SPCR 141
Certification rules for
Classification for
treatment of
polymeric waste
Foreword

Certification involves confirmation by an independent third party that a product fulfils requirements set out in standards or some other form of specification. Certification by RISE is performed by RISE Certification, a department that is separate from the testing and inspection departments.

Products which, after an initial evaluation - which includes testing and other aspects - show that they fulfil specified requirements can be certified by RISE. The certification is confirmed by issue of a certificate, one of the rights of which is usually permission (under licence) to use a certification mark. Certification of products by RISE is performed in accordance with EN ISO/IEC 17065.

Continuous inspection involves inspection by the manufacturer through the operation of Factory Production Control, FPC, and surveillance inspection by RISE. Surveillance inspection is carried out by RISE, or by a RISE partner, through visits to the manufacturer or testing of samples from the production. During the visits, RISE will audit the manufacturer’s FPC to verify that it is operating as intended. In addition, samples of the finished products may be taken for testing, from production/warehouse site(s) or directly from market to verify that the manufacturer’s FPC is operating as intended.

These certification rules set out the terms and conditions for certification, technical requirements and requirements in respect of ongoing inspection of polymeric materials, polymeric products and composed polymeric products in respect of various types of waste treatment. The technical requirements as set out in Section 3.1 are based on European and international standards issued by CEN, CENELEC and/or ISO. The requirements concerning continuous inspection as set out in Sections 4 and 5, have been drawn up by RISE. The certification rules are based on current standards, but may be revised in future, e.g. to harmonise them with European or international standards. Revision may also be necessary if new regulations are introduced or because of experience from the application of these rules.

This version of the rules replaces the previous version from November 2010 issued by SP Technical Research Institute of Sweden.

Borås, October 2022

RISE Research Institutes of Sweden AB
Certification

Martin Tillander
Director Product Certification

SPCR 141
Borås 2022

Postal adress: Box 857
SE-501 15 BORÅS
Sweden

Telephone +46 10 516 50 00
E-mail: info@ri.se
Internet: www.ri.se
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1. Scope

1.1 General

These certification rules apply for voluntary certification of polymeric materials including special components and master batches, polymeric products and composed polymeric products for marking in respect of different types of environmentally correct treatment of waste. Certification rules and the appendices include requirements for materials and products suitable for various types of degradation such as industrial composting, home composting, digestion, degradation by a combination of abiotic and biotic processes, mechanical recycling, controlled combustion and special cases (e.g. degradation in marine waters).

The certification rules comprise the following activities, which is in accordance with a scheme type 3 in EN ISO/IEC 17067:

1. Evaluation of the technical data and the products performances
2. Initial assessment of the manufacturers FPC
3. Issuing of a certificate, allowing the certificate holder to use the certification mark
4. Annual testing of samples taken from production

In the following sections, “product” can also mean material.

1.2 Definitions

<table>
<thead>
<tr>
<th>Polymeric materials</th>
<th>Materials composed of polymers and possible additives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Masterbatch</td>
<td>A concentrated mixture of additives encapsulated during a heat process into a carrier resin which is then cooled and cut into a granular shape</td>
</tr>
<tr>
<td>Polymeric products</td>
<td>Products made of one or more polymeric materials with possible additives</td>
</tr>
<tr>
<td>Composed polymeric products</td>
<td>Products composed of combined materials that are not homogenously distributed and where at least one material is polymeric, as for instance laminate.</td>
</tr>
<tr>
<td>Abiotic degradation</td>
<td>Degradation without influence from microorganisms, e.g. hydrolysis or oxidation by heat and/or light</td>
</tr>
</tbody>
</table>
2. Conditions for certification of polymeric waste

2.1 The certification process

2.1.1 General
The certification consists of an evaluation of the products performances and of its manufacturer’s FPC procedures. When the requirements are fulfilled, and a written agreement between the manufacturer and RISE about the extent of the surveillance inspection is signed, a certificate can be issued. The certificate is valid provided that the products continue to fulfil the requirements and that the ongoing inspection continues to operate correctly. Certified products may be marked, see chapter 3.4.

