European Eco-label for Soil Improvers and Growing Media

Revision 2005 - background document No. 3 (Concept)

ENV.G.2/SER/2004/0024r

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Contractnumber: ENV.G.2/SER/2004/0024r

Leiden, September 2005
ESG09-4-2/report
Some general information on the European Eco-label - the Flower

The flower is the symbol of the European Eco-label - your guide to greener products and services. It is a VOLUNTARY scheme. Criteria are established for individual product groups, such as paper products, textiles, detergents, paints and appliances such as refrigerators or dishwashers. When you, as a consumer, see products with the eco-label, you will know that these products have been carefully assessed and have been found to make less of an environmental impact than other similar competing products, or those products with sometimes misleading environmental claims on them.

Key aims

• to achieve significant environmental improvements - by developing, publishing and promoting criteria that push the market forward, in order to minimise the environmental impacts of a wide range of products and services over their whole life-cycle;

• to ensure the credibility of the award – by efficient administration and through criteria which:
  - are environmentally strong;
  - are based on good science, including the precautionary principle;
  - take account of consumer health;
  - require good product performance;
  - are developed transparently and cost-effectively, with the participation of stakeholders;
  - are reasonably attainable;
  - are up to date.

• to encourage manufacturers, retailers and service providers to apply for the award, to publicise their own participation in the scheme, and to promote the availability of eco-labelled products and information about them;

• to encourage purchasers to buy products and services with the award;

• to improve consumer awareness and behaviour regarding the environmentally optimal use of products and services.

How the eco-labelling Scheme works

It takes hard work and commitment to set up criteria. Every product group is designed and crafted to meet high environmental and performance standards. Ecological criteria for each product are defined on the basis of life cycle considerations (LCC) taken from a "cradle-to-grave" view of the environmental impacts of a product group.

How Eco-label Criteria are developed and adopted

Proposals for the definition of product groups and ecological criteria are made either on the request of the Eco-labelling Board (EUEB) or by the Commission. The Commission gives a mandate to the EUEB (lead Competent Body) to develop or review the eco-label criteria. Priority product groups will be listed in the joint working plan. On the basis of these mandates the appropriate EUEB member, supported by a working group and the Commission will draft appropriate eco-label criteria and the assessment and verification requirements related to these criteria. The Competent Body will take into account the results of feasibility and market studies, life cycle considerations and an improvement analysis. A regular feedback process to the whole EUEB is ensured. Finalised criteria are submitted to the Regulatory Committee of national authorities and voted upon. If the Committee takes a favourable view of the proposal, the Commission proceeds with its adoption and publication. Otherwise, the Committee submits the proposal to the Council of Ministers for decision.

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### Annex I: Proposed revised criteria
Summary

Introduction
Regulation (EC) 1980/2000 establishes a Community Eco-label award scheme to promote products which have a reduced environmental impact during their entire life cycle. The existing criteria for Soil Improvers and Growing Media expire in August 2006 and are now under revision. Leading in the revision process is SMK, the Dutch Competent Body for the European Eco-label. This third and final Background Document presents the main results of the preceding revision process, and formulates, on the basis of additional research and consultation, proposed revised criteria. The document will be discussed at the third meeting of the Ad Hoc Working Group (AHWG), to be held in Amsterdam the 31st of October, 2005.

Product group
Soil Improvers (SI) are defined as “materials to be added to the soil in situ primarily to maintain or improve its physical properties, and which may improve its chemical and/or biological properties or activity”. Growing media (GM) are materials, other than soils in-situ, in which plants are grown. Since the last revision, the number of licence holders has grown considerably (from 5 to 17) and the total sales of Eco-labelled soil improvers has been multiplied (to approximately 140.000 Mg in 2003). By contrast, there has been hardly any response in the area of growing media.

Focal points
As was decided during the previous revision in 2001, the 2005 revision paid particular attention to the following issues:

• completion of this product group by other sub-product groups such as humifying eco-systems and organic fertilisers;
• the possible use of sewage sludge in this product group;
• evaluation of other growing media;
• a reassessment of the use of peat;
• a reassessment of nutrient loadings.

Previous AHGWGs
During the first meeting of the Ad Hoc Working Group (AHWG), it became clear that, for various reasons, it would not be feasible to expand the product group with organic fertilizers and humifying eco-systems.

Other recommendations by the AHWG were to:

• completely split-up the criteria for SI and GM, thus expressing their fundamental difference in constitution and application;
• remove the criterion on pesticides, since this criterion is no longer regarded relevant;
• simplify the existing criteria on nutrient loadings;
• remove the criterion on odour;
• make a reference where applicable to National legislation.

How these recommendations have been translated into proposed revised criteria is highlighted in chapter 2 of the main text.
Throughout the revision process, ongoing attention has been paid to the following issues:

- the possible inclusion of (sewage) sludge;
- the possible inclusion of other materials such as minerals;
- admission of peat products;
- developments in the area of quality standards.

**Sewage sludge**

There is a fundamental difference between sewage sludge and (non sewage) sludges such as produced by the food & beverage industry. Sewage sludge is by definition sludge produced by municipal waste water treatment facilities. For sewage sludge, a survey was made on field data regarding contaminants. For non sewage sludges, an analysis was made of criteria available to limit possible risks for health and the environment. The Competent Bodies were also consulted on this topic.

All in all it is concluded that the topic of safe sewage sludge application is so complex and the possible consequences of unsafe application are so far reaching, that first consensus on European level (policy and legislation) should be achieved before admitting sewage sludge to the European Eco-label. Regarding non-sewage sludge, a set of criteria is proposed to safeguard its safe application. Criteria cover:

- a positive list of single source sludge producers (mainly the food and beverage industry);
- limit values for contaminants in untreated slurdes;
- type of processing;
- criteria for the end product.

The criteria have been based on the French norm NF U 44-095 regarding composts containing substances essential to agriculture, stemming from water treatment.

**Minerals**

Stone wool and perlite are two non organic materials that are widely used as (components in) growing media. An assessment was made of:

- the environmental impact of mineral mining;
- results from available LCAs;
- possible criteria for after use growing media.

The contribution of mining activities to the overall environmental profile proves to be small. It is therefore proposed to limit the requirements regarding mining to an elementary level: materials should not originate from areas of special ecological interest.

The environmental profiles of stone wool and perlite turn out to be more or less in line with the profiles of waste materials. Except for after use waste, no additional criteria have therefore been proposed. The purpose of the criteria on after use waste is to let the manufacturer play an active role in the removal and further processing of waste material, thus making his producer responsibility manifest.
Peat

As far as the application of peat is concerned, there is consensus on the (continued) exclusion of peat in soil improvers. On the possible application of peat in growing media, the opinions are diverse. Arguments pro and contra are valued differently by the various stakeholder groups. In order to draft a proposal that would receive sufficient support by the EUEB, the Competent Bodies were asked to express their preference for one of the following options:

- no inclusion of peat;
- allowing a certain percentage of peat in growing media for professional applications;
- allowing a certain percentage of peat given tight restrictions.

The consultation of the CBs shows that there is certainly support for allowing a percentage of peat, in particular in professional applications. However, for the CBs that are opposed, the peat issue seems to be a crucial one, much more so than to those who are in favour. Therefore it is proposed not to admit peat to the revised European Eco-label. The result of which may be a continued low (or zero) response to the European Eco-label by growing media producers.

Quality criteria

The existing Eco-label criteria contain a number of elementary quality criteria. Quality systems (legislation, voluntary standards and private labels) available throughout Europe cover the subject of product quality more extensively. A direct link to such quality initiatives could prove beneficial. Therefore, an attempt was made to compile a list of quality systems (or hallmarks) for soil improvers and growing media to which the European Eco-label could refer in order to guarantee product functional quality.

General analysis shows that there are significant differences in scope (compost, soil improvers, soil improvers and fertilizers, …), approach (product requirements, process requirements, …), quality levels and testing methods. Therefore, there was no other option than to update the existing quality criteria in the European Eco-label where necessary.

Revised criteria

Annex I contains (draft) revised criteria. In the annex, the revised criteria are highlighted in **bold printing**.
1 Introduction

1.1 Document background and objective

Regulation (EC) 1980/2000 establishes a Community Eco-label award scheme which is intended to promote the design, production, marketing and use of products which have a reduced environmental impact during their entire life cycle. To do so, the Commission gives mandates to the European Eco-labelling Board to develop and periodically review the European Eco-label criteria as well as the assessment and verification requirements.

