TÜVRheinland®
DIN CERTCO
Precisely Right.

Certification Scheme

Home Compostable Carrier Bags (DIN*plus*)

according to

DIN EN 17427

(Edition: June 2023)

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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 "Home Compostable Carrier Bags (DIN*plus*)" certification scheme was created in collaboration with the DIN CERTCO "Biodegradable Materials" certification committee (ZA-BAW in its German abbreviation) and will be continuously refined. It contains the requirements for the certification of carrier bags and the materials and intermediates they are based on.

In addition to DIN CERTCO's general terms and conditions and the Testing-, Registration- and Certification Regulations, this certification scheme provides a basis for parties who provide carrierplastic carrier bags to label their plastic carrier bags with the compostability mark, the ”DIN*plus* Home Compostable Carrier Bags”-logo. Materials and intermediates can be certified as well. This documents that their products, materials or intermediates fulfil all DIN EN 17427 requirements, and the requirements set out in this certification scheme, respectively.

The ”DIN*plus*”-mark creates trust among consumers, retailers, waste managers, municipalities, associations and authorities 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 benefit that they can take into consideration when making purchase decisions.

Home Compostable Carrier Bags are given the right to use the compostability mark “DIN*plus* Home Compostable Carrier Bags” upon fulfilling the requirements indicated under Section 4 according to the procedure described in this certification scheme. For materials and intermediates a certificate is issued if the requirements named under Section 4 are fulfilled.

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

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 exclusively for carrier bags or the respective materials and intermediates, in connection with the testing foundations named below, contains all requirements on issuing the compostability mark “DIN*plus* Home Compostable Carrier Bags”.

This certification scheme establishes requirements that have to be met by the product, intermediate or material directly, as well as requirements relating to the associated testing, monitoring and certification.

If carrier bags, intermediates or materials demonstrate conformity to the criteria specified in this certification scheme, then a certificate will be issued for that product, intermediate or material. Furthermore, these certificates will be added to the corresponding lists of certificate holders (see Section 6.10).

There is no legal right to receiving 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.

Carrier Bags and the respective materials or intermediates can be certified according to the following standard (certification standard):

DIN EN 17427	Packaging - Requirements and test scheme for carrier bags suitable for treatment in well-managed home composting installations

Carrier Bags or the respective materials or intermediates are required to demonstrate compliance with the requirements of DIN EN 17427 and those mentioned in Section 4.

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

EN ISO 14851	Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium - Method by measuring the oxygen demand in a closed respirometer
EN ISO 14852	Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium - Method by analysis of evolved carbon dioxide
EN ISO 14855-1	Determination of the ultimate aerobic biodegradability of plastic materials under controlled composting conditions -- Method by analysis of evolved carbon dioxide -- Part 1: General procedure
EN ISO 14855-2	Determination of the ultimate aerobic biodegradability of plastic materials under controlled composting conditions -- Method by analysis of evolved carbon dioxide -- Part 2: Gravimetric measurement of carbon dioxide evolved in a laboratory-scale test
EN ISO 16929	Plastics - Determination of the degree of disintegration of plastic materials under defined composting conditions in a pilot-scale test

EN 14582	Characterization of waste - Halogen and sulfur content - Oxygen combustion in closed systems and determination methods
prEN 17428:2020	Packaging — Determination of the degree of disintegration under simulated home composting conditions
EN ISO 534	Paper and board - Determination of thickness, density and specific volume (ISO 534:2011); German version EN ISO 534:2011
EN ISO 536	Paper and board - Determination of grammage (ISO 536)
EN 29073-1	Textiles; test method for nonwovens; part 1: determination of mass per unit area (ISO 9073-1:1989)
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 12625-6	Tissue paper and tissue products - Part 6: Determination of grammage (ISO 12625-6:2016)
EN ISO 11268-1	Soil quality - Effects of pollutants on earthworms - Part 1: Determination of acute toxicity to Eisenia fetida/Eisenia andrei (ISO 11268-1)
EN ISO 11268-2	Soil quality - Effects of pollutants on earthworms - Part 2: Determination of effects on reproduction of Eisenia fetida/Eisenia andrei (ISO 11268-2)
EN ISO 11269-2	Soil quality - Determination of the effects of pollutants on soil flora - Part 2: Effects of contaminated soil on the emergence and early growth of higher plants (ISO 11269-2:2012)
EN ISO 12846	Water quality - Determination of mercury - Method using atomic absorption spectrometry (AAS) with and without enrichment (ISO 12846)
EN ISO 17294-2	Water quality - Application of inductively coupled plasma mass spectrometry (ICP-MS) - Part 2: Determination of selected elements including uranium isotopes (ISO 17294-2)
EN ISO 17556	Plastics - Determination of the ultimate aerobic biodegradability of plastic materials in soil by measuring the oxygen demand in a respirometer or the amount of carbon dioxide evolved (ISO 17556)
ISO 4591	Plastics — Film and sheeting — Determination of average thickness of a sample, and average thickness and yield of a roll, by gravimetric techniques (gravimetric thickness)
ISO 4593	Plastics — Film and sheeting — Determination of thickness by mechanical scanning
ISO 15685	Soil quality — Determination of potential nitrification and inhibition of nitrification — Rapid test by ammonium oxidation

