TÜVRheinland®
DIN CERTCO
Precisely Right.

Certification Scheme

Additives harmless to the composting process

according to

DIN EN 13432

if applicable, in connection with

ASTM D 6400
ASTM D 6868
DIN EN 14995
NF T 51-800
ISO 17088
ISO 18606
AS 4736
AS 5810
DIN EN 17033
ISO 23517

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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.

This certification scheme is based on DIN EN 13432 if applicable in connection with ASTM D 6400, ASTM D 6868, DIN EN 14995, NF T 51-800, ISO 17088, ISO 18606, AS 4736, AS 5810 and/or DIN EN 17033 and/or ISO 23517 standard(s). It gives manufacturers of additives that are suitable for composting the opportunity to have their products certified by an independent third party. The certification process for products made of compostable materials can be simplified and speeded up by using additives that have been certified by DIN CERTCO.

According to the General Terms and Conditions (GTC) of TÜV Rheinland DIN CERTCO and the Testing, Registration and Certification Regulations of DIN CERTCO, this certification scheme forms the basis for suppliers of biodegradable and non-biodegradable additives to mark their products with the Certification Mark “DIN-Geprüft”.
They thereby document that their additive meet all requirements of the applicable DIN EN 13432 standard and, if applicable, additionally the requirements of ASTM D 6400, ASTM D 6868, DIN EN 14995, NF T 51-800, ISO 17088, ISO 18606, AS 4736, AS 5810, DIN EN 17033 or rather ISO 23517 standard(s) in accordance with a specified maximum usable amount.

The Certification mark “DIN-Geprüft“ gives the confidence, that an independent, neutral and competent body has carefully examined and assessed the product based on the test criteria. Tin addition, hird-party surveillance, also during the current production process, ensures that the quality of the product is maintained. The customer thus receive an added value, which they my take into account when decinding on purchase.

Additives shall receive the Certification Mark “DIN-Geprüft” upon meeting the requirements listed under section 3 according to the procedure described in this certification scheme.

All list of all valid certificate holders, which is updated on a daily basis, can be accessed via the website of DIN CERTCO (www.dincertco.de).

Amendments

This certification scheme differs from the certification scheme “Additives which are harmless to the composting process according to DIN EN 13432” (2020-08) as follows:

a) Change of requirements to ISO 17088:2021 and ASTM D 6400:2023 version (throughout the document)
b) Addition of ISO 23517 standard (throughout the document)
c) Addition of possibility to certifiy inorganic additives with > 1 % (e.g. filler) (3.1; Scope)
d) Summarize of Section 3.1.1 and 3.1.2 to Section 3.1
e) Summarize of Section 3.2.2 and 3.2.3
f) Change of surveillance test for masterbatches (chemical analysis once during validity) (4.2.2)
g) Surveillance of sub-types: 0.6 x $\sqrt{n}$ of the certified sub-types. The result is rounded up or off (4.2.2)
h) Addition of reference to “Annex A” (positive list) of other certification schemes (4.4.)
i) Addition on requirements for Organic Fluorine (PFAS) and Other Hazardous Substances (A 1)
j) Addition of Sub-licences (5.3.)
k) Editorial changes

Certificates based on the former revision of the certification scheme will remain valid and will be changed as part of the next renewal.

Previous Editions

Certification scheme “Additives harmless to the composting process” according to DIN EN 13432 (2022-08)

Certification scheme “Additives harmless to the composting process” according to DIN EN 13432 (2018-03)

Certification scheme “Additives harmless to the composting process” according to DIN EN 13432 (2016-04)

Certification scheme “Additives harmless to the composting process” according to DIN EN 13432 (2015-03)

Certification scheme “Additives which are harmless for the composting process according to DIN EN 13432” (2013-10)

Certification scheme “Additives which are harmless for the composting process according to DIN EN 13432” (2012-09)

Certification scheme “Additives which are harmless for the composting process according to DIN EN 13432” (2011-08)

CONTENTS

1 Scope

This certification scheme applies to additives used in the manufacture of products made of compostable materials that have been proven harmless to the composting process, according to DIN EN 13432 and contains, in conjunction with the basic documents mentioned below, all of the requirements for awarding the Certification Mark “DIN-Geprüft”.