The existing criteria for soil improvers and growing media expire in August 2006. Following a public call for tenders, the Commission awarded a service contract to draft revised criteria for this product group to SMK, the Dutch Competent Body for the European Eco-label.

This document gives an overview of the main results of the preceding revision process, and formulates, on the basis of some additional research and consultations, proposed revised criteria for the European Eco-label to Soil Improvers and Growing Media.

The document will be discussed during the third meeting of the Ad Hoc Working Group (AHWG) to be held in Amsterdam the 31st of October, 2005. The background document was prepared for SMK by SV&A sustainability consultants.

1.2 Reading instructions

First of all, this 3rd Background contains a summary of the revision process up until this point (chapter 2). This is done in order to have a complete overview of all revision considerations in a single document. In chapters 3 - 6 the results are presented of additional research regarding:

- the inclusion of (sewage) sludge (chapter 3);
- possible criteria for minerals (chapter 4);
- the feasibility of allowing a certain percentage of peat in growing media (chapter 5);
- safeguarding functional quality by referencing to quality systems already available in Europe today (chapter 6).

In addition, chapter 6 contains a proposed criterion on packaging.

Annex I displays a complete draft of revised criteria in line with the findings of this background report.
2 Revision overview

2.1 Introduction

This paragraph gives an overview of the main considerations and results of the preceding part of the revision. It is compiled out of the following revision documents:

- background document phase 1 (February 2005);
- Minutes first AHWG meeting (March 15, 2005);
- 2nd background document (May 2005);
- Minutes of the second AHWG meeting (June 20, 2005).

In these documents, downloadable at the homepage of the European Eco-label\(^1\), the details to the revision process can be found.

2.2 Overview

Product group

Soil Improvers are defined as “materials to be added to the soil in situ primarily to maintain or improve its physical properties, and which may improve its chemical and/or biological properties or activity”.

The physical properties of the soil can be influenced in many ways. The current criteria however are tuned primarily to products that improve the physical structure of the soil by adding stable organic matter.

Two main waste streams containing high levels of organic matter are bio-/green waste and sludges produced by waste water treatment facilities. Sewage sludge (produced by urban waste water treatment plants) is currently not admitted in Eco-labelled soil improvers.

The total annual amount of bio- and green waste in the EU is estimated to be nearly 60 million Mg. Presently, some 30% of this waste is separately collected. This results in an annual compost production of around 9 million Mg. Most composts are applied as soil improver in agriculture and landscaping. Relatively low volumes find upmarket application in for example the production of high quality top soils or as constituent in growing media.

Growing media

Growing media are defined as materials, other than soils *in-situ*, in which plants are grown.

Growing media have two main application areas; the professional and hobby market. In the professional market, growing media are applied on a large scale in soil-less greenhouse and/or container cultures. In the hobby market, growing media are better known as potting soil.

\(^1\) [http://europa.eu.int/comm/environment/ecolabel/product/pg_soilimprovers_en.htm](http://europa.eu.int/comm/environment/ecolabel/product/pg_soilimprovers_en.htm)
Chapter 2 - Revision process overview

The total volume of growing media consumed in the EU (hobby and professional) is estimated to be some 20 - 30 million m³ annually. Hobby applications account for approximately 60% of this volume. There is a broad spectrum of growing media available. Worldwide, peat based growing media cover some 90% of the market. Other materials applied are composts, synthetics and a wide range of natural organic products and minerals. Many growing media are blends (formulations), where the mix of materials is determined by the required end-product characteristics, availability and price of raw materials. For many materials, the required end-product characteristics set maximum application levels.

Similar to soil improvers, quality certification of growing media is essential to market acceptance. Lack of quality may not only lead to financial damage, but also to environmental damage that by far exceeds the environmental input of the growing medium itself.

**Status quo**

In April 1998, initial criteria were published for the award of the European Eco-label for Soil Improvers. The criteria focussed entirely on the use of soil improvers for home gardening. A first revision of the criteria was finalised in June 2001. During this revision, an important point of attention was to broaden the scope to professional applications of soil improvers and to extend the criteria to cover growing media as well.

The existing criteria aim in particular at promoting:

- the use and/or re-use of organic matter derived from waste material;
- the reduction of environmental damage or risks from heavy metals and other hazardous compounds.

Since the last revision, the number of licence holders has grown considerably (from 5 to 17) and the total sales of Eco-labelled soil improvers has been multiplied (to approximately 140.000 Mg in 2003). The broadening of scope to professional applications of soil improvers has contributed considerably to this volume growth. So far, only one producer of growing media (hobby market) has applied for the European Eco-label.

**Focal points**

As was decided during the previous revision in 2001, the 2005 revision paid particular attention to the following issues:

- the possible use of sewage sludge in this product group;
- evaluation of other growing media;
- a reassessment of the use of peat;
- completion of this product group by other sub-product groups such as humifying ecosystems and organic fertilisers;
- a reassessment of nutrient loadings.

The first Background Document addressed these topics by putting recent developments into perspective, including their possible impact on the current criteria of the European Eco-label. The ‘Thematic Strategy on Soil Protection’ introduced by the Commission in 2002, and the development of ‘Wise Use Guidelines for the use of mires and peatlands’
are just two examples of initiatives that were elaborated. In addition, special attention was paid to:

- the availability of updated Life Cycle Inventories for the product group;
- experiences of Competent Bodies and current licence holders with the existing criteria.

On March 15 2005, a first meeting of the Ad Hoc Working Group was held in Brussels. Using the first Background Document as guidance, a variety of topics regarding SI and GM was discussed.

The main conclusion of AHWG-1 was that revision of the existing criteria on SI and GM is desirable. Other recommendations were:

- to make a stronger division between the criteria for SI on the one hand and GM on the other, thus reflecting the fundamental differences in formulation and application;
- not to expand the product group with (organic) fertilizers or humifying ecosystems;
- not to tighten the current criteria for heavy metals since they are already experienced as very strict;
- to re-evaluate the criteria for nutrient loadings in line with the most recent scientific views on this subject.
- to revise the criteria for odour and salmonella;
- to assess the possible admission of composted (or otherwise treated) sewage sludge (see chapter 3 - page 6);
- to compile an overview of available LCA data on various growing media such as minerals (chapter 4 - page 11);
- to explore the possibility, on the basis of an overview of environmental benefits and doubts, of a restricted admission of peat in Growing Media² (chapter 5- page 20);
- to bring the quality criteria in the European Eco-label more in line with existing European quality criteria, standards and measuring methods (chapter 6 - page 22);

The possible inclusion of (sewage) sludge, minerals and peat products have received ongoing attention throughout the revision process. The latest results are presented in the following chapters. Here, an overview of revision proposals that already reached consensus earlier.

**Split-up**

The criteria set for Soil Improvers and Growing Media have been split up entirely. A number of criteria that are not relevant to Growing Media (for example a minimum content of organic matter) have been removed.

**Criterion 2b**

The general opinion on criterion 2b regarding pesticides³ was that it was ill defined and therefore difficult to enforce in practice. It turned out that the term ‘pesticides’ referred

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² There is a broad consensus on the continued ban of peat in Soil Improvers
³ Products shall not contain bark which has been treated with pesticides.
specifically to Lindane, a pesticide which has been phased out in forestry for several decades. The criterion is no longer regarded relevant and can therefore be removed.

**Criterion 4**

Regarding nutrient loadings (by soil improvers), the proposal is to simplify the existing criteria by removing criterion 4b\(^4\). In professional applications, nutrient loading is covered sufficiently by national legislation falling within the framework of the EU Nitrate Directive. Regular hobby applications of (non fertilised) soil improvers are not expected to pose any relevant environmental threat as far as nutrient loadings are concerned. The Nitrogen-criterion (4a) sufficiently marks the dividing line with the neighbouring product group of organic fertilisers. The existing criterion\(^5\) has been raised from 2% total N (of dry weight) to 3% (by weight) in line with French legislation\(^6\). This, in combination with the additional requirement that at least 80% of total N is organic provides sufficient safeguards for a modest and slow nutrient release.

**Criterion 5C**

It is proposed to remove the criterion on odour. The main reason for this is that there is no generally accepted testing method. In addition, no applicants have been rejected so far on the basis of this criterion.