OECD 208	OECD Guidelines for the Testing of Chemicals, Section 2, Effects on Biotic Systems — Test No. 208: Terrestrial Plant Test: Seedling Emergence and Seedling Growth Test
Federal Quality Association Compost (ed.): (Bundesgütegemeinschaft Kompost e.V. (Hrsg.))	Manual of methods for analysing organic fertilisers, soil improver and substrates

– this certification scheme
– the general terms and conditions of DIN CERTCO
– Testing-, Registration- and Certification Regulations of DIN CERTCO
– the schedule of fees in its most current version

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, wet strengtheners, chain extenders, antiblock agents, printing inks).
Blank compost	Compost obtained from a parallel process according to B 4 without addition of sample material
Blend	Physical mixture of 2 or more materials without reactive process.
Certification	Proof of conformity with the requirements of the named standards as well as with this certification scheme for final products. A licence to use the mark is granted.
Compostable material	Material meeting the requirements of this certification scheme.
Continuous phase	The background phase (polymer 1) of a multiphase 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	Carrier Bags, materials or intermediates according to this certification scheme. The classification of subtypes 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 subtypes shall be made according to Section 6.4.

Product	Carrier bag that is disposed of as waste (for composting) after use, is manufactured from polymeric materials or intermediates and frequently also contains additives. The classification of subtypes shall be made according to Section 6.4.
Production facility	Location at which production of manufactured items according to this certification scheme is carried out. This is not necessarily identical to the certificate holder's address.
PFAS	Organofluorine substance containing carbon-fluorine bonds and carbon-carbon bonds but also other heteroatoms

4 Product requirements

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

- Compliance with the threshold values named in Table 1 and the requirements on control of constituents Section 6.2.1 of DIN EN 17427, respectively.

- Ultimate biodegradability (90 % absolute biodegradation, or 90 % compared with a suitable reference substrate within not more than 12 months, according to DIN EN ISO 17556 not more than 24 months). Evidence has to be proven via a test according to the standards named under Section 2.

- For organic additives present in a manufactured item at concentrations of 1 % to 15 % of dry mass referred to the manufactured item, the ultimate biodegradability has to be evidenced separately.

- As an alternative to testing the single organic constituent used between 1 % and 15 % (by dry mass), the level of biodegradation of that organic constituent can be determined using an artificial blend of the same material composition consisting of at least 15 % (by dry mass) of this organic constituent. In case that this defined artificial blend meets the criteria specified, then the organic constituent in question is considered to be biodegradable in the context of the standard EN 17427 and can be used at the same or lower concentration in the same material composition on the condition that the co-substrate is present as tested in the artificial blend.

- Per- and polyfluoroalkyl substances (PFAS) shall not be intentionally added to a manufactured item (declaration of compliance as part of the application form).

- Each substance of very high concern (SVHC) that exceeds a concentration limit of 0.1 % (by weight) and appears on the Candidate List of substances of very high concern for Authorization should not be applied[1].

- After composting for no more than 180 days, no more than 10% of the tested samples' original dry weight shall be found in a > 2 mm screen fraction. Evidence has to be demonstrated via a test according to Section B 3 (disintegration testing).

- The germination rate and plant biomass of both plant types grown on the compost using test substance has to be higher than 90 % than the corresponding blank compost. Evi-

[1] Candidate List of substances of very high concern: https://echa.europa.eu/candidate-list-table

dence has to be demonstrated via a test according to the standards named under Section B 4.

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

- The total sum of the organic compounds smaller 1 % dry weight for which biodegradability need not be determined shall not exceed 3 % dry weight of mass.

- The difference in the observed mortality as well as in the biomass of surviving adult earthworms between a soil exposed to the test material and the corresponding blank soil not exposed to the test material shall be less than 10 % of those from the corresponding blank soil. Evidence has to be demonstrated via a test according to the standards named under Annex B 4).

- The nitrite formation in soil exposed to the test material shall be more than 80 % of those from the corresponding blank soil not exposed to the test material. Evidence has to be demonstrated via a test according to the standards named under Annex B 4.

- Clear identification of the sample according to Section 6.2.3 of DIN EN 17427. FTIR spectra, maximum thickness/grammage are mandatory to identify the materials.

5 Testing

5.1 General information

To carry out the tests necessary for the evaluation and certifications, DIN CERTCO uses testing laboratories it has recognised.

If applicable, test reports according to the certification schemes, “Products made of compostable materials” (“Seedling” and/or “DIN-Geprüft industrial compostable”), “Products made of compostable materials for home and garden composting” and “Additives harmless for the composting process” can be accepted.

All documents have to be submitted in German or English.

5.2 Types of tests

5.2.1 Initial test (Type testing)

The initial test is a type test intended to establish whether the manufactured item meets the requirements according to Section 4 of this certification scheme.

Section 6.2 shows which tests are necessary for individual cases.

5.2.2 Verification test (Control test)

Verification testing is performed on certified carrier bags, intermediates and materials.

Verification testing is performed in recurring, predefined intervals and establishes whether the certified carrier bags, intermediates or materials in production phase correspond to the manufactured item tested during initial certification.
This should be evidenced on schedule via a test report with positive results from a testing laboratory recognised by DIN CERTCO.
Test reports are assessed by DIN CERTCO.

For this purpose, 10 samples of the certified carrier bags or sufficient amount of material or intermediate are obtained from manufacturers' production facilities and provided to DIN CERTCO at his own expense.

