

**NB: Unofficial translation**

**Legally binding texts are those in Finnish and Swedish**

**1.8.2013**

## **Decree of the Ministry of Agriculture and Forestry on Fertiliser Products (24/2011, amendments up to 7/2013 included)**

### *Section 1 – Scope*

- (1) This Decree lays down provisions on the types of fertiliser products, type designation groups and the requirements specific to the type designation groups as well as on the quality, marking, packaging, transport, storage, use and other requirements of fertiliser products and on raw materials of fertiliser products.
- (2) This Decree does not apply to fertiliser products used for landscaping of landfill sites or other closed areas.

### *Section 2 – Requirements concerning the types of fertiliser products and type designation groups*

- (1) Fertiliser products are classified into types under section 4 of the Fertiliser Product Act (539/2006) and national type designation groups in Annex I.
- (2) In the definition of the type designation group the following shall apply:
  - 1) the requirements in Annex I for the relevant type designation group and
  - 2) the requirements in Annex II for the minimum content of secondary nutrients and micro-nutrients as well as for chelates and other organic materials which may be added to fertilisers.
- (3) Information for each type, type designation group and type designation under section 7(3) of the Fertiliser Product Act is entered to the national list of type designations of fertiliser products kept by the Finnish Food Safety Authority.
- (4) If living genetically modified material is used as raw material of a fertiliser product, this must be inactivated by heating or other appropriate manner so that it fulfils the requirements of the Gene Technology Act (377/1995).
- (5) When manufacturing fertiliser products by mixing of two or more fertiliser products with each other, each raw material shall fulfil the general quality requirements for fertiliser products laid down in this Decree and the requirements in Annex IV of this Decree.
- (6) Meat-and-bone meal derived from Category 2 material under paragraph d) of Article 32(1) of the Animal by-products Regulation and processed animal protein of Category 3 used to manufacture fertiliser products of animal origin in type designation groups 1B and 1C shall be mixed with an ingredient to exclude the subsequent use of the mixture for feeding purposes. The ingredient shall be one approved by the Finnish Food Safety Authority and that fulfils the requirements in points 2-4 of Chapter II, Section 1 of Annex XI of Commission Regulation (EU) No 142/2011 implementing Regulation (EC) No 1069/2009 of the European Parliament and of the Council laying down health rules as regards animal by-products and derived products not intended for human consumption and implementing Council Directive 97/78/EC as regards certain samples and items exempt from veterinary checks at the border under that Directive. In Finland meat-and-bone meal derived from Category 2 material under paragraph d) of Article 32(1) of the Animal by-products Regulation and processed animal protein of

Category 3 shall be mixed with at least 6 per cent of processed manure of poultry or fur animals or 3 per cent of potassium sulphate.

- (7) Animal by-products of Category 3 may be used as catalysts in the manufacture of biodynamic preparations under Annex I of Commission Regulation (EC) No 889/2008 laying down detailed rules for the implementation of Council Regulation (EC) No 834/2007 on organic production and labelling of organic products with regard to organic production, labelling and control.

### Section 3 – *Application for a type designation of a fertiliser product*

- (1) An application for adding a type designation of a fertiliser product in the national type designation list of fertiliser products shall be made in writing to the Finnish Food Safety Authority using a form ratified by the Authority and it shall include the accounts required in section 7(1) of the Fertiliser Product Act.

### Section 4 – *Other quality requirements for fertiliser products*

- (1) Permitted deviations (tolerances) in the properties required to be declared in the product description of a fertiliser products from the value to be declared in the product description are given in Annex III. The maximum permitted contents of harmful metals and other contaminants in a fertiliser product, the maximum permitted amounts of pathogens and pests and the instructions to prevent the spread of plant diseases in advance are given in Annex IV.

### Section 5 a – *Cadmium*

- (1) The maximum quantity of cadmium in a fertiliser product may be 1.5 milligrams per kilogram of dry matter and in ash fertiliser used in agriculture, horticulture, construction of green areas and landscaping 2.5 milligrams per kilogram of dry matter. By way of derogation from the above, in fertiliser products in type designation group 1A7 Ash fertilisers used in forest and in ashes used as their raw material the maximum quantity of cadmium may be 25 milligrams per kilogram of dry matter.
- (2) A fertiliser with the minimum phosphorus content of 2.2 per cent (5% P<sub>2</sub>O<sub>5</sub>) may contain no more than 50 milligrams of cadmium per kilogram of phosphorus (22 mg of cadmium/kg P<sub>2</sub>O<sub>5</sub>). For estimating the load per hectare the estimated cadmium content of a fertiliser product (mg Cd/kg of dry matter) shall be provided by the manufacturer or importer in the
  - 1) product description in the package
  - 2) transport document or
  - 3) invoice.

If this information has not been provided in the packages or documents referred to above, the maximum permitted contents for cadmium in Annex IV are used in the calculation.

- (3) The average maximum cadmium load per hectare may not exceed 1.5 grams of cadmium per hectare per year. The maximum cadmium load due to the use of fertiliser products as used batches and during the periods of use may be:
  - 1) in agriculture and horticulture, no more than 7.5 grams per hectare during a period of five years;
  - 2) in landscaping and construction of green areas, no more than 15 grams per hectare during a period of 10 years; and
  - 3) in fertiliser products in type designation group 1A7 Ash fertilisers used in forestry, no more than 100 grams per hectare during a period of 60 years.

- (4) However, the hectare-specific restriction concerning the maximum load of cadmium in construction of green areas and in landscaping does not apply to soil improvers in point 3 or to growing media in point 5 of Annex I of this Decree.

#### Section 5 b – *Arsenic*

- (1) The maximum quantity of arsenic in a fertiliser product may be 25 milligrams per kilogram of dry matter. By way of derogation from the above, in a fertiliser product in type designation group 1A7 Ash fertilisers used in forest and in ashes used as its raw material the maximum quantity of arsenic may be 40 milligrams per kilogram of dry matter.
- (2) The average maximum arsenic load in forestry due to the use of fertiliser products in type designation group 1A7 Ash fertilisers used in forestry may not exceed 2.65 grams of arsenic per hectare per year. The maximum arsenic load due to the use of fertiliser products in fertiliser products in type designation group 1A7 Ash fertilisers used in forestry may not exceed 160 grams per hectare during a period of 60 years.

#### Section 6 – *Selenium*

- (1) Selenium may be added as selenate at 15 milligrams per kilogram of dry matter to a fertiliser to which the addition of selenium is permitted according to the type designation. Solid fertiliser may contain selenium at a maximum of 20 milligrams per kilogram of dry matter. Selenium must not be added to the surface of a fertiliser grain. Any addition of selenium shall be declared in the product description.
- (2) As an exception to subsection 1, selenium as selenate may be added to solid fertilisers sold to a livestock farm and to a farm receiving manure in accordance with conditions in subsection 1 at 25 milligrams per kilogram of dry matter. Fertiliser may contain selenium at a maximum of 30 milligrams per kilogram of dry matter.
- (3) The permitted purpose of use of solid fertiliser referred to in subsection 2 above is supplementary fertilising of grass or cereals for a proven need when the main fertiliser used for arable land is manure. The fertiliser manufacturer and vendor are obliged to check in advance that a farm receiving fertiliser is a livestock farm or a farm receiving manure.
- (4) Selenium may be added as selenate at a maximum of 0.0015% of the total weight to a fluid fertiliser to which the addition of selenium is permitted according to the type designation. As fluid fertiliser selenium may be added spread through the soil at a maximum of 10 grams per hectare and as foliar fertiliser at a maximum of 4 grams per hectare per growing period.
- (5) Fluid fertiliser to which selenium has been added is intended for professional use only. The added selenium and restriction on the use in subsection 4 shall be declared in the product description.

