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Revision of the EU Ecolabel Criteria for Soil Improvers and Growing Media

Technical report and draft criteria proposal

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Abstract

Revision of the EU Ecolabel Criteria for Soil Improvers and Growing Media

This technical report is aimed at providing a sound base to the revision process of the EU Ecolabel criteria for Soil improvers and Growing Media. Currently, separate sets of EU Ecolabel criteria exist for Soil improvers (Decision 2006/799/EC) and Growing media (Decision 2007/64/EC). The revision process spanned both product groups; thus common criteria for both Soil improvers and Growing media are developed, only distinguishing between technical product characteristics where necessary.

Another objective of this revision is addressing the possibility to broaden the current scope to the product mulch, as it has been identified as a differentiated sub-product within the product group 'soil improvers'.

To achieve those objectives, a Preliminary Report was produced together with the first version of this technical report as a working document. Hence, this document was developed to undergo the stakeholder consultation, which is crucial to come up with criteria adapted to the market reality while being able to select the best environmental performance products available on the market. After an extensive stakeholder's consultation process, this current version of the Technical Report supporting the draft criteria for growing media, soil improvers and mulch, constitutes the support of the criteria set voted positive by the Regulatory Committee.

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Introduction

The revision process of the current EU Ecolabel criteria for Soil improvers (Decision 2006/799/EC) and Growing Media (Decision 2007/64/EC) is under development. In order to prepare the ground for this revision process, a study has been carried out by the Joint Research Centre's Institute for Prospective Technological Studies (JRC-IPTS) with technical support from the Ricardo-AEA. The work is being developed for the European Commission's Directorate General for the Environment.

Currently, separate sets of EU Ecolabel criteria exist for Soil improvers (Decision 2006/799/EC) and Growing media (Decision 2007/64/EC). The revision process spans both product groups; thus common criteria for both Soil improvers and Growing media are developed, only distinguishing between technical product characteristics where necessary.

Another objective of this revision is addressing the possibility to broaden the current scope to the product *mulch*, as it has been identified as a potentially differentiated product.

To achieve those objectives, a Preliminary Report was produced together with the first version of this technical report as a working document. Hence, this document was developed to undergo the stakeholder consultation, which is crucial to come up with criteria adapted to the market reality while being able to select the best environmental performance products available on the market. After an extensive stakeholder's consultation process, this current version of the Technical Report and draft criteria for growing media, soil improvers and mulch, constitutes the support of the criteria set voted positive by the Regulatory Committee.

The main issues addressed in the revision process have taken into account the Commission Statement issued in April 2006, shown in Table 1:

Table 1. Commission Statements Soil improver and Growing media

Issues to be addressed	Growing Media	Soil Improvers
Strengthening demands for heavy metals	X	X
Reducing the use of mineral wool (25% or 50%)	X	
Use of re-cycled/re-used mineral wool	X	
Extraction phase and emissions for minerals	X	
Re-look at the inclusion of peat	X	
Limits for relevant organic pollutants (*)	X	X
Test methods - <i>E. Coli</i> versus <i>Helminth Ova</i>		X
Sustainable resource management for ingredients		X

(*) Especially pesticides from fruit and vegetable sludges

The revision process has been conducted considering the new legislative framework that will apply to the product group: End of waste criteria for biodegradable waste that is currently

under development and the Fertilizers Regulation that is currently being revised and will include soil improvers and growing media in its scope.

Additionally, the EU Ecolabel Regulation 66/2010 has introduced new requirements by mean of Article 6.6 and 6.7., whose application in the product groups "soil improver", "growing medium" and "mulch" has been studied.

The current separate sets of EU Ecolabel criteria exist for Soil improvers and Growing media are the summarized in Table 2:

Table 2. Current sets of EU Ecolabel criteria

Soil improvers (Decision 2006/799/EC)	Growing media (Decision 2007/64/EC)
Criterion 1.1 Organic ingredients	Criterion 1.1 Organic ingredients
Criterion 1.2 Sludges	Criterion 1.2 Sludges
Criterion 1.3 Minerals	Criterion 1.3 Minerals
Criterion 2. Limitation of hazardous substances	Criterion 2. Limitation of hazardous substances
Criterion 3. Physical contaminants	---
Criterion 4. Nutrient loadings	---
Criterion 5. Product performance	Criterion 3. Product performance
Criterion 6. Health and safety	Criterion 4. Health and safety
Criterion 7. Viable seeds/propagules	Criterion 5. Viable seeds/propagules
---	Criterion 6.a Electrical conductivity
---	Criterion 6.b After use
Criterion 8. Information provided with the product	Criterion 7. Information provided with the product
Criterion 9. Information appearing on the eco-label	Criterion 8. Information appearing on the eco-label

The criteria proposed are shown in Table 3:

Table 3. Criteria proposal for the revision of the EU Ecolabel

Criterion	Growing media	Soil improvers	Mulch
Criterion 1 - Constituents	x	x	x
Criterion 2 - Organic constituents	x	x	x
Criterion 3.1. - Mineral growing media and mineral constituents: Energy consumption and CO ₂ emissions	x		
Criterion 3.2 - Mineral growing media and mineral constituents: Sources of mineral extraction	x	x	x
Criterion 3.3 - Mineral growing media and mineral constituents: Mineral growing media use and after use	x		
Criterion 4 - Recycled/recovered and organic materials in growing media	x		
Criterion 5 - Limitation of hazardous substances			
Criterion 5.1 - Heavy metals	x	x	x
Criterion 5.2 - Polycyclic Aromatic Hydrocarbons	x	x	x
Criterion 5.3 - Hazardous substances and mixtures	x	x	x
Criterion 5.4 - Substances listed in accordance with Article 59(1) of Regulation (EC) No 1907/2006	x	x	x
Criterion 5.5 - Limits for E. coli and Salmonella spp	x	x	x
Criterion 6 - Stability	x	x	x
Criterion 7 - Physical contaminants	x	x	x
Criterion 8 - Organic matter and dry matter		x	x
Criterion 9 - Viable weed seeds and plant propagules	x	x	
Criterion 10 - Plant response	x	x	
Criterion 11 - Growing media features	x		
Criterion 12 - Provision of information	x	x	x
Criterion 13 - Information appearing on the EU Ecolabel	x	x	x

1 Product group scope and definition

Proposed scope

The product group "growing media, soil improvers and mulch" shall comprise:

- Growing media
- Organic soil improvers
- Organic mulch

According to the definitions below

Proposed definitions

'Growing medium' means a material used as a substrate for root development, in which plants are grown;

'Mineral growing medium' means a growing medium totally composed by mineral constituents.

'Soil improver' means a material added to soil in situ whose main function is to maintain or improve its physical and/or chemical and/or biological properties, with the exception of liming materials

'Organic soil improver' means a soil improver containing carbonaceous materials whose main function is to increase soil organic matter content.

'Mulch' means a type of soil improver used as protective covering placed around plants on the topsoil whose specific functions are to prevent the loss of moisture, control weed growth, and reduce soil erosion.

'Organic mulch' means mulch containing carbonaceous materials derived from biomass;

'Constituent' means any input material that can be used as an ingredient of the product;

'Organic constituent' means a constituent composed by carbonaceous materials.

'Product family' means the range of products composed by the same constituents;

'Annual output' means annual production of a product family;

'Annual input' means the annual amount of materials treated in a waste or animal by-product treatment plant;

'Batch' means quantity of goods manufactured by the same process under the same conditions and labelled in the same manner and is assumed to have the same characteristics;

'Bio-waste' means biodegradable garden and park waste, food and kitchen waste from households, restaurants, caterers and retail premises and comparable waste from food processing plants.

'Biomass' means the biodegradable fraction of products, waste and residues from biological origin from agriculture (including vegetal and animal substances), forestry and related industries including fisheries and aquaculture, as well as the biodegradable fraction of industrial and municipal waste;

Rationale and discussion

The analysis of existing definitions has revealed the following findings:

- The current EU Ecolabel definition for Growing Media is consistently applied in the current EU Ecolabel documents (Decision and User Manual) and is consistent with the definition of Growing Media used in CEN Standards.
- The EU Ecolabel definition for Growing Media is a simple statement that provides an open playing field for commercial interests.
- The EU Ecolabel for Growing Media would contain aspects of hydroponic production. The definitions given by CEN/TC 223 derive that hydroponic production are not considered separately. However whilst some forms of hydroponic production involve growing plants in a wholly mineral nutrient water based medium, other methods include growing the plants in medium containing solid supports through which the mineral nutrient solution is passed.
- The current EU Ecolabel definition for soil improvers provides some inconsistency, as two different definitions appear in the EU Ecolabel User Manual. One of these is a simple definition that closely matches the definition applied by CEN apart from a few word changes, i.e. changing the first part of the definition from *Material added to soil* to *Materials to be added to the soil*. The definition given by the User Manual is more complex; so it may lead to confusion, as it is not helpful to include the phrases “*can loosely be used*”, “*include bulky organic manures*” and “*can be subdivided in soil conditioner, planting materials or mulches.*”.
- Mulch is applied as a surface layer to soil, is not incorporated into the soil and typically has different characteristics than true soil improvers. Therefore, the initial view is that mulch is a product that can be differentiated from soil improvers on the basis of its function and application as a layer on top of the soil. Whilst this may be considered as insufficient differentiation by many, the differences could lead to different hazards and risks associated with mulches compared with soil improvers. Different criteria for mulches and for soil improvers were developed that reflect differences in risks.
- The next Fertilizer Regulation will cover the products soil improver and growing medium, and it will contain definitions of both products.

Based on the findings above, the recommendations on definitions are the following:

- The definitions of Soil Improvers and Growing Media are consistently applied and match those typically applied in CEN/TC 223 developed standards for these products.
- Nevertheless, EU Ecolabel definitions shall be aligned to the definitions within the next Fertilizer Regulation, in order to ensure consistency among different European product policies. Thus, the development of this regulation was followed during the revision process of the EU Ecolabel criteria for soil improvers and growing media and its product definitions will be harmonized with the ones within the last version of the Fertilizer Regulation. Meanwhile, CEN Standards definitions will be used since they are the most relevant references currently available.
- That a separate product “Mulch” is considered for which EU Ecolabel criteria are developed.

Stakeholders feedback

Many comments were received regarding the proposed definition of mulch. It was widely supported to redefine the product in such way that enables the exclusion of 100% mineral mulch and synthetic mulch. The definition of organic mulch aligned to the definition of organic soil improvers allows the use of mineral constituents while the minimum organic content is fulfilled, which respects the EU Ecolabel principle of promotion of recycled/reused/renewable materials.

One stakeholder requested a better definition of organic mulches because other materials can be used for mulching which don't have a property of a soil improver, e.g. they don't biodegrade (plastics), suggesting replacing or supplementing the word "carbonaceous" with a term referring to biomass-based materials which biodegrade and thus in the end improve the soil properties (increase of organic C content) - like biodegradable, cellulose-based, wood-based etc. In this regard, the definition has been complemented with '*derived from biomass*' and a definition of biomass as the biodegradable fraction of products, waste and residues from biological origin from agriculture (including vegetal and animal substances), forestry and related industries including fisheries and aquaculture, as well as the biodegradable fraction of industrial and municipal waste, which is also applied in the Criterion 2 Organic constituents, to clarify that materials used as organic constituents shall be biodegradable materials from biological origin.

In addition to the modification suggested by the stakeholders, the definitions of soil improvers and growing media have been accommodated to the last update of the Fertilizer Regulation definitions (July 2014). In this regard, some stakeholders have suggested to not defining a separate product group for mulches, since the ongoing revision of the Fertilizer Regulation does not foresee a separate product for mulch, but it would be covered in the definition of soil improver. This issue is very relevant for the revision of this product group: in case that the final version of the Fertilizer Regulation coming into force does not include a separate product group for mulch, but it embeds it within the soil improvers definition, the requirements for soil improvers will be mandatory for mulches, superseding any distinction or exclusion for mulches that the EU Ecolabel Decision might contain. At this stage of the revision of the Fertilizers Regulation, the product 'mulch' is not differentiated from the product 'soil improver' and therefore, it is proposed to define 'mulch' as a type of soil improver with specific functions to avoid any legislative loophole that might derive from a definition not totally aligned to the European mandatory legislation.

Other stakeholders pointed out the need of reformulate some definitions according to the revised Waste Framework Directive, since it has introduced the definition of by-product, together with the exclusion of some materials from the waste category that is within the Article 2 of the rWFD, which are perfectly suitable inputs for EU Ecolabel soil improvers (manure, farming material, straw). This issue is addressed in Criterion 2: Organic constituents.

During the revision process, the inclusion of the mineral growing media as part of the scope in the previous revision process of the EU Ecolabel for growing media has been discussed with the stakeholders, showing a split view on the issue.

The arguments raised in favour of the exclusion of mineral wool are the following:

- Some stakeholders pointed out that the aim of the EU Ecolabel is promoting the recycling of the organic waste, as it is set in the current Decisions.

Decision for Soil improvers

These criteria aim in particular at promoting:

- *the use of renewable materials and/or recycling of organic matter derived from the collection and/or processing of waste material and therefore contributing to a minimisation of solid waste at the final disposal (e.g. at landfill),*
- *the reduction of environmental damage or risks from heavy metals and other hazardous compounds due to application of the product.*

Decision for growing media

These criteria aim in particular at promoting:

- *the use of renewable materials and/or recycling 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.*

For that reason, they support the definitions proposed for organic soil improvers and organic mulch, and they consider it should be extended to growing media to prevent a contradiction with the aim of the EU Ecolabel.

- The stakeholders also highlighted that the manufacture process of mineral wool uses additives that are unknown. In this regard, they showed their concern about the lack of criteria for the additives added to the mineral wool. Some producers add formaldehyde, which would be just addressed by the criterion excluding hazardous substances. This criterion is, in their view, too general and vague, and it doesn't apply to those substances that react during the manufacture process into other non-hazardous substances.
- Other stakeholder reported that mineral wool is not oriented to the consumer, but to professional applications, so it is meaningless to have the EU Ecolabel for mineral wool.

On the other hand, the arguments against the exclusion of the mineral wool are the following

- Some stakeholders pointed out that mineral wool has been included in the scope for some years, and it represents a real investment to improve the environmental characteristics, especially the recycling of the products. Its exclusion would inevitably jeopardise those investments aimed to guarantee sustainable and safe production conditions for the products.
- Another stakeholder recognized that the inclusion of mineral wool brings a positive environmental effect if the products are collected and reused but they also stressed that this is only realistic for professional products.
- Other stakeholders reported that professional horticultural producers tend to use mineral wool as a growing substrate because the mineral wool growing substrates present several advantages in terms of sustainability compared to other, more traditional growing methods. Mineral wool growing substrates play an important role in controlling the level of water and mineral retention at the plant's roots, thus allowing producers to reduce their use of said resources.

-
- Using mineral wool as part of a closed system avoids water and pesticide run-off, which can improve resource management.
 - The possibility to use mineral wool for multi-annual crops or for two consecutive seasons is still an asset to producers.
 - After use, mineral wools can be collected and recycled as part of specialised programmes which are set up by the manufacturer.

The stakeholders also underlined that the EU Ecolabel on mineral wool growing substrates nowadays is considered as a sign of quality that the hydroponic producers can promote to their clients, especially large retailers. The recycling programmes set up by mineral wool manufacturers also allow producers to meet the requirements of specific production methods that are laid down by certain private benchmark systems in this area.

The inclusion of mineral wool in the last revision of the EU Ecolabel criteria for growing media has enabled an incentive to put in place collecting and recycling systems for the mineral wool, after use, which are aligned to the aim of *minimization of environmental impact in retrieval and production of non-renewable materials*. This goal is proposed to be enhanced by a minimum content of recycled material (see Criterion 4: Recycled/recovered materials and organic materials in growing media) and by the reformulation of the After use criterion to broaden the markets within its scope. The exclusion of mineral growing media from the EU Ecolabel scope might discourage manufacturers to implement collecting and recycling systems, undermining those ones that have been already developed under the current EU Ecolabel criteria of growing media.

Nevertheless, the scientific evidence has pointed out the energy consumption in the manufacture process of mineral wool and expanded minerals, as the main environmental hotspot of these materials' life cycle. Therefore, a criterion is proposed to set thresholds in energy and CO₂ emissions per production (see Energy consumption and GHG emissions).

Regarding the binders used in the production of mineral wool, the presence of hazardous substances in the final product is restricted by the Criterion 5.3. and 5.4 (see Hazardous substances and mixtures and Substances listed in accordance with Article 59(1) of Regulation (EC) No 1907/2006). Furthermore, the manufacture process of mineral wool is already covered by the BAT conclusions published in the Decision 2012/134/EU establishing the best available techniques (BAT) conclusions on industrial emissions for the manufacture of glass.

2 Requirements on sampling and testing

The specific assessment and verification requirements are indicated within each criterion.

Where the applicant is required to provide declarations, documentation, analyses, test reports, or other evidence to show compliance with the criteria, these may originate from the applicant and/or their supplier(s) as appropriate.

Competent Bodies shall preferentially recognise attestations which are issued by bodies accredited according to the relevant harmonised standard for testing and calibration laboratories and verifications by bodies that are accredited according to the relevant harmonised standard for bodies certifying products, processes and services..

Where appropriate, test methods other than those indicated for each criterion may be used if the competent body assessing the application accepts their equivalence. Where appropriate, competent bodies may require supporting documentation and may carry out independent verifications.

As pre-requisite, the product must meet all respective legal requirements of the country (countries) in which the product is intended to be placed on the market. The applicant shall declare the product's compliance with this requirement.

The sampling shall be carried out according the standard EN 12579:2013 Soil improvers and growing media – Sampling. Samples shall be prepared according the standard EN 13040:2007 Soil improvers and growing media - Sample preparation for chemical and physical tests, determination of dry matter content, moisture content and laboratory compacted bulk density.

For the application year, the sampling and test frequency shall fulfil the requirements set in Table 4, and for the following years, the sampling and test frequency of final products shall fulfil the requirements set in Table 5. Different sampling and testing frequencies are set for the following types of plants:

- Type 1: Treatment plants for waste or for animal by-products
- Type 2: Product manufacture plants using materials from Type 1 plants.
- Type 3: Product manufacture plants not using materials derived from waste or from animal by-products

For Type 2 plants, the sampling and test frequencies for the application year and the following years will be the same as the frequencies set for Type 3, if their waste/animal by-product-derived materials' suppliers comply with the EU Ecolabel criteria for soil improvers. The applicant shall provide the Competent Body with the test reports from the suppliers, together with the documentation to ensure the compliance of the suppliers with the EU Ecolabel criteria. The Competent Body may recognize the sampling and testing frequencies within the national or regional legislation and standards as valid to ensure the compliance with the EU Ecolabel criteria of the suppliers of waste or animal by-products derived materials. In case when a product constitutes or contains material of animal origin reference shall be done to microbiological standards and animal and public health controls set out in Regulation (EU) No 142/2011¹.

¹ Commission Regulation (EU) No 142/2011 of 25 February 2011 implementing Regulation (EC) No 1069/2009 (OJ L 54, 26.02.2011, p. 1).