In the case of multiple certifications of the same certified manufactured item in the field of compostable materials at DIN CERTCO, one evidence of a verification test per manufactured item is sufficient.

5.2.3 Supplementary testing

Supplementary testing is performed when supplements, expansions or additions (see Section 6.14) are intended for a certified carrier bag, intermediate or material that may have an influence on conformity with the underlying requirements.

Type and scope of supplementary testing will be determined by DIN CERTCO.

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

If defects are detected in a special test, or if a special test is performed due to a stop in production, then the certificate holder shall bear the costs of the examination procedure.

If 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 carrier bags, intermediates and materials used for initial, verification and extension testing are usually delivered by the certificate holder or applicant to the DIN CERTCO approved testing laboratory, which has been commissioned to perform the tests. The applicant 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 basis for assessment.

5.4 Test procedure

Testing universally has to be performed according to one or more of the standards named above in Section 2.

According to DIN EN 17427, the following tests are required according to the respective Sections of this certification scheme:

- Chemical characterisation according to Section B 1.

- Testing of ultimate biodegradability according to Section B 2 with a maximum duration of 12 months.

- Testing of the quality of the composts (ecotoxicity) according to Section B3.

- Testing of compostability under simulated home composting conditions (disintegration with a duration of max. 6 months). Certification is performed with the maximum layer/ seam/handle/drawstring/etc. thicknesses determined in testing according to Section B 3.

- Additionally, for identifying the manufactured item it is necessary to perform FTIR spectra 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 directly sent by the testing laboratory. The language of the test report shall be German or English.

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

The test report should correspond to DIN EN ISO/IEC 17025 and ought to contain at least 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 needs also to 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 carrier bag, intermediate or material by DIN CERTCO on the basis of test reports submitted by testing laboratories recognized by DIN CERTCO. In doing so, the carrier bags, intermediates or materials being certified for conformity with the requirements named in Section 2, are examined and subsequently monitored. As this is a modular certification system, test requirements apply according to Section 6.2.

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

Should a reference be made to a carrier bag that has already been certified, then an additional agreement will be required from the certificate holder. References to certified carrier bags will only be possible if concerning an identical product.

6.1 Application for certification

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

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

- The original application for certification, with a legally binding signature and company stamp.
- Completed datasheet (part of the application form).
- List of production facilities, including complete address. If production is being carried out by companies other than the certificate holder, then the company's complete name and address should be submitted. Production can be carried out at various locations alternatively or simultaneously. In this case, all alternative production facilities have to be reported to DIN CERTCO upon application.
- Safety Data Sheets according to REACH for all substances being used to determine their suitability for composting (e.g. processing auxiliaries, printing inks, etc.).
- If required, an up-to-date test report according to Section 5.5 (see Section 5.4 and Section 6.2 and Section A), when the test has not been contracted by DIN CERTCO within the scope of an ongoing certification process.
- Details on construction and layer thickness, if applicable.
- Density or grammage or base weight, if applicable, e.g. for paper, non-wovens or expanded materials.
- Drawings, with data on all wall and layer thicknesses (d_{max}), if applicable.
- Test report on an infrared transmission spectrum according to Section C.
- Density or grammage or base-weight, if applicable, e.g. for paper, non-woven and expanded items.

  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.

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 carrier bags, intermediates or materials being certified, the tests named in the following will be required.

If assessment is finished with positive results and a positive decision is made regarding the application, the certification will be issued for the maximum layer thickness determined via testing according to Section B 4 and published according to Section 6.10.

Depending on composition and structure of the carrier bags, intermediates or materials a combination of the requirements named may become necessary.

6.2.1 Manufactured items consisting of materials 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 should be submitted along with the application form.

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

b) Safety Data Sheets according to REACH for all substances being used to determine substances' suitability for composting.

c) If substances' harmlessness cannot be determined using the Safety Data Sheet, then a testing of quality of the compost need to be performed (plant ecotoxicity, earthworm toxicity, nitrification test). This is coordinated with DIN CERTCO and, if applicable, with the testing laboratory.

d) Test report on the chemical characterisation as specified in Section B 1.

e) Test report on testing of ultimate biodegradability as specified in Section B 2.

f) Test reports on quality of the compost as specified in Section B 4 (plant ecotoxicity, earthworm toxicity and nitrification test).

g) Test reports on testing of compostability under simulated home composting conditions as specified in Section B 3 (disintegration) after composting for no more than 6 months.

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

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 with existing and valid test reports according to Section 4, and no further additives are used, the following documents and information have to 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 simulated home composting conditions as specified in Section B 3 (disintegration) after composting for no more than 6 months.

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

d) Test of maximum thickness and/or grammage of the carrier bags.

The test for disintegration according b) can be omitted if the applied thickness of the blend made of two certified materials does not exceed the applied thickness of the respective material certified according to this certification scheme with the lower applied thickness.

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 ranges. 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. As long as the continuous phase remains identical, different mixture proportions have no influence on compostability. The applicant has to 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 B3 - 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 of 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 should be determined in coordination with DIN CERTCO and, if applicable, the testing laboratory. This requires proof that the material forming the continuous phase does not change within the range (material B instead of material A is the continuous phase). A disintegration test is required for each continuous phase that occurs. It ought to be demonstrated using electron microscopy that there is no phase change within the requested range.