**Criterion 9**

In France, the term "amendement pour sols" mentioned in 9b of the current European Eco-label decision is replaced by the term "amendement organique" which is also used in French soil improver legislation.

**Criterion 10**

Current box 2 of the European Eco-label contains the text “promotes the use of organic waste”. It proves that this text doesn’t promote product sales. A simple correction is proposed doing justice to the heart of the matter: “promotes re-use”

**Miscellaneous**

It would be preferred to have a direct reference in the European legislation on organic farming to Eco-labelled soil improvers (this reference currently does not exist). The introduction of such a reference lies however outside the scope of the AHWG or the EUEB.

In a number of criteria, such as those referring to heavy metals and product information, a reference is made in the draft revised criteria to national legislation. In this, the provision is made that the European Eco-label criteria prevail unless national legislation is more strict or binding.

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\(^4\) being: When used at the rates of application as recommended in the information provided with the product, the product shall not exceed maximum nutrient loadings of:
- 17 g/m\(^2\) total nitrogen
- 10 g/m\(^2\) P\(_2\)O\(_5\)
- 20 g/m\(^2\) K\(_2\)O

\(^5\) being: “The concentration of nitrogen in the product shall not exceed 2% total N (of dry weight) and inorganic N must not exceed 20% total N (or organic N \(\geq 80\%\)).”

\(^6\) NF U 44-051
3 Sewage sludge

3.1 Introduction

The discussion on sewage sludge made clear that there is a fundamental difference between (human) sewage sludge and (non sewage) sludges which are for example produced in large quantities by the food & beverage industry. Sewage sludge is by definition sludge produced by municipal waste water treatment facilities. Non sewage sludges can already comply with the present criteria.

Some members of the AHWG have suggested that the distinction between sewage sludge and other sludges was never explicitly made or properly explained, and that a selection of sludges (on origin) or even additional criteria should be defined in order to exclude undesirable environmental risks.

As far as sewage sludge is concerned, the general opinion is that its quality and composition have improved considerably over recent years, but that sewage sludge possibly still contains a wide variety of contaminants that are difficult to monitor since sewage sludge is derived from a widespread number and type of sources. In order to get a better insight, a short survey was made on quantitative data regarding contaminants in (treated) sewage sludges.

A substantial part of the AHWG supported the idea of admitting selected (non sewage) sludges under the revised criteria, given, where necessary, effective criteria to ban risks for health and environment. The Competent Bodies were also consulted on this topic. This chapter reports the results.

3.2 Field data on contaminants in sewage sludges

USA

In the U.S., the first available national data on sludge content date back to 1988 (the 1988 National Sewage Sludge Survey of 208 treatment plants). It identified over 100 synthetic organic compounds (not including pesticides) in sludge, including phthalates, toluene, and chlorobenzene. The average sample contained almost 9 synthetic organic contaminants. Dioxins were found in sludge from 179 out of 208 systems (80%). In addition, 42 different pesticides were found - at least one in almost every sample, with an average of almost 2 pesticides per survey sample. None of these chemical contaminants are regulated in sludge7 [Hettenbach 1998].

In the second half of the 1990’s, scientists started to criticized the EPA’s regulatory framework for only focusing on a handful of the dozens of toxic chemicals that are found in sludge, and for formulating regulations based on wrong assumptions regarding human exposure and “allowable risks” [Harrison 1997].

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7 The survey was conducted before the enforcement of regulations requiring pretreatment of industrial waste prior to its being sent to sewage treatment plants. The survey also predated EPA’s regulatory restrictions on nine heavy metals for which monitoring is currently required.
In 2000 the CDC/NIOSH identified Class B sewage sludge as a potential hazard to workers who handle this material, and the same year an EPA office concluded that due to lack of data and lack of oversight the EPA could not assure the public that land application practices would be protective of human health and the environment. A new, national sewage sludge survey, comprising samples from about 100 waste water treatment plants was conducted in 2001. The survey indicated that the levels of dioxins in treated sewage sludge have declined since the EPA survey in 1988. After five years of study, including outside peer review, the Agency determined that dioxins from this source do not pose a significant risk to human health or the environment. As a result, EPA decided not to regulate these substances in land-applied sewage sludge [EPA 2003-1].

As part of the Round Two Sewage Sludge Regulation, a list of potentially hazardous substances in (treated) sewage sludges has been compiled that should be taken into consideration in future rulemaking [EPA 2003-2]. Research is ongoing.

Europe

In 2002, The Swedish Environmental Protection Agency (EPA) evaluated the need for revised regulations on the use of sewage sludge on agricultural land. [Samsøe 2002]. The report presents a review of a number of different studies regarding the occurrence and risks (for human health and the environment) of different organic contaminants in relation to the use of sewage sludge in agriculture. The review is thorough and detailed and includes material from Sweden, Norway, Denmark, Germany, the United Kingdom and the USA. In addition, reports compiled for the European Commission are taken into account.

Most studies included:

- identification of ‘substances of concern’ (some 44 substances in various groups such as PCDDs, PCBs, PAHs, Alkylphenols, Phthalates and LAS);
- an inventory of the concentration of these substances in sewage sludges;
- dispersal routes (soil uptake, evaporation, leaching, plant and animal uptake);
- risk assessment and precautionary measures (prevention, maximum concentrations, maximum loads, monitoring of accumulation in the soil).

For two groups of organic substances of concern, the information gathered in the survey is summarised as follows [Samsøe 2002, p. 38]:

1. Biodegradable, not very bioaccumulative substances, which are found in relatively high concentrations in sludge in some countries (LAS, NP, DEHP) offer low concern, given sufficiently low concentrations (for example the Danish limit values);

2. Persistent, bioaccumulative substances, which are generally found in low concentrations in sludge: limit values can and should be enforced in order to effectively reduce the danger of accumulation in soil. Limit values such as already in use in Nordic countries are regarded to be sufficient.

Next to a list of substances of concern, there is a list of substances potentially of concern [Samsøe 2002, p. 28]. This list includes a variety of chemicals (such as...
brominated fire retardants), pharmaceuticals and endocrine disrupters. Much of their effects on and in the soil are only poorly known or under research. It is noted that in many cases, human exposure to these substances due to the application of sewage sludges in soil is much lower than the exposure inflicted by other routes.

All in all it is concluded that “In general, the risk assessments (in terms of effects on human health or the environment), which have been carried out by several authorities indicate very low immediate risks from the application of sewage sludge to soil - especially with the restrictions in the application practice (reducing human exposure), such as already in operation in various European countries. Therefore, the main problem is whether a long-term build-up of concentrations of persistent contaminants in agricultural soil is acceptable, from a human health and environmental point of view, even if the immediate risk is negligible. This should be seen in the light of the continuous identification of “new” substances of concern but also the continuous awareness in society and authorities of persistent organic contaminants and the subsequent measures taken to reduce the use and/or formation of these” [Samsøe 2002, p. 50].

3.3 Opinions of CB’s on the inclusion of sludges

In view of the above, the Competent Bodies were asked (summer 2005) to express their preference for one of the following statements:

1) Soil improvers and growing media that include sludge, including (products) derived from sewage sludge, should be able to apply for the Flower if they are properly treated (composted) and under appropriate restrictions.

2) Sewage sludge should remain excluded. There are too many risks to its application. Other sludges should be allowed under certain conditions (There should be a list of sludges (by origin) and possibly additional criteria in order to exclude undesirable environmental and health risks).

3) All sludges should be excluded from the European Eco-label since there are in general too many risks related to their application in soil improvers and growing media.

A clear majority of responses is in favour of option 2 (no sewage sludge, other sludges under restrictions). The general feeling is that there are still too many risks in the application of (treated) sewage sludge. Other sludges should be allowed, unless source separated from selected sources, properly treated and under the right product criteria.

3.4 Conclusion

Every day practice in a number of European countries proves that sludges (including sewage sludge) can be applied safely as a soil improver, given the right set of criteria and controls. One of the main elements is evidently the quality of the incoming material. And this is the main obstacle for allowing (treated) sewage sludges (and derived products) under the European Eco-label. Across Europe, the quality of sewage sludges shows large variations, depending on for example:
• the types of sources connected to the sewage system - households, small businesses, 
  industry, run off of public roads and drainage by the sewage system,
• National policies for reducing hazardous substances in products.