Technical requirements, requirement for the continuous inspection and marking requirements are described in chapter 3.

Requirements regarding the manufacturer’s FPC and the surveillance is described in chapter 4 and 5.

Other terms and conditions are set out in chapter 6.

2.1.2 Application
Application for certification shall be submitted in writing and shall be accompanied by technical data. The evaluation will be based on a by the producer determined composition. The determined composition shall be connected to the producer’s definite product name. The producer shall provide relevant documentation which can be used during the evaluation:

- A test report showing that the technical requirements are fulfilled.
- Material or product description. The description shall contain a list of contents of the material or product, quantified. All additives shall be declared. Drawings shall be attached if applicable. The thickness of the polymeric material in products shall be presented.
- Dismantling instructions. If the product is composed and need to be dismantled before waste disposal, an instruction for dismantling shall be attached.
- Proposal for marking, as set out in section 3.3.

2.1.3 Review of application
When reviewing the application, RISE review that the application is complete, and that the application can be handled within this rule. The review may mean that RISE cannot accept the assignment, which is then communicated to the applicant with a justification. If the application is adopted, this is communicated to the applicant through an order confirmation.

2.1.4 Sampling and test samples
Where the sampling procedure is not stated in the applied specification, the following shall apply; the manufacturer is responsible for the sampling. Test samples shall be representative of the normal production. If the test samples are prototypes, they shall be representative of the intended future production and shall be selected by the manufacturer. Additional verifying testing can be necessary from production if prototype samples are type-tested.
2.1.5 Evaluation
During the evaluation process, the product is checked to ensure it has been manufactured in accordance with the technical data, and that it meets the requirements that the standard or specification requires. The evaluation process includes tests and examinations that are carried out to the extent that the specification requirements and/or evaluation plan specifies. The evaluation includes a review of labelling and information to the user etc. In cases where the product and/or documentation shows deficiencies, i.e. does not meet the requirements, the evaluation may be cancelled.

The evaluation process also includes an initial assessment of the manufacturers FPC, normally at the manufacturers and/or sub-contractor’s premises. If the result of the evaluation shows that the product and documentation meet the requirements of the specification, the process proceeds to review and decision.

All evaluation activities are performed under the responsibility of RISE.

2.1.6 Review and decision
The evaluation work is reviewed. If the result is approved, the process proceeds to the decision phase. When a decision on certification has been taken, a certificate is issued to the applicant. The certificate will then be listed on RISE website with information about the certified product and the manufacturer. The certificate document will not be published.

2.1.7 Period of validity
The validity of the certificate is normally five years. Depending on the content of reports from surveillance tests, and other factors, the validity time may be extended after application from the holder of the certificate, see chapter 2.3.

2.2 Changes to certified products and/or FPC
Note that no changes can be made to a certified product, without being assessed and approved by RISE. The manufacturer must notify RISE of any planned changes to the certified product. The notification together with a description of the changes and technical data shall be sent to RISE. RISE will then assess which evaluation activities that have to be made for the certificate to remain in force after such changes. The assessment may result in additional tests. In this case, the manufacturer will be notified thereof and may then also be given a price quotation. If the result of the changes mean that the certificate is still valid, the certificate is revised with the new data. See section 4 of this document.

The same applies for the manufacturer's system for factory production control. Significant changes in organization and/or the system for factory production control shall be reported to RISE for assessment. Significant changes involve, for example, move of the production, introduction of new technology or new mechanical equipment.

2.3 Extension of validity period for the certificate issued
At the end of the validity period, the period may be extended for a maximum of five years at a time. Applications for renewal are to be made in writing, at least six months before the end of the validity period. Provided the above, an assessment will be made to confirm that:
1. The product is unchanged relative to the valid certificate
2. Surveillance tests have been performed as scheduled with approved results
3. Regulation, specifications etc. are unchanged
4. An inspection of the manufacturer’s premises and FPC is performed

Provided the above, the validity of the certificate can be extended by another five years.

If changes are made to the product, or are planned, the application shall be supplemented with details about the changes. This may result in additional evaluation activities, e.g. testing. In this case, the manufacturer will be notified together with a price quotation.