Ranges in blends made from 3 different materials:

It is possible to register composition ranges of three different materials that have already been 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 within the blend remains inside a certain threshold, some of the tests may be omitted. This should be determined in coordination with DIN CERTCO and the testing laboratory. This requires proof that the continuous phase does not change within the range. A disintegration test is required for each continuous phase that occurs. It ought to be demonstrated using 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 (this shall be evidenced in the certification procedure):

Determination of disintegration properties with material A as continuous phase:

A/B/C = 60/20/20

Determination of disintegration properties with material B as continuous phase:

A/B/C = 20/60/20

Determination of disintegration properties with material C as continuous phase:

A/B/C = 20/20/60

6.2.3 Manufactured items consisting of natural organic substances

If exclusively chemically unmodified constituents of natural origin (e.g. wood, wood fibre, cotton fibre, starch, paper pulp or jute) are used for the manufactured item, such items are accepted by DIN CERTCO as being biodegradable without testing. The following documents and information have to be submitted along with the application form:

a) Disclosure of chemical composition (including all ingredients at concentrations below 1 % of mass).

b) Safety Data Sheets according to REACH for all substances being used to determine substances' suitability for composting.

c) If substances' harmlessness cannot be determined using the Safety Data Sheet, then a testing of quality of the compost should be performed (plant ecotoxicity, earthworm toxicity, nitrification test).

d) Test report on the chemical characterisation as specified in Section B 1.

e) Test reports on quality of the compost as specified in Section B 4 (plant ecotoxicity, earthworm toxicity and nitrification test).

f) Test reports on testing of compostability under simulated home composting conditions as specified in Section B 3 (disintegration) after composting for no more than 6 months.

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

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

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 has to 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.

d) If substances' harmlessness cannot be determined using the Safety Data Sheet, then a testing of quality of the compost should be performed (plant ecotoxicity, earthworm toxicity, nitrification test). This is coordinated with DIN CERTCO and, if applicable, with the testing laboratories or the assessment committee.

e) Test report on the chemical characterisation as specified in Section B 1.

f) Test reports on quality of the compost as specified in Section B 4 (plant ecotoxicity, earthworm toxicity and nitrification test).

g) Test reports on testing of compostability under simulated home composting conditions as specified in Section B 3 (disintegration) after composting for no more than 6 months.

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

The requirements according to 6.2.9 apply accordingly for the additives being used.

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

– Evidence of continuous compliance with the threshold values according to Table 1 of DIN EN 17427 via a suitable quality assurance system.

– An additional chemical analysis performed annually according to Section B 1 within the scope of annual control testing according to 5.2.2.

Certification of carrier bags, intermediates and/or materials made from paper/recycled paper requires information on the maximum layer thickness and grammage. Both additional conditions have to be fulfilled.

6.2.5 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 have to 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.

c) If substances' harmlessness cannot be determined using the Safety Data Sheet, then a testing of quality of the compost has to be performed (plant ecotoxicity, earthworm toxicity, nitrification test). This is coordinated with DIN CERTCO and, if applicable, with the testing laboratories or the assessment committee.

d) 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.

e) Safety data sheets according to REACH are to 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 has to be supplied for each individual filler or processing

auxiliary. Alternatively, chemical characterisation according to Section B 1 has to be performed.

f) Test reports on testing of compostability under simulated home composting conditions as specified in Section B 3 (disintegration) after composting for no more than 6 months.

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

Should various portions of the materials named in Section A be used, then the test should 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 B3 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:

– In subgroup 1.1 or Sections 1.2.1, 1.2.2 or 1.2.3: Other fillers or mixtures of fillers of the same subgroup or Section can be selected without restriction up to the certified upper limit, e.g. chalk can be replaced by talc without additional disintegration testing. An amendment of the certificate is required.

– In Section 1.2.4 and the subgroups 2.1 and 2.2: Proportions of the tested processing auxiliaries can be selected without restriction up to the certified upper limit, e.g. xylite can be replaced by sorbite without additional disintegration testing. An amendment of the certificate is required.

6.2.6 Manufactured items with coatings

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

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

The following documents and information have to 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.

d) If substances' harmlessness cannot be determined using the Safety Data Sheet, then a testing of quality of the compost should be performed (plant ecotoxicity, earthworm toxicity, nitrification test). This is coordinated with DIN CERTCO and, if applicable, with the testing laboratories or the assessment committee.

e) Test reports on testing of compostability under simulated home composting conditions as specified in Section B 3 (disintegration) after composting for no more than 6 months

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

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

6.2.6.2 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 have to 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.

d) If substances' harmlessness cannot be determined using the Safety Data Sheet, then a testing of quality of the compost should be performed(plant ecotoxicity, earthworm toxicity, nitrification test). This is coordinated with DIN CERTCO and, if applicable, with the testing laboratories.

e) Test reports on testing of compostability under simulated home composting conditions as specified in Section B 3 (disintegration) after composting for no more than 6 months.

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

6.2.6.3 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 have to be submitted along with the application form:

When using significant organic additives the following tests will be required in addition to the requirements stated under Section 6.2.9.

Testing of additives used between 1-15% dry mass:

a) Test report on testing of ultimate biodegradability as specified in Section B 2.

And of the coated manufactured item:

b) Test report on testing of ultimate biodegradability as specified in Section B 2.

c) Test reports on quality of the compost as specified in Section B 4 (plant ecotoxicity, earthworm toxicity, nitrification test). Alternatively, the ecotoxicity testing can be performed on each single substance.

d) Test reports on testing of compostability under simulated home composting conditions as specified in Section B 3 (disintegration) after composting for no more than 6 months.