The current version of the certification scheme applies to the following additive categories:

1. Non-biodegradable additives that may be used as product components in accordance with the requirements of DIN EN 13432:

   – Water-based inks
   – Solvent-based inks
   – Inorganic pigments
   – Organic colourants
   – Inorganic fillers

2. Biodegradable additives whose biodegradability has been proven separately:

   – Masterbatches based on biodegradable materials
   – Biodegradable additives
   – Biodegradable organic colourants

This certification scheme does not cover additives that catalyse the degradation of oxo-degradable plastics.

The certification scheme presented here specifies the requirements for the product itself as well as for the testing, surveillance and certification of the product.

2 Test and Certification Specifications

The following referenced documents are the basis for testing and certification. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

DIN EN 13432	Packaging – Requirements for packaging recoverable through composting and biodegradation – Test scheme and evaluation criteria for the final acceptance of packaging
ASTM D 5338	Test Method for Determining Aerobic Biodegradation of Plastic Materials Under Controlled Composting Conditions
ASTM D 5988	Standard Test Method for Determining Aerobic Biodegradation of Plastic Materials in Soil
ASTM D 6400	Standard Specification for Compostable Plastics
ASTM D 6868	Labeling of End Items that Incorporate Plastics and Polymers as Coatings or Additives with Other and Other Substrates Designed to be Aerobically Composted in Municipal or Industrial Facilities
ASTM D 6866	Test Methods for Determining the Biobased Content of Solid, Liquid, and Gaseous Samples using Radiocarbon Analysis

DIN EN 14995	Plastics – Evaluation of compostability – Test scheme and specifications
ISO 17088	Specifications for compostable plastics
ISO 18606	Packaging and environment – Organic recycling
NF T 51-800	Plastics – Specifications for plastics suitable for home composting
AS 4736	Biodegradable Plastics – Biodegradable Plastics suitable for Composting and other microbial Treatment
AS 5810	Biodegradable plastics – Biodegradable plastics suitable for home composting
DIN EN 17033	Plastics – Biodegradable mulch films for use in agriculture and horticulture – Requirements and test methods;
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 method
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
OECD 208	Terrestrial Plant Test Seedling Emergence and Seedling Growth Test
ASTM E 1676	Conducting Laboratory Soil Toxicity or Bioaccumulation Tests with the Lumbricid Earthworm *Eisenia Fetida* and the Enchytraeid Potworm *Enchytraeus albidus*
ISO 23517	Plastics – Soil biodegradable materials for mulch films for use in agriculture and horticulture – Requirements and test methods regarding degradation, ecotoxicity and control of constituents

– This certification scheme
– Certification scheme ”Products made of compostable materials (Seedling)“ by European Bioplastics e. V.
– Certification scheme “Products made of compostable materials (DIN-Geprüft)“ by DIN CERTCO
– Certification scheme “Products made of compostable materials for home and garden composting” by DIN CERTCO
– Certification scheme “Biodegradable in soil” by DIN CERTCO
– The General Terms and Conditions of TÜV Rheinland DIN CERTCO
– The Testing-, Registration and Certification Regulations of DIN CERTCO
– The associated schedule of fees of DIN CERTCO

3 Product Requirements

Additives to be used in the manufacture of products made of compostable materials are required to demonstrate compliance with the requirements of DIN EN 13432 by proving that they are harmless to the composting process. One/several of the standards ASTM D 6400, ASTM D 6868, DIN EN 14995, NF T 51-800, ISO 17088, ISO 18606, AS 4736, AS 5810, DIN EN 17033 or rather ISO 23517, may additionally be covered by the certification.

A maximum permissible concentration of the additive within the end product is defined for the purposes of certification. In certain circumstances, this may be higher than the maximum concentration that can actually be used in the end product. The use of certified additives does not eliminate the need for certification of the end product.