Table 4. Sampling and test frequency for the application year

Type of plant	Criterion	Annual input / output	Test frequency
Type 1: Treatment plants for waste or for animal by- products	5.1 – Limits for heavy metals 5.5 - Limits for E. coli and Salmonella spp 6 - Stability 7 - Physical contaminants 8 - Organic matter and dry matter 9 - Viable seeds and plant propagules 10 - Plant response 11 - Growing media features	Input (t) ≤ 3000	1 every 1000 tonnes input material rounded to the next integer
		3000 < input (t) ≤ 20000	4 (one sample every season)
		Input (t) > 20000	number of analyses per year = amount of annual input material (in tonnes)/10000 tonne + 1 Minimum 4 and maximum 12
	5.2 - PAH	Input (t) ≤ 3000	1
		3000 < input (t) ≤ 10000	2
		10000 < input (t) ≤ 20000	3
		20000 < input (t) ≤ 40000	4
		40000 < input (t) ≤ 60000	5
		60000 < input (t) ≤ 80000	6
		80000 < input (t) ≤ 100000	7
		100000 < input (t) ≤ 120000	8
120000 < input (t) ≤ 140000	9		

		140000 < input (t) ≤ 160000	10
		160000 < input (t) ≤ 180000	11
		Input (t) > 180000	12
Type 2: Product manufacture plants using materials from Type 1 plants	5.1 – Limits for heavy metals 5.5 - Limits for E. coli and Salmonella spp 6 - Stability 7 - Physical contaminants 8 - Organic matter and dry matter 9 - Viable seeds and plant propagules 10 - Plant response 11 - Growing media features	Output (m ³) ≤ 5000	Representative combined samples from 2 batches according EN 12579 ²
		Output (m ³) > 5000	Representative combined samples from 4 batches according EN 12579
	5.2 - PAH	Output (m ³) ≤ 5000	Representative combined sample(s) from 1 batch according EN 12579
		Output (m ³) > 5000	Representative combined samples from 2 batches according EN 12579
Type 3: Product manufacture plants NOT using materials derived from waste or from animal by-products	5.1 – Limits for heavy metals 5.5 - Limits for E. coli and Salmonella spp 6 - Stability 7 - Physical contaminants 8 - Organic matter and dry matter 9 - Viable seeds and plant propagules 10 - Plant response 11 - Growing media features	Output (m ³) ≤ 5000	Representative combined sample(s) from 1 batch according EN 12579
		Output (m ³) > 5000	Representative combined samples from 2 batches according EN 12579
	5.2 - PAH	Regardless the input / output	Representative combined sample(s) from 1 batch according EN 12579

² EN 12579 Soil improvers and growing media. Sampling

Table 5. Sampling and test frequency for the following years

Type of plant	Criteria	Annual input / output	Test frequency
Type 1: Treatment plants for waste or for animal by- products	5.1 – Limits for heavy metals 5.5 - Limits for E. coli and Salmonella spp 6 - Stability 7 - Physical contaminants 8 - Organic matter and dry matter 9 - Viable seeds and plant propagules 10 - Plant response 11 - Growing media features	Input (t) ≤ 1000	1
		Input (t) > 1000	number of analyses per year = amount of annual input material (in tonnes)/10000 tonnes + 1 Minimum 2 and maximum 12
	5.2 - PAH	Input (t) ≤ 10000	0.25 (once per 4 years)
		10000 < input (t) ≤ 25000	0.5 (once per 2 years)
		25000 < input (t) ≤ 50000	1
		50000 < input (t) ≤ 100000	2
		100000 < input (t) ≤ 150000	3
		150000 < input (t) ≤ 200000	4
		200000 < input (t) ≤ 250000	5
		250000 < input (t) ≤ 300000	6
		300000 < input (t) ≤ 350000	7
		350000 < input (t) ≤ 400000	8
		400000 < input (t) ≤ 450000	9
		450000 < input (t) ≤ 500000	10
		500000 < input (t) ≤ 550000	11

Type of plant	Criteria	Annual input / output	Test frequency
		Input (t) > 550000	12
Type 2: Product manufacture plants using materials from Type 1 plants	5.1 - Limits for heavy metals 5.5 - Limits for E. coli and Salmonella spp 6 - Stability 7 - Physical contaminants 8 - Organic matter and dry matter 9 - Viable seeds and plant propagules 10 - Plant response 11 - Growing media features	Output (m ³) ≤ 5000	Representative combined sample(s) from 1 batch according EN 12579
		Output (m ³) > 5000	Representative combined samples from 2 batches according EN 12579
	5.2 - PAH	Output (m ³) ≤ 15000	Representative combined sample(s) from 1 batch according EN 12579, once each four years
		15000 < Output (m ³) ≤ 40000	Representative combined sample(s) from 1 batch according EN 12579, each two years
		Output (m ³) > 40000	Representative combined sample(s) from 1 batch according EN 12579, each year
Type 3: Product manufacture plants NOT using materials derived from waste or from animal by-products	5.1 - Limits for heavy metals 5.5 - Limits for E. coli and Salmonella 6 - Stability 7 - Physical contaminants 8 - Organic matter and dry matter 9 - Viable weed seeds and plant propagules 10 - Plant response 11 - Growing media features	Regardless the input / output	Representative combined sample(s) from 1 batch according EN 12579
	5.2 - PAH	Regardless the input / output	Representative combined sample(s) from 1 batch according EN 12579, once each 4 years

Rationale and discussion

From the perspective of a reliable assessment of the criteria proposed, a robust scheme of sampling and testing was agreed by the stakeholders, to be the most suitable tool of compliance assurance. However, the proposal of sampling and testing frequencies in the first version of the Technical Report produced many complaints from manufacturers regarding the economic overburden that it would imply. Thus, a revised scheme was proposed in line with the proposal within the EoW criteria for biodegradable waste report (EC JRC, 2014). This proposal was widely agreed among the stakeholders involved in that project, and its estimated costs were detailed within the report. The Table 6 is an adaptation of that estimation.

Table 6. Cost estimation of the sampling and testing scheme proposed

Annual Input (tonne)	Sampling and analysis frequency (number/year)										Cost			
	Recognition year					Following years					Recognition year		Following years	
	Sampling			Analyses		Sampling			Analyses					
	Total	External	Internal	All but PAH	PAH	Total	External	Internal	All but PAH	PAH	Total (Euro)	Unit cost (Euro/tonne)	Total (Euro)	Unit cost (Euro/tonne)
<500	1	1	0	1	1	1	1	0	1	0.2	800		680	
500	1	1	0	1	1	1	1	0	1	0.2	800	1.60	680	1.36
1000	1	1	0	1	1	1	1	0	1	0.2	800	0.80	680	0.68
1500	2	2	0	2	1	2	2	0	2	0.2	1450	0.97	1330	0.89
2000	2	2	0	2	1	2	2	0	2	0.2	1450	0.73	1330	0.67
2500	3	3	0	3	1	2	2	0	2	0.2	2100	0.84	1330	0.53
3000	3	3	0	3	1	2	2	0	2	0.2	2100	0.70	1330	0.44
3500	4	4	0	4	2	2	2	0	2	0.2	2900	0.83	1330	0.38
4000	4	4	0	4	2	2	2	0	2	0.2	2900	0.73	1330	0.33
4500	4	4	0	4	2	2	2	0	2	0.2	2900	0.64	1330	0.30
5000	4	4	0	4	2	2	2	0	2	0.2	2900	0.58	1330	0.27
7500	4	4	0	4	2	2	2	0	2	0.2	2900	0.39	1330	0.18
10000	4	4	0	4	2	2	2	0	2	0.2	2900	0.29	1330	0.13
15000	4	4	0	4	3	3	3	0	3	0.5	3050	0.20	2025	0.14
20000	4	4	0	4	3	3	3	0	3	0.5	3050	0.15	2025	0.10
25000	4	4	0	4	4	4	4	0	4	0.5	3200	0.13	2675	0.11
30000	4	4	0	4	4	4	4	0	4	1	3200	0.11	2750	0.09
40000	5	5	0	5	4	5	5	0	5	1	3850	0.10	3400	0.09
50000	6	6	0	6	5	6	6	0	6	1	4650	0.09	4050	0.08
60000	7	7	0	7	5	7	7	0	7	2	5300	0.09	4850	0.08
70000	8	8	0	8	6	8	8	0	8	2	6100	0.09	5500	0.08
80000	9	9	0	9	6	9	9	0	9	2	6750	0.08	6150	0.08
90000	10	10	0	10	7	10	10	0	10	2	7550	0.08	6800	0.08
100000	11	11	0	11	7	11	11	0	11	2	8200	0.08	7450	0.07
110000	12	12	0	12	8	12	12	0	12	3	9000	0.08	8250	0.08
120000	12	12	0	12	8	12	12	0	12	3	9000	0.08	8250	0.07
>120000	12	12	0	12	8	12	12	0	12	3	9000		8250	

The figures show that the costs estimated for the sampling and testing scheme are feasible for plants above 1000 tonne input, but they might be an important expense in very small plants (< 500 tonne). However, a minimum frequency should be set, and the proposed one it is line with other standards at national level across Europe (PAS 100, PAS 110, VLACO QAS, RAL GZ 256).

Example of frequencies before the application and following the first assessment of compliance are given in Table 7 and Table 8.

Table 7. Monitoring frequency in existing standards

	PAS100 (compost)	PAS110 (digestate)	VLACO QAS (digestate)*	Germany RAL GZ 256 (secondary raw material fertilisers and SI)
Before application	3	3	Amount of samples is calculated on the basis of biodegradable waste input.	1 analysis for every full or partial batch of 1500 tons plant input, at least 4 tests. Max. 12 analyses per year
After first assessment of compliance	1/5,000 m ³ or 1/year if production is <5,000 m ³ /a	1/6,000 m ³ digestate or once every 3 months (whichever is sooner)	Amount of samples is calculated on the basis of biodegradable waste input.	1 analysis for every full or partial batch of 2000 tons plant input, at least 4 tests. Max. 12 analyses per year

*As described in EC JRC (2014)

Table 8. Frequency of testing for organic pollutants in some national standards.

Austria (Austrian Compost Ordinance BGBl II 292)	France (Norme NFU 44051)		Germany (Quality and Test Regulations for secondary raw material fertilisers and soil improvers RAL-GZ 256)		UK (PAS 100 and PAS110)
Frequency depends on compost tonnage and with some required to be analysed by external laboratories: e.g. plant >4000 m ³ : 1 sample every 4,000 m ³ but with a minimum of 3 and maximum of 12 per year of which 2 should be externally analysed	Plant output (tonnes per annum)	Monitoring frequency	Approval procedure	Monitoring procedure	No limits for organic pollutants
	0 – 350	1 per annum	one analysis for every full or partial batch of 1500 tons plant input, at least 4 tests max. 12 analyses per year	one analysis for every full or partial batch of 2000 tons plant input, at least 4 tests max. 12 analyses per year	
	350 – 3,500	1 per annum			
	3,500 – 7,000	1 per annum			
> 7,000	2 per annum				

Table 7 and Table 8 indicate that monitoring frequency varies and that it may be based on volume or tonnage and on inputs or outputs. Note also that the French standard NFU 44-051 adds further complexity as not only are the frequency of monitoring different for different sized of plants but also the frequency for each analytical tests differs. For example for a plant of 7,000 t/a requires 4 microbial and 3 inert impurity tests per year whilst for a plant of 350 to 3,500 t/a requires 2 microbial and 2 inert impurity tests.

Stakeholder feedback

The comments from the stakeholders about the sampling and testing frequency are the following:

- Accreditation of the laboratory and of the samplers: many stakeholders showed their concern about the availability and cost of laboratories accredited for all tests, in addition to the cost of external accredited sampler.
- Frequency: it was considered too high and thus very expensive for many stakeholders, rising the concern about that EU Ecolabel became unaffordable.
- Testing on the final product instead of its constituents after the application year. Although it was acknowledged that the dilution might be a risk, the number of tests in products formulated with several constituents could be unaffordable, according to the opinion of most stakeholders. This would lead to mono-constituent substrates, affecting the quality of the substrate.
- Product family: one stakeholder suggested introducing the concept of product family, as the range of products made of the same constituents.
- Methods: many stakeholders also stressed that the product should be controlled with the same method (there should be a limit evaluation for a change of method). In addition, the proposed method should have been validated for the tested materials (soils improvers and growing media): CEN TC 223 methods should be preferred.
- Input or output material: many stakeholders also recommended the frequency to be based on output production.
- Reduction of testing frequency if the test results show that they are consistently below 50% of the limit value.

The proposal on sampling and testing has been modified taking into account the following:

- It shall be affordable and not lead to drastic differences to the current requirements.
- It shall be harmonized to mandatory requirements. In this regard, the ongoing revision of the Fertilizer regulation is considering the proposal on sampling and testing within the EoW criteria for biodegradable waste project.
- It shall take into account the common standards applied for sampling by soil improvers and growing media manufacturers, i.e. EN 12579:2013 Soil improvers and growing media – Sampling.
- It should distinguish between waste-derived products and animal by-products, and non-waste derived products, relaxing the requirement for those materials, as forestry and agricultural material, which are not subject to the same variability of waste-derived products.

Therefore, the sampling and testing frequency scheme is proposed as follows:

- For waste and animal by-products treatment plants, the scheme is based on the proposal on sampling and testing within the EoW criteria for biodegradable waste project. Although some stakeholders suggested to base the scheme on the annual output, the frequency proposed based on input material was discussed and agreed by most stakeholders during the development of the EoW criteria for biodegradable waste project.

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- For product manufacture plants using waste-derived and animal-by product derived material, the proposal is formulated according to the EN 12579:2013 Soil improvers and growing media – Sampling, applying the definition of batch and sample within this standard. It also distinguishes smaller plants, for which the frequency requested is half.
 - For product manufacture plants not using waste-derived, the proposal is formulated according to the EN 12579:2013 Soil improvers and growing media – Sampling, applying the definition of batch and sample within this standard, setting a lower frequency.

According to the advice from many stakeholders, the criteria and tests are proposed to apply on the final product. This is also foreseen to be aligned to the future revision of the Fertilizer regulation, and it is in line to the common practice carried out by manufacturers. This proposal has been questioned by one stakeholder, which prefers to set requirements on the input materials and on the process instead of the final product to prevent dilution, improve the assurance of compliance and to reduce the costs of testing. The evidence accompanied this comment pointed out the risks associated to the used of municipal solid waste, and the low risk of source separated bio-waste shows. In this regard, the test frequency proposed is structured in different levels of ambition, depending on the size of the plant and the risk associated to the material (waste or non-waste). It is also required to carry out the sampling according to the EN EN 12579:2013 Soil improvers and growing media – Sampling, which describes the standardized procedure to build a combined representative sample of a batch. The comment points out the risks associated to Municipal solid waste, which is explicitly not allowed by criterion 2 on organic constituents. Requirements on the composting process would raise many difficulties for the assessment and verification under the EU Ecolabel scheme. The only parameter to be tested at level of organic constituents is heavy metals, for the application year, in order to ensure that level of ambition for this particular criterion of concern is kept aligned to the current criterion on heavy metals for growing media constituents.

The previous Technical Report presented for the 2nd AHWG meeting included a proposal of recognition of both CEN/TC 223 and 400 standards, to prevent any additional overburden to comply with the EU Ecolabel criteria, while the correct level of assurance of compliance is reached.

In response to this proposal, stakeholders insisted that the standard within the CEN/TC 223 are validated for the products soil improvers and growing media, so they should be chosen over other standards. Most of the experts agreed on the need to specify the standard of CEN/TC 223 as first option. Following the recommendation of the stakeholders, the CEN/TC 223 standards are required for verification, unless there is no CEN/TC 223 standard for the parameter to be tested (e.g. Hg, viable weed seeds, etc.), and then CEN/TC 400 standards are proposed.

3 Criteria proposal

Currently, separate sets of EU Ecolabel criteria exist for Soil improvers and Growing media, which are the following:

Table 9. Current sets of EU Ecolabel criteria

Soil improvers (Decision 2006/799/EC)	Growing media (Decision 2007/64/EC)
Criterion 1.1 Organic ingredients	Criterion 1.1 Organic ingredients
Criterion 1.2 Sludges	Criterion 1.2 Sludges
Criterion 1.3 Minerals	Criterion 1.3 Minerals
Criterion 2. Limitation of hazardous substances	Criterion 2. Limitation of hazardous substances
Criterion 3. Physical contaminants	---
Criterion 4. Nitrogen	---
Criterion 5. Product performance	Criterion 3. Product performance
Criterion 6. Health and safety	Criterion 4. Health and safety
Criterion 7. Viable seeds/propagules	Criterion 5. Viable seeds/propagules
---	Criterion 6.a Electrical conductivity
---	Criterion 6.b After use
Criterion 8. Information provided with the product	Criterion 7. Information provided with the product
Criterion 9. Information appearing on the eco-label	Criterion 8. Information appearing on the eco-label

The revision process spans both product groups; thus common criteria for both soil improvers and growing media are developed, which are only distinguishing between technical product characteristics where necessary. Another objective of this revision is addressing the possibility to broaden the current scope to mulch, as it has been identified as a potentially differentiated product.

Table 10 shows the criteria proposal for soil improvers, growing media and mulch, and the equivalences with the current two sets of criteria.

Table 10 Criteria proposal for the revision of the EU Ecolabel for growing media, soil improvers and mulch, and equivalences with current criteria

Revision	Products			Current Decisions		Changes proposed on current criterion
	Growing media	Soil improvers	Mulch	Growing media	Soil improvers	
Criterion 1 Constituents	X	X	X	Criterion 1 Constituents	Criterion 1 Constituents	No changes
Criterion 2 Organic constituents	X	X	X	Criterion 1.1 Organic ingredients	Criterion 1.1 Organic ingredients	No changes. Re-wording according to revised Waste Framework Directive
Criterion 2 Organic constituents	X	X	X	Criterion 1.2 Sludges	Criterion 1.2 Sludges	No changes
Criterion 3.1 Mineral growing media and mineral constituents: Energy consumption and GHG emissions	X			---	---	New criterion
Criterion 3.2 Mineral growing media and mineral constituents: Sources of mineral extraction	X	X	X	Criterion 1.3 Minerals	Criterion 1.3 Minerals	Revised
Criterion 3.3 Mineral growing media and mineral constituents: Mineral GM use and after use	X			Criterion 6.b After use	---	Revised, cut-off removed and verification modified
Criterion 4 Recycled/recovered and organic materials in growing media	X			---	---	New criterion
Criterion 5.1 Limitation of hazardous substances – Heavy metals	X	X	X	Criterion 2. Limitation of hazardous substances	Criterion 2. Limitation of hazardous substances	Revised. To be applied on final products.

Revision	Products			Current Decisions		
Criteria proposal	Growing media	Soil improvers	Mulch	Growing media	Soil improvers	Changes proposed on current criterion
Criterion 5.2 Limitation of hazardous substances – PAH	X	X	X	---	---	New criterion
Criterion 5.3 Limitation of hazardous substances –Hazardous substances and mixtures	X	X	X	---	---	New criterion
Criterion 5.4 Limitation of hazardous - substances listed in accordance with Article 59(1) of Regulation (EC) No 1907/2006	X	X	X	---	---	New criterion
Criterion 5.5 Limitation of hazardous - Limits for E. coli and Salmonella spp	X	X	X	Criterion 4. Health and safety	Criterion 6. Health and safety	No changes in limits, but in the test methods
Criterion 6 Stability	X	X	X	Criterion 7. Information provided with the product	Criterion 8. Information provided with the product	New criterion
Criterion 7 Physical contaminants	X	X	X	---	Criterion 3. Physical contaminants	No changes, test method for verification
Criterion 8 Organic matter and dry matter		X	X	---	Criterion 5. Product performance	Organic matter revised.
Criterion 9 Viable weed seeds and plant propagules	X	X		Criterion 5. Viable seeds/propagules	Criterion 7. Viable seeds/propagules	No changes, test method for verification
Criterion 10 Plant response	X	X		Criterion 3 Product	Criterion 5.b Product	No changes, test method

Revision	Products			Current Decisions		
Criteria proposal	Growing media	Soil improvers	Mulch	Growing media	Soil improvers	Changes proposed on current criterion
				performance	performance	for verification
Criterion 11 Growing media features	X			Criterion 6.a Electrical conductivity	---	Electrical conductivity revised, new requirements on pH and sodium and potassium content
Criterion 12 Provision of information	X	X	X	Criterion 7. Information provided with the product	Criterion 8. Information provided with the product	Revised
Criterion 13. Information appearing on the eco-label	X	X	X	Criterion 8. Information appearing on the eco-label	Criterion 9. Information appearing on the eco-label	Revised
Criterion removed				---	Criterion 4. Nitrogen	Removed

3.1 Criterion 1: Constituents

This criterion applies to growing media, soil improvers and mulch.

The constituents admitted shall be organic and/or mineral constituents.

Assessment and verification:

The applicant shall provide the Competent Body with the list of constituents of the product.

3.2 Criterion 2: Organic constituents

This criterion applies to growing media, soil improvers and mulch.

Criterion 2.1

A product shall not contain peat.

Criterion 2.2

- 1) The following materials are allowed as organic constituents of a product:
 - Materials derived from the recycling of bio-waste from separate collection, as defined in Article 3 of Directive 2008/98/EC of the European Parliament and of the Council³;
 - Materials derived from animal by-products category 2 and 3 as laid down in Article 32 of Regulation (EC) No 1069/2009 of the European Parliament and of the Council and technical standards which are laid down by implementing Regulation (EU) 142/2011⁴;
 - Materials derived from faecal matter, straw and other natural non-hazardous agricultural or forestry material as defined in Article 2.1(f) of Directive 2008/98/EC;
 - Materials derived from any other biomass by-products, as defined in article 5 of Directive 2008/98/EC, that are not mentioned above, subject to the provisions of 2) and sub-criterion 2.3;
 - Materials derived from recycling or recovery of any other biomass waste not mentioned above, subject to the provisions of 2) and sub-criterion 2.3.

