item	Material, intermediate, or product according to this certification scheme. The classification of types shall be made according to Section 6.4.
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 materials other than plastics. The classification of types shall be made according to Section 6.4.

PFAs	poly- and perfluoroalkyl substances: organofluorine compounds containing only carbon-fluorine bonds and carbon-carbon bonds but also other heteroatoms
Product	Article that is disposed of as waste (for composting) after use, 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 6.4.
Production facility	Location at which production of manufactured items is carried out according to this certification scheme. This is not necessarily identical to the certificate holder's address.

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 1 in NF T 51-800.
- Ultimate biodegradability (90 % absolute biodegradation, or 90 % with a suitable reference substrate within not more than 12 months). Evidence must be proven via a test according to DIN EN ISO 14855. Alternatively, via DIN EN ISO 14851 or DIN EN ISO 14852, respectively. The testing temperature shall be below 30° centigrade.

- After composting for not more than 180 days, not more than 10 % of the tested material's original dry weight may be found in a > 2 mm screen fraction. Evidence must be demonstrated via a test according to the standard DIN EN ISO 20200, DIN EN ISO 16929 or prEN 17428-01 at temperatures of 25 ± 5 ° centigrade (disintegration test).

- The germination rate and plant biomass of two different plant types grown on the compost using 10 % wet mass of test substance must be higher than 90 % of the corresponding blank compost. Evidence must be demonstrated via a modified test according to DIN EN 13432, Sections 8, A.4 and E, respectively.

- 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 shall be evidenced separately. The evidence can be proven via a certification according to NF T 51-800 in combination with the certification scheme “Additives according to EN 13432”. Alternatively, the ultimate biodegradability of the finished item shall be tested.

- Ingredients above 0.1% by dry weight must be determined to be harmless for the composting process by one or more of the following proves: Safety Data sheet, 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 below 0.1% by dry weight are not required to be tested on ecotoxicity. However, if these ingredients below 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.

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

- The total sum of the organic compounds for which biodegradability needs not be determined may not exceed 5 % of mass.

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

- According to NF T 51-800 the plastic product assessed shall not include any endocrine disruptor, any of the carcinogenic, mutagenic or toxic for reproduction (CMR) substances appearing on the candidate list of substances of very high concern for authorization, published in accordance with Article 59(10) of Regulation (EC) No. 1907/2006.

- PFAs shall not be intentionally used.

5. Testing
5.1. General Information

To carry out the inspections and tests necessary for the evaluation and certifications, DIN CERTCO uses qualified testing laboratories .

All documents must be submitted in English or German language.

5.2. Types of Test
5.2.1. Initial Test (Type Test)

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 6.2 shows which tests may be 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, material, intermediate and/or additive in production phase corresponds to the product tested during the initial certification procedure.

This shall be evidenced on schedule via a test report with positive results from a qualified testing laboratory .

Test reports are assessed by DIN CERTCO.

For this purpose, samples of the certified manufactured item are obtained from manufacturers' production facilities and provided to DIN CERTCO’s approved testing laboratory free of charge.

If finished items are certified several times in the field of compostable materials at DIN CERTCO, one verification testing per finished item is enough.

5.2.3. Supplementary Test

Supplement testing is performed when supplements, expansions or additions (see Section 6.144) are intended for a certified manufactured item that may have an influence on conformity with the underlying requirements.

The type and scope of supplementary testing will be determined by DIN CERTCO in individual cases in coordination 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 DIN CERTCO - reasons to be specified.
- requested in written form 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 tests will be determined by DIN CERTCO in each individual case, where applicable in coordination with the assessment committee.

If defects are detected in a special test, or if a special test is performed due to a stop in production, 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 DIN CERTCO and the testing laboratory unless it is already specified in the applicable test standards.

5.4. Test Procedure

Testing universally shall be performed according to one or more of the standards named above.

According to the standard NF T 51-800 the following tests are required:

- Chemical characterisation according to Section B1.

- Testing of ultimate biodegradability according to Section B2.

- Testing of compostability under laboratory-scale conditions (disintegration) and of the quality of the composts (plant ecotoxicity). The certificate is issued with the maximum layer thickness determined in testing according to Section B 3.
- Additionally, for identifying the material it is necessary to perform an IR spectrum in accordance with Section C.

5.5. Test Report

The testing laboratory informs the client of the test results by means of a test report. An original copy of the test report shall be submitted to DIN CERTCO; or a digital copy sent by the testing laboratory. The test report must be written in English or German.

As a rule, the test report may not be older than 12 months at the time of application. In individual cases, older test reports can be recognised if the testing laboratory confirms the validity of the results by means of a test report in written form.

The test report shall correspond to DIN EN ISO/IEC 17025 and shall 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 test.

6. Certification

Certification in the sense of this certification scheme relates to the assessment of conformity of a (end) product, intermediate, material or additive by DIN CERTCO on the basis of test reports submitted by qualified testing laboratories . In doing so, the (end) products, intermediates, materials or additives being certified for conformity with the requirements named in Section 4 are examined and subsequently monitored. Since this certification scheme is a modular system, the individual testing requirements are indicated accordingly in Section 6.2.

For certified materials, intermediates and additives the right to use the mark is only granted to the holder of the certificates for **marketing and advertisement reasons**, not for labelling the item itself. An individual registration number is issued upon granting the certificate.

References to manufactured items that have already been certified can minimise testing expenditures. The points named in the following shall apply.