Evaluation and testing are based on the concentration of the particular additive in the end product to be certified as the maximum permitted quantity.

3.1 Non-biodegradable additives

- They must be harmless to the composting process (for inks: in printed form).
- They must fulfil the criteria specified in Annexe A 1.
- They must not have any negative effects on plant growth.
- In the case ISO 17088, AS 4736 and/or AS 5810 standard are used the following applies additionally: They must not have any negative effects on the worm species *Eisenia Fetida.*
- In the case DIN EN 17033 or/and ISO 23517 is used, the following applies additionally: They must not have any negative effects on the worm species *Eisenia Fetida* and must not influence nitrification negatively
- For printing inks/organic additives: The disposal of the dried colour as part of household waste is possible.Unless otherwise specified, the quantity of each additive contained in the product must not exceed 1 mass% of the end product (dry weight) individually and less than 5 mass% in total (dry weight).

3.2 Biodegradable additives

3.2.1 Masterbatches/colour batches

Master-/colour batches to be certified must meet the following requirements:

- The master-/colour batch must be harmless to the composting process taking into consideration all masterbatch components.
- The material used as the matrix must demonstrate its compliance with the requirements of DIN EN 13432 and, if applied for, with the ASTM D 6400, ASTM D 6868, DIN EN 14995, NT F 51-800, ISO 17088, ISO 18606, AS 4736, AS 5810, DIN EN 17033 and/or ISO 23517 standard according to the "Products made of Compostable Materials" certification scheme. It is possible to reference existing material registrations according to the certification scheme "Products made of Compostable Materials (Seedling or DIN-Geprüft)” and if applicable to the certification schemes “Products made of compostable materials for home and garden composting” and/or “Biodegradable in Soil”. The proof of a valid registration according the certification scheme(s) is sufficient.
- The master-/colour batches are not allowed to constrain the disposal of products containing those master-/colour batches.
- They must fulfil the criteria specified in Annexe A 1.

– None of the components of the masterbatch must have any ecotoxicological effects on plant growth.
– In the case AS 4736 or AS 5810 standard is used, the following applies additionally: None of the components of the masterbatch must have any negative effects on the worm species *Eisenia Fetida.*
– Where the maximum permitted quantity is used, the requirements stipulated in table A 1 of DIN EN 13432 must be complied with.
– In the case ASTM D 6868 standard is used, the following applies: plastic and polymeric additives must be biodegradable even if these are used in less than 1 mass% dry weight.
– In the case ISO 17088, DIN EN 17033 or/and ISO 23517 is used, the following applies additionally: They must not have any negative effects on the worm species *Eisenia Fetida* and must not influence nitrification negatively

The carrier material of the masterbatch must be identical to the end product material. Alternatively, additional tests (e.g. disintegration) may be required as part of the certification procedure according to the "Products made of Compostable Materials (Seedling or DIN-Geprüft)" and, if applicable, according to “Products made of compostable materials for home and garden composting” and/or “Biodegradable in Soil” certification scheme.

3.2.2 Other biodegradable additives

Biodegradable additives to be certified must meet the following requirements:

– They must be harmless to the composting process taking into consideration all components.
– They are not allowed to constrain the disposal of products containing those additives. The additives themselves must be biodegradable in accordance with the relevant standard requirements. This must be demonstrated by a suitable test report for test according to clause 4.4.
– For ASTM D 6400: Ligno-cellulosic substrates are permitted to fulfil the requirements of biodegradation by demonstrating > 95% of its carbon comes from biobased resources tested by means of ASTM D 6866.
– They must fulfil the criteria specified in Annexe A 1.
– They must not have any negative effects on plant growth.
– In the case ISO 17088, AS 4736 and/or AS 5810 standard is used, the following applies additionally: They must not have any negative effects on the worm species *Eisenia Fetida.*
– In the case ASTM D 6868 standard is used, the following applies: plastic and polymeric additives must be biodegradable even if these are used in less than 1 mass% dry weight.
– In the case DIN EN 17033 or/and ISO 23517 is used, the following applies additionally: They must not have any negative effects on the worm species *Eisenia Fetida* and must not influence nitrification negatively.