- 2) The following materials are not allowed as organic constituents of a final product:
 - Materials totally or partially derived from the organic fraction of mixed municipal household waste separated through mechanical, physicochemical, biological and/or manual treatment;
 - Materials totally or partially derived from sludges derived from municipal sewage water treatment and from sludges derived from the paper industry;
 - Materials totally or partially derived from the sludges other than those allowed in Criterion 2.3.;

Materials totally or partially derived from the animal by-product category 1 materials according to Regulation (EC) No 1069/2009.

³ Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (OJ L 312, 22.11.2008, p. 3).

⁴ Commission Regulation (EU) No 142/2011 of 25 February 2011 implementing Regulation (EC) No 1069/2009 (OJ L 54, 26.02.2011, p. 1).

Criterion 2.3

Materials derived from recycling or recovery of sludges are only allowed if the sludges comply with the following requirements:

- (a). They are identified as one of the following types of waste according to the European List of Wastes, as defined by Decision 2000/532/EC⁵ presented in Table 11:

Table 11: Sludges allowed and their codes according to the European List of Wastes

0203 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;
0204 03	sludges from on-site effluent treatment in sugar processing;
0205 02	sludges from on-site effluent treatment in the dairy products industry;
0206 03	sludges from on-site effluent treatment in the baking and confectionery industry;
0207 05	sludges from on-site effluent treatment in the production of alcoholic and non-alcoholic beverages (except coffee, tea and cocoa).

- (b). They are single-source separated, meaning that there has been no mixing with effluents or sludges outside a specific production process.

Assessment and verification:

The applicant shall provide the Competent Body with the information about the origin of each organic constituent of the product, and a declaration of compliance with the above requirement.

Rationale and discussion

Two options were presented in the 1st AHWG meeting (October 2013), which were

Proposal 1: the retention of the complete prohibition of peat, so the organic constituents shall be derived from waste materials, or

Proposal 2: allowing a certain percentage of peat in growing media, which should not exceed 20% on a dry matter basis. This proposed limit was suggested on the basis of the LCA studies which indicate that such a peat content results in environmental impacts similar to

⁵ Commission Decision 2000/532/EC of 3 May 2000 replacing Decision 94/3/EC establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste and Council Decision 94/904/EC establishing a list of hazardous waste pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous waste (OJ L 226, 06.09.2000, p. 3–24)

many peat free GM. Moreover, peat used for the purposes of EU Ecolabel should then only be allowed from responsibly managed peatlands that are neither pristine peat habitats nor designated Natura 2000 sites, Special Areas of Conservation (SACs) or Sites of Special Scientific Interest (SSSIs). In that respect, acceptable sources and conditions to ensure responsible peat extraction should be clearly defined in the final EU Ecolabel criteria.

Stakeholder feedback

The revision of the peat-free criterion in the EU Ecolabel is a particularly controversial area, and many arguments both in favour and against the inclusion of peat have been raised during the discussion.

Arguments in favour of peat

Quality: the growing media manufacturers have argued that peat is an essential constituent to be added to growing media mixes, not having identified real alternatives so far. They have stressed that peat is the only raw material available in the market for the production of qualitative substrates, due to its characteristics as low salinity level, low pH, absence of human and plant pathogens and the absence of heavy metals and Persistent Organic Pollutants, high water holding ability, good aeration and slow rate of decomposition. These benefits of peat enable it as a very advantageous carrier to improve the quality features of compost-based growing media. From the manufacturers' perspective, peat would enable to offset the adverse characteristics of waste-derived materials, which might perform too high electrical conductivity and bulk density for suiting the requirements for growing purposes. Peat also retains dissolved nitrogen from livestock manure and is thus considered a good material to reduce nitrogen emission. The percentages of peat suggested to reach such level of fitness oscillate from 25 to 100% v/v. Some stakeholders have pointed out that the percentage originally proposed at the 1st AHWG meeting in October 2013 (20% v/v) does not suffice to improve the quality of growing media, while figures up to 50 -100% were claimed to be needed for growing media to perform a quality class. Other stakeholders also indicated that it is a clean product, free from possible pests, which might be an issue for plants health.

No alternatives: the growing media manufacturers have stressed that peat is the only raw material available in the market for the production of quality substrates. The industry has invested in and driven a wide range of research into materials other than peat and will continue to do so. However, alternatives for all applications with the same quality as peat are not yet available on the market. Therefore, peat will remain an important constituent for the industry.

Market availability: the manufacturers reproach the low uptake of the EU Ecolabel in growing media products to the peat-free criterion, since peat is by far the main growing medium constituent representing about 29 million m³ of the growing media produced in Europe in 2007. For example, a stakeholder reported that Estonia exports different peat products with a high economic relevance for their economy; at the same time, peat as substrate in horticulture is widely used. In the case of Latvia, only 5% of their peat reserves are currently used for peat extraction. The peat is widely used in this country in the production of vegetables, potplants and propagation material, some species like rhododendron, azalea, erica, blueberries, pines and other is not possible grow in other substrate instead of peat..

Other labels and certification schemes: the stakeholders have reported that many environmental labels including More Profitable Sustainability (MPS), Naturland, Bioswiss and Demeter recognize the importance of peat and allow a minimum of peat in the professional as well as consumer growing media subjected to their certification schemes. It is commonly

known that lower quality substrates induce a higher environmental impact due to the higher need of fertiliser (e.g. Nitrogen fertilizer to compensate fixation by the substrate) or due to higher impact of heating per unit yield of production. The use of peat in growing media is accepted under the EU's organic farming framework.

LCA studies: some LCA studies for growing media (Quantis 2012, Boldrin 2010) have concluded that in terms of GHG, the impact for peat might be comparable to other growing media, and comparable to compost at constituent level. These studies were performed using the same functional unit (cubic meter of growing medium). The Quantis study analyses different mixes for diverse purposes. Some stakeholders stressed that all raw materials, irrespective of their origin do have an impact on the environment, according the results of Quantis study, and some raw materials have shown to have a higher impact on environmental indicators such as Human Health, Ecosystem Quality and Climate Change compared to peat.

Responsible peat production: the first proposal presented in the 1st AHWG meeting recognized the need of a reliable certification scheme that prevents the harvesting of peat from natural peatlands and that ensures the after-extraction measurements for restoration, as far as possible. This argument is supported on the figures that prove that drained peatlands (for agricultural or forestry purposes) become net carbon sources, and upholds the responsible peat production as a potentially suitable management system to ensure the actions required to restore the peatlands, once the extraction phase is over. For these purposes, this certification scheme prioritises the extraction of peat from abandoned agricultural lands and requires implementing a restoration plan once the extraction phase is over. The growing media manufacturers have explained that the industry has committed itself to responsible peat extraction, which includes a thorough impact study before site-selection, using the best available techniques for the extraction of peat and restoration of the peat fields after use. These commitments are described in detail in the “Code of Practice for Responsible Peatland Management” coordinated by the European Peat And Growing Media Association (EPAGMA). They also reported that the certification scheme “Responsibly Produced Peat”, has been launched on the 30th of January 2014 and several peat fields situated in Germany and in the Baltic States are currently being (test)certified. This certification scheme comprises different criteria such as no extraction of ecological high value peat fields and wise after-use (create more added value to the peat fields compared to the situation before extraction). The scheme is driven by transparency and traceability and being audited by third parties. The growing media manufacturers highlighted that responsible peat sourcing is creating an after-use outcome that improves the situation pre-extraction. It means that peatlands which are used are already man-modified (ditched and/or used for agricultural purposes) and are emitting CO₂. Therefore, extracting peat from these emitting areas contribute to stop the above-mentioned emissions. It also means wise after use of these areas, e.g. rehabilitation and restoration to create a new environment which stimulates and increases biodiversity. Such peatland areas could then shift from a source of CO₂ emissions to a carbon sink (e.g. forestation). Many stakeholders, from the industry and quality certification of growing media, described the Responsible Peat Production as a win-win situation.

Slowly renewable resource: manufacturers have questioned the classification of peat as non-renewable resource, since many experts classify peat as slowly-renewable, because its rate of renewal (10² – 10⁵ years) is much faster than that of lignite and coal (10⁵ – 10⁸ years), but much slower than that of living plants (1 – 10 years). A stakeholder pointed that only 3% of

the peatfield in Europe are under exploitation and that according to several studies it has been proven that annually more peat is grown in Europe than extracted.

Arguments against peat

Boundaries in the reviewed LCA studies: some stakeholders questioned the boundaries set for the assessment of compost in the studies aimed at comparing the environmental performances of compost and peat. Quantis study defines a reference scenario to analyse the impact of peat in growing media, so the natural GHG emissions from peatlands are considered avoided by the peat extraction, and thus deducted from the GHG impact of the extracted peat. This study does not cover the replacement of other conventional waste management system by composting, while Boldrin (2010) modelled two scenarios, a baseline scenario with landfilling of the organic waste in a landfill with gas recovery and production of electricity and a recycling scenario with source separation and organic waste composting and use of compost as a substitution for peat. Therefore, the results obtained are not comparable. Some stakeholders pointed out these issues to refute the arguments in favour of the inclusion of peat based on LCA studies.

GHG emissions in degraded peatlands: NGOs support to implement restoration actions that recover the drained peatlands to turn them into their original role of carbon sink, but without the extraction phase that is foreseen in the responsible peat production (RPP) scheme. From their view, the peat responsible extracted should not be EU Ecolabel awarded because (i) the extraction and use phase of peat would release the amount of carbon still stored in the peatland in deeper layers, and (ii) the EU Ecolabel should otherwise rely on the future implementation of after-use plans where the rewetting of the peatland might not be foreseen. Additionally, the NGOs stressed that there is a serious delay in restoring degraded peatlands to address carbon balance and also biodiversity, and EU Ecolabel criteria shall be aligned to the objective of GHG emissions reduction to avoiding a climate change in excess of 2 °C average global temperature rise. The NGOs also doubted about the CO₂ balance achieved by the RPP.

Doubts around the certification scheme of Responsible Peat Production: NGOs pointed out that RPP is at an early stage of development, so it is still uncertain how the certification scheme will work. In addition, the EU Ecolabel would need to rely on future restoration plans to be implementer after the extraction phase, which might spans several years. They also raised their concern about the traceability of this scheme.

Impacts on biodiversity: some NGOs have argued that peatlands represent a unique ecosystem for diverse species of plants and animals that are seriously jeopardized by the activities of extraction of peat, and by agriculture and forestry. Therefore, one of the aims of the EU Ecolabel should be the promotion of the phasing out of peat in horticultural applications in line to some MS environmental policies, as for example initiative implemented in UK by DEFRA.

Non-renewable resource: other experts (Joosten, 2008) point out that from a climate change point of view, the term of "slowly-renewable" is misleading, since renewable resources must replenish as quickly as they are consumed to be considered carbon neutral. Global peat losses exceed the new formation of peat by a factor of 20 so the use of peat contributes as equally to the greenhouse effect as other fossil resources. Therefore it is more appropriate to treat peat – similar to lignite and coal – as a non-renewable resource. This is also supported by the

IPCC that classifies peat as fossil fuel in their methodology to calculate GHG emissions from energy activities (IPCC, 2006).

National policies for phasing out peat: many stakeholders stressed that some countries (UK, Switzerland) have policies aimed at phasing out peat, which is feasible in growing media products since there are good alternatives. Therefore, in their opinion, EU Ecolabel should be aligned to those policies, which are also in line to the European targets of CO₂ emissions reductions.

Alternatives to peat: many stakeholders provided information about the peat-free products, as coir pith, which are currently on the market, performing very good quality features.

Based on the arguments that come along the discussion on this criterion, the proposal 2 presented in the first version of the Technical report has been withdrawn and the proposal 1 to retain the peat-free criterion is recommended. The EU Ecolabel shall be committed to support and foster those alternatives to peat that are available in the growing media market, while as voluntary scheme, it does not entail the blocking of any product on the market, but identifying the ones that perform better from an environmental point of view. On top of that, the EU Ecolabel principle in this product group is promoting re-used and recycled materials, in line with the hierarchy set by the Waste Framework Directive (WFD). The inclusion of peat on EU Ecolabel products might undermine the efforts already made to promote the consumers' choice of growing media based on recycled materials over the peat-based ones, given that the suggested range of peat should be above 50% v/v to reach a quality class. Regarding the Responsible Peat Production scheme, the initiative has just started running and its implementation and results need a further development to assess its maturity and suitability. In addition, the EU Ecolabel would need to rely on future actions to be taken.

The input materials for the organic constituents have been re-defined according the revised WFD. There were many comments in this regard from stakeholders and Competent Bodies in charge of awarding EU Ecolabel licenses under the current decisions. Some materials as manure, straw, agricultural and forestry material are out of the scope of the WFD, but they might be used as input materials of compost and digestate production, and also, they are suitable as mulch and organic constituents of growing media. Moreover, the WFD introduces the concept of by-product, which is also relevant for some organic constituents as bark, rice hulls, coir pith, etc.

In the first technical report (1st AHWG meeting October 2013), it was proposed to align the materials allowed as organic constituents to the scope proposal within the EoW criteria for biodegradable waste report. Other comments suggested to restrict the organic constituents to a positive list of materials, or even stricter, to those derived from biowaste, as it is defined in the WFD ('bio-waste' means biodegradable garden and park waste, food and kitchen waste from households, restaurants, caterers and retail premises and comparable waste from food processing plants). Some stakeholders didn't agree on the definition of biodegradable waste (degradation time below 6 months) within the EoW criteria proposal. In order to not excessively restrict the organic constituents, the criterion is proposed to be aligned to the scope proposal within the EoW criteria for biodegradable waste report, but the specific time of degradation (6 months) for the assessment of biodegradability is not required, since it would lead to the exclusion of some materials, particularly those ones used in growing media (coir pith from the coco fibre production). Even though the input materials allowed are equivalent, the EU Ecolabel criterion is formulated according to the wording used by the WFD, so the main objective of the EU Ecolabel, i.e. promoting the use of renewable and recycled

materials, is respected.. It is important to highlight that 'biomass' is defined as the biodegradable fraction of products, waste and residues from biological origin, from agriculture (including vegetal and animal substances), forestry and related industries including fisheries and aquaculture, as well as the biodegradable fraction of industrial and municipal waste. This definition is narrowed by the harmonization with the EoW criteria for biodegradable waste scope proposal, which exclude the materials known to be more problematic (Municipal waste, sludges from the paper industry, sewage sludges). The output from the EoW criteria for biodegradable waste discussion pointed out that there are severe difficulties to determine a positive list: the TWG expert discussions indicated that for many types of input materials, different views existed about their eligibility for inclusion on the positive list of allowed materials. In view of the important consequences for materials being excluded from the positive list, it would be very difficult to establish a positive list that is agreed upon by all experts. Moreover, updating the positive list could be a complicated and time-consuming process that may hamper the rapid evolutions on the market.

The restriction of materials derived from contaminated input materials, together with the definition proposed, has received some comments related to its interpretation and verification which might be difficult or unfeasible for the Competent Bodies. For that reason, this explicit restriction is deleted from the criterion proposal, so the assessment and verification become doable by the Competent Body. The compliance with the proposed criteria together with the test frequencies, are fully aligned to the EoW criteria proposal for biodegradable report, and thus suffice to ensure the environmental and health performance of the product, which anyway shall fulfil all the national and European mandatory requirements.

Other comments pointed out that in case of manure and other organic materials, there exist other processes than composting and anaerobic digestion to stabilize and sterilize those materials, as pelletizing and reductive thermal processing (i.e. plant based biochar). In this regards, the criterion proposal has been reformulated in line to main definitions of the rWFD, using the terms recycling and recovery, in such way that other processes are also covered.

Another comment requested a better clarification that the exclusions of materials derived from municipal sewage sludge treatment and material partially or completely derived from contaminated input materials just apply to organic constituents and not to mineral substances recovered from contaminated organic waste streams (for example, struvite precipitated in sewage works or ammonium sulphate recovered from digestates). In this regard, the exclusion of materials derived from sewage sludge treatment applies to organic constituents, since the literature review hasn't shown any concern about the phosphorus recycled from this source (Institute for Crop and Soil Science, 2009, D. Cordell, 2010, Ayla Uysal, 2009.)

Other stakeholder expressed their concerns about pharmaceutical residues, but this is a risk associated to materials derived from sewage sludge, which is explicitly banned.

3.3 Criterion 3: Mineral growing media and mineral constituents

3.3.1 Energy consumption and GHG emissions

This criterion applies to mineral growing media only.

The manufacture of expanded minerals and mineral wool shall fulfil the following energy consumption and CO₂ emissions thresholds:

- Energy consumption / product ≤ 11 GJ/t product
- CO₂ emissions / product ≤ 0.8 t CO₂/t product

The ratio energy consumption/product shall be calculated as an annual average as follows:

$$\text{ratio} \frac{\text{Energy}}{\text{Product}} = \frac{1}{\sum_{i=1}^n \text{Production}_i} \cdot \sum_{i=1}^n \left(F + 2.5 \cdot El_{\text{grid}} + \left(\frac{H_{\text{cog}}}{\text{Ref } H\eta} + \frac{El_{\text{cog}}}{\text{Ref } E\eta} \right) \cdot (1 - PES_{\text{cog}}) \right)_i$$

Where:

- *n* is the number of years of the period used to calculate the average
- *i* is each year of the period used to calculate the average
- *Production* is the mineral wool or expanded minerals production in tonnes in the year *i*
- *F* is the annual consumption of fuels in the production process in the year *i*
- *El_{grid}* is the annual electricity consumption from the grid in the year *i*
- *H_{cog}* is the annual consumption of useful heat from cogeneration in the year *i*
- *El_{cog}* is the annual consumption of electricity from cogeneration in the year *i*
- *Ref Eη* and *Ref Hη* are the reference efficiencies for the separate production of electricity and heat as defined in the Directive 2012/27/EU⁶ and calculated according to the Commission implementing Decision 2011/877/EU⁷ of 19 December 2011 establishing harmonised efficiency reference values for separate production of electricity and heat
- *PES_{cog}* is the primary energy saving of the cogeneration plant as defined in the Directive 2012/27/EU, in the year *i*

The ratio CO₂ emissions/product shall be calculated as an annual average as follows:

⁶ Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC (OJ L 315, 14.11.2012, p. 1–56).

⁷ Commission Implementing Decision 2011/877/EU of 19 December 2011 establishing harmonised efficiency reference values for separate production of electricity and heat in application of Directive 2004/8/EC of the European Parliament and of the Council and repealing Commission Decision 2007/74/EC (OJ L 343, 23.12.2011, p. 91–96).

$$\text{ratio} \frac{\text{CO}_2 \text{ emissions}}{\text{Product}} = \frac{1}{\sum_{i=1}^n \text{Production}_i} \cdot \sum_{i=1}^n (\text{Direct CO}_2 + \text{Indirect CO}_2)_i$$

Where

- n is the number of years of the period used to calculate the average
- i is each year of the period used to calculate the average
- *Production* is the mineral wool production in tonnes in the year i
- *Direct CO₂* is the CO₂ emissions as defined in Commission Regulation (EU) No 601/2012⁸, in the year i
- *Indirect CO₂* is the indirect CO₂ emissions due to final energy consumption in the year i , and shall be calculated as:

$$\text{Indirect CO}_2 \text{ emission} = FE_{\text{grid}} \cdot El_{\text{grid}} + FE_{\text{fuel cog}} \cdot \left(\frac{H_{\text{cog}}}{\eta_{\text{refH}}} + \frac{El_{\text{cog}}}{\eta_{\text{refEl}}} \right) \cdot (1 - PES_{\text{cog}})$$

Where

FE_{grid} is the EU average carbon intensity of the electricity grid, according to MEErP methodology (0.384 tCO₂/MWh = 0.107 tCO₂/GJe)

$FE_{\text{fuel cog}}$ is the CO₂ emission factor of the fuel consumed in the cogeneration plant

The direct CO₂ emissions shall be monitored according to Commission Regulation (EU) No 601/2012

The period to calculate the ratios energy consumption/product and CO₂ emissions/product shall be the last 5 years before the application. If the operation period of the plant is less than 5 years at the date of application, the ratio shall be calculated as an annual average of that operation period, which shall be at least one year.