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

6.2.6.4 Coating using certified materials being used in portions more than 1 % of mass

The following documents and information has to 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.

d) If substances' harmlessness cannot be determined using the Safety Data Sheet, then a testing of quality of the compost has to be performed(plant ecotoxicity, earthworm toxicity, nitrification test). This is coordinated with DIN CERTCO and, if applicable, with the testing laboratories or the assessment committee.

e) Test reports on testing of compostability under simulated home composting conditions as specified in Section B 3 (disintegration) after composting for no more than 6 months

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

6.2.7 Manufactured items consisting of multiple layer structures made of registered 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 in the sense of this certification scheme (without using auxiliary materials), then the following documents and information must be submitted along with the application form:

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

b) Disclosure of the composition of each layer (including additives at concentrations 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 testing). This is coordinated with the Certification Body and, if applicable, with the testing laboratories or external experts.

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

f) Test reports on testing of compostability under simulated home composting conditions as specified in Section B 3 (disintegration) after composting for no more than 6 months.

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

6.2.8 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:

a) Test reports on testing of compostability under simulated home composting conditions as specified in Section B 3 (disintegration) after composting for no more than 6 months.

b) Infrared spectrum according to Section C.

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

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 have to be met.

6.2.9.1 Use of harmless additives with less than 1 % of mass per additive and less than 3 % of mass of non-biodegradable additives

According to Section A2.1 of DIN EN 17427, organic additives whose biodegradability has not been separately determined can be used on the following conditions:

– Less than 1 % of mass per organic additive.

– Less than 3 % 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.

c) If substances' harmlessness cannot be determined using the Safety Data Sheet, then a testing of quality of the compost should be performed according to Section B4 (plant ecotoxicity, earthworm toxicity, nitrification test). This is coordinated with DIN CERTCO and, if applicable, with the testing laboratories or the assessment committee.

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

6.2.9.2 Using printing inks

It is generally possible to use printing inks. In addition to the requirements named in Section 6.2, the printed product should also comply with the threshold values in Table 1 of DIN EN 17427.

No more than 1 % of mass of dry printing ink per colour (e.g. red, green, etc.) may be used, and a total of no more than 3 % printing ink. Compliance with the thresholds according to Table A.1 in DIN EN 17427 is required.

Additionally, the following documents and information have to 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.

b) If substances' harmlessness cannot be determined using the Safety Data Sheet, then a testing of quality of the compost should be performed(plant ecotoxicity, earthworm toxicity, nitrification test). This is coordinated with DIN CERTCO and, if applicable, with the testing laboratories or the assessment committee.

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

d) 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.

e) Test reports on quality of the compost as specified in Section B 4 (plant ecotoxicity, earthworm toxicity, and, nitrification test).

If the individual printing inks are tested, then 80 % of the threshold from table A 1 in DIN EN 17427 may not be exceeded with the maximum colour quantity being requested.

If different colours are 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 according to Section B 1:

– Color A: 0,1 % of mass
– Color B: 0,4 % of mass
– Color C: 0,6 % of mass

The single use of each colour is therefore limited to 0,1 % of mass 0,4 % of mass and 0,6 % of mass, respectively. Is colour A in use, the overall amount of printing colour combined is limited to 0,1 %, for the use of colour B (without colour A) 0,4 % only, etc. This is also valid for mixtures of pigments used as printing colours.

6.2.9.3 Use of adhesives

Remark:

This does not refer to certified materials used as adhesive.

If an adhesive is used with mass portions of less than 1 % of mass, then the following documents and information have to 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.

c) If substances' harmlessness cannot be determined using the Safety Data Sheet, then a testing of quality of the compost should be performed(plant ecotoxicity, earthworm toxicity, nitrification test). This is coordinated with DIN CERTCO and, if applicable, with the testing laboratories or the assessment committee.

d) Test reports on testing of compostability under simulated home composting conditions as specified in Section B 3 (disintegration) after composting for no more than 6 months.

e) Infrared Transmission spectrum according to Section C.

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

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

When using significant organic additives the following tests will be required in addition to the requirements stated under Section 6.2.9.

Testing of additives:

a) Test report on testing of ultimate biodegradability as specified in Section B 2.

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

And of the manufactured item:

c) Test reports on quality of the compost as specified in Section B 4 (plant ecotoxicity, earthworm toxicity, and, nitrification test).

d) Test reports on testing of compostability under simulated home composting conditions as specified in Section B 3 (disintegration) after composting for no more than 6 months.

e) Test report on the chemical characterisation as specified in Section B 1. Alternatively, the testing can be performed on each single substance.

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

6.2.10 Use of fibres made of already certified materials or intermediates

As there are different manufacturing processes for non-woven fibre products, any change of the manufacturing process should result in the need to be re-tested for disintegration according to Section B3. Information on the manufacturing process shall be given for the assessment.

For the change of Avivage (finisher) if the replacement Avivage is biodegradable, no additional disintegration testing according to Section B4 will be required. If the replacement Avivage (finisher) is not biodegradable, disintegration testing according to Section B 4 will be required.