4 Testing

4.1 General Information

For the performance of the tests required as the basis for the assessment and certification of the products, DIN CERTCO avails itself of the test laboratories to which it has awarded recognition.

All submitted documents must be in German or English language.

4.2 Types of Tests

4.2.1 Initial Test (Type Test)

The initial test is a type test, which serves to determine whether the product meets the requirements laid down in section 3 of this certification scheme.

The following documentary evidence must be submitted for the initial test:

Water-based inks, solvent-based inks, inorganic pigments, organic colourants

- Safety data sheets for the individual colours
- Information about the pigments used in the individual shades, incl. quantities
- Information about the solvents used, incl. safety data sheets if applicable
- Test reports on the testing mentioned in section 4.4

Master-/Colour Batches

- Safety data sheets of the individual master-/colour batches
- Composition of the individual batches
- Safety Data Sheets of all batch ingredients
- Reference to registration of the material used as the matrix in accordance with the "Products made of compostable materials (Seedling or DIN-Geprüft)" and if applicable “Products made of compostable materials for home and garden composting” and/or “Biodegradable in Soil” certification scheme or, alternatively, evidence of its compliance with the requirements of DIN EN 13432 and, if applicable, other standards in accordance with the "Products made of Compostable Materials" (Seedling or DIN-Geprüft)" and if applicable “Products made of compostable materials for home and garden composting” and or “Biodegradable in Soil” certification scheme
- Test reports on the testing mentioned in clause 4.4

Other biodegradable additives

- Safety data sheet of the additive
- Composition of the additive
- Safety data sheets of all ingredients contained
- Test reports on the testing mentioned in clause 4.4

4.2.2 Verification Test (Control Test)

The verification test is conducted repeatedly at determined intervals and serves to ascertain whether the certified product corresponds to the type-tested product during the production phase.

The test must be evidenced on the due date by a positive test report.

Surveillance testing is conducted every 12 months and comprises the in the following named testing. If sub-types exist, the testing will focus on 0.6 x $\sqrt{n}$ 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 Annexe A.
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
– Performance of one chemical characterisation according to Annexe A during the validity.

4.2.3 Supplementary Test

A supplementary test shall take place when additions, extensions or modifications (see section 5.10) are made to the certified product, which may influence the product’s conformity with the pertinent, fundamental requirements.

The type and scope of the supplementary test shall be laid down on a case by case basis by DIN CERTCO in conjunction with the testing laboratory.

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

The type and scope of the special test shall be laid down in accordance with the specific, respective purpose on a case by case basis by DIN CERTCO in conjunction with the testing laboratory.

Should defects be detected in the course of the special test or because of the suspended 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.

4.3 Sampling

The samples for the initial examination and monitoring test are standardally delivered by the manufacturer to the testing laboratory which has been commissioned to perform the tests. The costs for this shall be paid by the manufacturer.

The number of samples for the product test shall be agreed between DIN CERTCO and the testing laboratory in so far as this is not already laid down in the basic test stipulations.

4.4 Test Procedure

The following tests must be performed in accordance with the requirements of DIN EN 13432 (and other standards, if applicable):

– Chemical analysis in accordance with Annexe A 1.
  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.

– Testing of ecological toxicity in accordance with the requirements specified in Annexe A 2 and A 3. Generally, a maximum of 5 types/subtypes may be tested at the same time.

The following additional tests have to be performed for biodegradable additives:

– Measurement of the infrared transmission spectrum according to Annexe B.

– A biodegradability test must be performed in accordance with the combination of standards applied for, as per table 1.

The following additional assessment rules apply:

– Acceptance of biodegradation test at 28°C: Biodegradability test at a temperature of 28 °C, according to EN ISO 14855, may be accepted for EN 13432, ASTM D 6400, ASTM D 6868, DIN EN 14995, ISO 17088, ISO 18606 and AS 4736 if the test duration does not exceed the 6 months period laid down in this standard.