Assessment and verification

The applicant shall provide the Competent Body with a declaration which includes the following information:

- *Ratio Energy consumption (GJ)/product (tonne)*
- *Ratio CO₂ emissions (tonne)/product (tonne)*
- *Direct CO₂ emissions (tonnes) for each year of the period to calculate the average*
- *Indirect CO₂ emissions (tonnes) for each year of the period to calculate the average*
- *Fuels consumed, consumption of each fuel (GJ), sub-process/es of the manufacture process where they are consumed for each year of the period to calculate the average*
- *Electricity consumption from the grid (GJ final energy) for each year of the period to calculate the average*

⁸ Commission Regulation (EU) No 601/2012 of 21 June 2012 on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council (OJ L 181, 12.07.2012, p. 30–104).

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- *Useful heat consumption from cogeneration (GJ final energy) for each year of the period to calculate the average*
 - *Electricity consumption from cogeneration (GJ final energy) for each year of the period to calculate the average*
 - *Reference efficiencies for separate production of heat and electricity*
 - *Primary energy saving (PES) (%) of the cogeneration for each year of the period to calculate the average*
 - *Identification of fuels used in cogeneration and their share in the fuel mix, for each year of the period to calculate the average*

The following documents shall be provided together with the declarations:

- *Annual emissions report according to Commission Regulation (EU) No 601/2012, for each year of the period to calculate the average*
- *Verification report finding the annual emissions report satisfactory according to Commission Regulation (EU) No 600/2012⁹, for each year of the period to calculate the average*
- *Records of electricity consumption from the grid provided by the supplier, for each year of the period to calculate the average*
- *Records of the useful heat and electricity consumption from cogeneration, both on-site and purchased, for each year of the period to calculate the average.*

Rationale and discussion

Quantis (2012) concluded that mineral wool has a lower impact on climate change and resources than white peat (43% lower in GWP, 48% lower in resources); however, it still has a higher impact than compressed coir pith (30% higher in GWP, 50% higher in resources). The energy consumption during the production process contributes to 70% of the ecosystem quality impacts and to more than half climate change and resources. In the graphs that this study provides with the results of the different constituents considered, mineral wool results in GWP indicator and resources indicator comparable to other constituents as bark and perlite. Regarding perlite, it was reported that energy consumption for perlite expansion contributes to 70% of the result of its climate change impact indicator. Although the study strongly advises against the comparison between constituents providing different functions, such comparison is necessary to outline the environmental performance of mineral wool and expanded minerals in the framework of the product group of growing media.

Stakeholder feedback

During the stakeholder consultation, there have been many proposals of exclusion of mineral wool based on the impacts of the extraction of basalt rock and the high energy demand of the manufacture process. These concerns would be extended to the expanded minerals, as perlite, vermiculite and expanded clay.

⁹ Commission Regulation (EU) No 600/2012 of 21 June 2012 on the verification of greenhouse gas emission reports and tonne-kilometre reports and the accreditation of verifiers pursuant to Directive 2003/87/EC of the European Parliament and of the Council (OJ L 181, 12.07.2012, p. 1–29).

Other stakeholders and MS raised an opposite opinion regarding mineral wool, arguing that the energy consumption in the production of mineral wool is offset due to the energy and water savings achieved by the hydroponic production.

Additional information about the environmental performance of stone wool has been provided by a manufacturer. An LCA on the hydroponic productions of tomato was carried out, comparing different growing media (stone wool and coir pith), and the results show that (i) the hydroponic production based on stone wool and coir pith perform similar environmental impacts; and (ii) the growing medium makes a minor contribution to the total impact of tomato production (about 1%).

The LCA studies show that the manufacture processes of mineral wool and expanded minerals are very intensive in energy consumption, and thus, a criterion focused on GHG emissions and the energy consumption per ton of product is proposed. The thresholds are based on the sector report for the mineral wool industry carried out by Ecofys to develop a methodology for the free allocation of emission allowances in the EU ETS post 2012 (Ecofys, 2009) and the BREF for the Manufacture of Glass (EC JRC, 2013). The ratio of CO₂ emissions, direct and indirect, per production of mineral wool is proposed to select the best 20 plants out of the 73 plants/lines analysed by Ecofys report (87 plants identified), which emit less than 0.85 ton CO₂/ ton product. This would represent the 27% of plants analysed in Europe and 22% of the plants identified. The verification is proposed to be based on the EU ETS methodology, which requires third party verification by an accredited entity. The energy consumption ratio is proposed to select those plants that operate with electrical furnaces, performing lower CO₂ emissions. According to BREF Glass, the electricity consumption is in the range of 2.7 to 5.5 GJ/tonne, in final energy, (6.75 – 13.75 GJ/tonne in primary energy, 2.5 transformation factor). A threshold of 11 GJ/tonne in primary energy would be in the middle of the range.

The methodology to calculate the ratios are based on averages of the last 5 years or the operation period of the plant, if it is less than 5 years. This enables to have a more representative figure considering the fluctuations that the production is subject to, within the same year and along its operation phase.

For expanded minerals, there are not so detailed data available, but aggregate figures provided by the stakeholders suggest that the thresholds proposed are also suitable for the manufacture of these mineral constituents. Anyway, the criterion is proposed to be applied just to mineral growing media, i.e. growing media composed 100% mineral constituents. The common formulations of expanded minerals and organic constituents vary from 1:1 v/v to 1:3 v/v, and they are meant to improve the physical characteristics of some waste-derived materials, and thus the penetration of this type of materials in the growing media market. Therefore, the energy demand for the production of the expanded minerals is offset by the promotion of waste-derived materials that those constituents enable.

The assessment and verification is proposed to be based on the EU Emission Trade System, since it is robust third party verification, widely established across Europe.

One stakeholder has reproached the criterion proposed to be set by a dominant player on the market, based on their own benchmark, arguing that the other stakeholders have little knowledge of the process and therefore cannot judge its impact in general nor the options available for improvement. As it is explained above, the thresholds proposed are based on the report carried out by Ecofys, Fraunhofer Institute for Systems and Innovation Research Öko-Institut (Ecofys, 2009) where the main association and manufacturers are represented, and

on BREF for the Manufacture of Glass (EC JRC, 2013) which includes the mineral wool production.

Another stakeholder pointed out that the Quantis LCA study assumes that mineral wool growing media have a density of 70kg/m³ whereas the actual density of mineral wool growing media on the market is on average approximately 50kg/m³. This means that the Quantis study overestimates the environmental impacts of mineral wool by almost 30%. When the Quantis report are adjusted to take account of the correct mineral wool density, the environmental impact of mineral wool is comparable to compressed coir pith for Global Warming Potential and Resources and lower than compressed coir pith in the case of Human Health and Ecosystem Quality.

3.3.2 Sources of mineral extraction

This criterion applies to growing media, soil improvers and mulch.

Extracted minerals can be used as constituents of the final product provided that:

- 1) (Within the EU): If they are extracted from Natura 2000 network areas, composed of Special Protection Areas under Directive 2009/147/EC on the conservation of wild birds, and Special Areas of Conservation under Directive 92/43/EEC on the conservation of natural habitats and wild fauna and flora, extraction activities have been assessed and authorised in accordance with the provisions of Article 6 of Directive 92/43/EEC and taking into account the EC Guidance document on non-energy mineral extraction and Natura 2000¹⁰.
- 2) (Outside the EU): If they are extracted from protected areas designated as such under the national legislation of the sourcing / exporting countries, the extraction activities have been assessed and authorised in accordance with provisions that provide assurances equivalent to those under (1).

Assessment and verification

In case mineral extraction activities have been carried out in Natura 2000 network areas (in the EU) or protected areas designated as such under the national legislation of the sourcing / exporting countries (outside the EU), the applicant shall provide a declaration of compliance with this requirement issued by the competent authorities or a copy of their authorisation issued by the competent authorities..

Rationale and discussion

Criterion 1.3 (for both SI and GM) in the current EU Ecolabel criteria indicates that minerals extracted from natural resources can be used as a constituent, provided they are not sourced from protected sites.

One stakeholder expressed their opposition to this criterion, arguing that it does not meet the following requirements of the EU Ecolabel Regulation:

- They are not performance-based ('environmental performance' means the result of a manufacturer's management of those characteristics of a product that cause environmental impact")
- They are not scientifically based (See Article 6.3 of the Regulation)
- They do not guarantee labelling of the best 10-20% of products (minerals extracted from the areas mentioned, whilst minimising impacts on biodiversity can have a better environmental performance than minerals extracted from other areas with no management of biodiversity impacts).

The stakeholder also referred to the European Commission's Guidance on Non-energy mineral extraction and Natura 2000 which states that "There is no automatic exclusion of NEEI activities in and around Natura 2000. Instead, extractive activities shall follow the provisions

¹⁰ EC Guidance on undertaking new non-energy extractive activities in accordance with Natura 2000 requirements (http://ec.europa.eu/environment/nature/natura2000/management/docs/nee_i_n2000_guidance.pdf)

outlined in Article 6 of the Habitats Directive to ensure that these activities do not adversely affect the integrity of Natura 2000 sites". In addition, the stakeholder reported that perlite is a soft mineral that is excavated directly without the need for blasting, so the use of explosives in perlite quarries is extremely limited and therefore the contribution of blasting to the impact on ecosystem quality cannot be that high, in their opinion.

From the opposite point of view, some stakeholders expressed their opinion to go beyond this criterion by keeping it and by setting requirements of restoration of the extraction sites allowed by the criterion, once the extraction phase is over.

The rationale applied to revise the current criterion is the following:

- Quantis LCA study (2012) concludes that blasting during the extraction phase contributes more than half of the impact of perlite on ecosystem quality. The study specifies that data concerning perlite extraction were provided by one supplier and concern 2 different sites in Greece. Primary data include extracted area, fuel consumption and machines used. According to the publication of the Society for Mining, Metallurgy and Exploration "Industrial Minerals & Rocks 7th Edition" (2006) most perlite mines use either ripping or blasting, or both. If perlite is soft and friable, brecciated, or extensively jointed, ripping is employed with significant cost savings. Blasting is required where perlite cannot be readily broken using rippers. The same publication refers to sites located in Hungary where blasting is used. In Greece, the main producer of perlite in Europe, there are also mines of harder perlite (for example, Trachylas, in Milos Island).
- As mentioned above, the dominant player in the perlite industry is Greek company, S&B Industrial Minerals SA. The two main perlite mines are on Milos Island: Trachylas in the north and Tsigrado in the south. Figure 1 shows the areas protected by Natura 2000 Network in Milos Island, according to the dataset Natura 2000 viewer. The red circles indicate the perlite mines, according to S&B Industrial Minerals SA website¹¹.

¹¹ <http://www.sandb.com/about-sb/world-locations/>

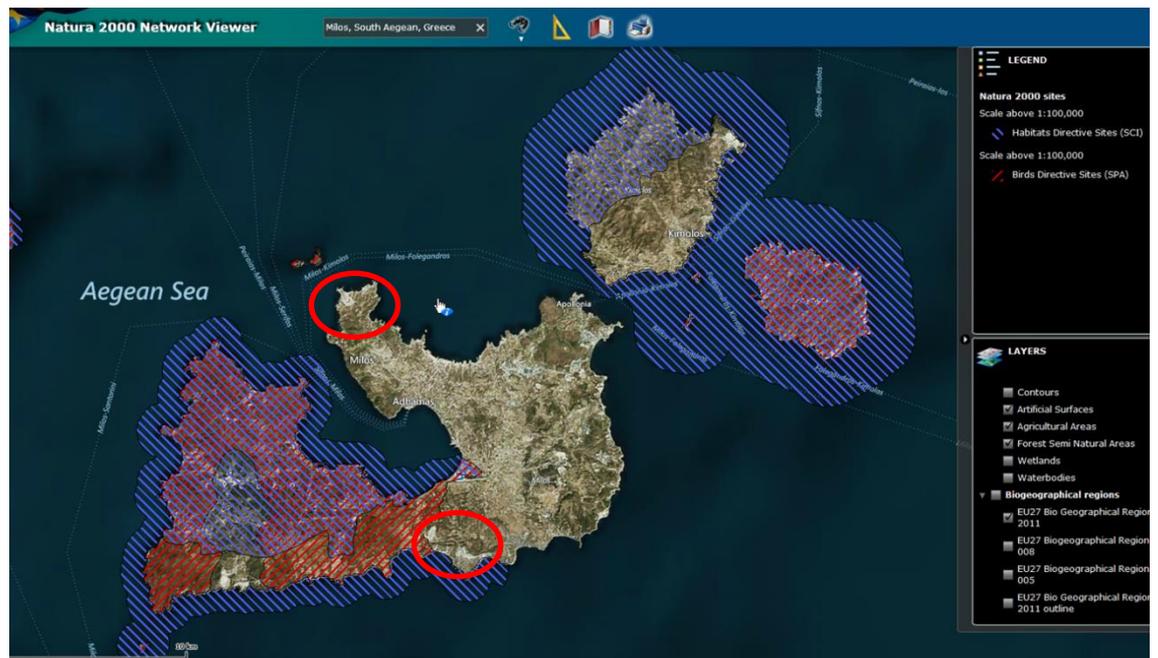


Figure 1: Perlite mines in Milos Island and Natura 2000. Source: <http://natura2000.eea.europa.eu/>

As it can be observed, none of those perlite mines (Trachylas and Tsigrado) seem to be located in protected areas, but the one in the south is quite close to the borders of a Bird Directive Site. It hasn't been found any active perlite mine placed in Natura 2000 Sites. Therefore, the proposed criterion would apply on the perlite coming from new mining activities that might be authorised in the future in protected areas, according to the respective Directives and national and regional legislation on biodiversity. Nevertheless, any extractive activity shall undergo an environmental impact assessment regardless whether it is located within or outside a Natura 2000 site.

- Hungary is the second producer in Europe. Hungarian perlite deposits are in the Tokaj Mountains of Zemplen Province at Pálhazá (close to the Slovakian border), Erdobenyé, Abubiszanto, Telkibany, and Mad (Shackley 1990; Roskill 2005). Approximately 30% of production in 2002 was exported mainly to Austria, Germany, and Poland. Perlit-92 Kft (Kendall 1994), the sole producer in Hungary, is owned by Duna-Drava Cement es Meszmuvek Kft, which is part of the German Heidelberger Zement group. Perlit-92 Kft has mined perlite (68% to 75% SiO₂) at the Pálhazá deposit since the mid-1950s and controls a deposit at the village of Bózsva (5 km from Pálhazá). The grayish-black ore is in a distinctive columnar form (Kendall 1994). Mining is by drilling and blasting in an open pit (2.4-Mt resource) and trucked to a nearby 200-ktpy plant. Mine-run perlite is crushed, dried in a rotary kiln, and further sized before being screened into at least 15 grades and stored in silos.
- The situation of the extraction site at Pálhazá is shown in Figure 2:



Figure 2: Perlite mine at Pálháza and Natura 200. Source: <http://natura2000.eea.europa.eu/>

- In this case, the extraction site is surrounded by Natura 2000 areas, and one part seems to be in protected area.
- Other expanded mineral used in growing media is vermiculite, which is not produced in Europe. It is mainly produced in South Africa and US.
- The European Commission's Guidance on Non-energy mineral extraction and Natura 2000 (EC 2010) has the specific purpose of providing guidance on how best to ensure that Non-Energy Extractive Industry (NEEI) developments are compatible with the provisions of the two EU Directives. It focuses in particular on the procedures to follow under Article 6 and provides clarifications on certain key aspects of this approval process. This article does not exclude any industrial or extractive activity, but requires an appropriate assessment prior to make a decision on the permit. Therefore according to the correct interpretation of Habitat Directive, a no-go criterion on mineral extraction wouldn't be coherent with its provisions.
- The guidance explains which mitigation measures to implement to minimize the environmental impacts on biodiversity, and also the monitoring to ensure the correct application. The aim is helping national and regional authorities to carry out the assessment of the activity and, if authorized, to define the specific conditions (mitigation measures, timescale and the mechanisms through which the mitigation measures will be secured, implemented and monitored).

Nevertheless, the guidances also recognizes that the non-energy extractive industry can make an important positive contribution to biodiversity conservation, through the rehabilitation of mining sites at the end of the project cycle. According to the Guidance, the rehabilitation plan is normally an integral part of the NEEI project and of the permit conditions, is often done not only after, but already during mining in an integrated manner, e.g., the whole extraction area may cover 10 ha, but only 2 ha are operated at any given moment accompanied by ongoing rehabilitation of mined out

areas. It is recommended to take into consideration timescale and rate of success of the actions within the rehabilitation plans. Some of them might span 40 years to achieve successful restoration of natural habitats and communities. Regarding the rate of success, the document cited a study from Lockwood and Pimm (1999), which reviewed 87 restoration projects of aquatic ecosystems according to the following criteria: (a) clear goals; (b) goals that aim at the restoration of some part of former ecosystem; (c) ecosystems subject to initial management. The time needed to achieve the expected results was between 1-53 years, with an average of 6, and with a varying success rate, with only a few goals reached, when management ceased. The issue of the timescale is particularly relevant for the assessment and verification of any criterion related to rehabilitation plans. However, the verification of the rehabilitation plans is competency of the Competent Authority of the Natura 2000 site, according to the provisions of the Habitat Directive, and the Guidance provides advice and support to Competent Authorities on how to implement it.

- The Convention on Biological Diversity (CBD) is an international legal instrument addressing protected areas. The scope of CBD is broad and protected areas are a spatial measure to achieve its targets. The term “protected area” is defined in Article 2 of the Convention as “a geographically defined area, which is designated or regulated and managed to achieve specific conservation objectives”. Article 8 of the Convention contains specific references to protected areas by encouraging Parties to:
 - Establish a system of protected areas or areas where special measures need to be taken to conserve biological diversity;
 - Develop, where necessary, guidelines for the selection, establishment and management of protected areas or areas where special measures need to be taken to conserve biological diversity;
 - Regulate or manage biological resources important for the conservation of biological diversity whether within or outside protected areas, with a view to ensuring their conservation and sustainable use;
 - Promote environmentally sound and sustainable development in areas adjacent to protected areas with a view to furthering protection of these areas;
 - Cooperate in providing financial and other support for in-situ conservation, particularly to developing countries.
- The International Union for Conservation of Nature defines 'protected area' as *a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long term conservation of nature with associated ecosystem services and cultural values* (IUCN, 2008). IUCN categories for protected areas are:
 - Ia Strict Nature Reserve:
 - Ib Wilderness Area.
 - II National Park:
 - III Natural Monument or Feature:
 - IV Habitat/Species Management Area:
 - V Protected Landscape/ Seascape
 - VI Protected area with sustainable use of natural resources
- With regards to the reference to CBD in the current decision, it has been found that the formulation "equivalent areas located outside the European Community that fall

under the corresponding provisions of the United Nations' Convention on Biological Diversity" is meaningless within the CBD framework and its practical implementation: the CBD needs to be implemented in Parties' territories through national legislation, and it is in any case not directly enforceable per se. This is also applicable to any other Multilateral Environmental Agreements (MEAs); or international frameworks and initiatives such as the IUCN. Any reference to protected areas outside the EU should refer instead to protected areas designated as such under the national legislation of the sourcing / exporting countries. It is the relevant national legislation (which implements international commitments and MEAS decisions) of those countries which would be deemed to have legal effects, equivalent to Natura 2000 areas. Furthermore, the references to the establishment of protected areas under the provisions of the Convention on Biological Diversity (CBD) and the International Union for the Conservation of Nature (IUCN) are not workable in real cases, since many protected areas have been established without explicit reference to the CBD or the IUCN - the EU Habitats Directive does not make reference to these conventions. For the verification of this proposed criterion, it is recommended to use the protected areas refer to the UN list of protected areas compiled by UNEP as a guidance (see <http://www.unep-wcmc.org/resources-and-data/united-nations-list-of-protected-areas>). This information will be provided in the User manual.

3.3.3 Mineral growing media use and after use

This criterion is applicable to mineral growing media only.

The mineral growing media shall only be offered for use for professional horticultural applications.

The applicant shall offer customers a structured collection and recycling service, which may use third party service providers. The collection and recycling service shall cover a minimum of 70% v/v of the applicant's sales of the product across the European Union.

Assessment and verification

The applicant shall provide the Competent Body with a declaration that the mineral growing media is only offered for use in professional horticultural applications. A statement about the professional horticultural application of the product shall be included in the information provided to the end-user.