In addition, the health and environmental effects depend on the type of application (as 
illustrated by for example the UK Safe Sludge Matrix).

The general feeling of the Competent Bodies is that selected (non sewage) sludges and 
products derived thereof should be admitted to the European Eco-label given the right 
criteria. These criteria should include:
• sources (food and beverage industry);
• sludge quality before treatment (heavy metals, PCBs and PAHs);
• treatment (composting);
• the properties of the final product (concentration of heavy metals, concentration of 
  PCBs and PAHs, limit values for micro-organisms);

All these topics are covered extensively by French Norm NF U 44-0958 which is in 
operation for some years now. It has been used as a basis for Eco-label criteria 
regarding the application of (non sewage) sludge products in Soil Improvers (criteria 
are highlighted below).

All in all it is concluded that the topic of safe sewage sludge application is so complex 
and the possible consequences of unsafe application are so far reaching, that first 
consensus on European level (policy and legislation) should be achieved before 
admitting sewage sludge to the European Eco-label.

Proposed criteria for the application of sludge

(Non-sewage) sludges are allowed only if they meet the following criteria:

Sludges are identified as one of the following wastes according the European list of wastes9

02 03 05 - sludges from on-site effluent treatment in the preparation and processing of fruit, vegetables, cereals, 
edible oils, cocoa, coffee, tea and tobacco; conserve production; yeast and yeast extract production, molasses 
preparation and fermentation.
02 04 03 - sludges from on-site effluent treatment in sugar processing.
02 05 02 - sludges from on-site effluent treatment in the dairy products industry.
02 06 03 - sludges from on-site effluent treatment in the baking and confectionery industry.
02 07 05 - sludges from on-site effluent treatment in the production of alcoholic and non-alcoholic beverages 
(except coffee, tea and cocoa).

(to be continued)

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8 ‘Amendements organiques - Composts contenant des matières d'intérêt agronomique, issues du traitement 
des eaux / Organic soil improvers - Composts containing substances essential to agriculture, stemming 
from water treatment.
**Proposed criteria for the application of sludge (continued)**

<table>
<thead>
<tr>
<th>Proposed criteria</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>03 03 05</td>
<td>de-inking sludges from paper recycling.</td>
</tr>
<tr>
<td>03 03 10</td>
<td>fibre rejects, fibre-, filler- and coating-sludges from mechanical separation in the production and processing of pulp, paper and cardboard.</td>
</tr>
<tr>
<td>03 03 11</td>
<td>sludges from on-site effluent treatment in the production and processing of pulp, paper and cardboard other than those mentioned in 03 03 10.</td>
</tr>
<tr>
<td>04 01 07</td>
<td>sludges, in particular from on-site effluent treatment free of chromium from the leather, fur and textile industries.</td>
</tr>
<tr>
<td>04 02 20</td>
<td>sludges from on-site effluent treatment other than those mentioned in 04 02 19(^{10}) [containing dangerous substances] from the textile industry.</td>
</tr>
</tbody>
</table>

Sludges are single source separated, meaning that there has been no mixing with effluents or sludges outside the specific production process.

<table>
<thead>
<tr>
<th>maximum concentrations organic pollutants before treatment</th>
<th>mg/kg (dry weight)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- total of 7 PCBs (28+52+101+138+153+180)</td>
<td>0.8</td>
</tr>
<tr>
<td>- Fluoranthene</td>
<td>5</td>
</tr>
<tr>
<td>- Benzo(oh)fluoranthene</td>
<td>2.5</td>
</tr>
<tr>
<td>- Benzo(a)pyrene</td>
<td>2</td>
</tr>
</tbody>
</table>

Sludges are stabilized/sanitized by (co-)composting. The end product is subject to all other European Eco-label criteria specified in this Annex.

*Note: sufficient additional safeguards for health and safety and environmental properties of the final product are supplied by criterion 2a (heavy metals), 4a (nutrients) and 6 (E.coli and Salmonella).

As opposed to NF U 44-095, the list of sludges does not include 02 02 04 - sludges from on-site effluent treatment in the preparation and processing of meat, fish and other foods of animal origin. The reason for this is that safe application of these type of sludges would require contamination tests on heat resistant bacteria such as clostridium perfringens and enterococci.

As part of Project Horizontal, testing methods currently available were evaluated. It was concluded that most testing methods are developed for detection of these bacteria in water and foodstuffs. A complete assessment and suitable modification of these methods would be needed to make them applicable for sludge or bio-waste analysis [Warnes 2004].

\(^{10}\) 04 02 19 - sludges from on-site effluent treatment in the textile industry containing dangerous substances.
Chapter 4 - Other growing media

4 Other growing media

4.1 Introduction

The AHWG supported the idea that the organic compounds mentioned in the background document (coir, (composted) bark, wood fibre, rice hulls, …) should be regarded as waste products (or at best as by-products) as defined by the existing criteria. Products containing these materials can therefore already apply for the European Eco-label in its present form; no additional requirements have to be developed.

Regarding non organic components and products: the AHWG agreed that if these products prove to have a favourable environmental profile (as suggested by the 2nd background document), they should be able to apply for the Flower. This paragraph looks at mining, production and after use of mineral growing media. Consequently, possible additional criteria are proposed to secure continued high environmental standards for the European Eco-label to SI and GM. Criteria are based on publicly available data.

4.2 Scope

Next to organic growing media (constituting at least 80 - 90% of the market), mineral wool and perlite are the most widely used non organic growing media. They are used both as a mono material and as a co-constituent. Other minerals applied are vermiculite (the production of which is almost similar to that of perlite), clay (both expanded clay granules used as a mono material and raw clay used in minor fractions as a co-constituent), pumice (co-constituent) and foam products (mono material). Since clay granules and foam products only have small market shares, and only little environmental data is available, the scope of the following paragraphs is on stone wool and perlite. First of all, their environmental profiles will be assessed.

4.3 Environmental profiles

4.3.1 General

Before discussing the environmental profiles of stone wool and perlite, it is important to realise that there are two environmental effects that are not addressed by the LCAs taken into consideration:

• impact on biodiversity and landscape due to mining activities, and
• the issue of after use waste.

Both topics are covered further on in this document (see § 4.5 on page 16 and § 4.6 on page 18).

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11 in Background Document 1, their joint market share is estimated to be some 5% of the Growing Media market (hobby + professional (see pp. 16 and 17). Their annual consumption is estimated to be nearly 1 million m³ (stonewool) and 140.000 m³ (perlite)
4.3.2 Stone wool

Production

The production of stone wool growing media comprises the following main sequence: Acquisition of rocks/stones - molten stone - spun fibres - stone wool fibre mats - packaging [Schmidt 2004].

The main raw materials for stone wool are natural stones (diabas, Gotland stone, basalt, lime stone, bauxite) accounting for about 77% of the raw materials for briquettes, while the remaining 23% are industrial waste materials, e.g. from cement and steel production and pre- and post consumer stone wool waste.

The minerals are molten and together with binder and impregnation oil poured on to rotating wheels, thus producing fibres under the influence of a powerful airflow. The product is cured in a polymerisation chamber and, finally, the stone wool is cut into the desired dimensions and packaged in polyethylene foil.

Binder is produced on-site from a number of chemicals and accounts for about 8% of the overall material input to the production process. Phenol, formaldehyde and urea are mixed with a catalyst in a reactor. Subsequently ammonia and silane are added in a precipitator, where the catalyst is recovered for recycling.

The inventory covered the accumulated in- and outputs to all processes, and it is thus not possible to quantify and distinguish between the impact from the single production steps. The life cycle inventory covers raw materials acquisition, production processes, and packaging.

The life cycle inventory for stone wool production has been established by using up-to-date information of a Danish production facility [Schmidt 2004, pp. 53-66] and a production facility in the Netherlands [Milieukeur 199912].

When looking at both life cycle inventories, it becomes clear that main environmental aspects linked to the production of stone wool are the following:

• energy consumption / the emission of greenhouse gasses (primarily the emission of CO₂ but also NOx);
• the emission of toxic substances to the air (SOx and also NOx);
• acidification (emission of SOx, Ammonia and NOx);
• photochemical smog (emission of hydrocarbons and volatile organic compounds).

Together, the emissions of CO₂, NOx, SOx, Ammonia and hydrocarbons cover at least 80 - 90% of the overall environmental profile of stone wool production. An overview of the main environmental effect is given in table 4.3.2.1.