3. Requirements

3.1 Technical Requirements

Current requirements for polymeric waste and corresponding test methods are presented in appendices listed below:

Appendix 1. Industrially compostable polymeric waste – Requirements and test methods

Appendix 2. Polymeric waste compostable in small scale – Requirements and test methods

Appendix 3. Industrially digestible polymeric waste – Requirements and test methods *(Will be added later)*

Each appendix contains specific technical requirements and methods for the different groups:

1. Polymeric materials
2. Polymeric products
3. Composed polymeric products

Within group 2 and 3 the requirements are also dependent on product assembly/construction.

3.2 Requirements for FPC and continuous inspection

Continuous inspection shall ensure that certified products continue to fulfil the requirements in these certification rules. It shall consist of the manufacturer’s FPC, as described in chapter 4, complemented by surveillance inspection, performed by RISE, as described in chapter 5.

The extent of the surveillance inspection shall be agreed and set out in a written agreement between the manufacturer and RISE.

3.3 Marking

Products/materials fulfilling these certification rules may be marked with RISE certification symbol, as can be supplied by RISE. The marking of materials or
products carrying RISE certification symbol(s) shall also contain the number of the certificate, name of the certificate holder, product name/designation, classification and production number or equivalent identification. The design of all marking shall be approved by RISE.

4. Manufacturer's Factory Production Control, FPC

4.1 General requirements
Factory production control (FPC) shall ensure that products marked with the certification mark fulfil the requirements of the current certification rules.

The manufacturer’s FPC shall conform to the general requirements in TKR 000 “General rules for product inspection”.

5. RISE surveillance inspection

5.1 Execution
Surveillance inspection will be carried out by RISE, before the certificate is issued and before the validity period of the certificate can be extended, in accordance with the requirements in TKR 000, “RISE General rules for product inspection”. An exemption from the requirements in TKR 000 is the period of surveillance inspections at the manufacturer’s premises.

Sample testing will be performed every year to verify that the certified products are in conformity with the requirements.

The surveillance inspection will be carried out by RISE in form of a visit to the manufacturer. The manufacturer shall provide unrestricted access to RISE representative for performance of the surveillance inspection.

On these visits, RISE will inspect to determine whether the manufacturer's described inspection procedures are operating as intended.

Detailed information about the surveillance is to be found in the appendices.

5.2 Reporting
The results of surveillance inspection visits and sample testing shall be reported in writing to the manufacturer and - if the holder of the certificate is some party other than the manufacturer - also to the holder of the certificate.

6. Other terms and conditions
See CR000 RISE General certification rules for certification of products.

Where deemed as necessary, RISE reserves the right to perform sample testing on samples taken from the manufacturer or directly from market.
7. References


CR000 RISE General certification rules for certification of products

TKR 000 RISE General rules for product inspection.

RISE Rules for the use of certificates and certification marks.

CEN/TR 15351, Plastics – Guide for vocabulary in the field of degradable and biodegradable polymers and plastic items.

ISO 14021, Environmental labels and declarations – Self-declared environmental claims.

SS-EN 13432, Requirements for packaging recoverable through composting and biodegradation – Test scheme and evaluation criteria for the final acceptance of packaging.

8 Change log

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<th>Description</th>
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</thead>
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<td>First issue</td>
</tr>
<tr>
<td>2010-11-01</td>
<td>Revision and updating</td>
</tr>
<tr>
<td>2022-10-07</td>
<td>Completely renewed, 2 appendices ready.</td>
</tr>
</tbody>
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9 Appendices

Appendix 1. Industrially compostable polymeric waste – Requirements and test methods

Appendix 2. Home compostable polymeric waste – Requirements and test methods

Appendix 3. Industrially digestible polymeric waste – Requirements and test methods (Will be added later)
Appendix 1 to SPCR 141
Industrially compostable polymeric waste – Requirements and test methods

This appendix treats requirements and associated test methods to certificate polymeric waste intended to be finally settled by industrial composting. This appendix is based on EN 13432. A flowchart on the last page of this appendix gives an overview of the procedure for judgement.