#### Section 7 – *Submitting the results of a non-explosiveness test*

- (1) Operators who manufacture or import fertilisers with ammonium nitrate base shall submit to the Finnish Food Safety Authority the results of a non-explosiveness test carried out in a testing establishment accredited for the area of application concerned by the Centre for Metrology and Accreditation or by another accreditation body in the European Economic Area or whose competence has been verified by some other reliable means at least five working days before the fertiliser is placed on the market or, when imported, at least five working days before the fertiliser enters the territory of a Member State of the European Union. The certificate regarding a non-explosiveness test may be no more than six months old.

## Section 8 – *Labelling requirements*

- (1) Further provisions on the content of information to be declared in product descriptions of a fertiliser product are laid down in Annex I and on the permitted deviations in the properties in Annex III. In addition, information entered to the type designation list specified to be declared in the product description in the decision of the Finnish Food Safety Authority concerning the type designation shall be declared in accordance with section 7(2 and 3) of the Fertiliser Product Act. Properties declared in the product description shall be analysed using analysis methods under the EU legislation suitable for the type of fertiliser product or, if no EU legislation exists, internationally approved standard methods or, if these are also lacking, equally effective validated methods. The batch code shall be given in the package or other documents accompanying the product.
- (2) In addition, provisions on information on each type designation group to be declared in the product description in Finnish and Swedish are laid down in Annexes I, II and IV of this Decree.
- (3) The approval number of the production establishment shall be given in the product description of a fertiliser product manufactured in an approved establishment or containing raw material coming from such an establishment.

## Section 9 – *Packaging requirements*

- (1) A package used to hold, protect, handle and distribute a fertiliser product may hold not more than 1,000 kilograms. The package shall be sealed tightly. In addition, the package shall be sealed in such a way or using such an implement that, when opening the package, the fastening, fastening sealer or the package itself is damaged beyond repair. The use of valve sacks is permitted.
- (2) Ammonium nitrate fertiliser containing more than 28 per cent by weight of nitrogen shall be delivered to the end user in packaged form.

## Section 10 - *Transport and storage requirements*

- (1) A fertiliser product shall be stored appropriately in an area designated for it for this purpose or packaged in such a way that it causes no nutrient discharges to the environment. A fertiliser product shall be stored so that the product composition does not change during storage and that the composition corresponds to the information declared in the product description. A fertiliser product and its raw materials sold in bulk shall be covered during transport if, due to the structure of the products, the transport may cause danger or harm to traffic or the environment.
- (2) An organic fertiliser product shall be transported and stored in such a way that its quality does not weaken due to harmful wetting or microbiological contamination. In addition, it shall be kept separate from animal feeds. Raw materials of a fertiliser product shall be stored labelled and separately from other finished fertiliser products.
- (3) An inorganic fertiliser may not be stored in the same storage facility with inflammable and explosive materials.

## Section 11 - *Requirements concerning certain uses of fertiliser products*

- (1) Restrictions specific to each type designation concerning the use of a fertiliser product are given in Annex I of this Decree. In addition, the provisions on restrictions concerning use in accordance with section 7(2 and 3) of the Fertiliser Product Act in the type designation in the

national list of fertiliser products kept by the Finnish Food Safety Authority shall be complied with.

- (2) When using fertiliser products in agriculture and horticulture, the requirements set for the use of fertiliser products in the Government Decree (931/2000) on the restriction of discharge of nitrates from agriculture into waters shall be complied with. The quantity of analysed water or ammonium citrate soluble phosphorus may be a maximum of 400 kilograms per hectare in agriculture and 600 kilograms per hectare in horticulture during a maximum period of use of five years.
- (3) Additions of soluble nitrogen and phosphorus in fertiliser products referred to in subsections 2 and 3 are permitted provided that the operators are able, upon request, to indicate in writing the quantities used to the control authority and that the additions cause no harm or danger to the environment.
- (4) In the use of fertiliser products for purposes other than agriculture and horticulture the provisions of section 5 of the Government Decree on the restriction of discharge of nitrates from agriculture into waters concerning the spreading times and earthing of nitrogen fertilisers and their use near water bodies and other provisions of the environmental and water protection legislation in force shall be complied with, as applicable.
- (5) A fertiliser product imported from another Member State of the European Union or from outside the Union or EC fertiliser which an operator imports for own use shall fulfil the requirements of the fertiliser product legislation or EU legislation.
- (6) The provisions on the use of an organic fertiliser product referred to above in section 2(6) on a farm, if its raw material has been other animal by-product than manure, contents of the digestive tract, guano, milk, milk-based product, products derived from milk, colostrum and colostrum products, laid down in Article 5(2), Chapter II of Annex II and Section 4 of Chapter IV of Annex VIII of Commission Regulation (EC) No 142/2011 shall be complied with. The withdrawal period in the use of an organic fertiliser product of animal origin other than manure in Finland is 21 days. When marketing fertiliser products referred to in this subsection for spreading on arable land, an ingredient in section 2(6) shall be used independent of whether the fertiliser product goes to a farm engaged in livestock or plant production.

#### Section 11 a – *Use of sewage sludge in agriculture*

- (1) In this Decree sludge means:
  - 1) community sewage sludge, which in the Government Decree on Waste (179/2012) means sludge from community wastewater purification plants
  - 2) septic tank sludge and other sludge from individual houses or a joint wastewater treatment system of farms as well as waste from dry toilets and
  - 3) other sludge from wastewater purification plants.
- (2) Sewage sludge may be used
  - 1) in agriculture only if it fulfils the requirements for fertiliser products in type designation group 3A5 and 1B4 of the Annex to this Decree
  - 2) only on arable land where the contents of harmful metals do not exceed the maximum permitted contents in Table 1 of Annex V
  - 3) only if the load of harmful metals caused by the use does not exceed the maximum annual loads in Table 2 of Annex V
  - 4) only on arable land where the pH is more than 5.8 when fertiliser products in point 1 are being used. When using lime stabilised sludge the pH of the arable land shall be more than 5.5.
  - 5) only on arable land used for growing cereal, sugar beet or oilseed plants or plants which are normally not used for human nutrition fresh or by eating the subterranean part or for

animal feed. It may be spread on grass only when under-sown with cereal and properly earthed over.