Should a reference be made to an (end)-product that has already been certified, then an additional agreement will be required from the respective certificate holder. References to certified products will only be possible if concerning an identical product. Thus, for the certification of e. g. trays a reference can be made to certified trays but not to certified carrier bags.

6.1. Application for Certification

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

The following documents shall be submitted by the applicant to DIN CERTCO:

- The original application form for certification, with a legally binding signature and company stamp.

– Completed datasheet (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 shall be submitted. Production can be carried out at various locations alternatively or simultaneously. In this case, all alternative production facilities shall be reported to DIN CERTCO upon application.

– Safety Data Sheets according to REACH for all substances being used to determine substances’ suitability for composting (e. g. processing auxiliaries, printing inks, etc).

  If substances' harmlessness cannot be determined using the Safety Data Sheet, it may be necessary to perform additional tests (e.g. ecotoxicity testing and/or earthworm toxicity test). This is coordinated with DIN CERTCO 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), if the test has not been contracted by DIN CERTCO within the scope of an on-going certification process.

– Details on construction and layer thickness, if applicable.

– Density or grammage, if applicable, e.g. for paper and expanded items.

– Drawings, with data on all wall and layer thicknesses (d_{max}), if applicable.

– Test report on an infrared transmission spectrum according to Section 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.

– Submitting of product samples.

– 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 as disposals will be accepted in any case.

After receipt of the application, the applicant will receive a confirmation of order from DIN CERTCO with a procedure number and information on further processing.

6.2. Required Tests/Documents

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

If the assessment is finished with positive results and a positive decision is made regarding the application, the certification will be issued for the maximum layer thickness determined via testing according to Section B 3 and published according to Section 6.10.

The testing requirements for products, materials and intermediates 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 become necessary.

6.2.1. Manufactured items consisting of items not yet certified

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

- Disclosure of chemical composition (including substances at concentrations below 1 % of mass).

- 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, where applicable). This is coordinated with DIN CERTCO and, if applicable, with the testing laboratories.

- Test report on the chemical characterisation as specified in Section B1.

- Test report on testing of ultimate biodegradability as specified in Section B 2

- Test reports on testing of compostability under laboratory scale conditions and of the quality of the compost as specified in Section B 3 (quantitative disintegration, ecotoxicity test, where applicable).

- An infrared transmission spectrum in accordance with Section C.

- 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 certified (Blends)

If certification is being requested for a manufactured item consisting solely of materials already on the list according to Section 6.10 and no further additives are used, the following documents and information shall be submitted along with the application form:

a) List of the materials used, including information on mass portions.

b) Test reports on testing of compostability under laboratory scale conditions (quantitative disintegration) as specified in Section B 3.

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

d) Self-declaration that no PFAs or other organic, fluorinated chemicals are intentionally added or are intentionally used during the production process.

Disintegration according to b) can be omitted if the applied thickness of the blend made of two certified materials according to this certification scheme does not exceed the maximum certified thickness of the respective certified material with the lower applied 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 precondition that the compostable properties (disintegration) of blends are determined by the properties of the continuous phase. They only refer to the certification of blends. The mixtures used for the testing needs to be defined in cooperation with DIN CERTCO and the testing laboratory. It needs to be representative for the continuous phase in question. As long as the continuous phase remains identical, different mixture proportions have no influence on compostability. The applicant shall 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 certified materials that are only distinguished by molecular weight, the disintegration test according to Section B 3 can be omitted. The requisite for this is that the manufacturing process for the materials is identical and there is certification 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 certify composition ranges of two different materials (A and B) that have already been certified. Doing so requires disintegration tests of the various compositions and continuous phases (e.g. ratio A/B 20/80 and 80/20).

Provided that the range within the blend remains inside a certain threshold, some of the tests may be omitted. This shall be determined in coordination with DIN CERTCO and, if applicable, the testing laboratory. This requires proofing that the continuous phase does not change within the range (material B instead of material A is the continuous phase). Disintegration testing is required for each continuous phase occurring. It shall 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 certify composition ranges of three different materials that have already been certified. For determining maximum layer thickness, it is sufficient to test the compostability properties of a blend for each continuous phase. Maximum layer thickness can be differentiated depending on the layer thickness tested for the continuous phase.

Provided that the range with the blend remains inside a certain threshold, some of the tests may be omitted. This shall be determined in coordination with DIN CERTCO and, if applicable, the testing laboratory. This requires to proof that the continuous phase does not change within the range (material B or C instead of material A).

Disintegration testing is required for each continuous phase occurring. It shall 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 certified materials A, B and C under the assumption that the material with a share of 60 % forms the continuous phase (shall be evidenced in the certification 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 section 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 constituent of natural origin (e. g. wood, wood fibre, cotton fibre, starch, paper, pulp or jute) and admissible for composting according to the applicable legal stipulations are used for the manufactured item, such items are accepted by DIN CERTCO as being biodegradable without additional testing. The following documents and information shall 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, where applicable). This is coordinated with DIN CERTCO and, if applicable, with the testing laboratories.

c) Test report on the chemical characterisation as specified in Section B1.

d) Test reports on testing of compostability under laboratory-scale conditions and of the quality of the compost as specified in Section B 3 (quantitative disintegration, ecotoxicity test, where applicable).

e) An infrared transmission spectrum in accordance with Section C.

The requirements according to 6.2.10 apply accordingly for the additives being used.

6.2.4. Manufactured items consisting of paper/recycled paper

Remark: In paper industry, fillers are called pigments.