Definitions
Polymeric waste refers to polymeric materials, polymeric products and combined polymeric products. For definitions of these three types, see the main document SPCR 141.

Industrially compostable polymeric waste refers to polymeric waste that can be biodegraded and disintegrated in an aerobic process in an industrial composting plant.

An industrial composting plant refers to a large scale composting facility with a process having a specified throughput time and controlled parameters leading to a product. The product in the form of compost must have measured values for content. The measured values must be below stated limit values.

For definitions concerning biodegradable and compostable plastics we refer to documents CEN/TR 15351 “Plastics – Guide for vocabulary in the field of degradable and biodegradable polymers and plastic items” and ISO 14021 “Environmental labels and declarations – Self-declared environmental claims (Type II environmental labelling)”.

Methods, certification and requirements
The three types of polymeric waste will be dealt with under each headline. Approved materials and products can be marked with the symbol of RISE as biodegradable or industrial compostable, depending on which properties that have been tested.

Materials which fulfils the requirements for chemical composition and biodegradation can be marked “Biodegradable” Products which fulfils the requirements for chemical composition and biodegradation and disintegration, compost quality and test of function if necessary can be marked “Industrially compostable”.

Any addition or exception from the requirements is specified separately for each material or product under the respective headline.

During an initial test of a new material or a new product, all tests under the headline must be performed according to mentioned methods or equivalent methods. Surveillance inspection is performed according to conditions stipulated in an ongoing inspection agreement between RISE and the commissioner.

As a material or product consists wholly or partly of components that have already previously received certificates that are still valid, RISE can accept these components without further testing. However, reports from chemical characterization, biodegradation tests, disintegration tests and compost quality and information that reference samples have been received by RISE must always be included in the application for certification.

The test report that forms the basis for the application for certification may at the time of application be dated no more than 5 years earlier.
A. Polymeric materials

A.1. Chemical composition and characterization
All included components like polymers, organic additives (plasticizers, impact resistance additives, fibres, etc), inorganic fillings, pigments, stabilizers, pro-oxidants, etc must be declared with chemical name and trade name, CAS-number and percentage of each component. None of the included components constituting ≥ 0.1 % may be officially classified as environmentally hazardous. In addition, a quantitative specification stating the following components is demanded:

1. total quantity of organic and inorganic carbon (C).
2. total quantity of inorganic (inert) material, requirements: < 50 %.
3. elements with the following high limit values according to EN 13432:
4. Unambiguous physical-chemical characterization of the material for reference.

Suitable methods for plastics are for example one or several of the following methods: IR, UV-VIS, SEC and GC-MS and for papers e.g. tensile energy absorption, wet strength and Cobb.

<table>
<thead>
<tr>
<th>Element</th>
<th>mg/kg of dry substance</th>
<th>Element</th>
<th>mg/kg of dry substance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zn</td>
<td>150</td>
<td>Cr</td>
<td>50</td>
</tr>
<tr>
<td>Cu</td>
<td>50</td>
<td>Mo</td>
<td>1</td>
</tr>
<tr>
<td>Ni</td>
<td>25,0</td>
<td>Se</td>
<td>0,75</td>
</tr>
<tr>
<td>Cd</td>
<td>0,5</td>
<td>As</td>
<td>5</td>
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<td>Pb</td>
<td>50</td>
<td>F</td>
<td>100</td>
</tr>
<tr>
<td>Hg</td>
<td>0,5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The material shall not contain any carcinogenic, mutagenic or toxic for reproduction (CMR) substances.

A.2. Biodegradability
The material must be tested for the degree of biodegradation under conditions in an aerobic environment. The material must be degraded at least 90% for a maximum of 6 months. Biodegradation is evaluated according to internationally accepted standards. The test method can, for example, be aerobic aquatic biodegradation according to ISO 14852 or aerobic small-scale composting according to ISO 14855-1 or equivalent standard.

Polymeric materials that constitute more than 1.0 % of a product or component shall fulfill the requirements. Additives present in the product at a concentration less than 1 % of dry weight must be harmless for the composting process described in section B. Total sum of organic compounds for which biodegradability needs not to be determined may not exceed 5 % of mass.