- (3) However, the requirements in points 1–4 of subsection 2 above do not concern septic tank sludge or dry toilet sludge intended for use on a farm or joint use of farms which originates from living on the farm or other activity on the farm or other residential buildings in the vicinity of the farm and for the utilisation of which no permit under the Environmental Protection Act (86/2000) is required. In such a case the septic tank sludge and dry toilet sludge shall be processed with lime stabilisation, composting, thermophilic digestion or mesophilic digestion before use. Mesophilically digested sludge shall be hygienised, composted, thermally dried or processed in other similar manner before or after the digestion.
- (4) No potato, root plants, vegetables or root or herbal spices may be cultivated on arable land on which fertiliser products in subsection 2, point 1 or septic tank sludge and dry toilet sludge processed in accordance with subsection 3 has been applied for a withdrawal period of five years. The withdrawal period may be less than five years if a shorter withdrawal period has been specified for a sludge-based fertiliser product in the type designation requirements.
- (5) If there is cause to suspect that arable land does not fulfil the requirements above in subsection 2 the arable land shall, where necessary, be analysed in a way specified in Annex VI.

#### Section 12 - *Entry into force*

- (1) This Decree enters into force on 13 September 2011.
- (2) This Decree repeals the Decree of the Ministry of Agriculture and Forestry on Fertiliser Products (12/07).

## ANNEX I

### LIST OF NATIONAL TYPES OF FERTILISER PRODUCTS (1-5) AND TYPE DESIGNATION GROUPS AND REQUIREMENTS SPECIFIC TO THEM

#### 1 FERTILISERS

##### 1A INORGANIC FERTILISERS

An inorganic fertiliser must not contain organic nutrients of animal or plant origin. Permitted organic additions to inorganic fertilisers in accordance with paragraph C of Annex II must be declared in the product description. The contents of nutrients and of other ingredients are declared as a percentage by weight of the total content. In addition, the content in fluid fertilisers may be declared as a volumetric unit of mg/l or g/l. The nutrient contents must be declared as elements, in addition to which they may be declared as oxides. In addition, contents of primary nutrients must be declared as an integer after the type designation. If a quantity exceeding the minimum content in paragraph A of Annex II of secondary nutrients or micro-nutrients has been added to the product or it naturally contains it, "contains secondary nutrients and/or micro-nutrients" is added to the type marking. A marking "contains" may also be used, and the secondary nutrients contained in the product in the following order: calcium (Ca), magnesium (Mg), sodium (Na), sulphur (S), and the micro-nutrients in the following order: boron (B), cobalt (Co), copper (Cu), iron (Fe), manganese (Mn), molybdenum (Mo), zinc (Zn). The product descriptions of micro-nutrient fertilisers (1A4) and ash fertilisers (1A7) with added micro-nutrients must include the text: *"Only used for apparent need. Permitted application rates may not be exceeded."* The nutrient contents of primary and secondary nutrients are declared to one decimal, and micro-nutrients in accordance with paragraph A of Annex II. The chlorine content of a product may be declared. When the maximum Cl content is 2%, a marking "low chlorine content" may be used.

The composition of the raw material of an inorganic fertiliser may deviate from the permitted raw materials by one percentage point without this changing the type designation of the fertiliser product. For ash fertiliser, however, a deviation of three percentage points in the raw material composition is allowed.

Only organic materials mentioned in paragraph C of Annex II of this Decree may be added to inorganic fertilisers. The total amount of organic materials added to inorganic fertiliser products may not exceed one percentage calculated as carbon content (C %).

Inorganic fertilisers are suitable for use in arable lands, horticulture and forests as well as landscaping and establishment and management of green areas, unless otherwise provided for a specific type designation group.

In inorganic fertilisers used in forests with added boron (B) the amount of boron spread per hectare may not exceed 2.5 kg of boron/ha except when boron deficiency in the soil or plants has been proven with a soil, leaf or needle analysis. In such cases a maximum of 4 kilograms of boron per hectare may be spread in granulated inorganic forest fertilisers. Spreading of inorganic forest fertiliser with added boron in Class I groundwater areas is prohibited.

##### 1A1 Inorganic straight primary nutrient fertilisers

Inorganic straight primary nutrient fertilisers mean fertilisers which contain the declared content of one primary nutrient. The declared minimum content is 3%. The fertiliser has no type designation in EC Regulation 2003/2003.

### **1A2 Inorganic compound primary nutrient fertilisers**

Inorganic compound primary nutrient fertilisers mean fertilisers which contain the declared content of at least two primary nutrients. The declared minimum content is: 1% N, 1% P and 1% K, the minimum content of primary nutrients in total is 7%. The fertiliser has no type designation in EC Regulation 2003/2003. The contents of secondary nutrients must be declared if they exceed the values in paragraph 1A3. The contents of micro-nutrients must be declared if they exceed the contents in paragraph E.2.2 and E.2.3 in Annex I of Commission Regulation (EC) No 2003/2003.

### **1A3 Inorganic secondary nutrient fertilisers**

Inorganic secondary nutrient fertilisers mean fertilisers which contain the declared content of one or several secondary nutrients. The declared minimum content is: 1.4% Ca, 0.5% Mg, 2.2% Na and 1.0% S. The minimum content of secondary nutrients in total is 8%. For calcium only the water-soluble content is declared. If the content of the water-soluble ingredient magnesium (Mg), sodium (Na) or sulphur (S) is at least one quarter of its total content, the water-soluble content is declared in addition to the total content. For water-soluble ingredients only the water-soluble content is declared. The fertiliser has no type designation in EC Regulation 2003/2003. The contents of primary nutrients must be declared if they are at least 1%. The contents of micro-nutrients must be declared if they exceed the contents in paragraph E.2.2 and E.2.3 in Annex I of Commission Regulation (EC) No 2003/2003.

### **1A4 Inorganic micro-nutrient fertilisers**

Inorganic micro-nutrient fertilisers mean fertilisers which contain the declared content of one or several micro-nutrients. The declared minimum content is as stated in paragraph E.2.1 in Annex I of Commission Regulation (EC) No 2003/2003. The minimum content of micro-nutrients in total in solid mixtures is 2.0% and in fluid mixtures 1% by mass of the fertiliser. The contents of primary nutrients must be declared if they are at least 1.0%. The contents of secondary nutrients must be declared if they exceed the contents in paragraph 1A3. The fertiliser has no type designation in EC Regulation 2003/2003.

### **1A5 Inorganic fertilisers whose performance is mainly based on effects other than plant nutrients**

Inorganic fertilisers whose performance is not based on the nutrients they contain but they have an apparent plant growth promoting effect.

### **1A6 By-products used as inorganic fertilisers as such**

A by-product of an industrial or processing plant used as inorganic fertiliser as such is a product which has an apparent plant growth promoting effect, mainly based on the amount of nutrients usable to plants present in the by-product. The minimum content of primary nutrients in total is 2.0% or the minimum content of secondary nutrients in total 8.0%. Contents of nutrients and of other ingredients are declared as a percentage by weight of dry matter. The primary and secondary nutrient content must be declared if it exceeds 0.3 % of dry matter.