12 LCA data for this production facility were based on studies performed in 1992.
Table 4.3.2.1  The main environmental effects of the production of stone wool and their drivers

<table>
<thead>
<tr>
<th>Effect</th>
<th>greenhouse</th>
<th>photochemical smog</th>
<th>acidification</th>
<th>human toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>contribution of individual emissions to the overall effect (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO2</td>
<td>80 - 90</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CxHy / VOC*</td>
<td>75 - 90</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOx</td>
<td></td>
<td>50 - 60</td>
<td>60 - 80</td>
<td></td>
</tr>
<tr>
<td>NOx</td>
<td>10 - 20</td>
<td>15</td>
<td>10 - 15</td>
<td></td>
</tr>
<tr>
<td>Ammonia</td>
<td></td>
<td>30 - 35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>&gt; 90</td>
<td>&gt; 75</td>
<td>&gt; 95</td>
<td>&gt; 75</td>
</tr>
</tbody>
</table>

*VOC Volatile Organic Compounds

Inventory
An overview of available life cycle information is given below in table 4.3.2.2. The emission of ammonia is linked to the application of binder. In practice, variations will occur depending on binder formulation and the type of flue gas cleaning applied. Differences in energy consumption, CO₂, SOx and NOx are due to variations in the energy mix.

The data in the right column of table 4.3.2.2 present the average of data retrieved from a Danish LCA [Schmidt 2004] and data provided by Grodan [Grodan 2005]. These data, which are fairly consistent with data presented in Rockwool’s annual environmental report, have been used as reference data in this Background Document.

Table 4.3.2.2  Energy input and selected emissions of stone wool production as indicated by various sources

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy/feedstock (MJ/kg)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coal</td>
<td>9.54</td>
<td></td>
</tr>
<tr>
<td>Oil</td>
<td>1.24</td>
<td></td>
</tr>
<tr>
<td>Natural gas</td>
<td>1.23</td>
<td></td>
</tr>
<tr>
<td>Biomass</td>
<td>0.45</td>
<td></td>
</tr>
<tr>
<td>Electricity (primary)</td>
<td>3.29</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>17.53</td>
<td>15.75</td>
</tr>
<tr>
<td>Emissions (g/kg)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO₂</td>
<td>1,200</td>
<td>940</td>
</tr>
<tr>
<td>Hydrocarbons (C₅H₆)</td>
<td>0.59</td>
<td>0.73</td>
</tr>
<tr>
<td>Sox</td>
<td>6.6</td>
<td>4.66</td>
</tr>
<tr>
<td>NOx</td>
<td>-</td>
<td>1.36</td>
</tr>
<tr>
<td>Ammonia</td>
<td>-</td>
<td>1.37</td>
</tr>
</tbody>
</table>

¹ ‘functional unit’ in Environmental report is 1 m² 250 mm loft insulation equalling 8 kg’s of stone wool.
² Data are average values of two sources
³ Including data from the UK (Bowdidge J., 1998 - unpublished) as reported by Schmidt et all.
⁴ Grodan’s environmental management system is certified according EMAS and ISO 14000 standards
4.3.3 Perlite

Introduction

Worldwide, some 1.7 million tonnes of perlite is produced annually. The most important mining locations are in the USA, Greece, Japan and Turkey. The explorable resources are estimated at 2,000 million tonnes. The most important applications are construction material (70%), filter material (10%) and horticulture (10%) [Bolen 1996]. In horticulture, perlite is being used primarily as a mono material substrate but also as supplement to potting soil mixes.

Production

The LCA of perlite includes the following production steps:

- mining and pre-processing of perlite ore;
- transport of perlite ore to the perlite producer;
- production of perlite growing media;

Most perlite produced in Europe originates from ores mined in Greece. The ores are produced in open pit mining on the isles of Kos and Milos. For more information on the environmental effects of mining, see § 4.5 on page 16. After pre-treatment (granulating), the ores are shipped to the production location. There, the granules are heated to a temperature of some 1000 °C. At this temperature, the mineral water enclosed in the granules transforms into gas, thus expanding the material to 20 times its original volume.

There are various producers of horticultural perlite throughout Europe. In the LCA performed by the RHP-foundation, a production facility in the Netherlands has been used as reference. An overview of the production process is given in Figure 4.3.3.1. Detailed assumptions and basic data used for the LCA of perlite are documented by the RHP-foundation [RHP 2004]. The energy consumption of the perlite furnace is based on data provided by a leading manufacturer of perlite production equipment [Incon 2004].

Figure 4.3.3.1 Process flow perlite

Source: RHP foundation
The environmental profile of 1 m³ of perlite is displayed in figure 4.3.3.2. There appears to be two main contributions to the overall environmental profile: transport of raw materials and the perlite furnace. Since both contributions are primarily energy related, the main environmental effects lie in the field of greenhouse gas emissions, acidification, toxic emissions and (obviously) energy consumption.

The environmental profile of perlite proves highly sensitive to transport distances, and to a lesser extent also the energy efficiency of the perlite furnace.

The influence of transport distances is considerable. Relocation of production/distribution in North-western Europe to for example the South of France leads to an impact reduction of 40 - 60%.

Furnace efficiency is another aspect for which the environmental profile shows high sensitivity, albeit not as high as for variations in transport distance. Every 10% increase in efficiency leads to a 5% gain on the overall energy consumption and a similar reduction in the emission of greenhouse gases. The impact on the other impact categories is limited.

4.4 Stone wool and perlite versus other growing media

The environmental profiles of stone wool, perlite and a number of other growing media constituents are displayed in figure 4.4.1. The environmental profile of stone wool displays the average of Danish and Dutch production locations. The ‘compost mix’ in figure 4.4.1 represents a 50/50 mix of household waste compost and green waste compost (both products generating different emissions). In order to put things into perspective, also the profile of 250 kilometres of road transport by passenger car is added (generating environmental effects in the same order of magnitude as 1 m³ of growing media).
Figure 4.4.1 indicates that the environmental profiles of stone wool and perlite are more or less in line with the profiles of waste materials: variations fall within the margins of uncertainty that should be taken into account in this type of analyses. Only energy consumption is clearly higher. This does however not lead to higher emissions of greenhouse gasses.

4.5 Mineral mining

General

In both stone wool and perlite, minerals are applied that originate from open pith mining. The European mining industry - collaborating in Euromines - has adopted a guideline to minimise the environmental burden of mining activities\(^\text{13}\). All associated companies have committed themselves to act in line with the principles of sustainable development (people, planet, profit). The guideline observes (and accepts) that:

- mining will always have adverse effects on the environment;
- that these effects can be substantially reduced by making the right efforts;
- that these efforts should cover all phases of mining (planning, exploitation, shut down and post exploitation);
- that all associated companies should communicate openly with all stakeholders about the measures taken and results achieved.

Efforts to minimise the environmental effects of (open pith) mining primarily focus on:

- loss of biodiversity (including restoration);
- process emissions (dust, energy, chemicals);

• waste management (in particular tailings - residues that remain after the production and processing of ores);
• development and introduction of branch specific environmental management systems.

In the European Eco-label for hard floor coverings, an extensive set of criteria is used to secure a limited environmental impact due to the open pith mining of minerals. Obviously, the main reason for this was that mining activities constitute the main part of the environmental impact of that product group. When looking at the feasibility of adopting (parts) of the mining criteria for floor covering to growing media, two elementary questions have to be answered:

1) Can origins of the minerals be traced back to individual mining locations?
2) What is the environmental impact of mining, both in absolute terms and in relation to the overall environmental profile of stone wool and perlite?

Answer question 1
In all cases, the origins of the minerals are known. Minerals from different mining locations have different properties. In order to produce an end product within strict specifications, the properties of raw materials have to be constant. This means that over a longer period, minerals originate from a limited number of mines. Their location is either known or can be figured out easily.

Answer question 2
The impact of mining activities on behalf of mineral growing media is limited. The main reason for this is that -other than in the case of hard floor coverings- only relatively small quantities of raw materials are needed to produce large volumes of growing media. Minerals typically have a density of 2,000 kg/m³ and more, whereas the density of the end product is in the range of 40 - 110 kg/m³. This means that for every cubic metre of growing medium, a maximum of 50 litre of minerals is mined (in most cases even less). For the entire annual consumption of stone wool growing media in Europe, some 10,000 m³ of minerals are being mined. This indicates that the environmental burden related to mining activities is hardly relevant compared to the environmental effects of the processing of this type of growing media. This is illustrated by for example the energy expenditure for the extraction and transport of raw materials to the processing plant, which hardly adds to the overall energy content of mineral growing media throughout their product life cycle.