Chemically unmodified natural polymeric materials like starch, cellulose etc. do not need to be tested for biodegradability. Chemical characterization shall be performed according to A1.

When testing according to A has been approved, certification and labelling with “Biodegradable” is possible.
B. Polymeric products

B.1. Disintegration (decomposition)
A product to be classified as compostable shall furthermore be disintegrated in a biological waste treatment process within maximum 12 weeks or 6 months (depending on chosen method) to fragments < 2 mm that can not be sieved out to more than 10 % of the original amount. In case of the same product occurring in different thickness it is sufficient to declare that the thickest one has passed the disintegration test. Residues or substances remaining in or attached to a product/packaging must be suitable for composting.

B.2. Quality of compost/ Test methods for analysis of environmentally hazardous substances
The compost obtained after the disintegration test is composted until maturity for use, wherafter tests are performed to guarantee that no negative effects on different plants can be observed. The tests consist of germination- and growth tests with at least 2 higher plants according to OECD 208 and annex E in EN 13432 or SP method 4149.

<table>
<thead>
<tr>
<th>Type of analysis</th>
<th>Standard/method</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disintegration-Plastics – Determination of the degree of disintegration of plastic materials under defined composting conditions in a pilot scale test or: Plastics - Determination of the degree of disintegration of plastic materials under simulated composting conditions in a laboratory-scale test</td>
<td>ISO 16929</td>
<td>≥ 90 % disintegrated into &lt; 2 mm pieces after 12 weeks</td>
</tr>
<tr>
<td></td>
<td>ISO 20200</td>
<td>≥ 90 % disintegrated into &lt; 2 mm pieces after 180 days</td>
</tr>
<tr>
<td>Methods for investigation of compost quality</td>
<td>SP method 4149 (based on OECD guideline 208 + annex E in EN 13432)</td>
<td>&gt; 90% germination and biomass for both plants compared to controls</td>
</tr>
<tr>
<td></td>
<td>OECD guideline 208 + annex E in EN 13432</td>
<td></td>
</tr>
</tbody>
</table>

Products of natural polymeric materials
Products of natural polymeric materials such as starch, cellulose, etc. do not need to be tested for biodegradability but must be tested for disintegration and compost quality. Chemical characterization must be performed according to A1.

C. Combined polymeric products
All polymeric materials included in a product must fulfil requirements according to A and B. If technically possible the product shall be tested for disintegration in the form intended for use. Exceptions can be made where compostable materials comprise easily separable parts of a combined product. In such a case, clear information about which part of the product the labelling is intended for and under what circumstances the label is valid must be added. RISE shall approve the formulation of the label and the attached information.
D. Surveillance

The certificate's validity period is 5 years. Inspection visits are made twice every five years. Monitoring control is done annually and means for materials and for products following:

<table>
<thead>
<tr>
<th>Property</th>
<th>Material</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identification / Marking</td>
<td>The manufacturer / certificate holder guarantees that the material has not been altered</td>
<td>Check that the marking exists and is in accordance with the certificate and current rules for marking</td>
</tr>
<tr>
<td>Thickness / Grammage / Density</td>
<td>Verification of conformity with original material</td>
<td>Verification of conformity with original product</td>
</tr>
<tr>
<td>Components – IR spectra</td>
<td>Conformity is checked by comparing the IR spectrum from the type test and monitoring controls</td>
<td>Conformity is checked by comparing the IR spectrum from the type test and monitoring controls</td>
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<td>Chemical composition</td>
<td>Checked according to EN 13432, table A1</td>
<td>Checked according to EN 13432, table A1</td>
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</table>
Flow chart to SPCR 141 appendix 1, Industrially compostable polymeric waste

A1 Chemical composition

Are the requirements in A1 fulfilled?

A2 Biodegradability

Is the material degraded to > 90% of the reference within 6 months?

Are components that constitute > 1% of the product declared and/or certified? Are total sum of nondeclared constituents ≤ 5%?

B1 Disintegration

Is > 90% of the product disintegrated to pieces < 2 mm during max 6 months?