## **1A7 Ash fertilisers**

A by-product of an industrial or processing plant used as ash fertiliser or its raw material is a product which has an apparent plant growth promoting effect, mainly based on the amount of nutrients usable to plants present in the by-product. Ash of peat, agrobiomass or wood as well as ash of animal origin may be used as ash fertiliser or its raw material. The ash must be handled in a way that its dusting is minimised.

Peat and wood ash means a by-product separated mechanically or electronically from flue gases produced in the incineration of peat, wood chips, bark waste, waste of plant origin produced containing fibre material produced in connection with the production of primary pulp or paper manufactured from pulp, unprocessed wood waste or other similar pure material of wood origin or agrobiomasses such as reed canary grass, straw, cereal, oilseed plants, willow or common reed or a mixture of these or which has been removed from the bottom of the combustion chamber of the incineration plant. Ash produced in the manufacture of wood, peat or agrobiomass based fuel is also suitable for use as fertiliser.

Ash of animal origin means a by-product produced when incinerating Category 2 and 3 animal by-products or derived products in an incineration plant or co-incineration plant approved under Government Decree on incineration of waste (362/2003) or Article 24 of the Animal by-products Regulation (EC) 1069/2009. Raw materials permitted in the incineration of wood, peat and agrobiomass may be present in the incineration process.

Contents of nutrients and of other ingredients are declared as a percentage by weight of dry matter. The primary and secondary nutrient content must be declared if it exceeds 0.3 % of dry matter. The minimum nutrient contents of ash fertiliser used in forests are the following:

Potassium (K) + Phosphorus (P) 2.0%

Calcium (C) 6.0%.

The minimum neutralising ability (Ca) of ash used elsewhere than in forest must be 10%. Inorganic fertilised products may be added to granulated ash fertiliser to increase its usability or fulfil the minimum requirements. Spreading of ash with added boron in groundwater areas and protected areas is prohibited.

## **IB ORGANIC FERTILISERS**

Organic fertilisers are materials or products of animal and/or plant origin and/or of microbial origin. Microbe products (type designation group 4A1) may have been added to organic fertiliser.

Information on this must be declared in the product description in accordance with the requirements in paragraph 4. Organic or inorganic materials for granulation, stabilisation, colouring approved for food use or approved for plant protection in Finland as well as organic materials under Annex II may also be added to organic fertilisers. The raw materials used in the manufacture such as type of manure and all added materials must be declared in the product descriptions of organic fertilisers. In organic fertilisers manufactured from by-products of the pharmaceutical industry the levels of antibiotic residues may not exceed 0.1 mg/kg of dry matter (measured by the HPLC method).

The contents of nutrients and other ingredients are declared as a percentage by weight of dry matter (%-DM). In addition, they may be declared as a percentage by weight of the total weight. The contents of liquid fertilisers are declared as a percentage by weight of the total weight. In addition, they may be declared as a volumetric unit of mg/l or g/l. The nutrient contents must be declared as

elements, in addition to which they may be declared as oxides. The contents of primary nutrients in organic compound fertilisers must be declared in the product description as integers after the type designation. If a product contains secondary nutrients or micro-nutrients to be declared in quantities exceeding the minimum content in Annex II, the word “contains” is added to type designation together with the secondary nutrients contained by the product in the following order: calcium (Ca), magnesium (Mg), sulphur (S) and the micro-nutrients in the order: boron (B), cobalt (Co), copper (Cu), iron (Fe), manganese (Mn), molybdenum (Mo) and zinc (Zn). A marking “contains micro-nutrients” may also be used for micro-nutrients. The product descriptions of organic fertilisers containing micro-nutrients must include the text: *“Only used for apparent need. Permitted application rates may not be exceeded.”* The chlorine content of a product may be declared. A marking “low chlorine content” may be used when the maximum Cl content is 10% of the total content of primary nutrients in the product. Moisture and dry matter content is declared as a percentage and the amount of organic matter i.e. ignition loss or the total amount of organic carbon (TOC) as a percentage of dry matter. The amounts of water-soluble nitrogen and phosphorus must be declared in addition to the total contents.

The composition of the raw material of an organic fertiliser may deviate from the permitted raw materials by one percentage point without this changing the type designation of the fertiliser product.

The recommendation for use declared in the product description must take into account the possible risks and restrictions on use relating to all raw materials. The risk of spreading plant pests must be eliminated in the manufacture of fertilisers containing raw materials of plant origin. Raw material originating from plant material found to be contaminated by a dangerous plant pest may be used for the manufacture of fertiliser if this is permitted by a decision on measures issued by a plant health authority on the grounds of plant health legislation. If necessary, the plant pest risk must be taken into account in the instructions for use as a restriction on use (e.g. not recommended for arable parcels intended to be used for seedling or potato production within five years).

Organic fertilisers are suitable for use in arable lands and horticulture as well as landscaping and management and construction of green areas, unless otherwise provided for a specific type designation group.

### **1B1 Organic fertilisers of animal origin**

This type designation group includes all technically processed or mechanically mixed organic fertilisers and fluid organic fertilisers which contain by-products derived from animals, e.g. manure. In organic fertiliser the minimum content of primary nutrients (N, P, K) in total is 3.0%, in liquid fertilisers the minimum content of each primary nutrient mentioned in the type designation is 1.0%.

### **1B2 Organic fertilisers of non-animal origin**

Organic technically processed as well as mechanical mixtures and fluid fertilisers which do not contain by-products of animal origin. In organic fertiliser the minimum content of primary nutrients (N, P, K) in total is 3.0%, in liquid fertilisers the minimum content of each primary nutrient mentioned in the type designation is 1.0%.

### **1B3 Organic fertilisers whose performance is mainly based on effects other than plant nutrients**

This type designation group includes organic fertilisers whose performance is not based on the nutrients they contain but they have an apparent plant growth promoting effect. Active substances and their analysis methods must be declared in the product description. The primary and secondary nutrient content must be declared if it exceeds 0.3 % of dry matter. In fluid fertilisers these must be declared if the content exceeds 0.3% of total weight. Micro-nutrients are declared as specified in Annex II.

#### **IB4 By-products used as organic fertilisers as such**

A by-product of an industrial or processing plant used as organic fertiliser as such is a product which has an apparent plant growth promoting effect, mainly based on the amount of nutrients usable to plants present in the by-product. The minimum content of primary nutrients in total is 1.0%, except in potato cell sap 0.8%, or the minimum content of secondary nutrients in total 8.0%. The primary and secondary nutrient content must be declared if it exceeds 0.3 % of dry matter. In fluid fertilisers these must be declared if the content exceeds 0.3% of total weight. Of the raw materials in fluid by-products used as organic fertiliser the amount of sludge referred to in section 11a(1) of this Decree may not exceed 10% of fresh weight. In such a case the requirements in section 11a do not apply to the use of the product.

#### **1C ORGANIC MINERAL FERTILISERS**

Organic mineral fertilisers are mechanical mixtures of organic fertilisers and inorganic fertilisers or liming materials. Microbe products (type designation group 4A1) may have been added to organic mineral fertiliser in connection with mixing. Information on this must be declared in the product description in accordance with the requirements in paragraph 4. Organic or inorganic materials for granulation, stabilisation, colouring approved for food use or approved for plant protection in Finland as well as organic materials under Annex II may also be added to them. The raw materials used in the manufacture and their mixing ratios as well as all added materials must be declared in the product descriptions of organic mineral fertilisers.