It is therefore defendable to limit the requirements regarding mining to an elementary level. Materials should not originate from areas of special ecological interest.

Proposed criteria
More specifically minerals should not be extracted from:


14 Stone wool 45 kg/m³ and Perlite 80 - 110 kg/m³.
15 Estimated 930,000 m³ - see background document no. 1 - p. 17.
16 A football field, 1.25 m high.
17 Adopted from the European Eco-label for hard floor coverings

4.6 After use

After use, growing media waste material is released in considerable quantities. This applies in particular to crop rotation horticulture (such as the production of fruit vegetables, rose cultivation etcetera)\(^\text{18}\). This type of horticulture is the main growth market for mineral growing media. In line with producer responsibility, it would be desirable if a supplier of mineral growing media would offer his customer a waste removal option. This would prevent illegal waste disposal and meet a clear customer demand. This is underlined by the fact that various producers of growing media have already successfully introduced after use collection services.

Note: waste material does not have to be collected and processed physically by the manufacturer himself - in many cases this is even legally prohibited. The purpose of the after use criterion is that the manufacturer facilitates the removal and further processing of waste material, thus making his producer responsibility manifest.

Legal requirements on the collection, processing, re-use and disposal of (agricultural) waste materials differ substantially throughout the EU. Also, regional characteristics may be the reason that an option that proves effective in one place turns out to be fully counterproductive (also for the environment) in another. For example, the concentrated application of stone wool growing media in greenhouse clusters in the Netherlands, facilitates central processing of phased out stone wool slabs. In areas with incidental applications, this option would require extensive transport (raising the environmental impact of the overall life cycle).

It is therefore concluded that in professional applications, a take back option would be a logical and valuable addition to the European Eco-label criteria for growing media, but that the actual content of such a take back option is highly dependant on national legislation and local market characteristics. It is therefore not possible to formulate a single criterion on waste processing valid for all applications throughout Europe.

In order to underline the importance of the subject, and in support of the development of possible additional requirements in future revisions of the European Eco-label, the following criterion on after use growing media waste is proposed:

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\(^{18}\) As opposed to the production of ornamental plants, where growing media are part of the end product and shipped as such to the retailer and end consumer.
Proposed criteria For all substantial professional markets (i.e. countries where the applicant’s annual sales in the professional market exceeds 30,000 m³), the applicant informs the user about available options for the removal and processing of after use growing media. This information is integrated in the accompanying fact sheets.

The applicant will inform the Competent Body about the option(s) on offer and their response, in particular:

- a description of collection, processing and destinations. At any time, plastics should be separated from minerals/organics and processed separately;
- an annual overview of the volume of growing media collected (input) and processed (by destination).

4.7 Conclusions on mineral growing media

The above leads to the following conclusions regarding the inclusion of mineral growing media in the European Eco-label to SI & GM:

- their application reduces the emission of greenhouse gases as compared to peat based products. Their environmental profile is in line with waste derived products;
- the environmental criteria for minerals can be limited to criteria on mining and after use.

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19 Equal to approximately 300 hectares of horticulture.
5 Peat in growing media

5.1 Introduction

As far as the application of peat is concerned, there is consensus within the AHWG on the (continued) exclusion of peat in soil improvers. On the possible application of peat in growing media, the opinions of the members of the AHWG were diverse.

Arguments for excluding peat from Eco-labelled products:

• Peat is not a renewable material. Legitimate extraction still occurs on bogs designated for nature conservation, and on sites proposed as Natura 2000 sites20. This extraction is due to historical precedent rather than to wise use;

• In some applications, there are proven alternatives for peat (such as products based on coir and wood products). Admitting peat in growing media will undermine the credibility of the Eco-label. It will be a significant change to the existing criteria for which no convincing justification is available.

Arguments for allowing peat under strict criteria in Eco-labelled Growing Media:

• Peat extraction is strictly controlled and subject to permits in all EU Member States. If desired, it would be possible to set even more strict requirements for peat extraction to ensure a high level of environmental protection;

• In particular in professional applications, composts and other waste derived products are in their pure form not really suited as growing media. For example their potassium (K) content is in general to high. A co-constituent is needed to come to a well balanced product21. Peat proves most effective in compensating many of the less favourable characteristics of waste products. Allowing a certain percentage of peat will therefore stimulate the development and substantial application of mixtures with a high ratio of waste derived products.

5.2 Opinions of CBs on the inclusion of peat

In view of the above, the Competent Bodies were asked to express their preference for one of the following statements:

• Allowing peat in growing media is the wrong signal to consumers. It will obstruct the development of peat free products. Furthermore, it will undermine the credibility of the European Eco-label. We accept that this may result in a possible low (or zero) interest by applicants for professional growing media.

• The environment would benefit most by the maximum application of waste derived materials throughout the market of growing media. A strategy of progressive peat dilution is more effective in this than an absolute ban. Therefore, a certain level of peat produced under tight restrictions should be allowed in Eco-label products.

20 according information of the RSPB (the Royal Society for the Protection of Birds)

21 Note: Organic growing media usually are a blend of materials (or formulations).
In the hobby market, admitting peat may undermine the credibility of the European Eco-label and frustrate the position of peat free alternatives. At the same time, in professional applications, a continued ban on peat will obstruct the use of peat alternatives in horticulture. A pragmatic approach could be to hold on to the ban on peat in hobby products (growing media) but to allow a certain percentage of peat in professional applications, with strict requirements on peat extraction.

5.3 Conclusions

Looking at the replies so far, it shows that there is certainly support for allowing a certain percentage of peat, in particular in professional applications. However, for the CBs that are opposed, the peat issue seems to be a crucial one, much more so than to those who are in favour. Therefore it is proposed not to admit peat in the European Eco-label. The result of which may be a low (or zero) response to the European Eco-label by growing media producers.
6 Quality criteria and packaging

6.1 Introduction

In the second background document the issue of quality criteria was raised. It is concluded that it is impossible to include complete and effective quality criteria in the award scheme of the European Eco-label. In order to be complete, criteria would have to cover the entire spectrum of issues currently under review by Project Horizontal.22

As an alternative it was suggested to include a reference to existing quality labels and norms. In order to assess the feasibility of this option, an attempt was made to compile a list of viable quality systems (or hallmarks) to which the European Eco-label could refer in order to guarantee product functional quality.

6.2 Results

Below, there is an overview of quality standards for compost/soil improvers and growing media in operation in Europe today. The list refers to both legal requirements, (voluntary) standards and private labels. Note: the list is not necessarily complete!

Table 6.2.1 Functional criteria for Composts and Growing Media across Europe

<table>
<thead>
<tr>
<th>product group</th>
<th>quality system / norm</th>
<th>originating country</th>
</tr>
</thead>
<tbody>
<tr>
<td>composts/soil improvers</td>
<td>BGBI, BKAL, BSI PAS 100, BVOR, CIC, DK-EPA, KGVÖ, KIWA, legislation + technical norms, NFU 44-051 / NFU 44-095, RAL, RVF, Safe Sludge Matrix, VLACO</td>
<td>Austria, Austria, UK, Netherlands, Italy, Denmark, Austria, Netherlands, Czech Republic, France, Germany, Sweden, UK, Belgium</td>
</tr>
<tr>
<td>growing media</td>
<td>AENOR, BECAS, KIWA, legislation + technical norms, NFU 44-551, RAL, RHP</td>
<td>Spain, Belgium, Netherlands, Czech Republic, France, Germany, Netherlands</td>
</tr>
</tbody>
</table>

22 ref.: CEN BT/TF 151: “Horizontal Standards in the fields of sludge, biowaste and soil”
6.3 Evaluation

General analysis shows that there are significant differences in scope (compost, soil improvers, soil improvers and fertilizers, …), approach (product requirements, process requirements, …) and quality levels. The complexity of the matter was illustrated by information provided by UEAPME: In France alone, there are legal requirements laid down in a law which are implemented by a decree and different “arrêtées”. The law refers to French standards (NF U 44-051, NF U 44-095, NF U 44-551). Technical standards developed by CEN are also used. There are also 3 different private labels: La Charte des Supports de Culture (run by CAS), Terreau NF (NF 142 run by AFNOR - AFAQ) and Qualité France (run by qualité France) [UEAPME 2005]. Similar National clusters of legislation, norms and labels can be found throughout Europe.