If certification is being requested for a manufactured item consisting of paper/recycled paper, then the following documents and information shall 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, where applicable). This is coordinated with DIN CERTCO and, if applicable, with the testing laboratories.

d) Test report on the chemical characterisation as specified in Section B1.

e) Test reports on testing of compostability under laboratory scale conditions and of the quality of the compost as specified in Section B 3 (quantitative disintegration, ecotoxicity, where applicable).

f) An infrared transmission spectrum in accordance with Section C.

g) Self declaration that no PFAS or other organic, fluorinated chemicals are intentionallyadded or are intentionally used during the production process.

The requirements according to 6.2.10 apply accordingly for the additives being used.

If using recycled paper, the following additional evidence is required:

a) Evidence of continuous compliance with the threshold values named in Table 1 in NF T 51-800.

b) An additional chemical analysis performed annually according to Section B 1 within the scope of annual verification testing according to Section 5.2.2 and 7.4.

Certification of manufactured items requires information on the maximum applied thickness and grammage. Both additional conditions shall 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.

6.2.5. Special Rules

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

Chemical pulp with less than 1 % additives, **without** pigmentation and without use of wet strengtheners:

- For single-sided coating, up to 50 % of the tested layer thickness of the certified polymer and up to 100 % of the tested layer thickness of the paper can be certified without additional tests.

- For double-sided coating, up to 25 % of the tested layer thickness of the certified polymer and up to 100 % of the tested layer thickness of the paper can be certified 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 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 100 % of the tested layer thickness of the paper can be certified without additional tests.

Mechanical pulp with less than 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 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 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 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 without additional tests.

Chemical pulp with less than 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 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 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 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 without additional tests.

Recycled paper with less than 1 % additives, **without** pigmentation and without use of wet strengtheners

The same evaluation rules mentioned above regarding composting properties as for non-recycled paper.

6.2.6. Manufactured items composed of certified materials and materials indicated in Section A

If certification is being requested for a manufactured item that is intended to contain the fillers and processing auxiliaries indicated in Section A, it is possible to certify individual compositions within a predefined composition range. The following documents and information shall 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, where applicable). This is coordinated with DIN CERTCO 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 Section 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 shall be submitted for all materials used as specified in Section A. Proof of compliance with the requirements of Section B.1 with respect to the heavy metal content shall be supplied for each individual filler or processing auxiliary. Alternatively, chemical characterisation according to Section B.1 has to be performed for the finished item.

e) Test reports on testing compostability under laboratory-scale conditions (quantitative disintegration) according to Section B 3.

f) An infrared transmission spectrum in accordance with Section 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 Section A be used, then the test shall be performed using the largest portion being included in the application.

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

Within the separate subgroups or Sections (as per Section A), other mixtures may, under the following conditions, be certified 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 additional 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 CaCO3), a qualitative disintegration test is required.

6.2.7. Certified manufactured items with coatings

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

6.2.7.1. Coating using substances whose biodegradation has not been proven, but have excellent water solubility and are being used in portions <u>less</u> than 1 % of mass.

The following documents and information shall 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, where applicable). This is coordinated with DIN CERTCO and, if applicable, with the testing laboratories.

d) An infrared transmission spectrum in accordance with Section C.

e) Self-declaration that no PFAS or other organic, fluorinated chemicals are intentionally added or are intentionally used during the production process.

Evidence of excellent water solubility can be provided, for example, by the Safety Data Sheet according to REACH. Alternative evidence may be possible and will be evaluated by DIN CERTCO.

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

The following documents and information shall 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, where applicable). This is coordinated with DIN CERTCO and, if applicable, with the testing laboratories.

d) Test reports on testing of compostability under laboratory-scale conditions (quantitative disintegration) according to Section B 3 of the coated item.

e) An infrared transmission spectrum in accordance with Section C.

f) Self-declaration that no PFAS or other organic, fluorinated chemicals are intentionally added or are intentionally used during the production process.

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

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

When using significant organic additives according to Section 6.3 of NF T 51-800, the following tests will be required in addition to the requirements stated under Section 6.2.10.

Testing of additives used with amounts of more than 1 mass-%:

a) Test report on the chemical characterisation for all additives used in portions more than 1 % of mass as specified in Section B1. Test report on the chemical characterisation as specified in Section B1.

b) Test report on testing of ultimate biodegradability of each single additive as specified in Section B2. Alternatively, the finished item can be tested according to Section B2

and of the coated manufactured item:

c) Test reports on testing of compostability under laboratory scale conditions and of the quality of the compost as specified in Section B 3 (quantitative disintegration, ecotoxicity test, where applicable). Alternatively, the ecotoxicity testing can be performed on each single substance.

d) An infrared transmission spectrum in accordance with Section C.

6.2.7.4. Coatings with materials that have already been certified with portions over 1 % of mass

The following documents and information shall 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, where applicable). This is coordinated with DIN CERTCO and, if applicable, with the testing laboratories.

d) Test reports on testing compostability under laboratory-scale conditions (quantitative disintegration) according to Section B 3 of the coated item.

e) An infrared transmission spectrum in accordance with Section C.