The composition of the raw material of an organic mineral fertiliser may deviate from the permitted raw materials by one percentage point without this changing the type designation of the fertiliser product.

The contents of nutrients and other ingredients are declared as a percentage by weight of dry matter (%-DM). In addition, they may be declared as a percentage by weight of the total weight. The contents of liquid fertilisers are declared as a percentage by weight of the total weight. In addition, they may be declared as a volumetric unit of mg/l or g/l. The nutrient contents must be declared as elements, in addition to which they may be declared as oxides. The contents of primary nutrients in organic compound mineral fertilisers must be declared in the product description as integers after the type designation. If a product contains secondary nutrients or micro-nutrients to be declared in quantities exceeding the minimum content in Annex II, the word “contains” is added to type designation together with the secondary nutrients contained by the product in the following order: calcium (Ca), magnesium (Mg), sulphur (S) and the micro-nutrients in the order: boron (B), cobalt (Co), copper (Cu), iron (Fe), manganese (Mn), molybdenum (Mo) and zinc (Zn). A marking “contains micro-nutrients” may also be used for micro-nutrients. Product descriptions of organic fertilisers containing micro-nutrients must include the text: *“Only used for apparent need. Permitted application rates may not be exceeded.”* The chlorine content of a product may be declared. A marking “low chlorine content” may be used when the maximum Cl content is 10.0% of the total content of primary nutrients in the product. Moisture and dry matter content is declared

as a percentage and the amount of organic matter i.e. ignition loss or the total amount of organic carbon (TOC) as a percentage of dry matter. The amounts of water-soluble nitrogen and phosphorus must be declared in addition to the total contents. The neutralising ability of organic mineral fertilisers containing liming material must be at least 10%, calculated as calcium (Ca), and it must be declared in the product description.

The recommendation for use declared in the product description must take into account the possible risks and restrictions on use relating to all raw materials. The risk of spreading plant pests must be eliminated in the manufacture of fertilisers containing raw materials of plant origin. Raw material originating from plant material found to be contaminated by a dangerous plant pest may be used for the manufacture of fertiliser if this is permitted by a decision on measures issued by a plant health authority on the grounds of plant health legislation. If necessary, the plant pest risk must be taken into account in the instructions for use as a restriction on use (e.g. not recommended for arable parcels intended to be used for seedling or potato production within five years).

Organic mineral fertilisers are suitable for use in arable lands and horticulture as well as landscaping and management and construction of green areas, unless otherwise provided for a specific type designation group.

### **1C1 Organic compound mineral fertilisers**

Organic NPK mineral fertilisers are mechanical mixtures or fluids in which the amount of organic matter in total exceeds 10.0%, calculated as carbon content (C %) of the dry matter content of the fertiliser. The declared minimum content of primary nutrients is: 1.0% N, 1.0% P and 1.0% K, the minimum content of primary nutrients in total is 7% and in binary fertilisers (NP, NK, PK) 5.0%. In fluid fertilisers the declared minimum content of each primary nutrient is 1.0%.

### **1C2 Inorganic compound fertilisers containing organic matter**

Inorganic compound mineral fertilisers containing organic matter are mechanical mixtures or fluids in which the amount of added organic matter in total exceeds 1.0%, calculated as carbon content (C %) of the dry matter content of the fertiliser. The declared minimum content of nutrients is: 2.0% N, 1.0% P and 2.0% K, the minimum content of primary nutrients in total is 7%.

### **1C3 Liming organic mineral fertilisers**

Liming organic mineral fertilisers are mechanical mixtures or fluids in which the amount of organic matter in total exceeds 10.0%, calculated as carbon content (C %) of the dry matter content of the fertiliser. The minimum neutralising ability of liming organic mineral fertilisers is 10.0% (Ca). The declared minimum content of primary nutrients is: 1.0% N, 1.0% P and 1.0% K, the minimum content of primary nutrients NPK in total is 5% and in binary fertilisers (NP, NK, PK) 3.0%.

## **2 LIMING MATERIALS**

The purpose of liming materials is to maintain or increase the pH in soil and water and improve the availability of plant nutrients and alter the physical properties of the soil. The minimum neutralising ability of liming material or a by-product used as such must be 10.0% calculated as calcium (Ca). The nutrient contents and other properties are declared as a percentage by weight of dry matter (%-DM). In addition, they may be declared as percentage by weight of fresh weight. The neutralising ability and quick-acting neutralising ability are declared in the product description as a percentage

calculated as calcium (Ca). The primary and secondary nutrient content must be declared if it exceeds 0.3% of dry matter. Micro-nutrients are declared in accordance with Annex II. Moisture is declared as a percentage of fresh weight. Sieve sizes passed through by 100.0% of the product and passed through by 50.0% of the product are declared as a degree of fineness.

The composition of the raw material of liming material may deviate from the permitted raw materials by one percentage point without this changing the type designation of the fertiliser product.

Liming materials are suitable for use in arable lands and horticulture as well as landscaping and management and construction of green areas, unless otherwise provided for a specific type designation group.

### **2A1 Limestone and other liming materials**

Liming material mainly in the oxide, hydroxide, carbonate or silicate form which contains calcium and/or magnesium elements.

### **2A2 By-products used as liming material as such**

By-products suitable for use as liming material obtained from industry mainly in the oxide, hydroxide, carbonate or silicate form which contains calcium and/or magnesium elements.

Quick-acting neutralising ability as a percentage calculated as calcium (Ca) (SFS-EN 13971) or in the form "Quick-acting (30 days) neutralising ability low" must be declared in the product description.

## **3 SOIL IMPROVERS**

Soil improvers are fertiliser products whose plant growth promoting effect is based on the ability to improve the plant growth conditions by influencing the chemical, physical and/or biological properties of the soil. Soil improvers may also contain primary and secondary nutrients in significant amounts. Raw materials used in the manufacture, including type of manure, mixing substances and added substances, must be declared in the product descriptions of soil improvers. Other fertiliser products may be added to soil improvers. If microbe products (type designation group 4A1) are added to it, information on this must be declared in the product description in accordance with the requirements in paragraph 4A. Organic or inorganic materials for granulation, stabilisation, colouring approved for food use and increasing water holding capacity or organic materials under Annex II may also be added to a soil improver.

The composition of the raw material of a soil improver may deviate from the permitted raw materials by one percentage point without this changing the type designation of the fertiliser product.