– For substances, which are listed in Annexe A of the certification schemes "Products made of Compostable Materials" (Seedling or DIN-Geprüft)" and if applicable “Products made of compostable materials for home and garden composting” and or “Biodegradable in Soil” certification scheme, testing of ecological toxicity and biodegradation can be omitted.

– For substances, which are approved as food additives according to E-No.-list, testing of ecological toxicity can be omitted under the condition that the applied amount does not exceed the maximum quantities of use mentioned in the E-No-list.

Table 1 Overview about the test methods for ultimate biodegradation depending on the standard which is applied for

Testing according to the following standards	**mandatory**	**optional**								
	DIN EN 13432	ASTM D 6400	ASTM D 6868	DIN EN 14995	NF T 51-800	ISO 17088	ISO 18606	AS 4736	AS 5810	DIN EN 17033/ ISO 23517
ISO 14855-1	x	X	x(1)	x	x(2)	x(4)	x	x	x(2)	
ISO 14855-2	x	X	x(1)	x	x(2)	x(4)	x	x	x(2)	
ISO 14851	X(1)		x(1)	x(1)	x(2)	x	x(1)	x(1)	x(2)	
ISO 14852	X(1)		x(1)	x(1)	x(2)	x	x(1)	x(1)	x(2)	
ISO 17556						x				x(3)
ASTM D 5338		x	x(1)			x				

This certification scheme is based on the standard DIN EN 13432, thus this standard is marked as mandatory for certification. The further listed standards marked as optional can be additionally addressed for certification.
(1) Only possible if the nature and properties of the test material do not permit testing to the requested testing method.
(2) Reaction temperature according to AS 5810 is 25±5 °C with a maximum test time of 12 months. For NF T 51-800, the temperature should not exceed 30 °C.
(3) Reaction temperature according to DIN EN 17033 is 25±5 °C and according ISO 23517 between 20 °C and 28 °C (preferably 25 °C; within 2+- °C) with a maximum test time of 24 months.
(4) To be applied preferentially.

4.5 Test Report

The testing laboratory shall inform the principal of the test and examination results in the form of a test report. This must be submitted to DIN CERTCO in the original.

As a rule, the test report may not be older than 6 months on submitting the application. In individual cases, older test reports can be recognized if the testing laboratory provides written confirmation of the current validity of the information given in said test report and the customer provides written confirmation of the identity of the composition.

The test report must be in conformity with DIN EN ISO/IEC 17025, Section 5.10 and contain at least the following information:

– Name and address of the manufacturer
– Name and address of the applicant (if different from the manufacturer)
– Test basis with date of issue
– Type of test (e.g. type-test, complementary examination, etc.)
– Date of examination
– Test result and assessment
– Name and signature of the person responsible for the examination

5 Certification

Certification in the sense of this certification scheme relates to the assessment of conformity of a product by DIN CERTCO on the basis of test reports submitted by testing laboratories recognized by DIN CERTCO. For this purpose, the products to be certified are examined and subsequently monitored in respect of conformity with the requirements laid down in clause 3.

The right to use the Certification Mark “DIN-Geprüft” will be granted by the issuing of the respective certificate.

5.1 Application

Both manufacturers according to § 4 of the Product Liability Act (ProdHaftG) and distributors who, with the written consent of the certificate holder, bring the products onto the market under their own responsibility in the sense of the Product Liability Act, may apply.

The applicant must submit the following documents to DIN CERTCO:

– Application for certification in the original complete with legally binding signature
– a recent test report according to section 0 concerning an initial test (see section 4.2.1), as long as the test was not commissioned by DIN CERTCO
– further documents according to section 4.2.1

The applicant shall receive from DIN CERTCO, after receipt of the application, a confirmation of order with a process number and notes regarding the further course of the procedure and, as applicable, queries concerning any missing documents.

5.2 Definition of Types and Sub-Types

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) in the case of inks
– Labelling as separate ink 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 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

A separate certificate is issued for each type.

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.