The applicant shall inform the Competent Body about the option(s) on offer of structured collection and recycling service and their response to these options. In particular, the applicant shall provide the following documentation and information:

- *Contract documentation between the manufacturer and the service providers;*
- *Description of collection, processing and destinations;*
- *Annual overview of the total sales volume of growing media in the European Union Member States and an annual overview of the sales volumes in areas of those Member States where collection and processing are on offer;*
- *In case of new entrants, an estimation of the annual overview of the total sales volume of growing media in the European Union Member States and an estimation of the annual overview of the sales volumes in areas of those Member States where collection and processing are on offer, shall be provided. Real data shall be provided one year after the EU Ecolabel licence is awarded.*

Rationale and discussion

It is proposed that mineral growing media are restricted to its use in commercial horticultural applications (closed-cycle recirculating hydroponic systems). Under these conditions, the after use criterion can be considered feasible and realistic. Spent growing media may be re-used by the amateur gardener or placed in household waste, which may in turn hinder the recycling process, leading to disposal of the waste mineral growing media in landfill. It would be impractical to arrange and manage a totally separate recycling route for mineral growing media.

Arising of spent growing media composed of 100% mineral in commercial hydroponic applications would be on a sufficient scale that the used growing media could be collected and effectively cleaned and recycled. It is suggested from the stakeholder consultation that the re-use of this growing media is not practised due to the difficulty of cleaning and mitigating risks from spreading plant pathogens. However, such issues are not insurmountable, and might be considered, together with recycling into other mineral wool

applications. The current EU Ecolabel growing media criteria recognise this and provide in Criterion 6b requirements for the after use of mineral growing media.

Two proposals (1 and 2) were presented in the last version of the criteria proposal:

The proposal 1 was aimed at retaining the current criterion, but revising the sales cut-off value. Stakeholder feedback suggests that a lower threshold could be feasible, since there are important markets that are not covered by the current threshold. According to the information available, a threshold of 15000 m³ could be implemented, extending the scope of the criterion to other countries.

The proposal 2 was based on the input from manufacturers, who highlighted the difficulty of demonstrating the percentage of sold volumes which are recycled, meaning that several stages of the process are beyond their control and thus, many assumptions need to be contrived in the calculation leading to a large uncertainty in the results. An alternative approach is therefore proposed to streamline the implementation of this criterion, while keeping a level of ambition that is translated to the sales across EU countries. In this proposal, the threshold of annual sales is removed, applying to all the manufacturers regardless the volume of their sales at country level. The criterion also allows the applicant to decide the markets to offer the collecting and recycling services, optimizing the efforts and the results to comply with the criterion. The percentage of 70% allows the applicant to optimize the collection and recycling systems, taking into account the size of the market or its level of scattering.

Stakeholder feedback

Some stakeholders prefer proposal 2 for pragmatic reasons, since proposal 1 would require the size based on the sale needs to be determined and together with the information by their users on the recovery and recycling rate. These data are difficult to obtain. Other stakeholder supported it because of its higher level of ambition.

Other stakeholder supports the inclusion of mineral constituents but only for professional products, as the collection and recycling systems is only realistic for professional products. They also suggested spanning this criterion to all growing media containing mineral constituents. From the practical point of view, the results of the Preliminary Study showed that the recycling of growing media composed by blends of organic and mineral constituents is very challenging. A study by Co Concept (2008) mentioned that there are not many options for recycling mineral constituents within those blends after their use.

It was also suggested a cut-off value of 10000 m³/year if Proposal 1 was chosen.

In order to not discriminate new entrants in the market, an estimation of the annual sales and the volume subject to collection and recycling is accepted, provided that it is confirmed with real data 12 months after the award of the EU Ecolabel licence.

3.4 Criterion 4: Recycled/recovered materials and organic materials in growing media

This criterion applies to growing media only.

Growing media products shall contain a minimum percentage of recycled/recovered content or organic content, as follows:

- (a). The growing medium shall contain a minimum of 30% of organic constituents (expressed as volume of organic constituent per total volume of the product), or
- (b). The mineral growing medium shall contain mineral constituents manufactured from a process using at least 30% of recycled materials (expressed as the dry weight of recycled/recovered materials per total dry weight of the input materials).

Assessment and verification:

The applicant shall declare the following information:

- *For the case (a): volume of organic constituents declared in Criterion 1 per total volume of the product, or;*
- *For the case (b): dry weight of recycled/recovered materials per total dry weight of the input materials.*

For the case (b), the applicant shall also declare the following information about the mineral constituents:

- *Identification of raw material inputs, dry weight of the raw material input per total dry weight of the input materials and origin for each raw material input, and*
- *Identification of recycled/recovered material inputs, dry weight of recycled/recovered material input per total dry weight of the input materials and origin for each recycled/recovered material input.*

Rationale and discussion

The NNFCC study (NNFCC, 2008) addresses the LCA of glass fibre wool manufactured by KNAUF and stone wool manufactured by ROCKWOOL, for insulation purposes. Both processes were similar, except that the KNAUF process used significant amounts of recycled glass (typically 30-60% and up to 80%, although the content in the example was not described) whilst the ROCKWOOL process used mainly virgin raw minerals (77%) and 23% recycled materials. Both processes included some finite percentage of raw mineral in the feedstock. The results of this study are highly sensitive to the density of the product. These data were used to build the first proposal of recycled materials in mineral wool growing media.

The first criteria proposal presented in the 1st AHWG meeting were aimed at ensuring that all EU Ecolabel products would contain a certain amount of recycled/re-used materials, by mean of the organic matter content criterion, which was proposed to be extended to growing media products.

Stakeholder feedback

On the basis of the limited LCA data, the previous version of the criterion proposal recommended that mineral wool for EU Ecolabel purposes is only acceptable if sourced from a manufacturing process that uses at least 60% waste material as input. The stone wool manufacturers for growing media purposes agreed on a recycled content criterion, but also informed that the percentage proposed was not doable, because the quality of the stone wool as growing media would be seriously affected, and also the compliance with the Note Q of the CLP Regulation (See "Hazardous substances and mixtures" on page 78 and 79). It was recommended to set a percentage of 30%.

One stakeholder suggested that if mineral wool is allowed to the EU Ecolabel, the adoption of mineral growing media should occur according to the same principles as done for organic constituents, which is promoting the re-use and recycling of materials. Therefore they suggest to fully maximize the use of recycled mineral wool and propose to re-introduce the first proposal where at least 60% of recycled mineral wool should be used for the production of new mineral wool substrates. As it is explained above, the mineral wool for growing media purposes cannot reach a percentage above 30%, because the quality of the stone wool as growing media would be seriously affected, and also the compliance with the Note Q of the CLP Regulation.

During the 1st AHWG meeting, it was proposed to set a minimum percentage of organic constituents in growing media, so it would ensure that all EU Ecolabel products would contain a certain amount of recycled/re-used materials. The proposal was done by mean of the organic matter content criterion, but the stakeholders did not consider it appropriate, and they suggested it to be set as a percentage in volume basis. The minimum is proposed based on common formulations of expanded minerals and organic constituents, which vary from 1:1 v/v to 1:3 v/v. The figure of 30% is proposed to provide enough margins in the formulations considering that there are different formulations depending on the constituents and applications.

Some stakeholders have proposed to restrict the origin of the mineral constituents in growing media to recycled mineral wastes or also by-products from gravel or rock mining activities (sands, sediments, rock dust, soils etc.), with a limitation in the use of extracted minerals. They also proposed to restrict the processing of the mineral constituents to mechanical treatments by means of sieving, crushing, washing with water with use of any synthetic extracting agents or any other agents. In this regard, it is necessary to identify the representative range of mineral constituents used in growing media. Those are expanded minerals (perlite, vermiculite and expanded clay) added to improve the bulk density of the product. For that purpose, it has been found that slags from the blast furnaces can be expanded by adding controlled quantities of water, air, or steam, producing a lightweight expanded or foamed product, though the main applications are construction materials. Slags from aluminium and steel industry can also be used in the production of mineral wool. These considerations have been taken into account to propose a percentage of recycled materials in the mineral growing media, which also includes recycling of the mineral wool production wastes. This endorses the use of an emerging technology mentioned in BREF for the Manufacture of Glass (EC JRC, 2013), which is the waste injection in the stone wool production process. With this technique, according to BREF, it is possible to recycle waste from the fiberising process by up to 80 – 100 %; this corresponds to a reduction of mineral raw materials in the batch composition of at least 7 %.

3.5 Criterion 5: Limitation of hazardous substances

3.5.1 Limits for Heavy metals

This criterion applies to growing media, soil improvers and mulch.

(a). Soil improvers, mulch and organic constituents of growing media

For soil improvers, mulch and organic constituents of growing media, the content of the following elements in the final product or constituent shall not exceed the values shown in Table 12, measured in terms of dry weight of product.

Table 12. Heavy metals limits for Soil improvers, Mulch and organic constituents of growing media

PTE	Symbol	Maximum content in the product (mg/kg DW)
Cadmium	Cd	1
Chromium (total)	Cr	100
Copper	Cu	100
Mercury	Hg	1
Nickel	Ni	50
Lead	Pb	100
Zinc	Zn	300

(b) Growing media

For growing media, the content of the following elements in the final product shall not exceed the values shown in Table 13, measured in terms of dry weight of product.

Table 13. Heavy metals limits for Growing media

PTE	Symbol	Maximum content in the product (mg/kg DW)
Cadmium	Cd	3
Chromium (total)	Cr	150
Copper	Cu	100
Mercury	Hg	1
Nickel	Ni	90
Lead	Pb	150

Zinc	Zn	300
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The limit values set on Table 12 and Table 13 are valid unless national legislation is stricter.

Assessment and verification

The applicant shall provide the Competent Body with the test reports conducted in accordance with testing procedure indicated in respective EN standards in Table 14: In the case of organic constituents of growing media, the test reports may be provided by the suppliers.

Table 14. Standard methods of extraction and measurement of heavy metals

PTE	Symbol	Method measurement	of	Method of extraction
Cadmium	Cd	EN 13650		For soil improvers, mulch, organic constituents of growing media and growing media, except mineral growing media
Chromium (total)	Cr	EN 13650		
Copper	Cu	EN 13650		
Mercury	Hg	EN 16175		EN 13650 Soil improvers and growing media - Extraction of aqua regia soluble elements
Nickel	Ni	EN 13650		For mineral growing media
Lead	Pb	EN 13650		EN 13651 Soil improvers and growing media - Extraction of calcium chloride/DTPA (CAT) soluble nutrients and elements
Zinc	Zn	EN 13650		

Rationale and discussion

Limit values

The current EU Ecolabel Decisions for soil improvers and growing media set the following limits for PTE in mg/kg DW:

Table 15. Current PTE limits for soil improver and growing media

Parameter	GM Limit	SI Limit	Condition
Zn	300	300	Soil improvers: <i>In the final product, the content of the following elements shall be lower than the values shown below, measured in terms of dry weight</i>
Cu	100	100	
Ni	50	50	
Cd	1	1	Growing media: <i>In the organic growing medium constituents, the content of the following elements shall be lower than the values shown below, measured in terms of</i>
Pb	100	100	

Parameter	GM Limit	SI Limit	Condition
Hg	1	1	<i>dry weight</i>
Cr	100	100	
Mo	2	2	Limit values are applicable to organic constituents only. Maximum allowable concentrations are applied only to products containing material from industrial processes, such as rice hulls, peanut hulls or sludges from the agro-food industry. <i>Note this is the same text for GM and SI</i>
Se	1.5	1.5	
As	10	10	
F	200	200	

It was initially recommended that the PTEs that should be limited in EU Ecolabel for growing media, soil improvers and mulch were those that are currently limited, i.e. Zn, Cu, Ni, Cd, Cr, Pb, Hg, Mo, Se, As and F.

The first version of the proposed criteria included two options (presented at the 1st AHWG meeting, October 2013):

1. retaining the current limit values for organic constituents
2. setting stricter limit values for organic constituents, based on the limits proposed in the EoW criteria for Biodegradable waste project and the JRC Measurement Campaign (EC JRC, 2014).

The second version of the draft criteria proposed (presented at the 2nd AHWG meeting May 2014) to set the stricter limit values in option 2, to be applied to each constituent of the products, both mineral and organic.

Stakeholder feedback

The stakeholders' feedback showed that the current limit values for organic constituents in force, are feasible for organic soil improvers and mulch, and supported by many of them, raising doubts about the Cu and Zn limit values due to their function as micronutrients. In this regard, limit values equal to those proposed in the EoW for biodegradable waste report (see Table 16) and even higher were suggested.

Table 16. PTE limits proposed in EoW criteria for biodegradable waste report

PTE	Limit EoW biodegradable waste report mg/kg DW
Cd	1.5
Cr	100
Cu	200
Hg	1
Ni	50
Pb	120
Zn	600

Some stakeholders also recommended restricting the elements to be monitored to those proposed by the EoW criteria for biodegradable waste report, meaning the withdrawn of Mo, Se, As and F limit values. Furthermore, one comment pointed out that Mo is an essential element in the nitrogen fixation process. Another controversial limit value is the one proposed for Cd, as it would exclude most bark mulches that might reach values up to 3 ppm, according to the comments received.

For mineral constituents in growing media, some comments pointed out that the test based on aqua regia digestion measures the content of metals that are not bioavailable in mineral constituents. The standard EN 13650 also declares that the results cannot be regarded as the “bioavailable” fraction, as the extraction procedure is too vigorous to represent any biological process. Furthermore, it was also mentioned that mineral wool and expanded minerals are manufactured at high temperatures, producing a chemical bound of heavy metals within the structure of the mineral. These comments are further supported by the standard NF U 44-551 (Supports de cultures), which exempts mineral wool and expanded minerals from the requirement of heavy metals, as shown in Table 17.

Table 17. PTE limit values in NF U 44-551 Supports de cultures

PTE	Abbr	Limit values for GM except mineral wool and expanded minerals. mg/kg (dry weight)
Cadmium	Cd	2
Chromium (total)	Cr	150
Copper	Cu	100
Mercury	Hg	1
Nickel	Ni	50
Lead	Pb	100
Zinc	Zn	300

The ongoing revision of the Fertilizer Regulation is also considering setting limit values in heavy metals specific for growing media products. For mineral wool, the same limits apply but the extraction method is based on of calcium chloride/DTPA (CAT) (Table 18)

Table 18. PTE limit values in ongoing revision of Fertilizer Regulation

PTE	Abbr	Limit values for GM (under discussion) mg/kg (dry weight)
Cadmium	Cd	3
Chromium (VI)	Cr VI	2
Copper	Cu	No limit
Mercury	Hg	1
Nickel	Ni	90
Lead	Pb	150
Zinc	Zn	No limit

The feedback received from the stakeholders during the revision process have shown an opposite opinion to lower the limits on heavy metals currently in force for organic constituents, as proposed at the 2nd AHGW meeting, since those stricter limits wouldn't bring any added value according to the risk assessment given that the limits proposed by the EoW criteria for biodegradable report are regarded safe for human health and environment. Therefore, stricter limit values would mean a significant restriction for many products, depending on the region where the wastes are collected and treated. There were also many comments that recommended the fully harmonization with the mandatory requirements that the Fertilizer regulation will set. The experts strongly recommended the withdrawal of the limits for As, F, Mo and Se.

Many stakeholders also stressed that the current formulation of the criterion for growing media products, which sets the limits on the organic constituents, is very difficult to implement from a practical point of view. Furthermore, it might lead to the promotion of monoconstituent products, affecting the quality of the growing media. This view is aligned to the ongoing Fertilizer regulation revision which is setting limit values on the final product, as well as the French standard NF U 44-551. Nevertheless, the limit values for soil improvers and mulch are proposed to apply also to organic constituents of growing media, in the application year, in order to ensure that level of ambition for this particular criterion of concern is kept aligned to the current criterion on heavy metals for organic constituents of growing media constituents. Some Member States showed their concern about the less strict limit values for growing media, which would allow the use of organic constituents not fulfilling the current limit values. This might also conflict with the future Fertilizer regulation which will set the same limit values for soil improvers and for organic constituents of growing media.

Taking all the input into account, it is proposed to set limit values on the final products instead of constituents, and the following limit values are proposed:

- For soil improvers, mulch and organic constituents of growing media, it is proposed to retain the limit values for Cd, Cr, Cu, Hg, Ni, Pb, Zn in the current decisions for organic constituents, dropping the limits for As, F, Mo and Se. The proposed limits are stricter than the current limit values set by many MS legislation (see Table 19) and the limit values proposed in the EoW criteria for biodegradable waste report, except for Cr, Hg and Ni, which are the same. This is a compromise between the objective of reducing soil and water pollution (most limit values below the average values) and a reasonable selectivity of the criterion.
- For growing media, it is proposed a partial alignment to the Fertilizer regulation, since there is a lack of data on growing media products, and few standards are available. The same limit values for Cd, Hg, Ni, Pb proposed by the ongoing revision of the Fertilizer regulation are recommended. For Chromium, the standard to test CrVI in growing media is not developed yet, so it is proposed to set the limit value on the Cr total, in line with the NF U 44-551. The limits on Cu and Ni are also in line with the French standard.

Table 19. PTE limits in EU Countries (EC JRC, 2014)

Country	Regulation	Type of standard	Cd	Crtot	CrVI	Cu	Hg	Ni	Pb	Zn	As
<i>mg/kg d.m.</i>											
AT	Compost Ord.:Class A+ (organic farming)	Statutory Ordinance	0.7	70	-	70	0.4	25	45	200	-
	Compost Ord.:Class A (agriculture; hobby gardening)		1	70	-	150	0,7	60	120	500	-
	Compost Ord.: Class B (landscaping; reclam.) limit value (guide value)*		3	250	-	500 (400)	3	100	200	1,800 (1,200)	-
BE	Royal Decree, 07.01.1998, case by case authorisation, Compost	Statutory decree	2	100	-	150	1	50	150	400	20
	Royal Decree, 07.01.1998, case by case authorisation, DIGESTATE	Statutory decree	6	500	-	600	5	100	500	2000	150
BG	No regulation	-	-	-	-	-	-	-	-	-	-
CY	No regulation	-	-	-	-	-	-	-	-	-	-
CZ	Use for agricultural land (Group one)	Statutory	2	100	-	100	1	50	100	300	10
	Landscaping, reclamation (draft Bio-waste Ordinance) (group two)	Class 1	2	100	-	170	1	65	200	500	10
		Class 2	3	250	-	400	1.5	100	300	1200	20
		Class 3	4	300	-	500	2	120	400	1500	30
	Fertilizer law 156/1998, ordinance 474/2000 (amended)	DIGESTATE with dry matter > 13%	2	100		150	1	50	100	600	20
	Fertilizer law 156/1998, ordinance 474/2000 (amended)	DIGESTATE with dry matter < 13%	2	100		250	1	50	100	1200	20
DE	Quality assurance RAL GZ - compost / digestate products	Voluntary QAS	1.5	100	-	100	1	50	150	400	-
	Bio waste Ordinance	Statutory decree (Class I)	1	70	-	70	0.7	35	100	300	-
		(Class II)	1.5	100	-	100	1	50	150	400	-
DK	Statutory Order Nr.1650; Compost after 13 Dec. 2006	Statutory decree	0.8	-	-	1,000	0.8	30	120/60 for priv. gardens	4,000	25
EE	Env. Ministry Re. (2002.30.12; m° 87) Sludge regulation	Statutory	-	1000	-	1000	16	300	750	2500	-
ES	Real decree 506/2013 on fertilisers	Statutory	0.7	70	0	70	0.4	25	45	200	-
	Class B		2	250	0	300	1.5	90	150	500	-