6.2.8. Manufactured items consisting of multiple layer structures made of certified materials

If certification is being requested for a manufactured item consisting of multiple layers of materials already on the list according to Section 6.10 and are therefore demonstrated to be compostable (without using auxiliary materials), then the following documents and information shall be submitted along with the application form:

a) Disclosure of the exact structure, including information on coating thickness of the individual coats.

b) Disclosure of the composition of each layer (including additives at concentrations below 1 % of mass).

c) Disclosure of other additives used (including additives used at concentrations below 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 test, where applicable). This is coordinated with DIN CERTCO and, if applicable, with the testing laboratories.

e) List of the materials used, including information on mass portions.

f) Test reports on testing compostability under laboratory scale conditions (quantitative disintegration) according to Section B 3.

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

h) Self-declaration that no PFAS or other organic, fluorinated chemicals are intentionally added or are intentionally used during the production process.

If additives are being used, then each individual layer must fulfil the requirements of this certification scheme regarding biodegradability and the use of additives.

6.2.8.1. Special Rules: 2 Layers

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

- Testing according to Section 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 Section B 3,

or

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

Both the individual layers and the overall product shall comply with the other requirements in Section 6. These rules apply for laminates and co-extrudates, provided no adhesive is being used.

Example:

Material A is certified with a maximum layer thickness of 150 µm.
Material B is certified 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.

6.2.8.2. Special rules: 3 Layers

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

For three-layered structures, the laboratory scale compostability test according to Section B.3 (disintegration) can be omitted if

- The overall thickness of the three layered structure does not exceed half of the minimum certified thickness among the three certified materials, as determined in a test according to Section B3.

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 co-extrudates, provided no adhesive is being used.

Example:

Material A is certified with a maximum layer thickness of 150 µm.
Material B is certified with a maximum layer thickness of 400 µm.
Material C is certified 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.

6.2.8.3. Special rules: multiple layers of the same material

For multiple layered structures where all layers consist of the same certified material (without additives), the test according to Section B 3 (disintegration) can be omitted if the layer thickness of the multiple layer structure does not exceed the maximum certified layer thickness for the material being used. For the use of adhesives the rules of Section 6.2.10.3 apply.

6.2.8.4. Special rules: registered self adhesive labels

a) Provided that a certified self-adhesive label and a certified 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 6.2.8.1 and 6.2.8.2 apply.

No disintegration test according to Section B3 is required.

b) Provided that a certified self-adhesive label and a certified 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 Section B3 is sufficient.

6.2.9. Manufactured items exceeding the maximum certified layer thickness

If a manufactured item exceeds the maximum certified layer thickness of the material/intermediate/product being used, then the compostability of the manufactured item has to be evidenced separately.

Additional Test required:

Compostability under laboratory-scale conditions according to Section B 3 (quantitative disintegration).

6.2.10. Manufactured items consisting of manufactured items already certified and non-biodegradable additives

For example, a printed shopping bag.

Certification 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 shall be met.

6.2.10.1. Use of non-hazardous additives with less than 1 % of mass per additive and less than 5 % of mass of non-biodegradable additives

According to Section 6.4 of NF T 51-800 organic additives, for which biodegradability has not been separately determined can be used on the following conditions:

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

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, where applicable). This is coordinated with DIN CERTCO and, if applicable, with the testing laboratories.

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

6.2.10.2. Use of Printing Inks

It is generally possible to use printing inks. In addition to the requirements named in Section 6.2, the printed product shall also comply with the threshold values in Table 1 of NF T 51-800

Not more than 1 % of mass of dry printing ink per colour (e.g. red, green, etc.) shall be used, and a total of no more than 5 % printing ink. Compliance with the thresholds according to Table 1 of NF T 51-800 is decisive.

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

a) 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, where applicable). This is coordinated with DIN CERTCO and, if applicable, with the testing laboratories.

b) For each colour used information on heavy metal contents in the form of test reports according to Section B 1.

   Alternatively: Test report on the chemical characterisation as specified in Section 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 the individual printing inks are tested, then 80 % of the threshold(s) from Table 1 of NF T 51-800 may not be exceeded with the maximum colour quantity being requested.

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

Example:

The inks A, B and C have been limited to the following amounts of dried mass according to the test report:

- Color A: 0.1 % of mass
- Color B: 0.4 % of mass
- Color C: 0.6 % of mass

The single use of each color therefore is limited to 0.1 %, 0.4 % and 0.6 %, respectively. Is color A in use the overall amount of printing color combined is limited to 0.1 %, for the use of color B (without color A) 0.4 % only, etc. This is also valid for mixtures of pigments used as printing colors.

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.

6.2.10.3. Use of Adhesives

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

If an adhesive is being used with mass portions of less than 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 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, where applicable). This is coordinated with DIN CERTCO and, if applicable, with the testing laboratories.

c) Test reports on testing of compostability under laboratory scale conditions (quantitative disintegration) according to Section B 3 of the manufactured item including the adhesive.

   If an adhesives’ suitability cannot be determined, then testing shall be performed under laboratory-scale conditions for compostability and compost quality according to Section B 3 (disintegration, ecotoxicity test, where applicable).

6.2.10.4. Use of additives with more than 1 % of mass per additive and/or more than 5% of mass of additives

When using significant organic additives, the following tests will be necessary in addition to the specifications given under Section 6.2.10.

Testing of additives:

a) Test report on the chemical characterisation as specified in Section B1.

b) Test report on testing of ultimate biodegradability of any single additive as specified in Section B2. Alternatively, the finished item shall be tested.

And of the manufactured item:

c) Test reports on testing of compostability under laboratory scale conditions and of the quality of the compost as specified in Section B 3 of the finished item (quantitative disintegration, ecotoxicity test, where applicable). Alternatively, ecotoxicity testing can be performed on each single substance.

d) An infrared transmission spectrum in accordance with Section C.