5.3 Sub-licences

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

It is possible to issue sub-licences for manufactured items as defined in this certification scheme. They facilitate bringing certified additives 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 by sub-licence holders.

Documents and information required for application:

a) Application for certification, with a legally binding signature and company stamp.

b) Sub-licence holder's declaration that the main certificate holder's additives 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 is issued with an own individual registration number.

5.4 Conformity Assessment

On the basis of the documents submitted, DIN CERTCO conducts the conformity assessment. In particular, by means of the test report, it is assessed whether the product meets the requirements of the certification scheme and the standard(s).

DIN CERTCO will notify the applicant of any deviations in writing.

5.5 The Certificate and the Right to Use the Mark

After successful testing and conformity assessment of the submitted documents, DIN CERTCO issues a certificate to the applicant and awards the right to use the Certification Mark “DIN-Geprüft” in conjunction with a corresponding registration number.

Format of the Registration Number **8Zxxxx**

Additives, for which the right to use the certification mark “DIN-Geprüft” has been awarded, must be marked with the respective certification mark "DIN-Geprüft" and the respective registration number.

The mark and the corresponding registration number may only be used for the type 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 (see section 5.2).

In addition, the General Terms and Conditions of DIN CERTCO must be considered.

5.6 Publications

An up-to-date list of all certificate holders can be accessed via the DIN CERTCO website www.dincertco.de. Manufacturers, users and consumers use this research option to obtain information on certified products.

Here, in addition to the contact details of the certificate holders (telephone, telefax, e-mail, website), the technical data of the certified additive can also be reviewed.

5.7 Validity of the Certificate

The certificate is valid for 5 years. The period of validity is shown on the certificate. On expiry of the certificate, the right to use the mark also expires.

5.8 Renewal of the Certificate

If the certification is to be maintained after the specified date in the certificate, DIN CERTCO must be presented with a positive test report and a renewal application form before the expiration of the certificate’s validity. Based on the submitted documents, DIN CERTCO conducts a conformity assessment.

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

Proof of conformity with the requirements of the test and certification specifications according is done on the basis of the results of the verification testing.

5.9 Withdrawal of the Certificate

If the new standard conformity assessment according to section 4 has not been completed before the expiry date, the right to use the Certification Mark "DIN-Geprüft" and the registration number expire without the necessity for explicit notification from DIN CERTCO.

Furthermore, the certificate is withdrawn in particular if:

– the surveillance according to section 6 is not performed punctually or completely,
– the Certification Mark "DIN-Geprüft" is abused 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 requirements for issuing the certificate no longer exist

5.10 Alterations/Amendments

5.10.1 Alterations/Amendments to the Product

The certificate holder is under obligation to inform DIN CERTCO immediately of all changes to the additive that affect the certification-relevant features of the additive. In coordination with the testing laboratory, DIN CERTCO decides whether it is a significant alteration and to what extent testing according to clause 4.2.1 (Initial Type Test) of clause 4.2.3 (Supplementary Test) is to be conducted. The corresponding test report shall be forwarded to DIN CERTCO by the testing laboratory.

If a significant alterarion is determined (e.g. change of the production facility), the certificate with its corresponding registration number is withdrawn. For the modified product, a new application for an initial certification and the right to use of the Certification Mark "DIN-Geprüft" may be submitted.

The certificate holder remains under the obligation to report any changes to the formal information (e.g. certificate holder or his address). An application of amendment has to be handed in. After positive assessment, the certificate will 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 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 product and, provided that the conditions are fulfilled, shall be regarded as an integral part of same.

5.10.2 Modification to the Test Specifications

If the test specifications for the certification change, an application for the modification 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 (see section 4.2.3).

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

5.11 Product Defects

If defects are found on a certified product at the market, the certificate holder will be asked in writing by DIN CERTCO to rectify the defects.

In coordination with the testing laboratory, DIN CERTCO decides whether it is a serious or a minor defect.

For defects that have a direct or indirect influence on the technical safety or functionality of the product (serious defects), the manufacturer must ensure that the products are no longer marked with the Certification Mark "DIN-Geprüft".