The content of primary nutrients (EN-SFS-13654, EN-SFS-13650) and water-soluble nitrogen and phosphorus in soil improvers are declared in product descriptions as mg/kg of dry matter. In addition, the nutrient amounts must be declared as mg/l or kg/m<sup>3</sup> of the product, sold moist. Secondary nutrients and micro-nutrients may be declared in accordance with Annex II. Moisture content as a percentage, the amount of organic matter, i.e. ignition loss or the total amount of organic carbon (TOC) as a percentage of dry matter, pH (EN-SFS-13037) as well as conductivity as

mS/m (EN-SFS-13038) and volumetric weight as g/l or kg/ m<sup>3</sup> must be declared in the product description. In addition, effective cation exchange capacity as the amount of ammonium ions per dry matter (cmol<sup>+</sup>/kg of dry matter) may be declared. If only peat or covering material derived from the nature or material of plant origin is used as raw material of soil improvers, the contents of harmful metals (mg/kg of dry matter) in Annex IV need not be declared. In soil improvers and by-products used as soil improvers as such where manure and litter are the only organic materials only the cadmium content must be declared in the product description.

The degree of decomposition of an organic soil improver of type designation group 3A2 and a by-product used as such of type designation group 3A5 must be such that they may be placed on the market. The use of organic soil improvers may also not cause disturbing odour nuisance with due consideration of the operating environment. Soil improvers must not contain harmful amounts of permanent or decomposing substances which are toxic or harmful to plant growth (so-called phytotoxic substances) or to the environment. The degree of decomposition, i.e. stability, of a product is assessed by means of the carbon dioxide output test. The assessment of maturity by the control authority is carried out on the basis of a combined result of the tests (phytotoxicity index and carbon dioxide output). In addition, the maturity of an organic soil improver can be ensured by the ratio of nitrate-nitrogen and ammonia-nitrogen (NO<sub>3</sub>-N/NH<sub>4</sub>-N). In packaged products stability measured as carbon dioxide output must be less than 3 mg CO<sub>2</sub>-C/g VS/day. For unpackaged products this need not be declared. Target values for stability and maturity may be set for specific type designations.

It may be required for specific type designations that the stabilisation or hygienisation method must be validated before the approval of the establishment. In validation the effectiveness of the method used and handling conditions are indicated by reliable analysis results, as well as that the final product that is produced fulfils the requirements for the specific type designation. Similarly, in the validation of hygienisation a significant reduction either in the pathogen naturally present in the raw material (e.g. norovirus in sewage sludge) or an appropriate indicator added to the mass to be handled (e.g. *Plasmodiophora brassicae*, TM virus, *Salmonella senftenberg*).

The risk of spreading plant pests must be eliminated in the manufacture of soil improvers containing raw materials of plant origin. Raw material originating from plant material found to be contaminated by a dangerous plant pest may be used for the manufacture of soil improvers if this is permitted by a decision on measures issued by a plant health authority on the grounds of plant health legislation. The recommendation for use declared in the product description must take into account the possible risks and restrictions on use relating to all raw materials. If necessary, the plant pest risk must be taken into account in the instructions for use as a restriction on use (e.g. not recommended for arable parcels intended to be used for seedling or potato production within five years). Similarly, the instructions for use given in the product description must take account of the restrictions on use in section 11 of this Decree and for specific type designations as well as, among other things, restrictions under the Nitrates Decree and agri-environment payments.

Soil improvers are suitable for use in arable lands and horticulture, landscaping, preventing erosion as well as management and construction of green areas, unless otherwise provided for a specific type designation group.

When the maturity of a soil improver declared as carbon dioxide output is less than 3 mg CO<sub>2</sub>-C/g VS/day, phytotoxicity index is over 80% and the ratio of nitrate-nitrogen and ammonia-nitrogen NO<sub>3</sub>-N/NH<sub>4</sub>-N is over 1, it is also suitable for placing on the market as raw material of growing media.

### **3A1 Soil improving peats**

Soil improving peats are soil improvers which are mainly composed of natural peat. Other fertiliser products may have been added to them. The analysis of soluble nutrients, acidity and electrical conductivity of soil improving peats may be carried out either from pressed liquid or with the so-called growing media methods. The measure of conductivity measured from pressed liquid is mS/cm, the corresponding measure with SFS-EN-13038 method is mS/m. For a packaged product the moisture content need not be declared in the product description.

### **3A2 Organic soil improvers**

Organic soil improvers are soil improvers which have been manufactured from organic raw material by means of biological or mechanical processing or mixing. The minimum amount of organic matter (measured as ignition loss) must be 20%. Organic soil improvers may also contain primary and secondary nutrients in significant amounts. The contents of primary nutrients in total as well as the amounts of water-soluble nitrogen and phosphorus (mg/kg of dry matter) must be declared in the product description.

### **3A3 Materials improving the soil structure**

Materials improving the soil structure are organic or inorganic soil improvers poor in nutrients manufactured from natural materials or products of chemical industry by means of technical processing to which fertilisers may have been added. Raw materials and added substances must be declared in the product description.

### **3A4 Materials increasing the biological activity**

Fertiliser products intended to promote the composting or digesting process or increase the soil biological activity are included in this type designation group. However, liming materials promoting composting are included in liming materials (in paragraph 2 of Annex I of this Decree), those containing only urea in nitrogen fertilisers (in paragraph 1A1 of Annex I of this Decree) and products containing only microbe strains in microbe products (in paragraph 4 of Annex I of this Decree). Primary nutrient content must be declared if it exceeds 0.3% of dry matter, secondary nutrients and micro-nutrients may be declared in accordance with Annex II of this Decree.

### **3A5 By-products used as soil improvers as such**

By-products from industrial or processing plants used as soil improvers as such must be such that they have an apparent effect of promoting the physical, chemical or biological properties of the soil. They may also contain primary and secondary nutrients in significant amounts. The use of a by-product may cause no odours or other environmental harm. If necessary, disease risk must be taken into account in the instructions for use as a restriction on use.

The content of primary and secondary nutrients must be declared if it exceeds 1 000 mg/kg of dry matter. The amounts of water-soluble nitrogen and phosphorus must always be declared.

By-products used as soil improvers as such are suitable for use in arable lands and horticulture, cultivation of energy crops as well as preventing erosion in landscaping. The requirements of

section 11a do not apply to by-products used as soil improvers as such which contain the maximum of 10% of sludge referred to in section 11a(1) of this Decree.

#### **4 MICROBE PRODUCTS**

Microbe products contain pure and viable bacterial or fungal strains isolated from nature. The full scientific name of the microbe present in the product, at least the genus, must be declared in the product description. In addition, the amount of viable microbes in the product must be declared as cfu/g of the product or cfu/ml of solution prepared in accordance with the instructions.

The composition of the raw material of a microbe product may deviate from the permitted raw materials by one percentage point without this changing the type designation of the fertiliser product.

Microbe products are suitable for use in arable lands and horticulture and landscaping as well as management and construction of green areas, unless otherwise provided for a specific type designation group.

#### **5 GROWING MEDIA**

Growing media are solid or liquid products manufactured by technical processing intended for growing plants. Other fertiliser products may have been added to growing media. Substances increasing the water or nutrient retention capacity may also be added to growing media.