In addition, national requirements, norms and labels are often not comparable as different methods are used for a single parameter.\(^\text{23}\)

As an alternative, the existing quality criteria in the European Eco-label are updated where necessary, and criteria that are not backed by generally accepted testing methods have been removed (i.e. odour). Updated information on testing methods will be contained by the revised User Manual.

6.4 Packaging (SI & GM)

In the hobby market, soil improvers and growing media (potting soil) are supplied in plastic bags (PE or PP). In the Netherlands, the applied foil sometimes contains a certain level of recycled material. It is however not clear whether this option is available throughout Europe.

In the professional market, soil improvers are usually supplied in bulk. Growing media are either supplied in bulk or using a variety of packaging such as bags, big bags, big bales etcetera. In some applications (such as growing bags), the packaging material has become an intrinsic part of the product, adding to its specific functionality. This is also the case in the professional application of stone wool and a number of other growing media where the substrate material is applied in combination with plastic foil surrounding the slabs.

Proposed criterion The following criterion on packaging is proposed, applicable to both soil improvers and growing media: Non-returnable packaging material shall be either PP or PE.

\(^{23}\) The main objective of Project Horizontal is to come to harmonisation in this field.
7 References


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EPA 2003-1 Anon., EPA Makes Final Decision on Dioxin In Sewage Sludge used in Land Applications, EPA press release, October 17, 2003


Grodan 2005 Grodan, personal communication J. Cuypers, 2005


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Milieukeur 1999 Aarts, R.J., Milieukeur substraat; onderzoek ten behoeve van het opstellen van Milieukeurcriteria, (research on behalf of the development of Milieukeur criteria for growing media - report code msp 3-2), SV&A sustainability consultants, NL, November 1999.


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Anon., UEAPME answers to the questions on the revision of the Eco-label for soil improvers and growing media, UEAPME, Brussels, September 2005.

Warnes 2004
Warnes, S., and Keevil, W., Desk studies on feasibility of horizontal standard rapid methods for detection of Clostridium perfringens and enterococci in Sludges, Soil, Soil Improvers, Growing Media and Biowastes, Project Horizontal Work Package 3, Task 4, University of Southampton, UK, May 2004
Annex I: Proposed revised criteria

Note: the proposed modifications are printed in **Bold Italic**

<table>
<thead>
<tr>
<th>Art.</th>
<th>Soil Improvers</th>
<th>Growing Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The product group ‘soil improvers’ (hereinafter referred to as ‘the product group’) shall comprise: materials to be added to the soil in situ primarily to maintain or improve its physical properties, and which may improve its chemical and/or biological properties or activity.</td>
<td>The product group ‘growing media’ (hereinafter referred to as ‘the product group’) shall comprise: material, other than soils in situ, in which plants are grown.</td>
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<tr>
<td>2</td>
<td>The environmental performance of the product group as defined in Article 1 shall be assessed by reference to the specific ecological criteria set out in the Annex.</td>
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<td>3</td>
<td>The product group definition and the criteria for the product group shall be valid for five years from the date on which this Decision takes effect. The period of validity of the product group definition and the criteria established by Decision 98/488/EC shall be modified to expire 12 months after the date on which this Decision takes effect.</td>
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<td>4</td>
<td>For administrative purposes the code number assigned to the product group shall be ‘003’.</td>
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<td>5</td>
<td>This Decision is addressed to the Member States.</td>
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</table>

**ANNEX**

**FRAMEWORK**

In order to qualify for the eco-label, a soil improver (growing media) (hereinafter referred to as ‘the product’ or ‘products’) must fall within the product group as defined in Article 1, and must comply with the criteria of this Annex, with tests carried out on application as indicated in the criteria.

Testing shall where applicable be carried out in accordance with test methods developed by Technical Committee CEN 223 ‘Soil improvers and growing media’.

Sampling shall be carried out in accordance with methodologies set out by CEN/TC 223 (WG 3) as specified and approved by CEN in EN 12579 — Soil improvers and growing media — Sampling. Where testing or sampling is required that is not covered by these methods and sampling techniques, the competent body or bodies assessing the application (hereinafter referred to as the ‘competent body’) shall indicate which testing and/or sampling methods it considers acceptable.

Where appropriate, other test methods may be used if their equivalence is accepted by the competent body. Where no tests are mentioned, or are mentioned as being for use in verification or monitoring, competent bodies should rely as appropriate on declarations and documentation provided by the applicant and/or independent verifications.

The competent bodies are recommended to take into account the implementation of recognized environmental management schemes, such as EMAS or ISO 14001, when assessing applications and monitoring compliance with the criteria in this Annex. (Note: it is not required to implement such management schemes.)

These criteria aim in particular at promoting:

- the use of renewable materials and/or re-use of organic matter derived from the collection and/or processing of waste material and therefore contributing to a minimization of solid waste at the final disposal (e.g. at landfill),
- minimization of environmental impact in retrieval and production of non renewable materials (only applicable to Growing Media)
- the reduction of environmental damage or risks from heavy metals and other hazardous compounds due to application of the product (only applicable to soil improvers).

The criteria are set at levels that promote the labeling of soil improvers and growing media that have a lower environmental impact during the whole life-cycle of the product.
Note: the proposed modifications are printed in **Bold Italic**

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<tr>
<th>Art.</th>
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<tbody>
<tr>
<td></td>
<td>ECOLOGICAL CRITERIA</td>
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<tr>
<td>1a</td>
<td>Organic ingredients</td>
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<td></td>
<td>A product shall only be considered for the award of an eco-label if its organic matter content is derived from the processing and/or re-use of waste materials (as defined in Council Directive 75/442/EEC of 15 July 1975 on waste, as amended by Directive 91/156/EEC of 18 March 1991 442/EEC on waste and in Annex I to the said Directive. The applicant shall provide the competent body with the detailed composition of the product, and a declaration of compliance with the above requirement.</td>
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<tr>
<td>1b</td>
<td>Products shall not contain sewage sludge.</td>
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<td></td>
<td>[Added] (Non-sewage) sludges are allowed only if they meet the following criteria:</td>
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<td></td>
<td>Sludges are identified as one of the following wastes according to the European list of wastes (as defined by Commission Decision (2001/118/EC amending Decision (2000/532/EC):</td>
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<td></td>
<td>02 03 05 - sludges from on-site effluent treatment in the preparation and processing of fruit, vegetables, cereals, edible oils, cocoa, coffee, tea and tobacco; conserve production; yeast and yeast extract production, molasses preparation and fermentation</td>
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<td></td>
<td>02 04 03 - sludges from on-site effluent treatment in sugar processing.</td>
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<td>02 05 02 - sludges from on-site effluent treatment in the dairy products industry.</td>
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<td>02 06 03 - sludges from on-site effluent treatment in the baking and confectionery industry.</td>
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<td>02 07 05 - sludges from on-site effluent treatment in the production of alcoholic and non-alcoholic beverages (except coffee, tea and cocoa).</td>
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<td>03 03 05 - de-inking sludges from paper recycling.</td>
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<td>03 03 10 - fibre rejects, fibre-, filler- and coating-sludges from mechanical separation in the production and processing of pulp, paper and cardboard.</td>
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<td>03 03 11 - sludges from on-site effluent treatment in the production and processing of pulp, paper and cardboard other than those mentioned in</td>
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<td>03 03 10.04 01 07 - sludges, in particular from on-site effluent treatment free of chromium from the leather, fur and textile industries.</td>
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<td></td>
<td>04 02 20 - sludges from on-site effluent treatment other than those mentioned in 04 02 19.</td>
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<td>Sludges are single source separated, meaning that there has been no mixing with effluents or sludges outside the specific production process.</td>
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<td>Maximum concentrations organic pollutants in the waste before treatment: (mg/kg dry weight)</td>
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<td>- total of 7 PCBs (28+52+101+138+153+180) 0,8</td>
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<td></td>
<td>- Fluoranthene 5</td>
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<td></td>
<td>- Benzo(a)fluoranthene 2,5</td>
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<td></td>
<td>- Benzo(a)pyrene 2</td>
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<td>Sludges are stabilized/sanitized by (co-)composting. The end product is subject to all other Eco-label criteria specified in this Annex.</td>
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<td>The applicant shall provide the competent body with the detailed composition of the product, and a declaration of compliance with each of the above requirements.</td>
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<tr>
<td>1c</td>
<td>[Added] Minerals should not be extracted from:</td>
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24 04 02 19 - sludges from on-site effluent treatment in the textile industry containing dangerous substances.
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<td><strong>ECOLOGICAL CRITERIA (Cont’d)</strong></td>
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2a Limitation of hazardous substances

In the final product, the content of the following elements shall be lower than the values shown below, measured in terms of dry weight:

[added] Note: These limit values are valid unless national legislation is more strict

The applicant shall provide the competent body with the relevant test reports, and a declaration of compliance with this requirement.