The defects must also be rectified without delay in delivered products or products in storage. The manufacturer must submit proof to DIN CERTCO within 3 months, in the form of a test report on a special test in accordance with section 4.2.4, 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 compostability behavior (minor defects), the manufacturer must 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, the certificate will be withdrawn from him and from the distributor of the product and they will no longer be permitted to use the certification mark "DIN-Geprüft".

If there are still grounds for complaint, 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 period of grace, or if it is again not possible to prove that the defects have been rectified, the certificate shall be withdrawn.

6 Surveillance

The constant surveillance of the certified product during the entire duration of the certification period is an integral component of the certification itself. The surveillance shall be performed at regular intervals of 12 months in according with section 4.2.2.

Annexe A Testing

A 1 Chemical Characterization

A 1.1 According to DIN EN 13432, ASTM D 6400, ASTM D 6868, DIN EN 14995, NF T 51-800, ISO 17088, ISO 18606, AS 4736, AS 5810, DIN EN 17033, ISO 23517

Chemical characterization is carried out according to DIN EN 13432 (see table A1).

Table A1 Maximum element content as listed in Table 1 of DIN EN 13432 (80 %) and Table 1 NF T 51-800 (80 %).

Element	mg/kg dry product
Zn	120
Cu	40
Ni	20
Cd	0.4
Pb	40
Hg	0.4
Cr	40
Mo	0.8
Se	0.6
As	4
F	80
Co*	13,6

***** Only required for certification according ASTM D 6400, ASTM D 6868, NF-T 51-800, ISO 17088, ISO 18606 and/or ISO 23517.

A 1.2 Organic Fluorine (PFAS)

Poly- and perfluoroalkyl substances (PFAS) shall not be intentionally added to the material/product/intermediate/additive.

A 1.3 Other Hazardous Substances

The product, material, intermediate or additive **shall not**

1. be classified as hazardous to the environment according to the UN Globally Harmonized System for Classification and Labelling of Chemicals (GHS)

and

2. be intentionally produced with a hazardous (to the environment) substance

- meeting criteria of classification according to the UN Globally Harmonized System for Classification and Labelling of Chemicals (GHS) as

carcinogenic (category 1A or 1B) or
mutagenic (category 1A or 1B) or
toxic for reproduction (category 1A or 1B), or

— having endocrine disrupting properties[22], or
— having persistent, bioaccumulative and toxic properties, or
— having very persistent and very bioaccumulative properties, and
— exceeding a concentration limit of 0,1 % (by dry weight) in the manufactured item.

NOTE 1 Safety Data Sheets or other reliable sources such as the website of the European Chemicals Agency (ECHA)[32] which provide comprehensive information about a substance or a mixture, can be used for the identification of hazardous substances fulfilling the above-mentioned criteria.

A 2 Ecotoxicity testing

A 2.1 According to DIN EN 13432, ASTM D 6400, ASTM D 6868, DIN EN 14995, NF T 51-800, ISO 17088, ISO 18606

The test of ecological toxicity must be performed in accordance with the requirements of DIN EN 13432, section 8, A.4 und E in conjunction with OECD 208 with a plant growth ecotoxicity test with two plant species. Corresponding to DIN EN 13432 testing shall be carried out by adding 10 % of the final product based on the quantity of compost used.

A 2.2 According to AS 4736, AS 5810, ISO 17088, DIN EN 17033 and ISO 23517

The ecotoxicity test has to be carried out according to section A 2.1 in correspondence to the requirements of DIN EN 13432 in conjunction with OECD 208.

Additionally, a 14-days toxicity test with the worm species *Eisenia Fetida* according to section A1 of the ASTM E 1676 is required. Corresponding to DIN EN 13432 testing shall be carried out by adding 10 % of the final product based on the quantity of compost used.

For ISO 17088, DIN EN 17033 and ISO 23517 testing is required according to DIN EN ISO 11268-1 or DIN EN ISO 11268-2.