If substances should be used, which are already certified according to the certification scheme for “Additives according to EN 13432”, this testing may not be required.

6.2.10.5. 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 shall 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 replacing 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 26 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 Section C.

Remark: If additives > 1 % are used Section 6.2.10.4 applies.

6.2.11. Special cases for products/Intermediates

6.2.11.1. Design Requirements

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

6.2.11.2. Hollow Bodies

In the case of hollow bodies with small diameter apertures, the maximum permissible wall thickness d_{max} is limited to 50 % of the maximum compostable material thickness determined in accordance with Section 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.

Calculation is based on the following formula:

$$x = \frac{container\ volume}{aperture\ area}$$

Hollow bodies with x > 10 cm, may have wall thicknesses up to $d_{max,}$ if a test report is submitted on the determination of the maximum compostable material thickness for this product in accordance with Section B 3. Where justified in exceptional cases, the performance of further tests specified in Section B 3 may be required by the assessment committee.

6.2.11.3. Packaging units

Packaging units are distinguished in easily manually separable units and not easily manually separable units.

Easily separable units (packaging units according to EN 13432). This refers to products like bottles with lids or yoghurt cups with lids. These products will be processed as a single packaging unit and not as single products. Therefore, the calculation of potential additives will be referred to each single unit. Nevertheless, the complete and unseparated packaging units need to meet the requirements as well.

- Not manually separable units

This refers to products like labels on packaging. These products will be processed as one single product unit. Therefore, the calculation of potential additives will be referred to this single product unit.

6.2.11.4. 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:

a) The biodegradation, ecotoxicity and material characterization on the product is made only on the outer envelope without the content (coffee, tea or similar).

b) The quantitative disintegration test is made on the whole product, outer envelope with content. The quantitative disintegration test shall be performed on a used product (corresponding to an actually used coffee pad/capsule or tea bag). The testing percentages added to the disintegration test refer to the dry weight of the outer envelope, 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 down to 0.5 % relative to the wet weight of the compost.

c) 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 to content, a quantitative disintegration test is necessary.

The other requirements according to Section 6.2 must be met.

6.2.11.5. 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. Therefore, it is possible to apply the testing percentage for thin films to a concentration ranging between 0.5% and 2%. This can be discussed between the testing laboratory and DIN CERTCO. The concentration for ecotoxicity testing remains 10%.

6.2.11.6. Disintegration testing of wet wipes

Preservatives and other additives can influence the disintegration characteristics of a nonwoven, 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.

6.2.11.7. Ecotoxicity testing of constituents present <0,1%

Ingredients above 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 below 0.1% by dry weight are not required to be tested on ecotoxicity. However, if these ingredients below 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.

6.2.12. 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.

6.3. Certification of biodegradable additives

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

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

a) Description of chemical characterization
b) Test report on the chemical characterization as specified in Annex B1
c) Test report on testing of ultimate biodegradability of the additive in accordance with one of the methods specified in Annex B2
d) Test report on compost quality according to Annex B3 (ecotoxicity)
e) An infrared transmission spectrum in accordance with Annex C (not required for printing ink)
f) Self declaration that no PFAS or other organic, fluorinated chemicals are intentionally added or are intentionally used during the production process

6.4. Definition of types, subtypes and manufactured item families

Products, intermediates and materials 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:

- Carrier bags 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 certificate. An individual certificate will be issued for each type.

for additives:

Inks, inorganic pigments, organic colours, master/colour batches, biodegradable additives or biodegradable colours are defined as different types. If additives are different in essential characteristics relevant to certification (e.g. properties that have a significant influence on safety, operation or handling and that therefore require the product to be marketed under a different trade name), they are defined as additional type or model. Characteristics relevant for certification are e.g.:

Water-based inks. Solvent-based inks:

- different base (e.g. solvent or binding agent)
- labelling as separate inks series by the manufacturer

Inorganic pigments:

- Different types of application (e.g. for the manufacturing of master-/colour batches or printing inks)
- Labelling as separate pigment series by the manufacturer

Organic colourants:

- Different types of application (e.g. for the manufacturing of master/ colour batches or printing inks)
- Labelling as separate pigment series by the manufacturer

Master-/colour batches:

- Different biodegradable materials
- Labelling as different master-/colour batch by the manufacturer

Other biodegradable additives:

- Different compositions

Biodegradable organic colourants:

- Different types of application (e.g. for the manufacturing of master-/colour batches or printing inks)

Labelling as separate pigment series by the manufacturer
An individual certificate will be issued for each type.

A subtype 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.

Example:

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.

Multiple subtypes can be grouped onto one certificate.

for addtives:

sub-types are generally products of a particular model/type, which share the same base and differ only in terms of the following characteristics:

Water-based inks, solvent-based inks:

- Different colours, pigments

Inorganic pigments:

- Different pigments

Organic colourants:

- Different colours

Master-/colour batches:

- Different colours

Biodegradable organic colourants:

- Different colours

For other biodegradable additives, subtypes are not possible.

6.5. Sub-licences

According to DIN CERTCO's General Terms and Conditions sub-licences are necessary if certified products are intended to be brought onto the market on behalf of companies other than the main certificate holder.

6.5.1. 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 manufactured items into circulation on behalf of the sub-licence holder. Sub-licences are dependent upon the validity of the main certificate. 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:

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 into commercial trade without being changed.

c) Letter of agreement of the main certificate holder for issuing the respective sub-licence.