B2 Quality of compost

Are the requirements in B2 fulfilled?

Certification of material

Certification of product

NO
Appendix 2 to SPCR 141
Home compostable polymeric waste – Requirements and test methods

This appendix treats requirements and associated test methods to certificate polymeric waste intended to be finally settled by home composting which can be performed in a small scale with garden and household waste. This appendix is based on EN 13432. A flowchart on the last page of this appendix gives an overview of the procedure for judgement.

Definitions
Polymeric waste refers to polymeric materials, polymeric products and combined polymeric products. For definitions of these three types, see the main document SPCR 141.

Home compostable polymeric waste refers to polymeric waste that can be biodegraded and disintegrated in an aerobic process in a home composting plant.

A home composting plant refers to a composting facility, with a process not having a specified throughput time nor controlled parameters.

The product in the form of compost must fulfil the requirements stated in section B.2 Quality of compost, in order to fulfil the definitions as home compostable.

For definitions concerning biodegradable and compostable plastics we refer to documents CEN/TR 15351 “Plastics – Guide for vocabulary in the field of degradable and biodegradable polymers and plastic items” and ISO 14021 “Environmental labels and declarations – Self-declared environmental claims (Type II environmental labelling)”.

Methods, certification and requirements
The three types of polymeric waste will be dealt with under each headline. Approved materials and products can be marked with the symbol of RISE as biodegradable or home compostable, depending on which properties that have been tested.

Materials which fulfil the requirements for chemical composition and biodegradation can be marked “Biodegradable” Products which fulfils the requirements for chemical composition and biodegradation and disintegration, compost quality and test of function if necessary can be marked “Home compostable”.

Any addition or exception from the requirements is specified separately for each material or product under the respective headline.

During an initial test of a new material or a new product, all tests under the headline must be performed according to mentioned methods or equivalent methods. Surveillance inspection is performed according to conditions stipulated in an ongoing inspection agreement between RISE and the commissioner.

As a material or product consists wholly or partly of components that have already previously received certificates that are still valid, RISE can accept these components without further testing. However, reports from chemical characterization, biodegradation tests, disintegration tests and compost quality and information that reference samples have been received by RISE must always be included in the application for certification.

The test report that forms the basis for the application for certification may at the time of application be dated no more than 5 years earlier.
A. Polymeric materials

A.1. Chemical composition and characterization

All included components like polymers, organic additives (plasticizers, impact resistance additives, fibres, etc), inorganic fillings, pigments, stabilizers, pro-oxidants, etc must be declared with chemical name and trade name, CAS-number and percentage of each component. None of the included components constituting ≥ 0.1 % may be officially classified as environmentally hazardous. In addition, a quantitative specification stating the following components is demanded:

1. total quantity of organic and inorganic carbon (C).
2. total quantity of inorganic (inert) material, requirements: < 50 %.
3. elements with the following high limit values according to EN 13432:
4. Unambiguous physical-chemical characterization of the material for reference.

Suitable methods for plastics are for example one or several of the following methods: IR, UV-VIS, SEC and GC-MS and for papers e.g. tensile energy absorption, wet strength and Cobb.

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<td>25,0</td>
<td>Se</td>
<td>0,75</td>
</tr>
<tr>
<td>Cd</td>
<td>0,5</td>
<td>As</td>
<td>5</td>
</tr>
<tr>
<td>Pb</td>
<td>50</td>
<td>F</td>
<td>100</td>
</tr>
<tr>
<td>Hg</td>
<td>0,5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The material shall not contain any carcinogenic, mutagenic or toxic for reproduction (CMR) substances.

A.2. Biodegradability

The material must be tested for the degree of biodegradation under conditions in an aerobic environment. The material must be degraded at least 90% for a maximum of 12 months in the testing temperature below 30 °C. Biodegradation is evaluated according to internationally accepted standards. The test method can, for example, be aerobic aquatic biodegradation according to ISO 14852 or aerobic biodegradation according to ISO 14855-1 or equivalent standard.