Phosphorus and potassium contained in growing media must be declared in their product descriptions as soluble (EN-SFS-13651) and nitrogen as water-soluble (EN-SFS-13652) mg/kg of dry matter. In addition, nutrients may be declared as mg/l or mg/kg of the product, sold moist. If the nutrients are declared per litre, the volumetric weight (SFS-EN-13040) must be declared in the product description. Secondary nutrients and micro-nutrients may be declared. The pH (EN-SFS-13037), conductivity mS/m (EN-SFS-13038) and moisture as percentages (EN-SFS-13040) must also be declared in the product description. The pH, conductivity and liquid nutrient content of growing media containing only peat may also be declared as measured by the so-called silage effluent method (Puustjärvi 1969, Peat and Plant News 2(1):3-8), in which case the measure of conductivity is mS/cm. Nutrients, pH and conductivity of liquid growing media are determined as measured directly from an undiluted product and the nutrient contents are declared as mg/l.

Raw materials of growing media must be declared in the product description in the order of their volume. All added fertilisers, liming materials and soil improvers and substances increasing water or nutrient retention and their amounts must be declared. Sewage sludge used as a raw material, manure or other by-product of animal origin and material of plant origin from industry must be treated in an approved establishment, and the approval number of the establishment and the raw materials treated must be mentioned in the information on the raw material. The composition of the raw material of growing media may deviate from the permitted raw materials by one percentage point without this changing the type designation of the fertiliser product. Raw material originating from plant material found to be contaminated by a dangerous plant pest may be used for the manufacture of growing media if this is permitted by a decision on measures issued by a plant health authority on the grounds of plant health legislation. Treated raw material used for growing media must not contain substances inhibiting plant growth (phytotoxicity index over 80%), and the quality requirements in Annex IV apply to it. Any restrictions on use due to the quality of raw

material must also be taken into account in the instructions for use in the product description of the growing media.

### **5A1 Peats**

Growing media included this type designation group are composed only of peat and no mineral soil material has been added to them. For a packaged product the moisture content need not be declared in the product description.

### **5A2 Mixed topsoil**

Mixed topsoil has been manufactured by mixing different soil materials, including peat. Other fertiliser products may be added at different stages of the mixing. Raw materials and added substances must be declared in the product description. The amount of organic matter i.e. ignition loss must be declared in the product description as a percentage of dry matter (EN EFS-13039). The grading curve may be declared in the product descriptions of mixed topsoil sold in bulk.

If mineral soil originating from metal industry, such as foundry sand, is used as raw material for topsoil, it must fulfil the criteria for placing in a permanent landfill site in respect of harmful metals and organic harmful substances (Government Decree 202/2006 amending the Government Decision on landfill sites).

Soil fractions originating from food industry must be processed so that their use as raw material for growing media does not involve the risk of spreading plant diseases. Approval of the establishment is required for the processing.

### **5A3 Other growing media**

Other growing media are growing media manufactured from material other than soil material. Raw materials and added substances must be declared in the product description.

## ANNEX II

### MINIMUM CONTENTS OF SECONDARY NUTRIENTS AND MICRO-NUTRIENTS IN FERTILISER PRODUCTS AS WELL AS CHELATES, COMPLEXING AGENTS AND OTHER ORGANIC MATERIALS PERMITTED TO BE ADDED TO FERTILISERS

#### A. MINIMUM CONTENTS OF SECONDARY NUTRIENTS AND MICRO-NUTRIENTS

**Table 1. Minimum content of secondary nutrients which must be declared for fertilisers.**

Secondary nutrient	Content in fertilisers as a percentage by weight
Calcium (Ca)	1.4
Magnesium (Mg)	0.5
Sodium (Na)	2.2
Sulphur (S)	1.0

If the minimum content of the water-soluble ingredients of magnesium (Mg), sodium (Na) or sulphur (S) is a quarter of its total content, the water-soluble content is declared in addition to the total content. For water-soluble ingredients, only their water-soluble content is declared. For calcium, only the water-soluble content is declared.

**Table 2. Minimum content of secondary nutrients which may be declared for soil improvers. The measure used is mg/kg of dry matter but the content per fresh weight or volume may also be declared; in liquid fertiliser products as mg/l.**

Secondary nutrient	Content as mg/kg or mg/l
Calcium (Ca)	500
Magnesium (Mg)	20
Sulphur (S)	20

The minimum content of micro-nutrients in fertilisers must be declared as a percentage by weight of dry matter or of total weight, in liming materials as a percentage by weight of dry matter and in other fertiliser products as mg/kg of dry matter (the content may also be declared per fresh weight), in liquid fertiliser products as mg/l.

**Table 3 A. Minimum content of micro-nutrients declared for fertiliser products spread on growing media.**

Micro-nutrient	Content as a percentage by weight
Boron (B)	0.01
Cobalt (Co)	0.002
Copper (Cu)	0.002
Iron (Fe)	0.02
Manganese (Mn)	0.01
Molybdenum (Mo)	0.001
Zinc (Zn)	0.002
Selenium (Se)	0.001

**Table 3 B. Minimum content of micro-nutrients declared for fertiliser products used as leaf spray.**

Micro-nutrient	Content as a percentage by weight
Boron (B)	0.01
Cobalt (Co)	0.002
Copper (Cu)	0.002
Iron (Fe)	0.02
Manganese (Mn)	0.01
Molybdenum (Mo)	0.001
Zinc (Zn)	0.002
Selenium (Se)	0.001

## B. CHELATES AND COMPLEXING AGENTS PERMITTED TO BE ADDED TO INORGANIC FERTILISERS

**Table 4. Permitted organic compounds forming chelates(\*) with micro-nutrients and their sodium, potassium or ammonium salts must be declared as an abbreviation in the product description.**

Designation	Abbreviation	Chemical formula
ethylenediaminetetraacetic acid	EDTA	$C_{10}H_{16}O_8N_2$
2-hydroxyethylethylenediaminetriacetic acid	HEEDTA	$C_{10}H_{18}O_7N_2$
diethylenetriaminepentaacetic acid	DTPA	$C_{14}H_{23}O_{10}N_3$
ethylenediamine-N,N'-di[(ortho-hydroxyphenyl) acetic acid]	(o,o) EDDHA	$C_{18}H_{20}O_6N_2$
ethylenediamine-N[(ortho-hydroxyphenyl) acetic acid] –N'-(para-hydroxyphenyl) acetic acid]	(o,p) EDDHA	$C_{18}H_{20}O_6N_2$
ethylenediamine-N,N'-di[(ortho-hydroxy-methylphenyl) acetic acid]	(o,o) EDDHMA	$C_{20}H_{24}O_6N_2$
ethylenediamine-N-[(ortho-hydroxy-methylphenyl) acetic acid]- N'-(para-hydroxy-methylphenyl) acetic acid]	(o,p) EDDHMA	$C_{20}H_{24}O_6N_2$
ethylenediamine-N,N'-di[(5-carboxy-2-hydroxyphenyl) acetic acid]	EDDCHA	$C_{20}H_{20}O_{10}N_2$
ethylenediamine-N,N'-di[(2-hydroxy-5-sulphophenyl) acetic acid] and its condensation products	EDDHSA	$C_{18}H_{20}O_{12}N_2$ $S_2 + n^*$ $(C_{12}H_{14}O_8N_2S)$
iminodisuccinic acid	IDHA	$C_8H_{11}O_8N$
N,N'-di(2-hydroxybenzyl)ethylenediamine-N,N'-diacetic acid	HBED	$C_{20}H_{24}N_2O_6$

(\*) Chelating agents must be identified and quantified in the European standards in which these chelating agents are dealt with.