Additional 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 (plant ecotoxicity, earthworm toxicity, nitrification test). This is coordinated with the Certification Body and, if applicable, with the testing laboratories.

c) Test reports on testing of compostability under simulated home composting conditions as specified in Section B 3 (disintegration) after composting for no more than 6 months.

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

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

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

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 have to be met.

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

a) List of all additives, including portions of mass.

b) Safety Data Sheets according to REACH for all substances being used to determine substances' suitability for composting.

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

d) Test reports on testing of compostability under simulated home composting conditions as specified in Section B 3 (disintegration) after composting for no more than 6 months.

e) Test reports on quality of the compost as specified in Section B 4 (plant ecotoxicity, earthworm toxicity, and, nitrification test).

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

6.3 Design requirements

All biodegradable materials used in the manufactured item should comply with the maximum degradable layer thickness and grammage yielded in the test according to Section B 3.

6.4 Definition of types, subtypes and product families

Carrier bags, intermediates and/or 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:

- contents.
- Shapes.
- Product characteristics beyond differences in dimensions.
- Intended use (e.g. Shopping Bags, Fruit & Vegetable Bags, (Bio)Waste Bags

Ranges in connection with materials are grouped into one certificate.

An individual certificate will be issued for each type.

A subtype is defined as the manufactured item that is different based on dimensions. Multiple alternative subtypes are grouped into one product family of alternative dimensions.

- Dimensions.
- Materials used.
- Printing inks or print layouts used.

6.5 Sub-licences

According to DIN CERTCO's General Terms and Conditions and the Testing-, Registration- and Certification Regulations, sub-licences are necessary if certified carrier bags, intermediates or materials are intended to be brought onto the market on behalf of companies other than the main certificate holder.

6.5.1 Sub-licences with and without self-production

It is possible to issue sub-licences for all carrier bag, intermediates or materials as defined in this certification scheme. They facilitate bringing certified carrier bags, intermediates or materials into circulation on behalf of the sub-licence holder. Sub-licences depend on the validity of the corresponding main certificate. Carrier bags, intermediates or materials should not be amended (e.g. printed or coloured) by sub-licence holders.
Documents and information required for application:

a) Application form with stamp and signature.

b) Sub-licence holder's declaration that the main certificate holder's products enter into commercial trade without being changed.

c) Declaration of confirmation from the main certificate holder that a sub-licence shall be issued.

A sub-licence can be issued

– With its own individual registration number.

– 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 carrier bags, intermediates and/or materials. They facilitate bringing certified carrier bags, intermediates or materials into circulation on behalf of the production facility's owner. Sub-licences depend on the validity of the respective main certificate. The production facility owner has to produce the manufactured items according to the specifications indicated by the holder of the main licence.

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

Documents and information required for application:

a) Application form with stamp and signature.

b) Declaration from the production facility operator that the carrier bags, intermediates or materials are being manufactured according to the main certificate's stipulations.

c) Declaration of consent from the main certificate holder that a sub-licence may be issued.

d) Forwarding of a datasheet completely filled out by the production facility operator accordingly.

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

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 assessment. The assessment is made with the aid of the test report as to whether the carrier bags, intermediates or materials meet the requirements of this certification scheme and of the underlying standard.

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

6.8 Registration numbers of carrierbags, intermediates and materials

Composition of the registration number:

– Carrier Bags	P7BPxxxx
– Materials	P7BWxxxx
– Intermediates	P7BHxxxx

6.9 Certificate and the right to use the mark

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 compostability mark "DINplus Home Compostable Carrier Bags" for manufactured items in conjunction with the respective registration number.

Carrier bags for which a right to use the compostability mark "DIN*plus* Home Compostable Carrier Bags" has been issued should be marked with the "DIN*plus* Home Compostable Carrier Bags" mark and the respective registration number.

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

For each respective type, a separate 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 and intermediates do **only** receive the right to use the "DINplus Home Compostable Carrier Bags" mark for **marketing and advertising purposes**. They are certified and receive individual registration numbers. For each respective type, one 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).

Sub-license holders gain the same right to use the mark as the respective main certificate holder regardless of whether an own registration number has been issued.

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

6.10 Publication

All certificate holders can be viewed on the daily up-dated homepage of DIN CERTCO (www.dincertco.de) under <Certificates and Registrations>. Manufacturers, retailers, users and consumers use this research possibility for obtaining information on certified products.

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

6.11 Validity of certificates

The validity of the certificates for carrier bags is 3 years, for intermediates and materials it is 6 years. The period of validity is shown on the certificate. On expiry of the certificate, the right to use the mark also expires.

6.12 Renewal of certificates

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

The carrier bags', intermediates' or materials' current composition hast to be submitted with the application for renewal. For renewals, DIN CERTCO will perform an assessment based on this certification schemes valid at the time of renewal and may request supplemental documentation.

Furthermore, if no deviations were found during the verification tests performed during 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 the respective registration number expires without the necessity for explicit notification from DIN CERTCO.

Furthermore, certificates can expire if, for example:

- the surveillance according to Section 0 is not performed punctually or completely.
- the compostability mark "DIN*plus* Home Compostable Carrier Bags" is misused by the certificate holder.
- the requirements laid down in this 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 certified manufactured item

The certificate holder is obliged to notify DIN CERTCO of all alterations to the manufactured item without delay. DIN CERTCO will decide the extent to which testing according to Section 5.2.3 should be performed and whether the change is significant.