Note: ISO 17088, DIN EN 17033 and ISO 23517 asks for DIN EN ISO 11268-1 or DIN EN ISO 11268-2 for Earthworm toxicity testing. Alternatively, conformity can be shown according to AS 4736 or AS 5810 in accordance with this certification scheme, respectively.

A 2.3 Nitrification inhibition test with soil microorganisms (ISO 17088, DIN EN 17033 and ISO 23517 only)

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 E of DIN EN 17033 and Annex F of ISO 23517:

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

A 3 Additional information regarding the performance of the ecotoxicity testing

The required sample quantity is determined based on the following assumptions:

The test substance is added to the compostable sample at 10 % of mass (including the maximum quantity of the additive to be tested) in accordance with the requirements of DIN EN 13432 in conjunction with OECD 208.

Assumptions:

- After composting and sieving < 10 mm, approximately 35 % of the compost will remain. The pigments do not biodegrade.
- The additive does not biodegrade.
- After disintegration, 10 % of the degradable quantity of the product sample remains in sieve fraction < 10 mm.
- 5 additives at 1 % of mass should be tested

Underlying formula:

$$m_{WA} + m_{ZA} = 0{,}1 \cdot m_{KA}$$

$$m_{ZA} = n_Z \cdot p_Z \cdot m_{WA} \cdot 0{,}1$$

$$m_{gesE} = m_{KE} + m_{WE} + m_{ZE}$$

$$p_{ZP} = \frac{m_{ZE}}{m_{gesE}} \cdot \frac{1}{n_Z} \cdot 100\ \%$$

where:

m_{kA} – Quantity of compost prior to composting
m_{WA} – Quantity of material prior to composting
m_{ZA} – Quantity of additive prior to composting
m_{gesA} – Total quantity prior to composting
m_{KE} – Quantity of compost after composting and sieving
m_{WE} – Quantity of material after composting and sieving
m_{ZE} – Quantity of additive after composting and sieving
m_{gesE} – Total quantity after composting
n_Z – Number of additives tested
p_Z – Percentage of additive tested
p_{ZP} – Percentage of additive tested in m_{gesE}

Example calculation:

100 kg compost $\xrightarrow{\text{composting and sieving <10 mm: 35\% remains (experienc e)}}$ 35 kg compost

10 kg product sample $\xleftarrow{\text{made of}}$ 9.5 kg compostable material + 0.5 kg additives

9.5 kg compostable material $\xrightarrow{\text{composting and sieving <10 mm: 10 \% remains (DIN EN13432)}}$ 0.95 kg compostable material

0.5 kg additives to be tested $\xrightarrow{\text{composting and sieving <10 mm: 100\% remains}}$ 0.5 kg additives to be tested

Result: m_{gesE} = 36.45 kg

Under the conditions given, the required quantity for each additive is as follows:

P_{ZP}=0.274 %

A 3.1 Testing for non-biodegradable additives

The test of ecological toxicity and the quantity added shall be in accordance with the requirements of DIN EN 13432 in conjunction with OECD 208 or rather ASTM E 1676. A shortened composting process is permitted.

A 3.2 Testing for inks, master/colour batches (with tested/certified carrier)

The pigments including contained solvent are mixed with sand and undergo a drying process to simulate the printing process.

The sand is mixed with finished compost, which consists of < 10 mm sieve fraction of fresh, pre-treated bio waste (municipal waste) that has undergone aerobic composting for more than 12 weeks.

A simplified, shortened composting process is completed over 7 days at 58 °C followed by a 3-day stabilisation phase at ambient temperature. The use of one approach is sufficient.

The further testing is performed in accordance with the requirements of DIN EN 13432 in conjunction with OECD 208 or rather ASTM E 1676.

A 3.3 Testing for biodegradable additives

For the determination of the time of composting, the results of the biodegradation testing shall be taken into consideration.

Alternatively, a 12-week disintegration test in accordance with ISO 16929 may be performed beforehand. The quantity of additives to be added is specified in accordance to the requirements of DIN EN 13432 in conjunction with OECD 208 or rather ASTM E 1676.

Annexe B Infrared-Transmission spectra

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.