A sub-licence can be issued

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

6.5.2. Sub-licences for Production Facilities

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

An annual verification test shall be performed according to Section 7.4.

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

a) Application form for sub-licence with main certificate holder's stamp and signature.

b) Submission 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) Letter of agreement of the main certificate holder for issuing the respective sub-licence.

e) An infrared transmission spectrum in accordance with Section C for each product.

Documents and information needed if the applicant should 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) Submission of a datasheet completely filled out by the production facility operator.

d) An infrared transmission spectrum in accordance with Section 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.

A sub-licence can be issued

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

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, DIN CERTCO conducts the conformity examination. The assessment is made with the aid of the test report as to whether the product, material, intermediate or additive meets the requirements of the Certification scheme and of the underlying standards.

The applicant will receive written notification from DIN CERTCO in the event of any possible deviations.

6.8. Registration numbers of Materials, Intermediates and Products

Composition of the registration number:

- Materials 9Rxxxx
- Intermediates 9Sxxxx
- (End)products 9Pxxxx
- Additives 9Jxxxx

6.9. Certificate and the right to use the mark for (end)products

After successful testing and conformity assessment of the application documents submitted, DIN CERTCO issues a certificate to the applicant and issues the right to use the

“DIN-Geprüft HOME compostable” mark for products in conjunction with the respective registration number.

Products made of compostable materials for which a right to use the “DIN-Geprüft HOME compostable” mark has been issued shall be marked with the “DIN-Geprüft HOME compostable” mark and the respective registration number.

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

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 6.4).

Materials, intermediates and additives do receive the right to use the mark for **marketing and advertising purposes only**. They are certified and receive registration numbers (9Rxxxx, 9Sxxxx or 9Jxxxx). 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 6.4).

For sub-licences of certificates of materials and intermediates the same right to use the “DIN-Geprüft HOME compostable”-logo applies like for the main certificate applies, independent of the use of an own registration number.

The General Terms and Conditions and the Testing-, Registration- and Certification Regulations of DIN CERTCO also apply.

6.10. Publications

All certificate holders can be found on the daily up-dated homepage of DIN CERTCO (www.dincertco.de) under <Database>. Manufacturers, users and consumers use this full-text research possibility for obtaining information on certified products, intermediates, materials or additives.

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, intermediate or material, as well as the maximum allowed usage of the certified additive

6.11. Validity of Certificates

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 certificate of intermediates,materials and additives is valid for 6 years. The period of validity is shown on the certificate. On expiry of the certificate, the right to use the mark for marketing and advertisement also expires.

6.12. Renewal of Certificates

If the validity of the certification is to remain valid beyond the date indicated, an application for renewal can be submitted to DIN CERTCO sufficiently in advance prior to validity expiring.

The manufactured item's current composition shall be submitted with the application for renewal. For renewals, DIN CERTCO will perform 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 verification tests performed within the validity, the certificate may be renewed.

6.13. Expiration of certificates

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 and the corresponding registration number expire without the necessity for explicit notification from DIN CERTCO.

Furthermore, certificates can expire if, for example:

- the verification testing according to Section 7 is not performed punctually or completely.
- the “DIN-Geprüft HOME compostable” mark is misused by the certificate holder.
- the requirements laid down in the Certification scheme or its accompanying documents are not fulfilled.
- the certification fees are not paid on the due date.
- the prerequisites for the issuing of the certificate are no longer fulfilled.

6.14. Alterations/Amendments

6.14.1. Alteration/Amendment to a Product, Intermediate, Material or Additives

The certificate holder is obliged to notify DIN CERTCO of all alterations to the manufactured item (product, intermediate, material or additive) without delay. DIN CERTCO will, if applicable, decide the extent to which testing according to Section 6.2 and 6.3 shall be performed and whether the change is significant.

If DIN CERTCO determines a significant change, the certificate with the corresponding registration number expires. A new application for initial certification can be submitted for the modified product.

The certificate holder remains obliged to notify of any changes in the formal details (e.g. certificate holder or his address). An application form must be submitted for this modification. The certificate will then be amended accordingly.

The certificate holder may apply to DIN CERTCO for an extension of the existing certificate for further design-types (sub-types) of the same type. It is on DIN CERTCO to decide whether these amendments require a complementary examination. If the requirements are met, the sub-types are included in the certificate for the already certified product, intermediate, material or additive.

6.14.2. Alterations to the basic test specifications

If the basic test specifications for the certification are modified, an application for the alteration of the certification shall be generally submitted within 6 months of receiving notification from DIN CERTCO, 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 6.2 and 6.3).

The time limit will be defined by DIN CERTCO and might last up to the next renewal at the latest.

6.15. Defects in products, intermediates, materials or 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 DIN CERTCO to rectify the defects.

DIN CERTCO will 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 has to ensure that, until the defects have been rectified, the products are no longer marked with the “DIN-Geprüft HOME compostable” mark.

The defects shall also be rectified without delay in installed products or products in storage. The manufacturer shall submit proof to DIN CERTCO 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 shall submit suitable proof to DIN CERTCO 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 “DIN-Geprüft HOME compostable” mark.

Should grounds for complaint continue to exist, DIN CERTCO will initially suspend the certificate and will simultaneously 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 period of time, or if it is again not possible to prove that the defects have been rectified, the certificate shall be expired.

For holders of certificates for intermediates, materials or additives, the measures named above will apply to the effect that certificates 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, material, intermediate or additive is an integral component of the certification itself.