2b [removed - no longer regarded relevant - see background document 2 and minutes 2nd AHWG]

*Products shall not contain bark which has been treated with pesticides.*

3 Physical contaminants

In the final product (with mesh size > 2 mm), the content of glass, metal and plastic shall be lower than 0.5 % as measured in terms of dry weight.

The applicant shall provide the competent body with the relevant test reports, and a declaration of compliance with this requirement.

4a The concentration of nitrogen in the product shall not exceed [changed] 3 % total N (by weight) and inorganic N must not exceed 20 % total N (or organic N ≥ 80 %).

[existing criterion: 2 % total N (of dry weight)]

4b [removed - no longer regarded relevant - see background document no. 2 and minutes 2nd AHWG]

(b) When used at the rates of application as recommended in the information provided with the product, the product shall not exceed maximum nutrient loadings of:

— 17 g/m² total nitrogen
— 10 g/m² P₂O₅
— 20 g/m² K₂O

Note: This requirement does not apply to products where less than 10 % (w/w) of the nutrient content is available for plant growth during the first season of application. Such products (for example many mulches) are defined as those having a C:N ratio greater than 30:1.

The applicant shall provide the competent body with the relevant test reports and documentation, and a declaration of compliance with these requirements.
Note: the proposed modifications are printed in **Bold Italic**

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<tr>
<td>5</td>
<td><strong>Product performance</strong>&lt;br&gt;(a) Products shall be supplied in a solid form and contain not less than 25 % dry matter by weight and not less than 20 % organic matter by dry weight (measured by loss of ignition).&lt;br&gt;(b) Products shall not adversely affect plant emergence or subsequent growth.&lt;br&gt;(c) (removed - no generally excepted testing method) Products shall not give rise to offensive odours after being applied to the soil. The applicant shall provide the competent body with a declaration of compliance with these requirements, together with related test reports and documentation.</td>
<td>(a) <strong>(removed)</strong> Products shall be supplied in a solid form and contain not less than 25 % dry matter by weight and not less than 20 % organic matter by dry weight (measured by loss of ignition).&lt;br&gt;(a) Products shall not adversely affect plant emergence or subsequent growth. The applicant shall provide the competent body with a declaration of compliance with these requirements, together with related test reports and documentation.</td>
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<td>6</td>
<td><strong>Health and safety</strong>&lt;br&gt;Products shall not exceed the maximum levels of primary pathogens as follows:&lt;br&gt;— Salmonella: absent in [changed] 25 g&lt;br&gt;— E. coli: &lt; 1,000 MPN/g&lt;br&gt;(MPN: most probable number).&lt;br&gt;The applicant shall provide the competent body with the relevant test reports and documentation, and a declaration of compliance with these requirements.</td>
<td><strong>Health and safety</strong>&lt;br&gt;Products shall not exceed the maximum levels of primary pathogens as follows:&lt;br&gt;— Salmonella: absent in [changed] 25 g&lt;br&gt;— E. coli: &lt; 1,000 MPN/g&lt;br&gt;(MPN: most probable number).&lt;br&gt;The applicant shall provide the competent body with the relevant test reports and documentation, and a declaration of compliance with these requirements.</td>
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<td>7</td>
<td><strong>Viable seeds / propagules</strong>&lt;br&gt;In the final product, the content of weed seeds and the vegetative reproductive parts of aggressive weeds shall not exceed two units per litre.&lt;br&gt;The applicant shall provide the competent body with a declaration of compliance with these requirements, together with any related test reports and/or documentation.</td>
<td><strong>Viable seeds / propagules</strong>&lt;br&gt;In the final product, the content of weed seeds and the vegetative reproductive parts of aggressive weeds shall not exceed two units per litre.&lt;br&gt;The applicant shall provide the competent body with a declaration of compliance with these requirements, together with any related test reports and/or documentation.</td>
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<td>ECOLOGICAL CRITERIA (Cont’d)</td>
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<td>8</td>
<td></td>
<td>Additional criteria specifically applicable to growing media</td>
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<td>[removed since already covered by criterion 1a]</td>
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<td>(a) The organic part of the product shall be composed exclusively of soil improvers that meet the requirements stated in the present Decision. Mineral coformulants such as sand, clay, etc. can be added in order to improve overall physical and chemical properties.</td>
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<td></td>
<td>[removed since already covered by criterion 1a]</td>
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<td>(b) Products shall not contain peat or any products derived from peat</td>
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<td></td>
<td>(a) The electrical conductivity of the products shall not exceed 1.5 dS/m.</td>
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<td>[added] (b) applicable to mineral growing media only: For all substantial professional markets (i.e. countries where the applicant’s annual sales in the professional market exceeds 30,000 m³), the applicant informs the user about available options for the removal and processing of after use growing media. This information is integrated in the accompanying fact sheets.</td>
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<td>9</td>
<td>Information provided with the product</td>
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The following information shall be provided with the product (whether the product is packaged or [revised] unpacked), either written on the packaging or on accompanying fact-sheets:

**General information:**

(a) the name and address of the body responsible for marketing;

(b) a descriptor identifying the product by type, including the wording ‘SOIL IMPROVER’;

(c) a batch identification code;

(d) the quantity (in weight or volume);

(e) the main input materials (those over 5% by volume) from which the product has been manufactured, [removed: distinguishing between source separated municipal solid waste, wastes from agriculture or forestry, industrial and commercial wastes specifying the sector (e.g. food processing, paper, etc.);]

(f) the recommended conditions of storage and the recommended ‘use by’ date;

(g) guidelines for safe handling and use.

**Information about the use of the product:**

(h) a description of the purpose for which the product is intended and any limitations of use;

(i) a statement about the suitability of the product for particular plant groups (e.g. calcifuges or calcicoles);

(j) a statement about the stability of organic matter (stable or very stable) by national or international standard;

(k) a statement on recommended methods of use.

(l) *in hobby applications*: recommended rate of application expressed as kilograms or litres of product per unit surface area (m²) removed: or hectare) per annum. (removed) The recommended application rate shall take into account the content and availability of nutrients in the soil improver in order not to exceed the maximum nutrient loadings per m². The recommended rate of application can also suggest higher loads if the application is not meant to be repeated each year, e.g. in field crops, and provided that the average yearly loads comply with the maximum nutrient loading for each nutrient;

(m) [added] An indication of the availability of N, P₂O₅ and K₂O during the first season of application.

[added] Note: This information is supplied unless national legislation requires otherwise

[removed] Note: This information is supplied unless national legislation requires otherwise
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<td><strong>ECOLOGICAL CRITERIA (Cont’d)</strong></td>
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<td>10</td>
<td>Information appearing on the eco-label</td>
<td>Information appearing on the eco-label</td>
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<td>Box 2 of the eco-label shall include the following text:</td>
<td>Box 2 of the eco-label shall include the following text:</td>
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<tr>
<td></td>
<td>- contributes to reducing soil and water pollution,</td>
<td>- <em>revised</em> promotes re-use.</td>
</tr>
<tr>
<td></td>
<td>- <em>revised</em> promotes re-use,</td>
<td>- <em>added</em> promotes the use of materials produced in a more sustainable manner, thus reducing environmental degradation.</td>
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<tr>
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<td>- contributes to enhanced soil fertility.</td>
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<td>11</td>
<td>Non-returnable packaging material shall be either PP or PE.</td>
<td>Non-returnable packaging material shall be either PP or PE.</td>
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