Country	Regulation	Type of standard	Cd	Crtot	CrVI	Cu	Hg	Ni	Pb	Zn	As
	Class C		3	300	0	400	2.5	100	200	1000	-
			<i>mg/kg d.m.</i>								
FI	Decree of the Ministry of Agriculture and Forestry on Fertiliser Products 12/07	Statutory decree	1.5	300	-	600	1	100	100	1,500	25
FR	NF U44-051	standard	3	120		300	2	60	180	600	
GR	KYA 114218, Hellenic Government Gazette, 1016/B/17- 11-97 [Specifications framework and general programmes for solid waste management]	Statutory decree	10	510	10	500	5	200	500	2,000	15
HU	Statutory rule 36/2006 (V.18)	Statutory Co. 50; Se: 5	2	100	-	100	1	50	100	--	10
IE	Licensing/permitting of treatment plants by competent authority stabilised MBT output or compost not meeting class I or II	Statutory	5	600	-	600	5	150	500	1500	-
	(Compost – Class I)	Statutory	0.7	100	-	100	0.5	50	100	200	-
	(Compost – Class II)	Statutory	1.5	150	-	150	1	75	150	400	-
IT	Law on fertilisers (L 748/84; and: 03/98 and 217/06) for BWC/GC/SSC	Statutory decree	1.5	-	0.5	230	1.5	100	140	500	-
Luxembourg	Licensing for plants		1.5	100	-	100	1	50	150	400	-
LT	Regulation on sewage sludge Categ. I (LAND 20/2005)	Statutory	1.5	140		75	1	50	140	300	-
LV	Regulation on licensing of waste treatment plants (n° 413/23.5.2006) – no specific compost regulation	Statutory =threshold between waste/product	3			600	2	100	150	1,500	50
Netherlands	Amended National Fertiliser Act from 2008	Statutory	1	50		90	0.3	20	100	290	15
PL	Organic fertilisers	Statutory	5	100		-	2	60	140	-	-
PT	Standard for compost is in preparation	-	-	-	-	-	-	-	-	-	-
Sweden	Guideline values of QAS	Voluntary	1	100	-	100	1	50	100	300	
	SPCR 152 Guideline values	Voluntary	1	100	-	600	1	50	100	800	-
	SPCR 120 Guideline values (DIGESTATE)	Voluntary	1	100	-	600	1	50	100	800	-
SI	Decree on the treatment of biodegradable waste (Official Gazette of the Republic of Slovenia, no. 62/08)	Statutory: 1 st class*	0.7	80	-	100	0.5	50	80	200	-
		Statutory: 2 nd class*	1.5	200	-	300	1.5	75	250	1200	-
		Statutory: stabilized biodegradable waste*	7	500	-	800	7	350	500	2500	-

Country	Regulation	Type of standard	Cd	Crtot	CrVI	Cu	Hg	Ni	Pb	Zn	As
			<i>mg/kg d.m.</i>								
		* normalised to an organic matter content of 30%									
SK	Industrial Standard STN 46 5735 Cl. 1	Voluntary (Mo: 5)	2	100		100	1	50	100	300	10
	Cl. 2	Voluntary(Mo: 20)	4	300		400	1.5	70	300	600	20
UK	UKROFS fertil.org.farming, 'Composted household waste'	Statutory (EC Reg. 889/2008)	0.7	70	0	70	0.4	25	45	200	-
	Standard: PAS 100	Voluntary	1.5	100	-	200	1	50	200	400	-
	Standard: PAS 110 (DIGESTATE)	Voluntary	1.5	100	-	200	1	50	200	400	-
EU ECO Label	COM Decision (EC) n° 64/2007 eco-label to growing media COM Decision (EC) n° 799/2006 eco-label to soil improvers	Voluntary [Mo: 2; As: 10; Se: 1.5; F: 200 [only if materials of industrial processes are included]	1	100	-	100	1	50	100	300	10
EU Regulation on organic agriculture	EC Reg. n° 889/2008. Compliance with limits required for compost from source separated bio-waste only	Statutory	0.7	70	-	70	0.4	25	45	200	-

Regarding the content of cadmium present in bark mulches, its Cd concentration will have to fulfil the requirements within the ongoing Fertilizers regulation revision, which considers mulch as a type of soil improver. In this regard, the limit value for Cd that is foreseen to be adopted is 1.5 ppm. Hence, the EU Ecolabel limit value cannot be less strict than the one set by the mandatory regulation. In addition, there are bark mulches that can fulfil the limits of 1 - 1.5 ppm Cd, so the EU Ecolabel criterion would select the best ones from an environmental point of view, i.e. a reduction of heavy metals load to the soil, which is the main objective of this scheme.

Extraction and measurement methods

The initial proposal recalled the instruction within the current EU Ecolabel Decisions to implement those relevant methods developed under the horizontal project once they were available, and thus, the CEN/TC 400 standards were suggested to be chosen over the CEN/TC 223.

Stakeholder feedback

In reaction, most growing media manufactures claimed that CEN/TC 400 methods were not validated for growing media and soil improvers, in contrast to CEN/TC 223, while other stakeholders supported the original proposal. Some of the manufacturers supporting the CEN/TC 223 also argued that their laboratories work with CEN/TC 223 standards, and new standards would mean an economical overburden that would not bring any advantage.

Other comments about the different heavy metals measuring methods proposed in the previous document have been raised. One stakeholder requested to set one method for monitoring each heavy metal. In addition, the proposed method should have been validated for the tested materials (soils improvers and growing media), as the ones from CEN/TC 223.

In response to this discussion, a revised proposal was recommended in the previous report, where those standards within CEN/TC 223 and the equivalent ones within CEN/TC 400 are allowed to be used. In the case of Hg determination, the EN 13650 doesn't include any determination method for it, thus the CEN/TC method based on cold-vapour atomic absorption spectrometry or cold-vapour atomic fluorescence spectrometry is proposed. The aqua regia digestion is recommended as extraction method (EN 13650 Soil improvers and growing media - Extraction of aqua regia soluble elements; or EN 16174 Sludge, treated biowaste and soil - Digestion of aqua regia soluble fractions of elements), and methods of determination based on ICP OES or FAAS (as the EN 13650 standards does by mean of its Annex B) and on ICP MS are allowed to be used. These methods are suitable to measure the heavy metals in the concentrations permitted, and just in the case of Hg, the determination with cold-vapour atomic absorption spectrometry or cold-vapour atomic fluorescence spectrometry is required.

This proposal of recognition of both CEN/TCs standards, which was also extended to the rest of criteria, aimed at avoiding any additional overburden to comply with the EU Ecolabel criteria, while the correct level of assurance of compliance is reached.

In response to this proposal, the stakeholders insisted that the standard within the CEN/TC 223 are validated for the products soil improvers and growing media, so they should be chosen over other standards. Most of the experts agreed on the need to specify the standard of CEN/TC 223 as first option. Following the recommendation of the stakeholders, the CEN/TC 223 standards are required for verification, unless there is no CEN/TC 223 standard for the

parameter to be tested (e.g. Hg limit value). This rule is proposed to be applied to the rest of the criteria.

As mentioned above, for mineral constituents in growing media, some stakeholders pointed out that the test based on aqua regia digestion measures the content of metals in mineral constituents including the fraction that is not bioavailable. The standard EN 13650 also declares that the results cannot be regarded as the “bioavailable” fraction, as the extraction procedure is too vigorous to represent any biological process. Based on this information and the input from a manufacturer, the extraction method proposed for mineral growing media is EN 13651 (Soil improvers and growing media - Extraction of calcium chloride/DTPA (CAT) soluble nutrients and elements). This is aligned to the ongoing revision of the Fertilizer regulation.

Other stakeholders didn't agree on setting a different extraction method for mineral constituents, with the same limit values. Although the elements in the mineral constituents are not bioavailable, the extraction method should consider the mobility of those elements after a long period of time. In response to this concern, the mineral growing media under the EU Ecolabel provisions is just for professional application in hydroponic production, which works out under controlled conditions of irrigation, and it is not used for long periods of time.

3.5.2 Limits for Polycyclic Aromatic Hydrocarbons (PAH)

This criterion applies to growing media, soil improvers and mulch, with the exception of mineral growing media.

The content of the following polycyclic aromatic hydrocarbons in the final product shall not exceed the values shown in Table 20, measured in terms of dry weight

Table 20. Limit value proposed for PAH

Pollutant	Limit mg/kg DW
PAH ₁₆	6

PAH₁₆ = sum of naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, indeno[1,2,3-cd]pyrene, dibenzo[a,h]anthracene and benzo[ghi]perylene

Assessment and verification

The applicant shall provide the test reports conducted in accordance with testing procedure indicated in respective EN standard in Table 21

Table 21. Standard test method for PAH₁₆

Pollutant	Test method
PAH ₁₆ (sum of naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, indeno[1,2,3-cd]pyrene, dibenzo[a,h]anthracene and benzo[ghi]perylene)	CEN/TS 16181 Sludge, treated biowaste and soil - Determination of polycyclic aromatic hydrocarbons (PAH) by gas chromatography (GC) and high performance liquid chromatography (HPLC)

Rationale and discussion

In line with other initiatives, it was proposed that some specific POPs limits should be introduced for PAHs, PCBs, PFC and PCDD/F. Although most of the responses from the stakeholder consultation would like to have no or limited monitoring, there have also been occurrences of poor quality products contaminated with organic pollutants (EC JRC, 2014).

The control of organic pollutants, particularly POPs that do not degrade during composting and anaerobic digestion, is largely by elimination of input materials containing such pollutants. The FATE study by IPTS published in the working document for EoW criteria for biodegradable waste (EC JRC, 2014) indicated, however, that there is likely to be some measurable and variable level of POPs in all potential waste streams. Elimination of known materials as constituents with a high risk of high concentrations is feasible, but in our view, such measures are unlikely to be fully effective and eliminate the risk of the composts and digestates being contaminated. Assurance of quality through appropriate product testing is therefore recommended.

Stakeholder feedback

The frequency of testing is a key parameter, as testing is a cost, but greater assurance on product quality is provided by more frequent monitoring. The stakeholder responses clearly show that the financial cost of monitoring for organic pollutants might become a burden, so an appropriate balance has been sought. It is also suggested that testing has to be carried out by laboratories accredited according to relevant harmonised standard for testing and calibration laboratories. The costs of the test proposed are shown in Table 22:

Table 22. Estimated cost of the PAH₁₆ test

Parameter	Test method	Cost
PAH ₁₆	prCEN/TS 16181	€ 149

Based on the inputs received from the stakeholders, the first proposal that included PAH₁₆, PCB₇, PCDD/F and Pesticides has been reduced to PAH₁₆, in line with the criterion proposal within the EoW criteria for biodegradable waste report (EC JRC, 2014). While being a good indicator of the presence of organic pollutants, the expenses of the monitoring are reduced to the minimum.

One stakeholder pointed that digestates are well below the limit value proposed (or even nearly zero), therefore they proposed that they should be only investigated in the recognition year and not anymore as it is demonstrated that results are below 50 % under limit value. Other stakeholder also proposed to restrict the analysis to the first year, arguing that if a material fulfils the EU Ecolabel criteria there is no need for further analyses of organic pollutants, while it is not justifiable in the relation to the environmental risk. In addition, they pointed out that the tests would be prohibitively expensive and would adversely affect building up a European market for EU Ecolabel soil improvers and growing media.

In this regard, the criterion is meant to be aligned to what is proposed in the Fertilizer regulation revision. The test frequency proposed for POP is much lower than the rest of criteria, in order to minimize the economic burden that might entail. Anyway, as waste materials are variable, a minimum frequency is recommended after the application year.

3.5.3 Hazardous substances and mixtures

This criterion applies to growing media, soil improvers and mulch.

The final product shall not be classified and labelled as being acutely toxic, a specific target organ toxicant, a respiratory or skin sensitiser, or carcinogenic, mutagenic or toxic for reproduction hazardous to the environment, in accordance with Regulation (EC) No 1272/2008 of the European Parliament and of the Council¹².

The product shall not contain substances or mixtures classified as toxic, hazardous to the environment, respiratory or skin sensitisers, or carcinogenic, mutagenic or toxic for reproduction in accordance with Regulation (EC) No 1272/2008 of the European Parliament and as interpreted according to the hazard statements listed in Table 23.. Any intentionally added ingredient present at a concentration above 0.010% w/w (in terms of wet weight) in the product shall meet this requirement. Where stricter, the generic or specific concentration limits determined in accordance with Article 10 of Regulation (EC) No 1272/2008 shall prevail to the cut-off limit value of 0.010% w/w (in terms of wet weight) mentioned above.

Table 23. Restricted hazard classifications and their categorisation

Acute toxicity	
Category 1 and 2	Category 3
H300 Fatal if swallowed	H301 Toxic if swallowed
H310 Fatal in contact with skin	H311 Toxic in contact with skin
H330 Fatal if inhaled	H331 Toxic if inhaled
H304 May be fatal if swallowed and enters airways	EUH070 Toxic by eye contact
Specific target organ toxicity	
Category 1	Category 2
H370 Causes damage to organs	H371 May cause damage to organs
H372 Causes damage to organs through prolonged or repeated exposure	H373 May cause damage to organs through prolonged or repeated exposure
Respiratory and skin sensitisation	
Category 1A	Category 1B

¹² Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 (OJ L 353, 31.12.2008, p. 1).

H317: May cause allergic skin reaction	H317: May cause allergic skin reaction
H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled	H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled
Carcinogenic, mutagenic or toxic for reproduction	
Category 1A and 1B	Category 2
H340 May cause genetic defects	H341 Suspected of causing genetic defects
H350 May cause cancer	H351 Suspected of causing cancer
H350i May cause cancer by inhalation	
H360F May damage fertility	H361f Suspected of damaging fertility
H360D May damage the unborn child	H361d Suspected of damaging the unborn child
H360FD May damage fertility. May damage the unborn child	H361fd Suspected of damaging fertility. Suspected of damaging the unborn child
H360Fd May damage fertility. Suspected of damaging the unborn child	H362 May cause harm to breast fed children
H360Df May damage the unborn child. Suspected of damaging fertility	
Hazardous to the aquatic environment	
Category 1 and 2	Category 3 and 4
H400 Very toxic to aquatic life	H412 Harmful to aquatic life with long-lasting effects
H410 Very toxic to aquatic life with long-lasting effects	H413 May cause long-lasting effects to aquatic life
H411 Toxic to aquatic life with long-lasting effects	
Hazardous to the ozone layer	
EUH059 Hazardous to the ozone layer	

The most recent classification rules adopted by the Union shall take precedence over the listed hazard classifications. In accordance with article 15 of Regulation (EC) No 1272/2008, applicants shall therefore ensure that any classifications are based on the most recent rules on classification, labelling and packaging of substances and mixtures.

The hazard statements in generally refer to substances. However, if information on substances cannot be obtained, the classification rules for mixtures shall apply.

Substances or mixtures which change their properties through processing and thus become no longer bioavailable or undergo chemical modification in a way that removes the previously identified hazard are exempted from criterion 5.3.

This criterion does not apply to those final products composed by:

- Materials not included in the scope of the Regulation (EC) No 1907/2006¹³ of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), according its Article 2(2).
- Substances covered by Article 2(7)(b) of the Regulation (EC) No 1907/2006 which sets out criteria for exempting substances within Annex V of this Regulation from the registration, downstream user and evaluation requirements.

In order to determine if this exclusion applies, the applicant shall screen any intentionally added substance present at a concentration above 0.010% w/w (in terms of wet weight).

Assessment and verification:

The applicant shall screen the presence of substances and mixtures that may be classified with the hazard statements reported in this criterion. The applicant shall provide the Competent Body with a declaration of compliance with this criterion for the product.

That declaration shall include related documentation, such as declarations of compliance signed by the suppliers, on the non-classification of the substances, mixtures or materials with any of the hazard classes associated to the hazard statements referred in Table 23 in accordance with Regulation (EC) No 1272/2008, as far as this can be determined, as a minimum, from the information meeting the requirements listed in Annex VII to Regulation (EC) No 1907/2006.

The information provided shall relate to the forms or physical states of the substances or mixtures as used in the final product.

The following technical information shall be provided to support the declaration of classification or non-classification for each substance and mixture:

- for substances that have not been registered under Regulation (EC) No 1907/2006 or which do not yet have a harmonised CLP classification: information meeting the requirements listed in Annex VII to that Regulation;*

¹³ Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (OJ L 396, 30.12.2006, p. 1)

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- ii. *for substances that have been registered under Regulation (EC) No 1907/2006 and which do not meet the requirements for CLP classification: information based on the REACH registration dossier confirming the non-classified status of the substance;*
 - iii. *for substances that have a harmonised classification or are self-classified: safety data sheets where available. If these are not available or the substance is self-classified then information shall be provided relevant to the substances hazard classification in accordance with Annex II to Regulation (EC) No 1907/2006;*
 - iv. *in the case of mixtures: safety data sheets where available. If these are not available then calculation of the mixture classification shall be provided according to the rules under Regulation (EC) No 1272/2008 together with information relevant to the mixtures hazard classification in accordance with Annex II to Regulation (EC) No 1907/2006.*

Safety data sheets shall be provided for the materials composing the final product and for substances and mixtures used in the formulation and treatment of the materials remaining in the final product at a concentration above a cut-off limit of 0.010 % w/w (in terms of wet weight) unless a lower generic or specific concentration limit applies in accordance with the Article 10 of Regulation (EC) No 1272/2008.

Safety data sheets shall be completed in accordance with the guidance set out in sections 10, 11 and 12 of Annex II to Regulation (EC) No 1907/2006 (requirements for the compilation of safety data sheets). Incomplete safety data sheets shall require supplementing with information from declarations by chemical suppliers.

Information on intrinsic properties of substances may be generated by means other than tests, for instance through the use of alternative methods such as in vitro methods, by quantitative structure activity models or by the use of grouping or read-across in accordance with Annex XI to Regulation (EC) No 1907/2006. The sharing of relevant data across the supply chain is strongly encouraged.

In the case of mineral wool, the applicant shall also provide the following:

- (a). *Certificate awarded for the right to use the European Certification Board for Mineral Wool Products trademark to demonstrate the compliance with the Note Q within the Regulation (EC) No 1272/2008.*
- (b). *Test report according to ISO 14184-1 Textiles - Determination of formaldehyde - Part 1: Free and hydrolysed formaldehyde*

Rationale and discussion

The EU Ecolabel Regulation 66/2010 has introduced new requirements by mean of Article 6.6 and 6.7. which affects to the hazardous substances that might be present in the products:

Article 6.6

The EU Ecolabel may not be awarded to goods containing substances or preparations/mixtures meeting the criteria for classification as toxic, hazardous to the environment, carcinogenic, mutagenic or toxic for reproduction (CMR), in accordance with Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures.

Article 6.7

For specific categories of goods containing substances referred to in paragraph 6, and only in the event that it is not technically feasible to substitute them as such, or via the use of alternative materials or designs, or in the case of products which have a significantly higher overall environment performance compared with other goods of the same category, the Commission may adopt measures to grant derogations from paragraph 6. No derogation shall be given concerning substances that meet the criteria of Article 57 of Regulation (EC) No 1907/2006 and that are identified according to the procedure described in Article 59(1) of that Regulation, present in mixtures, in an article or in any homogeneous part of a complex article in concentrations higher than 0.1 % (weight by weight). Those measures, designed to amend non-essential elements of this Regulation, shall be adopted in accordance with the regulatory procedure with scrutiny referred to in Article 16).

The EU Ecolabel Chemicals Horizontal Task Force recommends to distinguish between two main physical forms of product:

Articles: Defined by REACH and CLP as ‘an object which during production is given a special shape, surface or design which determines its function to a greater degree than does its chemical composition’. The article could be composed of further articles, parts, accessories, consumables and packaging; Examples: printer, computer, bed mattress, shirt

Chemical mixture: Defined by REACH and CLP as ‘a mixture or solution composed of two or more substances’. The composition could therefore include the different ingredients of the product that make up the products formulation, some of which may in turn consist of a number of mixtures or formulations. Examples: soap, shampoo, paint

Soil improvers and growing media are considered chemical mixtures under this approach. According to this classification, the cut-off value of the screening of the product's composition for hazards shall be 0.010% w/w.

Organic constituents

With regards of the exemptions within this proposed criterion, the organic constituents currently allowed by the current EU Ecolabel criteria for soil improvers and growing media are derived from the processing and/or re-use of waste. In the case of compost, it is covered by Article 2(7)(b) of the Regulation (EC) No 1907/2006 (REACH), which sets out criteria for exempting substances within Annex V of this Regulation from the registration, downstream user and evaluation requirements. According the Guidance provided by ECHA.

This exemption covers compost when it is potentially subject to registration, i.e. when it is no longer a waste, and is understood as being applicable to substances consisting of solid particulate material that has been sanitised and stabilised through the action of micro-organisms and that result from the composting of any bio waste capable of undergoing aerobic decomposition in its entirety.

This explanation is without prejudice to discussions and decisions to be taken under European Union waste legislation on the status, nature, characteristics and potential definition of compost, and may need to be updated in the future.

In the case of digestates, an exemption is also foreseen to be considered.