Should DIN CERTCO determine a substantial alteration, the certificate with the corresponding registration number shall expire. For the modified manufactured item, a new application for initial certification may be submitted.

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

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 for DIN CERTCO to decide whether these amendments require a complementary examination. The design-types shall be entered in the certificate for the already certified manufactured item and, provided that the conditions are fulfilled, shall be regarded as an integral part of same.

6.14.2 Alterations to the basic test specifications

If the basic test specifications for certification are modified, an application for the alteration of the certification shall be generally submitted within 6 months of receiving written 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 5.5).

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

In the event that a certified carriermanufactured item on the market is found to be defective, the certificate holder shall be summoned in writing by DIN CERTCO to rectify the defects.

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

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

The defects have also to be rectified without delay in installed manufactured items or manufactured items in storage. The manufacturer has to 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 manufactured items in question again fulfils the stipulated requirements.

In the case of defects that have no influence on the technical safety or functionality of the manufactured items (minor defects), the manufacturer has to submit suitable proof to DIN CERTCO within 3 months that the defects in the manufactured items in question have been rectified.

Should the manufacturer fail to observe these deadlines, he and the distributor of the manufactured items carrierwill no longer be permitted to use the ”DINplus Home Composta-ble Carrier Bags” mark.

Should grounds for complaint continue to exist, DIN CERTCO shall initially suspend the certificate and at the same time issue a final deadline for the rectification of the defects. Should the certificate holder fail to meet this demand, or fail to meet it within the grace

period, or if it is again not possible to prove that the defects have been rectified, the certificate shall be annulled.

7 Surveillance

7.1 General

The constant surveillance of the certified manufactured item is an integral component of the certification itself during its validity.

7.2 Surveillance by the manufacturer

The manufacturer has to 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 manufactured item with the requirements laid down in this 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 Carrier Bags

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 carrier bags from various production facilities. If there are 3 alternative production facilities, then one sample should be alternatingly submitted from each production facility for the control test. If there are more than 3 alternative production facilities, then samples should be submitted on an alternating basis of $\sqrt{n}$ of the 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 the carrier bags with the “DIN*plus* Home Compostable Carrier Bags” mark and corresponding registration number.

b) Check of compliance with the certified maximum admissible wall/layer thickness (d_{max}), density and/or grammage using the samples submitted.

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.

d) For this purpose, one of the 10 submitted samples is used to perform an infrared transmission spectrum according to Section C. 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 has to show that the two sets of polymeric materials, intermediate and/or additives are identical to the polymer materials or intermediates and additives from type testing.

e) Performance of one chemical characterisation according to Table 1 of DIN EN 17427 during the validity.

f) When using recycled paper, the performance of a chemical analysis according to Table 1 of DIN EN 17427 is required annually.

7.4.2 Materials and intermediates

The verification 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 has to be alternatingly submitted from each production facility for the control test. If there are more than 3 alternative production facilities, then samples should 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 (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 from one of the submitted 5 samples is used for this purpose. Evidence is demonstrated by comparing the results of the spectral analyses submitted during type testing with the results of the spectral analyses for control testing. When compared, the spectra need to show that the two sets of polymeric materials or intermediates and additives are identical to the polymer materials or intermediates and additives from the type testing.

d) Performance of one chemical analysis according to Table 1 of DIN EN 17427 during the validity.

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

If a manufacturer has 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 carrier bag(s) based on self-owned certificates exists at the same time, the verification testing needs to be performed on each type according to Section 7.4.1..

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 0, the remaining 9 samples should also be tested. At least 9 of the 10 tested samples of the certified product has to meet the specified requirements.

If the criteria are met by fewer than 9 samples, another 10 samples will be tested immediately. If at least 9 of the 10 samples tested comply with the requirements of this certification scheme applying at the time when the certificate was issued, then no complaint will be made.

7.5.3 Infrared Transmission Spectra (Identification of materials)

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 should 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 in written form and requested to ensure compliance with the criteria within 3 months after receipt of such notice.

During the period of suspension of the certificate, products marked with the "DIN*plus* home-compostable carrier bag" label cannot be placed on the market by the certificate holder.
If a complaint is made, the control test will be repeated within 3 months. If this re-test yields no further cause for complaint, the certificate will be set valid again. Should reason for complaints continue to exist, the certificate will be cancelled. The latest re-test named will not apply as a regular control test, but rather as a special test for which the certificate holder has to cover the costs.

A Fillers, colors and processing auxiliaries

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

Main Group 1: Fillers

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

– Aluminium silicates
– Ammonium carbonate
– Calcium carbonate
– Calcium chloride
– Dolomite
– Iron oxides (pigment)
– Gypsum
– Mica
– Graphite (pigment)
– Kaolin
– Chalk
– Sodiumcarbonate
– Natural silicates
– Carbon black (pigment)
– Silicon dioxide; quartz
– Talc
– 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

Main Group 2: Processing auxiliaries

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

- Benzoic acid/sodium benzoate
- Euric acide amide/euric amide
- Glycerol monostearate
- Glycerol monooleate
- Natural waxes
- Polyethylene glycol (up to molecular weight 2000)
- Metal Stearates, Calcium stearate

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

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

B Tests

B 1 Chemical characterisation according to DIN EN 17427

The chemical characterization is conducted in accordance with the requirements of DIN EN 17427, Table 1.