7.2. Surveillance by the Manufacturer

The manufacturer shall 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 DIN EN ISO 9000 ff.

7.3. Surveillance by DIN CERTCO

DIN CERTCO examines the conformity of the product with the requirements laid down in the certification scheme.

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

7.4. Verification Tests (Control Tests)
7.4.1. Products

The verification shall be performed at regular intervals of one year.

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

- The control test is performed on products from various production facilities. If there are 3 alternative production facilities, then one sample must be alternating submitted from each production facility for the control test. If there are more than 3 alternative production facilities, then samples must be submitted on an alternating basis of $\sqrt{n}$ of the number of production facilities for the control 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 control test covers the following:

a) Check of identification of product with “DIN-Geprüft HOME compostable” mark and corresponding registration number according to the usage rules.

b) Check of compliance with the certified maximum admissible wall/layer thickness (d_{max}), density and/or grammage using the samples submitted according to the rules specified. 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 greater than 1 % are identical with those specified in the type testing. An infrared transmission spectrum according to Annex C is used for this purpose.

   Evidence is demonstrated by comparing the results of the spectral analysis submitted during type testing with the results of the spectral analysis for control testing. When compared, the spectra shall show that the two sets of polymeric materials, intermediates and/or additives are identical to the polymer materials and/or intermediates and additives from type testing.

d) Performance of one chemical characterisation according to Table 1 of NF T 51-800 during the validity period.

e) When using recycled paper, the performance of one chemical analysis according to Section B 1 (see Section 6.2.4.) is required annually.

7.4.2. Materials/Intermediates/Additives

The verification test shall be performed at regular intervals of two years.

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

- The control test is performed on manufactured items from various production facilities. If there are 3 alternative production facilities, then one sample shall be alternating submitted from each production facility for the control 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 control test covers the following:

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

b) Check of compliance with the certified maximum admissible wall/layer thickness (d_{max}) using the samples submitted according to the rules specified (if applicable).

c) Checking whether all polymeric materials, intermediates and additives used in manufacturing the product and present in the product to a percentage by mass greater than 1 % are identical with those specified in the type testing. An infrared transmission spectrum according to Section C 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 have to show that the two sets of polymeric materials and/or intermediatesare identical to the polymer materials and/or intermediates from the type testing.

d) Performance of one chemical analysis according to Table 1 of NF T 51-800 during the validity.

e) When using recycled paper, it will also be necessary to perform one chemical analysis according to Section B 1 (see Section 6.2.4.) every two years.

If a manufacturer owns certificates for different manufactured items with identical compositions beside colours, then a control test on one manufactured item will be sufficient. In case that a certification for one or more final product(s) based on self-owned certificates exists at the same time, the verification testing needs to be performed on each type according to Section 7.4.

For additives:
If sub-types exist, the testing will focus on 0.6 x n of the certified sub-types. The result is rounded up or off to the nearest whole number. The certificate holder must ensure that alternate subtypes are submitted each time.

n = Total of certified types and sub-types of a certificate

Water-based inks, solvent-based inks; inorganic pigments, organic colourants, biodegradable colourants, inorganic fillers

- Test report on chemical analysis in accordance with Table 1 of NF T 51-800.

If the chemical analysis is performed on groups of different sub-types, it is assumed as part of a worst-case analysis that the result for the group corresponds to the individual result. Generally, a maximum of 5 types/subtypes may be tested at the same time.

Biodegradable pigments, master-/colorbatches, other biodegradable additives, not biodegradable organic additives (the latter max. 1 %)

- Test report on the measurement of the infrared transmission spectrum according to Annex C
- Performance of one chemical characterisation according to Table 1 from NF T 51-800 during the validity of the certificate.

7.5. Assessment of Verification Test (Control Test)

7.5.1. General

The conformity requirements which are tested during verification test have to be fulfilled basically.

7.5.2. 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 Certification Scheme applying at the time when the certificate was issued, then no complaint will be made.

7.5.3. 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 customer will be requested to send a written statement. If no positive assessment can be reached on the basis of that position statement, then new samples must be submitted for testing.

7.5.4. Complaints

If the requirements according to Section 7.5 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 with the “DIN-Geprüft HOME compostable” mark.

In the event of a complaint, the control test will be repeated within 3 months. If this re-test yields no further cause for complaint, the certificate will stay valid. Should reason for complaints continue to exist, the certificate will be withdrawn. The last re-test named will not apply as a regular verification test, but rather as a special test for which the certificate holder shall 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 6.2.6.

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 oxides (pigments)
- Gypsum
- Mica
- Graphite (pigment)
- Kaolin
- Chalk
- Sodium carbonate
- Natural silicates (not otherwise listed**)**
- Carbon black (pigment)
- Silicon dioxide; quartz
- Talcum
- Titanium dioxide (pigment)
- Wollastonite

Subgroup 1.2: Organic fillers

Section 1.2.1: Non- modified naturally occurring native Cellulose

- Vegetable fibers

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

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

Section 1.2.3: Non-modified naturally occurring Starch

- Starch
- Rye flour and other flours

Section 1.2.4: Non-modified naturally occuring Polyhydroxyalkanoates

- PHB, PHBH, PHBV

Main Group 2: Processing auxiliaries

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

- Benzoic acid/sodium benzoate
- Erucic acide 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 esters (with linear, aliphatic chains up to a chain length of C22)
- Glycerol acetates
- Xylite

Annex B Tests

B 1 Chemical Characterisation according to NF T-51-800

The chemical test is conducted in accordance with the requirements of Table 1 of NF T-51-800.