Other wastes not covered by End of Waste criteria are out of the scope of the REACH Regulation.

According to the REACH Regulation, naturally occurring substances, if they are not chemically modified, are also exempted. This group of substances is characterised by the definitions given in Article 3(39) and 3(40):

The Article 3(39) defines a 'substances which occur in nature' as 'a naturally occurring substance as such, unprocessed or processed only by manual, mechanical or gravitational means, by dissolution in water, by flotation, by extraction with water, by steam distillation or by heating solely to remove water, or which is extracted from air by any means

Mineral constituents

Mineral constituents are covered by the exemption provided by Article 2(7)(b) of the REACH Regulation. The ECHA Guidance clarifies this point as follows:

Minerals which occur in nature are covered by the exemption if they are not chemically modified. This applies to naturally occurring minerals, which have undergone a chemical process or treatment, or a physical mineralogical transformation, for instance to remove impurities, provided that none of the constituents of the final isolated substance has been chemically modified.

Mineral wool and CLP Regulation (Regulation (EC) No 1272/2008)

Mineral wool is included in CLP Regulation as a substance that may be classified as Carcinogen category 2 if it does not fall under the conditions of exception. The exceptions are included in the Notes Q and R within the CLP Regulation, meaning that if the mineral wool is under the scope of one of these notes, the classification of carcinogen category 2 does not apply to it:

- Note Q:

The classification as a carcinogen need not apply if it can be shown that the substance fulfils one of the following conditions:

- a short term biopersistence test by inhalation has shown that fibres longer than 20 µm have a weighted half-life less than 10 days; or
- a short term biopersistence test by intratracheal instillation has shown that fibres longer than 20 µm have a weighted half-life less than 40 days; or
- an appropriate intra-peritoneal test has shown no evidence of excess carcinogenicity; or
- absence of relevant pathogenicity or neoplastic changes in a suitable long term inhalation test.

- Note R :

The classification as a carcinogen need not apply to fibres with a length weighted geometric mean diameter less two standard geometric errors greater than 6 µm.

One of the main manufacturers of mineral wool for growing media purposes in Europe reported that its mineral wool falls under the Note Q provisions, fulfilling all of the conditions for the exclusion of classification as hazardous under this Note.

It has been found that mineral wool insulation manufacture process uses urea-extended phenol formaldehyde resins as binder. It has been reported by a manufacturer of mineral wool growing media that phenol formaldehyde resins are also commonly used as binders in the production of those products. During the production process the phenol formaldehyde

resin is converted into bakelite, through a high temperature curing process. According to the mineral wool industry, primary combustion products of the cured urea extended phenolic formaldehyde binder, when heated above 200 °C, are carbon monoxide, carbon dioxide, ammonia, water and trace amounts of formaldehyde. Other undetermined compounds could be released in trace quantities. Emission usually only occurs during the first heating. In this regard, the industry reported that most formaldehyde in mineral wool is eliminated in the production process through high temperatures, and traces of free formaldehyde might remain in the final product at concentrations below 0.010% w/w. In order to control any trace of formaldehyde that might be present in the final product, a test to measure the free-formaldehyde in mineral wool is proposed as part of the assessment and verification.

Stakeholder feedback

Some concerns have been raised about the carcinogenic category which mineral wool might be classified as. Based on this fact, some stakeholders propose the exclusion of mineral wool, as there are apparently many risks involved. However, the fact is that mineral wool is not classified as carcinogenic if it complies with just one of the requirements in Note Q or the requirement in Note R. Given the importance of the hazard, the CLP Regulation is a robust base to ensure the harmlessness of the mineral wool and the compliance with the Article 6.6 of the EU Ecolabel Regulation. It was also requested that the compliance with Note Q shall be supported by reliable data as external tests. This external surveillance is already in force by mean of the European Certification Board for Mineral Wool Products (EUCEB), whose aim is certifying the conformity of mineral wool fibres with Note Q of Regulation (EC) No 1272/2008. The following steps have to be accomplished before the EUCEB Trademark can be awarded:

1. Initial Application for the right to use the Trademark

- *Legal Undertaking*
- *Manufacturers Declaration*
- *Contract with Sampling Institute on test material sampling and monitoring of self-control*
- *Exoneration certificate of the Biopersistence test*
- *Short term Biopersistence test report*
- *Confirmation of scientific expert that the fibre complies with EUCEB-exoneration criteria of 15-04-2005*
- *Report of Analysis Institute on initial conformity inspection*
- *Confirmation of scientific expert that initial conformity inspection complies with EUCEB range of exonerated fibres*

2. Continuous Verification

Every manufacturer obtaining certificate to use the Trademark undertakes to comply with conformity between the tested fibers and those, which are offered for sale.

In order to ensure conformity that the chemical compositions of the fibres are within the acceptable range, cf. enclosure from the fibres tested in the report submitted to the European

Certification Board for Mineral Wool Products, an external conformity inspection shall take place regularly twice per calendar year in laboratories designated by the Quality Board.

The samples to be tested shall be obtained from a production line or commercially available products. Collection shall be made by an accredited sampling institute qualified by the Quality Board as competent to act in this domain.

- *The external inspection, which should be submitted to the Quality Board, must include:*
- *Details of the manufacturer.*
- *Designation of the fibres tested (e.g. tradename or other identification).*
- *Inspecting office.*
- *Time or period of the inspection.*
- *Details of the inspection procedure.*
- *Chemical composition of the material examined*

Another stakeholder also presented his concern about the use of formaldehyde in the manufacture of mineral wool. As explained above, the industry reported that most formaldehyde in mineral wool is eliminated in the production process through high temperatures, but traces of free formaldehyde might remain in the final product at concentrations below 0.010% w/w. In order to control any trace of formaldehyde that might be present in the final product, a test to measure the free-formaldehyde in mineral wool is proposed as part of the assessment and verification.

3.5.4 Substances listed in accordance with Article 59(1) of Regulation (EC) No 1907/2006

The final product shall not contain any intentionally added substances of very high concern and included in the list provided for in Article 59(1) of Regulation (EC) No 1907/2006, present in the final product in concentrations > 0.010 % in terms of wet weight.

Assessment and verification

Reference to the latest list of substances of very high concern shall be made on the date of application. The applicant shall provide a declaration of compliance with criterion 5.4, together with related documentation, including declarations of compliance signed by the material suppliers and copies of relevant SDS for substances or mixtures in accordance with Annex II to Regulation (EC) No 1907/2006 for substances or mixtures. Concentration limits shall be specified in the safety data sheets in accordance with Article 31 of Regulation (EC) No 1907/2006 for substances and mixtures.

3.5.5 Limits for E. coli and Salmonella spp

This criterion applies to growing media, soil improvers and mulch with the exception of mineral growing media.

The content of E. coli and Salmonella spp in the final product shall not exceed the maximum levels set in Table 24:

Table 24. Limit value proposed for E. coli and Salmonella spp

Pathogen	Limit
E. Coli	1000 CFU/g fw
Samonella spp	absent in 25g fw
CFU = colony-forming units; fw = fresh weight	

Assessment and verification

The applicant shall provide the test reports conducted in accordance with testing procedure indicated in Table 25:

Table 25. Standard test method for E. coli and Salmonella spp

Parameter	Test method
E. Coli	CEN/TR 16193 or equivalent
Salmonella	ISO 6579

Rationale and discussion

The current EU Ecolabel criteria for growing media and soil improvers include monitoring for Salmonella spp. and either E.coli or Helminth ova, depending on the source of the compost (see Table 26).

Table 26. Current criterion on pathogens

	Growing Media	Soil Improvers
Current	<ul style="list-style-type: none"> Salmonella spp: absent in 25g fw (ISO 6579) Helminth ova(1):absent in 1.5g E. Coli (2): limit of 1000 MPN/g 	<ul style="list-style-type: none"> (prXP X33-017) (ISO 11866-3)

	Growing Media	Soil Improvers
Proposal	For growing media, soil improver and mulch: <ul style="list-style-type: none"> • E. Coli: limit of 1000 CFU/g fw (CEN/TR 16193) • Salmonella spp: absent in 25g fw (ISO 6579) 	

(1) For those products whose organic content is exclusively derived from green, garden or park waste.

(2) For those products whose organic content is exclusively derived from green, garden or park waste.

Key: MPN = most probable number; CFU = colony-forming units; fw = fresh weight

This section discusses the value in monitoring these organisms and whether these are sufficient.

Salmonella are a genus of enteric pathogenic bacteria that are responsible for many mild to potentially fatal (typhoid) gastric diseases. They are often found associated with food stuffs and faecal material of animal origin. In particular, they are often associated with poultry and eggs and are a known hazard in the kitchen to be aware of during food preparation. Consequently, they are potentially present in compost and digestate feedstocks. They may also contaminate green and garden wastes if containing faecal material, e.g. from animal bedding, and natural faecal deposition.

They do not produce heat resistant bodies and are therefore readily destroyed by the heat treatments applied in composting and AD processes to comply with ABP Regulation. They are readily tested for in low cost microbiological tests that test for the group of *Salmonella* and are hence broad based rather than for a particular species. The test is widely applied in the context of standards or proposed standards for composts and digestates (Table 27), where typically the limit is none detected in 25 g of fresh weight of material, although some are more and some less stringent in some uses. In the EoW criteria for biodegradable waste report (EC JRC, 2014), a limit of absent in 25 g was proposed.

Table 27. EU Standards for compost and digestate – limits for Salmonella

Country	Standard	Limit
EU	ABP Regulation	None in 25 g for 5 samples
EU	EoW criteria for biodegradable waste report (EC JRC, 2014)	None in 25 g fresh weight
EU	Fertiliser Regulation (draft proposal)	None in 25 g fresh weight
Germany	RAL-GZ-256	None in 50 g fresh weight
UK	PAS100 and PAS110	None in 25 g fresh weight
France	NFU-44-051	Gardening/retailer – None in 1 g Other uses – None in 25 g
Denmark	Biowaste ordinance	None (sample size not specified)
Italy	Fertiliser law	None in 25 g fresh weight

Country	Standard	Limit
Latvia	Cabinet Regulation No. 530 25.06.2006	None in 25 g fresh weight

The presence or absence of *Salmonella* is not an effective indicator for general pathogen risk, as it is not always present in the feedstock. However, its absence is a reasonable indication that pathogen risks would be low for many non-sporulating ABP derived pathogens. On this basis, and considering the relatively low cost of testing, we see testing for this organism as valuable protection that should be maintained.

Monitoring for Helminth ova is usually considered as an alternative test to that for *E. coli* as an indicator for faecal contamination and hence faecal-derived pathogen risks.

Helminths are a collective name for flatworms (flukes and tapeworms) and roundworms (nematodes), many of which are parasites of the intestinal tract and produce eggs (ova) which are released and therefore may be found in faecal material. Helminths are transmitted to humans in many different ways, but the simplest is by accidental ingestion of infective eggs (*Ascaris*, *Echinococcus*, *Enterobius*, *Trichuris*) or larvae (some hookworms). The presence of ova may be used as a direct indicator of risks from helminths and of faecal material. Their presence in faecal material is not guaranteed, as they are parasites and not normal components of the intestinal organisms. Therefore, their absence is not a guarantee of no faecal contamination and consequently no risk from other faecal derived pathogens. In the current EU Ecolabel for growing media and soil improvers, there is a requirement to monitor for Helminth ova if the compost component is not exclusively green, garden and park waste. This recognizes that helminths are generally associated with ABP, but there is also no guarantee that park green waste is free of faecal material.

Monitoring for Helminth ova is less commonly carried out in many compost and digestate standards for which limits are similar (Table 28).

Table 28. EU Standards for compost and digestate – limits for Helminth Ova

Country	Standard	Limit
EU	ABP regulation	Not required (<i>E. coli</i> instead)
EU	Proposed end of waste criteria for biodegradable waste (Draft Final Report)	Not required (<i>E. coli</i> instead)
Germany	RAL-GZ-256	Not required
UK	PAS110	<i>E. coli</i> instead but possibly included in specific cases at discretion of accrediting ABR body
France	NFU-44-051	Gardening/retailer – None in 1 g Other uses – None in 1.5 g
Italy	Fertiliser law	Not required but <i>Nematodes</i> , <i>trematodes</i> ,

Country	Standard	Limit
		<i>cestodes</i> must be absent in 50 g
Poland		Not required but <i>Ascaris</i> , <i>Trichuris</i> , <i>Toxocara</i> must be absent (sample size unspecified)

Escherichia coli is a common microorganism found in significant numbers in the intestinal tract of all animals. Most strains are not pathogenic and live in the intestine as a normal part of the gut flora, but there are some notable pathogenic strains, e.g. O157. Its virtually universal presence in faecal material means that *E. coli* is used in many areas as an organism to indicate faecal contamination and, as a consequence, the potential presence of faecal-derived pathogens.

In the current EU Ecolabel criteria for growing media and soil improvers, the test for *E. coli* is applied for products whose compost component is exclusively derived from green, garden or park waste. These materials may be contaminated with faecal material and contain *E. coli*. Similarly, however, the *E. coli* would be an indicator of faecal contamination in EU Ecolabel growing media and soil improvers products for which helminth ova are currently tested. In our view, this would be preferable, as *E. coli* is an indicator of faecal contamination rather than a specific pathogen indicator. The presence and absence of *E. coli* does not provide an absolute guarantee of the presence or absence of faecal material and of faecal pathogens. However, it should be understood that the only surety for the presence or absence of a particular pathogen is to monitor specifically for the pathogen.

The analysis of *E. coli* is a relatively low cost and established methodology, and limits for *E. coli* appear widely in standards for composts and digestates, with similar limit of 1000/ g fresh weight (Table 29). Note there are some differences in methods and reporting units, e.g. as CFU (colony forming units) or MPN (mean probable number).

Table 29. EU Standards for compost and digestate – limits for *E. coli*

Country	Standard	Limit
EU	ABP regulation	1000/ g in 4 of 5 samples (units CFU or MPN not specified)
EU	Proposed end of waste criteria for biodegradable waste (Draft Final Report)	1000 CFU /g
EU	Fertiliser Regulation (draft proposal)	1000 CFU/ g fresh weight
Germany	RAL-GZ-256	
UK	PAS100 and PAS110	1000 CFU/ g fresh weight

Country	Standard	Limit
France	NFU-44-051	Not used (Helminth ova instead)
Italy	Fertiliser law	Not used (<i>Enterobacteriaceae</i> instead)
Czech Republic	Biowaste ordinance	1000 CFU/ g
Spain		1000 MPN/g
Finland		1000 CFU/g
Latvia	Cabinet Regulation No. 530 25.06.2006	2500 CFU/g

Stakeholder feedback

Some doubts related to the change of the test method for the measurement of E. Coli have been raised, since it would require a comparative evaluation of both methods to conclude whether the limit value should be updated accordingly or not. From JRC perspective, the proposed limit value and method for E. Coli is in line with the limits proposed by the EoW criteria report, and with other national standards. Thus, such comparison would not be needed, since the limit value does not come from the previous EU Ecolabel criterion, but from a harmonization with the legislation currently in force and under development.

Some stakeholders insisted that this criterion should apply just to those materials derived from animal by-products, in line with the ABP Regulation. The requirements should be fully aligned to this legislation in their view.

Another stakeholder showed that the limits might not be suitable for soil improvers and growing media since they come from the EoW criteria for biodegradable waste report, which were developed for different product groups. Furthermore, the test methods have not been validated for soil improvers and growing media, but for dairy and fishery products.

In this regard, the EU Ecolabel criteria shall take into account relevant European Union policies and work done on other related product groups, as other criteria established for other environmental labels, particularly officially recognised, nationally or regionally. This criterion concerns to a very sensitive matter and it is formulated in accordance with many national standards. The standard suggested for Salmonella is the one used in the NF U 44-551 (Supports de culture) and the one for E. Coli was validated for composted green waste and composted biowaste, which are used as organic soil improvers and organic constituents of growing media.

3.6 Criterion 6: Stability

This criterion applies to growing media, soil improvers and mulch, with the exception of mulch totally composed of lignocellulosic constituents and mineral growing media.

Soil improvers and mulch for non-professional applications and growing media for all applications, shall meet one of the following requirements:

Stability parameter	Requirement
Maximum Respirometric index	15 mmol O ₂ /kg organic matter/hr
Minimum Rottegrad, where applicable	IV (self-heating test temperature rise of maximum 20 C above ambient temperature)

Soil improvers and mulch for professional applications shall meet one of the following requirements:

Stability parameter	Requirement
Maximum Respirometric index	25 mmol O ₂ /kg organic matter/h
Minimum Rottegrad, where applicable	III (self-heating test temperature rise of maximum 30 C above ambient temperature)

Assessment and verification

The applicant shall provide the test reports conducted in accordance with testing procedure indicated in Table 30.

Table 30. Standard test method for stability

Parameter	Test method
Respirometric index	EN 16087-1 Soil improvers and growing media - Determination of the aerobic biological activity - Part 1: Oxygen uptake rate (OUR)
Rottegrad	EN 16087-2 Soil improvers and growing media - Determination of Aerobic biological activity - Part 2: Self heating test for compost

Rationale and discussion

This proposal is not completely new, since the current criterion on Provision of information includes a statement about the stability of organic matter (stable or very stable) by national or international standard.

The stability criterion is proposed based on several comments from stakeholders that pointed out the concerns related to unstable products. A stability requirement can help prevent the introduction of materials that have hardly undergone any treatment (e.g. so-called "shred-and-spread" compost). Furthermore, greenhouse gas emissions may occur during transport and storage of all compost and digestate materials. The limits proposed were the values

required to classify a product as 'stable' according to the two referred standards. This criterion is also aimed at retaining and standardizing the current criterion of provision of information, where a statement about the stability of organic matter (stable or very stable) by national or international standard is required.

On the other hand, a maximum C/N ratio was recommended, as indicator of the decomposition of the organic matter in the soil improver and its grade of stability and maturity.

Stakeholders feedback

There was a wide consensus among the experts on the unsuitability of the C/N ratio, as it is not a good indicator for maturity and stability. Therefore, the requirement on C/N ratio is withdrawn.

It was also stressed that the stability criterion is irrelevant for mulches, since they are composed by vegetal by-products (barks, straws, wood chips...) which are very dry and stable.

Some stakeholders highlighted that there is a lack of robust European-wide experience with the proposed test method and validation of the limit values, thus they do not support implementing stability/maturity criteria for the EU Ecolabel for soil improvers and growing media. According to their view, there is no European wide acceptance of the proposed limit values, so, the criterion seems likely to have significant adverse effects on parts of the compost market. For example, with the proposed rotting degree of IV and V, fresh compost which is widely used as soil improver and organic fertilisers in the agricultural sector, will be excluded from the EU Ecolabel. In addition, if a stability criterion is decided, it needs to be based on a European standard and, there is no European validated test method available for digestates.

On the subject of the application of this criterion to digestates, it is important to stress that the minimum stability is meant to comply with the quality expectations of the market, both professional and non-professional. Some concerns about the quality of the products have been raised along the revision process, from the growing media manufacturers and from the agricultural associations. In this regard, some market barriers have been identified related to the level of stability of digestates, i.e. methane and ammonia emissions, unpleasant odour, ammonium content (WRAP, 2013). These barriers may be overcome with a further aerobic stabilization, and thus a minimum stability criterion is recommended to ensure the quality of the product, while enhancing the customers' perception of the waste-derived products.

Some Member States disagreed on the use digestates within the EU Ecolabel. In their view, digestate is a bio-reactive and therefore biologically unstable substance. If digestates could be used we need to set very strict requirements to prevent unstable digestates to be awarded with EU Ecolabel.

Taking into account the input from stakeholders, the criterion is proposed to be split on professional and non-professional applications, with a less strict limit values for the first ones. For non-professional applications of soil improvers and all application of growing media, the limits proposed are the values established to classify a product as 'stable'. According to Brinton et al (1995), the compost stability can be classified based on their Rottegrad as shown in Table 31:

Table 31. Compost stability based on Rottegrad

Temperature rise above ambient (C)	Official Class of stability	Descriptors of Class or Group	Major Group
< 10	V	Very stable, well-aged compost	Finished compost
10 - 20	IV	Moderately stable, curing compost	
20 - 30	III	Still decomposing, active compost	Active Compost
30 - 40	II	Immature , young or very active compost	
> 40	I	Fresh, raw compost, just mixed ingredients	Fresh compost

Brinton et al (1995) also proposes end use categories derived from experience with composted source-separated residential food residues blended with yard-waste, and active compost (Rottegrad III) is applicable to fruity crops, while for general purpose gardening, Rottegrad IV compost is recommended.