B 2 Testing of ultimate biodegradability as specified in DIN EN 17427

Testing of ultimate biodegradability is conducted in accordance with the criteria of DIN EN 17427 by one of the following methods (validity criteria specified in Section 6.3.4 of DIN EN 17427):

– 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-, Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium - Method by analysis of evolved carbon dioxide

Alternatively, one of the following methods can be used:

– 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 17556 Plastics- Determination of the ultimate aerobic biodegradability of plastic materials in soil by measuring the oxygen demand in a respirometer or the amount of carbon dioxide evolved

For the use of DIN EN ISO 17556 the 90% pass level need to be met within 24 months using soil as inoculum.
For single organic constituents used between 1-15 % in dry weight, ready biodegradation can be proven by OECD 301 A-F or OECD 310.

B 3 Disintegration under simulated well-managed home composting conditions

Testing of disintegration shall be performed according to the following test method with the pass/fail criteria, validity and reporting criteria specified therein:

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

Table 1 from prEN 17428 — 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 29073-1
Textiles	EN ISO 5084	–
Tissue paper and tissue products	–	EN ISO 12625-6

B 4 Testing of the quality of the composts

B 4.1 Preparation for ecotoxicity testing

Ecotoxicity of the finished items and the remaining degradation products shall be performed and assessed according to the procedures mentioned in Sections B 4.2, B 4.3 and B 4.4 using test soil prepared according to Annex A of DIN EN 17427.

B 4.2 Plant toxicity as specified in DIN EN 17427

Test items that have been already assessed for plant toxicity according to EN 13432, EN 14995, ISO 17088, ISO 18606, ASTM D6400, ASTM D6868, AS 4736, AS 5810, NF T 51-800 or equivalent standard specifications and fulfilled the pass level for plant toxicity laid down in the standard specifications do not need to be retested.

The germination rate and plant biomass of the tested plant species in soil exposed to the test material shall be greater than 90% of the corresponding value of blank soil not exposed to the test material.

The acute toxicity test on plant growth is carried out according to the criteria of DIN EN 17427 section 5.3.2.2 with the modifications specified in Annex A of DIN EN 17427 using one of the following methods:

- EN ISO 11269-2 — Soil quality - Determination of the effects of pollutants on soil flora - Part 2: Effects of contaminated soil on the emergence and early growth of higher plants (ISO 11269-2:2012)
- OECD 208 — OECD Guidelines for the Testing of Chemicals, Section 2, Effects on Biotic Systems — Test No. 208: Terrestrial Plant Test: Seedling Emergence and Seedling Growth Test

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

1. min. 2 weeks after 50 % of the seedlings in the control have emerged, plants are harvested and weighted

2. Validity: min. 80 % of control seeds should produce healthy seedlings

Deviating from the standard, the use of minimum 50 seeds per replicate is required, if the test is performed using barley. It is possible to test theoretical samples.

B 4.3 Earthworm tests as specified in DIN EN 17427

Adverse effects of materials on mortality and biomass of adult earthworms according Section 6.5.2.3 and shall be determined in an acute earthworm test Annexe B 3.2.1 or in a chronic toxicity earthworm test according Annex B 3.2.2 of DIN EN 17427.
Test items that have been already assessed for toxicity to earthworms following AS 4736 and AS 5810 and fulfilled the pass level for toxicity to earthworm laid down in the standard specifications do not need to be retested.

4.3.1. Acute toxicity earthworm test

The difference in the observed mortality as well as in the biomass of surviving adult earthworms between a soil exposed to the test material and the corresponding blank soil not exposed to the test material shall be less than 10 % of those from the corresponding blank soil.

Acute toxicity on earthworms shall be determined according DIN EN 17427, with the following method with modifications specified in Annex B of DIN EN 17427:

– EN ISO 11268-1 Soil quality - Effects of pollutants on earthworms - Part 1: Determination of acute toxicity to Eisenia fetida/Eisenia andrei

4.3.2. Chronic toxicity earthworm test

Alternative to B4.2.1: After an incubation period of 28 days the difference in the observed mortality as well as in the biomass of surviving adult earthworms between a soil exposed to the test material and the corresponding blank soil not exposed to the test material shall be less than 10 % of those from the corresponding blank soil.

After an incubation period of 56 days the difference in the observed number of offspring between a soil exposed to the test material and the corresponding blank soil not exposed to the test material shall be less than 10 % of those from the corresponding blank soil.

Chronic toxicity on earthworms shall be determined according DIN EN 17427, with the following method with modifications specified in Annex C of DIN EN 17427:

– EN ISO 11268-2 Soil quality - Effects of pollutants on earthworms - Part 2: Determination of effects on reproduction of Eisenia fetida/Eisenia andrei

B 4.4 Nitrification inhibition test with soil microorganisms as specified in DIN EN 17427

The nitrite formation in soil exposed to the test material shall be more than 80 % of those from the corresponding blank soil not exposed to the test material.

The effects of materials on the microbial nitrification activity in soil shall be determined with the following method with the modifications specified in Annex D of DIN EN 17427:

– ISO 15685 Soil quality -- Determination of potential nitrification and inhibition of nitrification -- Rapid test by ammonium oxidation

Nitrification inhibition test reports according to EN 17033 do not fulfil the requirements stated in this certification scheme, as the sample loading is 1 % only in EN 17033.

C Infrared transmission spectrum

The spectrum shall be recorded at least 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.