B 2 Testing of Ultimate Biodegradability as specified in NF T 51-800

Testing of ultimate biodegradability is conducted in accordance with the criteria of NF T 51-800 by one of the following methods:

- DIN 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"

- DIN 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

- DIN 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"

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

In all cases the reaction temperature shall be 25 ± 5 °C and it shall not exceed 30 °C. The test period shall be no longer than 365 days.

B 3 Testing of compostability under laboratory scale conditions and of the quality of the composts according to NF T 51-800

Note: For NF T 51-800 Disintegration and ecotoxicity shall be performed according to DIN EN ISO 16929. Disintegration only can be performed according to DIN EN ISO 20200, pr EN 17428 or the slide-frame test.

If disintegration has already been proven at elevated temperatures according to DIN EN ISO 16929 or DIN EN ISO 20200 the slide-frame test at ambient temperatures is sufficient.

Section 6.4.1 c) of NF T 51-800 sets the specifications for the disintegration methods used:

- DIN EN ISO 16929 or DIN EN 14045 if disintegration and ecotoxicity need to be tested

- DIN EN ISO 20200, prEN 17428 or slide-frame test if disintegration only is needed

B 3.2.1 As specified in DIN EN ISO 16929 or DIN EN 14045

Compostability under practice-relevant conditions under defined composting conditions (disintegration):

The following test methods shall be used for quantitative testing in a pilot-scale test under defined composting conditions:

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

- DIN EN 14045 "Packaging - Evaluation of the disintegration of packaging materials in practical oriented tests under defined composting conditions"

Variational to DIN EN ISO 16929 and/or DIN EN 14045 the following conditions for testing shall be applied as named in NF T 51-800, Section 6.4.2:

- The temperature shall be 25 ± 5 °C

- The test duration is set to 180 days

Maximum compostable layer thickness shall be determined in all cases by means of ISO 4591 or ISO 4593. 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, Nos. C1 and C3). In addition, physical-chemical parameters shall be determined according to Section 8.2 of EN 13432.

Additionally, the determination of the chemical parameters is required.

B 3.2.2 As specified in DIN EN ISO 20200

Compostability under laboratory scale conditions (disintegration):

The following method is available for testing compostability under laboratory scale conditions:

DIN 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 shall be determined in all cases by means of ISO 4591 or ISO 4593. 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).

Variational to DIN EN ISO 20200 the following conditions for test shall be applied as named in NF T 51-800:

- The temperature shall be 25 ± 5 °C

- The test duration is set to 180 days

B 3.2.3 As specified in prEN 17428

Compostability under laboratory scale conditions (disintegration):

The following method is available for testing compostability under laboratory scale conditions:

prEN 17428 Packaging - Determination of the degree of disintegration under simulated home composting conditions

Table 1 — Thickness and grammage determination methods

Matrix	Thickness determination method	Grammage determination method
Plastic	ISO 4591, ISO 4593	–
Paper and board	EN ISO 534	EN ISO 536
Non-woven	EN ISO 9073-2	EN ISO 9073-1
Textiles	EN ISO 5084	–
Tissue paper and tissue products	–	EN ISO 12625-6

B 3.2.4 Slide-frame test

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 DIN EN ISO 16929 and/or DIN EN ISO 20200 with the below modifications:

The film or sheet sample is cut into small pieces and introduced via slide frames in the composting vessel (vessel according to DIN EN ISO 20200 or DIN 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 10 will be removed during the composting process – after 1, 2, 3, 4, 6, 8, 10, 15, 20 and 26 weeks, respectively. 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 DIN EN ISO 16929 and/or DIN EN ISO 20200.

Temperature profile, pH value, and analyses of exhaust air of the qualitative disintegration test:

Identical to quantitative test according to DIN EN ISO 16929 and/or DIN EN ISO 20200 at ambient temperature.

Visual perceptions and disintegration of the qualitative disintegration test:

Identical to the quantitative test according to DIN EN ISO 16929 and/or DIN EN ISO 20200.
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 26 weeks as described in DIN EN ISO 20200.

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:

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

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 averages 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 cannot be distinguished from the compost. If necessary, additional qualitative evaluation by means of sieving may be performed.

B 3.2.5 Determining compost quality (ecotoxicity):

The criteria for the quality of composts are assessed according to Section 6.5 and Annex B of NF T 51-800 by way of a test of the ecological toxicity with not less than two types of plants. According to DIN EN ISO 16929 the addition of 10 % test material to the disintegration test setup on wet weight basis is necessary. To assure the quality of the blank compost, the respective criteria of the OECD Guideline 208 apply:

- Min. 2 weeks after 50 % of the seedlings in the control have been emerged, plants are harvested and weight

- Validity: min. 80 % of control seeds should procure healthy seedlings.

In deviation to the standard, the use of minimum 50 seeds is sufficient only, if the test is performed with barley.

It is possible to test theoretical samples.

Test reports for ecotoxicity performed according to DIN EN 13432, DIN EN 14995, ISO 17088, ISO 18606, AS 5810, ASTM D 6400 or ASTM D 6868 are accepted by NF T 51-800.

Annex C Infrared Transmission Spectrum

The spectrum should be recorded in a range between the wave numbers 4000 cm^{-1} and 400 cm^{-1}, and a transmission level from 0-100 % being indicated on the vertical axis.