Polymeric materials that constitute more than 1.0 % of a product or component shall fulfil the requirements. Additives present in the product at a concentration less than 1 % of dry weight must be harmless for the composting process described in section B. Total sum of organic compounds for which biodegradability needs not to be determined may not exceed 5 % of mass.

Natural polymeric raw materials

Chemically unmodified natural polymeric materials like starch, cellulose etc. do not need to be tested for biodegradability. Chemical characterization shall be performed according to A1.

When testing according to A has been approved, certification and labelling with “Biodegradable” is possible.
B. Polymeric products

B.1. Disintegration (decomposition)
A product to be classified as compostable shall furthermore be disintegrated in a biological waste treatment process at a temperature of 25 ± 5 °C, within maximum of 6 months to fragments < 2 mm that can not be sieved out to more than 10 % of the original amount. In case of the same product occurring in different thickness it is sufficient to declare that the thickest one has passed the disintegration test.
Residues or substances remaining in or attached to a product/packaging must be suitable for composting.

B.2. Quality of compost/ Test methods for analysis of environmentally hazardous substances
The compost obtained after the disintegration test is composted until maturity for use, wherafter tests are performed to guarantee that no negative effects on different plants can be observed. The tests consist of germination- and growth tests with at least 2 higher plants according to OECD 208 and annex E in EN 13432 or SP method 4149.

<table>
<thead>
<tr>
<th>Type of analysis</th>
<th>Standard/method</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disintegration-Plastics</td>
<td>ISO 16929</td>
<td>≥ 90 % disintegrated into &lt; 2 mm pieces after 180 days in a testing temperature of 25 ± 5 °C</td>
</tr>
<tr>
<td>Disintegration-Plastics</td>
<td>ISO 20200</td>
<td></td>
</tr>
</tbody>
</table>

Methods for investigation of compost quality

SP method 4149 (based on OECD guideline 208 + annex E in EN 13432)
OECD guideline 208 + annex E in EN 13432

> 90% germination and biomass for two plants compared to controls

Products of natural polymeric materials
Products of natural polymeric materials such as starch, cellulose, etc. do not need to be tested for biodegradability but must be tested for disintegration and compost quality. Chemical characterization must be performed according to A1.

C. Combined polymeric products
All polymeric materials included in a product must fulfil requirements according to A and B. If technically possible the product shall be tested for disintegration in the form intended for use. Exceptions can be made where compostable materials comprise easily separable parts of a combined product. In such a case, clear information about which part of the product the labelling is intended for and under what circumstances the label is valid must be added. RISE shall approve the formulation of the label and the attached information.
D. Surveillance

The certificate's validity period is 5 years. Inspection visits are made twice every five years. Monitoring control is done annually and means for materials and for products following:

<table>
<thead>
<tr>
<th>Property</th>
<th>Material</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identification / Marking</td>
<td>The manufacturer / certificate holder guarantees that the material has not been altered</td>
<td>Check that the marking exists and is in accordance with the certificate and current rules for marking</td>
</tr>
<tr>
<td>Thickness / Grammage / Density</td>
<td>Verification of conformity with original material</td>
<td>Verification of conformity with original product</td>
</tr>
<tr>
<td>Components – IR spectra</td>
<td>Conformity is checked by comparing the IR spectrum from the type test and monitoring controls</td>
<td>Conformity is checked by comparing the IR spectrum from the type test and monitoring controls</td>
</tr>
<tr>
<td>Chemical composition</td>
<td>Checked according to EN 13432, table A1</td>
<td>Checked according to EN 13432, table A1</td>
</tr>
</tbody>
</table>
Flow chart to SPCR 141 appendix 2, Home compostable polymeric waste

A1 Chemical composition
Are the requirements in A1 fulfilled?

A2 Biodegradability
Is the material degraded to > 90% of the within 12 months in testing temperature < 30 °C?

Certification of material
Are components that constitute > 1% of the product declared and/or certified? Are total sum of nondeclared constituents ≤ 5%?

B1 Disintegration
Is > 90% of the product disintegrated to pieces < 2 mm during max. 12 months in a testing temperature of 25 ± 5 °C?

B2 Quality of compost
Are the requirements in B2 fulfilled?

Certification of product

NO