Veeken et al (2003) proposed the following scheme for classification of biowaste and green waste compost based on specific oxygen uptake rate, which is shown in Table 32, together with equivalent CO₂ production values calculated for this report.

Table 32. Compost stability based on Respirometric index

Category of compost product	Oxygen uptake rate (mmol O ₂ /kg VS/h)	Oxygen uptake rate (mg O ₂ /kg VS/h)	Equivalent CO ₂ evolution rate (mg CO ₂ /kg VS/day)
Very unstable	> 30	> 960	> 32
Unstable	15 – 30	480 – 960	16 – 32
Stable	5 – 15	160 – 480	5 – 16
Very stable	< 5	< 160	< 5

The limit values proposed for professional purposes are based on the End of Waste criteria for biodegradable waste report, which recommends the following stability criterion for compost:

One of those minimum stability requirements:

-
- Respirometric index of maximum 25 mmol O₂/kg organic matter/h, measured according to standard EN 16087-1.
 - Minimum Rottegrad III (self-heating test temperature rise of maximum 30 °C above ambient temperature), measured according to standard EN 16087-2.

The report also covers digestate, for which it recommends one of those minimum stability requirements

- Respirometric index of maximum 50 mmol O₂/kg organic matter/h, measured according to standard EN 16087-1.
- Organic acids content of maximum 1500 mg/l.
- Residual biogas potential of maximum 0.25 l/ g volatile solids.

The report set those values to ensure a minimum stability needed to avoid methane and odour emissions during uncontrolled anaerobic conditions after sales (e.g. during storage).

According to the EoW for biodegradable waste report, many Member States already regulate compost stability, whether by imposing certain methods and associated limit values or by requiring a declaration. Most methods are based on a self-heating test or a respirometric index. Studies on the evaluation of the different systems used for stability measurement indicate that the different approaches are actually highly correlated, at least for compost stability. A WRAP study (WRAP, 2009) suggested that there is no clear superiority of any given method. Nonetheless, EN standards exist for oxygen uptake rate and self-heating tests (EN 16087-1 and EN 16087-2) and hence these should be preferable over national standards or commercial measurement tools to provide a level playing field. For digestate stability, it appears that fewer measurement methods are being used at present. Most of them are based on organic acids testing or assessment of remaining biodegradability through an aerobic respirometric test or anaerobic biogas formation potential. Provided that digestate is a less stabilized material than compost, a less strict respirometric index is proposed by the EoW for biodegradable waste report, together with equivalent values based on other tests commonly used for digestates.

The minimum stability for professional uses proposed in the EU Ecolabel criterion is meant to ensure a sufficient level of stability, while preventing the introduction of materials that have hardly undergone any treatment (e.g. so-called "shred-and-spread" compost), despite the fact that these untreated materials might be used in agriculture. The figure proposed ensures that the materials were processed to get a reasonable level of stabilization by means of aerobic stabilization. In the case of digestates, a post-composting process would be needed, to overcome the market barriers identified and to improve the perception of the waste-derived products. This aims to avoiding methane and odour emissions, while it suffices to comply with the market expectations for professional purposes, which often use active compost, for soil improvers or mulch, according to the feedback received from the stakeholder. Nevertheless, the national requirements will supersede these minimum stability requirements, if they are stricter.

For growing media, the manufacturers reported that they use stable/mature compost, and therefore a specific value for professional uses is not needed.

3.7 Criterion 7: Physical Contaminants

This criterion applies to growing media, soil improvers and mulch, with the exception of mineral growing media.

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

Assessment and verification

The applicant shall provide the result of tests conducted in accordance with the testing procedure indicated in the Technical Specification CEN/TS 16202 (Sludge, treated biowaste and soil - Determination of impurities and stones).

Rationale and discussion

The current EU Ecolabel for soil improvers contains limits for the content of physical contaminants, thus: *“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“*. However, there is no requirement for this in the EU Ecolabel for growing media, which seems inappropriate, owing to the risk from injury through handling growing media. Thus, this criterion is proposed to be applied to the constituents of all products.

Stakeholder feedback

A stakeholder reported that TS methods are just technical specifications, not really methods, meaning they are not validated by ring test lab. They suggested the CEN/TC223 to be mandated to finish the work and prepare real EN method. In this regard, although it is recognized that there is not EN standard for this test, the EU Ecolabel is not entitled to mandate CEN to develop harmonized EU standards. However, a common test method is needed, and the CEN/TS 16202 is suggested to be applied.

3.8 Criterion 8: Organic matter and dry matter

This criterion applies to soil improvers and mulch:

The organic matter as loss on ignition of the final product shall be at least 15% dry weight (% DW).

The dry matter content of the final product shall be at least 25% of the fresh weight (% FW).

Assessment and verification

The applicant shall provide the result of tests conducted in accordance with testing procedure indicated in Table 33:

Table 33. Standard test methods for Dry matter and Organic matter.

Parameter	Test method
Dry matter (% FW)	EN 13041 Soil improvers and growing media - Determination of physical properties - Dry bulk density, air volume, water volume, shrinkage value and total pore space
Organic matter as Loss on Ignition (%DM)	EN 13039 Soil improvers and growing media - Determination of organic matter content and ash

Rationale and discussion

The organic matter content proposed for the organic constituents for the three product groups is harmonized with the criteria proposed in the EoW criteria for biodegradable waste report, which is also under consideration in the ongoing revision of the Fertilizer Regulation. The initial minimum of 20% proposed in the first version of this document (1st AHWG meeting October 2013) was revised according to the comments received in this regard by the stakeholders, suggesting this harmonization, given that, as the experts commented at the first AHWG meeting (October 2013), loamy/clay soils are traditionally added as additive in high quality compost in order to support the clay-humus complex formation. This may frequently result in organic matter levels between 15% and 20% dry matter.

The dry matter content criterion is proposed to be set for organic constituents used in the three product groups. Some stakeholders have advised against the use of liquid digestates, and some Member States, as Belgium, just allow the use of liquid digestates in professional applications, because of a lack of stability, which implies a need for certain measures for storage and no possibility of packaging in small bags. Moreover, special equipment is necessary to apply the liquid digestate (like for liquid manure). In addition, it is important to remark that stricter legislation in force at national level will supersede any limit value set by the EU Ecolabel criteria.

Stakeholder feedback

A stakeholder remarked that dry matter (DM) content cannot be a criterion to define if a product is a soil improver or not, but other ones related to the product's functions and capabilities. In the case of digestate, the stakeholder reported that they can perform as soil improvers with a very low DM content. They also stressed that the national restrictions were on manure and sludges, but not on digestates.

Other stakeholder added that the liquid digestates could be classified as both soil improver and fertilizer, and they might be closer to be fertilizers.

In the view of the ongoing revision of the Fertilizer Regulation, which is considering a requirement on dry matter for organic soil improvers, it is proposed to keep this criterion.

3.9 Criterion 9: Viable weed seeds and plant propagules

This criterion applies to growing media and soil improvers, with the exception of mineral growing media.

Final products shall not contain more than two units of viable weed seeds and plant propagules per litre.

Assessment and verification

The applicant shall provide the test report in accordance with testing procedure indicated in CEN/TS 16201 (Sludge, treated biowaste and soil - Determination of viable plant seeds and propagules).

Rationale and discussion

This criterion was proposed to be retained from the current set of EU Ecolabel criteria for soil improvers and growing media, and be extended to mulch. This maximum was halved for growing media according to the stakeholders' comments and in line with the standard RAL-GZ 250/2 (Quality Parameters for Growing Media) and RAL-GZ 250/1-2 (Quality Parameters for Composted Bark).

Stakeholder feedback

Some stakeholders highlighted that a validated test method for this criterion was relevant to prevent misuse of the criterion. They also explained that the methods used in RAL standards were different and thus, the limits might not be equivalent.

Other stakeholders also pointed out that the test method was not applicable to coarse material as bark. They also reported that RAL standards do not set any criterion on viable seeds to bark mulch.

In order to simplify the criterion, it is proposed to retain the criterion for growing media and soil improvers. The method proposed is the one within the CEN/TC 400, as the only European reference, and the limit is proposed to be based on the work developed for the EoW criteria for biodegradable waste.

3.10 Criterion 10 Plant response

This criterion applies to growing media and soil improvers.

Final products shall not adversely affect plant emergence or subsequent growth.

Assessment and verification

The applicant shall provide the Competent Body with the test report of a valid test in accordance with testing procedure indicated in EN 16086-1 Soil improvers and growing media - Determination of plant response - Part 1: Pot growth test with Chinese cabbage

Rationale and discussion

This criterion is proposed to retain from the current set of criteria for soil improvers and growing media (Criterion 5.b and Criterion 3 respectively), but specifying the standard to be used in the assessment and verification requirements. Along the revision process, many stakeholders have expressed their concerns about the quality of waste-derived products, and the customers' perception of the EU Ecolabel product, therefore this criterion is proposed to be kept and strengthened by means of the verification based on a common EU standard.

3.11 Criterion 11: Growing media features

3.11.1 Electrical conductivity

This criterion applies to growing media.

The electrical conductivity of the final product shall be below 100 mS/m.

Assessment and verification

The applicant shall provide the test report conducted in accordance with testing procedure indicated in EN 13038.

Rationale and discussion

Electrical conductivity is an indirect measurement of salinity, and therefore an important parameter to be checked for products coming into direct contact with plant roots. However, it is not particularly applicable for soil improvers or mulches, which are added to or spread on soil, where the soluble elements that constitute the electrical conductivity would quickly dissipate.

The current EU Ecolabel criteria for growing media states that, *the electrical conductivity of the products shall not exceed 1.5 dS/m*. This limit was proposed in the previous revision of this document. Growing media manufacturers strongly recommended revising this value, which was very high in their view. Further investigation on the electrical conductivity performed by growing media showed that multiple methods are used to test this parameter, and the results are highly dependent on the extraction ratio of the method. Particularly, there are two extraction ratios commonly used to measure electrical conductivity: extraction ratio 1:5 and extraction ratio 1:1.5. The standard EN 13038 applies the extraction ratio 1:5 (1 V sample + 5 V water). It hasn't been found a factor to transform the results based on ratio 1:1.5 to 1:5, but they are usually more than double the 1:5 ratio results. Different sources and data have been collected in order to set a revised electrical conductivity criterion (Reed 2007, Watson 2003), finding that electrical conductivity (1:5) below 65 mS/m is suitable for most plants.

Stakeholders feedback

The stakeholders suggested a figure of 100 mS/m since the electrical conductivity might be increased in some growing media products due to the addition of fertilizers.

3.11.2 pH

The pH of the final product shall be in the range 4 – 7.

Assessment and verification

The applicant shall provide the Competent Body with the test report conducted in accordance with testing procedure indicated in EN 13037 Soil improvers and growing media - Determination of pH.

Rationale and discussion

Many stakeholders have expressed their concerns about the quality of waste-derived products, and the customers' perception of the EU Ecolabel product. Therefore this criterion is proposed based on the standard RAL-GZ 250/2 (Quality Parameters for Growing media), RAL-GZ 250/3 (Quality Parameters for Quality Assurance Flower Potting Soil), the recommendations from WRAP for compost to be used in growing media (WRAP, 2011) and the figures suggested by the manufacturers and the experts from the growing media certification schemes.

3.11.3 Sodium content

The sodium content in water extract of the final product shall not exceed 150 mg/l of fresh product.

Assessment and verification

The applicant shall provide the Competent Body with the test report conducted in accordance with testing procedure indicated in EN 13652 Soil improvers and growing media - Extraction of water soluble nutrients and elements.

Rationale and discussion

Many stakeholders have expressed their concerns about the quality of waste-derived products, and the customers' perception of the EU Ecolabel product. Therefore this criterion is proposed based on the recommendations from WRAP for compost to be used in growing media (WRAP, 2011) and Quality Parameters for Quality Assurance Flower Potting Soil (RAL-GZ 250/3). The figure is based on the requirement within WRAP recommendations, since it uses the same EN standard for testing.

3.11.4 Chloride content

The chloride content in water extracts of the final product shall not exceed 500 mg/l of fresh product.

Assessment and verification

The applicant shall provide the Competent Body with the test report conducted in accordance with testing procedure indicated in EN 13652 Soil improvers and growing media - Extraction of water soluble nutrients and elements.

Rationale and discussion

Many stakeholders have expressed their concerns about the quality of waste-derived products, and the customers' perception of the EU Ecolabel product. Therefore this criterion is proposed based on the recommendations from WRAP for compost to be used in growing media (WRAP, 2011) and Quality Parameters for Quality Assurance Flower Potting Soil (RAL-GZ 250/3). The figure is based on the requirement within WRAP recommendations, since it uses the same EN standard for testing.

3.12 Criterion 12: Provision of information

This criterion applies to growing media, soil improvers and mulch.

The following information shall be provided with the product either on the packaging or in accompanying fact sheets.

Criterion 12.1 Soil improvers

- 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);
- e) Range of moisture content;
- f) The main materials (those over 5% by weight) from which the product has been manufactured;
- g) The recommended conditions of storage and the recommended 'use by' date;
- h) Guidelines for safe handling and use;
- i) A description of the purpose for which the product is intended and any limitations on use, including a statement about the suitability of the product for particular plant groups (e.g. calcifuges or calcicoles);
- j) pH (reference of the test method used);
- k) Organic carbon content (%), total nitrogen content (%) and inorganic nitrogen content (%) (reference to the test method used);
- l) Carbon/Nitrogen ratio;
- m) Total phosphorus (%) and total potassium (%) (reference to the test method used) ;
- n) For products for non-professional use, a statement about the stability of organic matter (stable or very stable);
- o) A statement on recommended methods of use;
- p) In non-professional applications: recommended rate of application expressed in kilograms of product per unit surface area (m²) per annum.

Criterion 12.2 Growing media

- a) The name and address of the body responsible for marketing;
- b) A descriptor identifying the product by type, including the wording "GROWING MEDIUM";
- c) A batch identification code;
- d) The quantity (in volume or number of slabs, in case of mineral wool, specifying the dimensions of the slab);
- e) Range of moisture content;
- f) The main materials (those over 5% by volume) from which the product has been manufactured;
- g) The recommended conditions of storage and the recommended 'use by' date;
- h) Guidelines for safe handling and use;

-
- i) A description of the purpose for which the product is intended and any limitations on use, including a statement about the suitability of the product for particular plant groups (e.g. calcifuges or calcicoles);
 - j) pH (*EN 13037*);
 - k) Electrical Conductivity (1:5 extraction);
 - l) Germination inhibition (*EN 16086-1*);
 - m) Growth inhibition (*EN 16086-1*);
 - n) A statement about the stability of organic matter (stable or very stable);
 - o) A statement on recommended methods of use;
 - p) For mineral growing media, a statement about the professional horticultural application.

Criterion 12.3 Mulch

- a) The name and address of the body responsible for marketing;
- b) A descriptor identifying the product by type, including the wording "MULCH";
- c) A batch identification code;
- d) The quantity (in volume);
- e) Range of moisture content;
- f) The main materials (those over 5% by volume) from which the product has been manufactured;
- g) Guidelines for safe handling and use;
- h) A description of the purpose for which the product is intended and any limitations on use, including a statement about the suitability of the product for particular plant groups (e.g. calcifuges or calcicoles);
- i) pH (reference of the test method used);
- j) A statement about the stability of organic matter (stable or very stable), where applicable, for non-professional uses;
- k) A statement on recommended methods of use;
- l) In non-professional applications: recommended rate of application expressed in mm.

Assessment and verification:

The applicant shall declare that the product complies with this criterion and provide the Competent Body with a sample of the packaging or fact sheets or the text of the user information written on the packaging or accompanying fact sheets.

Rationale and discussion

Comments raised were the following:

- Phosphorus should refer to dissolved phosphorus.
- In mulch, pH, 'use by date' and C/N ratio were not relevant.
- Mineral wool volume to be expressed as size of slabs.
- Maximum deviation of the parameter should be included and to be harmonized with Fertilizer regulation.
- % of recycled phosphorus should be also included.

The maximum deviation of the parameter has not been included since the Fertilizer regulation revision has not published those values yet.

Percentage of recycled phosphorus was not included, as it is not clear enough whether the information about % of recycled phosphorus is available for manufacturers, given that they usually test the final products.

3.13 Criterion 13: Information appearing on the EU Ecolabel

The optional label with text box shall contain the following text:

The optional label with text box shall contain the following text:

- promotes the recycling of materials
- promotes the use of renewable and recycled materials

For soil improvers and mulch, the additional information shall be included:

- reduces soil and water pollution, by limiting heavy metals concentrations

The guidelines for the use of the optional label with the text box can be found in the 'Guidelines for the use of the EU Ecolabel logo' on the website:

<http://ec.europa.eu/environment/ecolabel/promo/pdf/logo%20guidelines.pdf>

Assessment and verification:

The applicant shall provide a sample of the packaging showing the label, together with a declaration of compliance with this criterion

Rationale and discussion

The sentence included in the current criterion for soil improvers 'contributes to enhanced soil fertility' is proposed to be deleted since it refers to a function of the product, rather than an environmental feature.

3.14 Criterion removed

Criterion 9: Nitrogen

Rationale and discussion

Most stakeholders didn't agree on the need of a criterion on maximum nitrogen content, since it is already considered in the definition of soil improver expected to be adopted by the Fertilizer Regulation (> 2% N is considered organic fertilizer). Some comments pointed out that there is an undefined border between an organic fertilizer and a soil improver, and thus this limit value doesn't really bring additional advantages and is therefore not needed.

The criterion proposal is withdrawn, since the Fertilizer Regulation will set different N content for each type of product (organic soil improver and organic fertilizer).

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Acronyms

ABP	Animal By-Products
ABPR	Animal By-Products Regulations
ABPR	Animal By-Product Regulations
AD	Anaerobic Digestion
AOX	Adsorbable Organic Halogen
BSI	British Standards Institute
CEN	Comité Européen de Normalisation (European Committee for Standardisation)
CEN TC	European Committee for Standardization (Comité Européen de Normalisation) Technical Committee
CLP	Classification, Labelling and Packaging (refers to Regulation on Classification, Labelling and Packaging of Substances and Mixtures)
CV-AAS	Cold-vapour atomic absorption spectrometry
CV-AFS	Cold-vapour atomic fluorescence spectrometry
DDT	DichloroDiphenylTrichloroethane
DG	Directorate General
EC	European Community
ECHA	European Chemicals Agency
EEC	European Economic Community
EoW	End of Waste
EPA	Environmental Protection Agency
EU	European Union
FAAS	Flame atomic absorption spectrometry
GM	Growing Media
GPP	Green Public Procurement
ICMM	International Council on Mining and Metals
ICP MS	Inductively coupled plasma mass spectrometry
ICP OES	Inductively coupled plasma optical emission spectrometry
IPTS	Institute for Prospective Technological Studies
ISE	Ion-Selective Electrode method
IUCN	International Union for Conservation of Nature
JRC	Joint Research Centre

LCA	Life Cycle Assessment
MBT	Mechanical-Biological Treatment
MS	Member State
MSW	Municipal Solid Waste
OJ	Official Journal
PAH	Polycyclic Aromatic Hydrocarbon
PAS	Publically Available Standard
PBDE	PolyBrominated Diphenyl Ether
PCB	Polychlorinated Biphenyl
PCDD	Polychlorinated Dibenzodioxin
PCDD	PolyChlorinated Dibenzo-p-Dioxin
PCDF	Polychlorinated Dibenzofuran
PFC	PerFluorinated Compounds
PFNA	PerFluoroNonanoic Acid
PFOA	PerFluoroOctanoic Acid
PFOS	PerFluoroOctane Sulfonate
POP	Persistent Organic Pollutant
PTE	Potentially Toxic Element
QAS	Quality Assurance System
REACH	Registration, Evaluation, Authorisation and restriction of Chemicals
rWFD	Revised Waste Framework Directive
SI	Soil Improvers
TA	Technical Annex
TC	Technical Committee
TCDD	TetraChloroDibenzo-para-Dioxin
TEQ	Toxic EQuivalent
TS	Technical Standard
UK	United Kingdom
UN	United Nations
UNEP	United Nations Environment Programme
US	United States

VAT	Value Added Tax
WFD	Waste Framework Directive
WRAP	Waste and Resources Action Programme

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Stimulating innovation
Supporting legislation*

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