### Table 4 A. Complexing agents

The following complexing agents are only permitted in products for fertigation and/or foliar application, except for Zn lignosulfonate, Fe lignosulfonate, Cu lignosulfonate and Mn lignosulfonate that can be applied directly to the soil.

Sodium, potassium and ammonium salts of the following acids:

<b>Designation</b>	<b>Alternative designation</b>	<b>Chemical formula</b>	<b>CAS number of the acid<sup>(1)</sup></b>
Lignosulfonic acid	LS	Not available	8062-15-5

<sup>(1)</sup> For information only

### **C. OTHER ORGANIC MATERIALS ADDED TO FERTILISERS**

**Table 5. Organic materials permitted to be added to inorganic fertilisers.**

<b>Permitted substance</b>
Amino acid; referred to by name
Betaine
Enzyme; referred to by name
Humus material; referred to by name
Sugar; referred to by name
Other chemically known substance, referred to by chemical name

## ANNEX III

### PERMITTED DEVIATIONS FROM VALUES DECLARED IN PRODUCT DESCRIPTION

Permitted deviations do not apply to the minimum and maximum limits referred to in Annex I of this Decree. If the values mentioned in the product description are given as a range of variation, the deviations specified in this Annex do not apply to them. The maximum range of variation may be the extent of the permitted deviation.

#### A. INORGANIC FERTILISERS

Permitted deviations for the total contents and different forms and solubility of primary nutrients in inorganic fertilisers are shown in Table 1. Permitted negative total deviations for primary nutrients in compound fertilisers are shown in Table 2. Permitted deviations for secondary nutrients and micro-nutrients are shown in Table 3 and permitted deviations for other ingredients and properties in Table 4.

**Table 1. Permitted deviations for total contents, different forms and solubility of primary nutrients.**

Property	Permitted deviation
Nitrogen (N)	$\pm 25\%$ relative deviation, however, no more than -1.1/+2.2 percentage points
Phosphorus (P)	$\pm 25\%$ relative deviation, however, no more than -0.5/+1.0 percentage points
Soluble phosphorus (P)	-25% relative deviation, however, no more than -0.5 percentage points
Potassium (K)	-25% relative deviation, however, no more than -0.9 percentage points

**Table 2. Total permitted deviations for primary nutrients in compound fertilisers.**

Fertiliser	Permitted deviation
Binary fertilisers	-1.5 percentage points
Ternary fertilisers	-1.9 percentage points

**Table 3. Permitted deviations for secondary nutrients and micro-nutrients.**

Property	Permitted deviation
Ca, Mg, Na, S	-25/+50% relative deviation, however, no more than -1.0/+2.0 percentage points
B, Cu, Zn	$\pm 20\%$ relative deviation, when the content is no more than 2% $\pm 0.4$ percentage points, when the content is over 2%
Co, Fe, Mn, Mo	-20/+100% relative deviation, when the content is no more than 2% -0.4/+0.8 percentage points, when the content is over 2%

**Table 4. Permitted deviations for other ingredients and properties.**

Property	Permitted deviation
Silicon	-1.0 percentage points

Carbon	-1.0 percentage points
Neutralising ability (Ca)	-2 percentage points
Selenium	±50% relative deviation

**Table 5. Permitted deviations for by-products used as inorganic fertilisers.**

Property	Permitted deviation
Neutralising ability (Ca)	-2.0 percentage points
Nutrients	± 20 relative deviation
Moisture	± 20% relative deviation

## B. ORGANIC FERTILISERS

The permitted deviations in paragraph A of Annex II apply to the contents declared in the product description. For micro-nutrients the permitted deviation is ±25%.

**Table 6. Permitted deviations for properties declared in product descriptions of organic fertilisers and by-products used as organic fertilisers as such.**

Property	Permitted deviation
Nitrogen (N)	±25% relative deviation*
Phosphorus (P)	±25% relative deviation*
Potassium (K)	-25% relative deviation*
Moisture	±25% relative deviation
Content of humus materials	±50% relative deviation
Amount of humic acids or fulvic acids	±25% relative deviation
Amount of organic carbon (C)	±25% relative deviation

\* However, at least 0.5 percentage points, if the declared content is  $\geq 1$  %

**Table 7. Permitted deviations for properties declared in product descriptions of organic mineral fertilisers and liming organic mineral fertilisers.**

Property	Permitted deviation
Nitrogen (N)	±25% relative deviation, however, no more than -1.1/+2.2 percentage points
Phosphorus (P)	±25% relative deviation, however, no more than -0.5/+1.0 percentage points
Potassium (K)	-25% relative deviation, however, no more than -0.9 percentage points
Moisture/dry matter content	±25% relative deviation
Amount of organic carbon (C)	±25% relative deviation
Neutralising ability (Ca)	-2.0 percentage points

## C. LIMING MATERIALS

**Table 8. Permitted deviations for properties declared in product descriptions of liming materials.**

<b>Property</b>	<b>Permitted deviation</b>
Neutralising ability (Ca)	-2.0 percentage points
Quick-acting neutralising ability (Ca)	±5 percentage points
Calcium (Ca) and Magnesium (Mg)	-2.0 percentage points
Other nutrients	±20% relative deviation
Degree of fineness (particle size)	-10% relative deviation

## D. SOIL IMPROVERS

**Table 9. Permitted deviations for properties declared in product descriptions of soil improvers.**

<b>Property</b>	<b>Permitted deviation</b>
Volumetric weight	±25% relative deviation
Conductivity	±50% relative deviation
pH	-0.5/+1 units
Amount of organic material (ignition loss)	±25% relative deviation
Amount of organic carbon (C)	±25% relative deviation
Primary nutrients	±50% relative deviation
Soluble nutrients	±50% relative deviation
Secondary nutrients and micro-nutrients	±100% relative deviation
Moisture	±25% relative deviation
Degree of coarseness	±25% relative deviation
Exceeding the declared fragment size	± 20% over the declared limit
Cation exchange capacity (ECEC)	±50% relative deviation

Permitted deviations for the declared amounts of microbe products added to soil improvers are shown in Table 10.

## E. MICROBE PRODUCTS

**Table 10. Permitted deviations for properties declared in product descriptions of microbe products.**

<b>Property</b>	<b>Permitted deviation</b>
Amount of micro organisms	±50% relative deviation

## F. GROWING MEDIA

As a rule the nutrients, pH and conductivity of growing media are measured in accordance with the SFS-EN standards. For peat products the nutrients, pH and conductivity may be determined by means of the silage effluent method.

**Table 11. Permitted deviations for properties declared in product descriptions of growing media.**

<b>Property</b>	<b>Permitted deviation</b>
Conductivity	±50% relative deviation
pH	-0.5/+1 units
Soluble primary nutrients	±50% relative deviation
Soluble secondary nutrients and micro-nutrients	±100% relative deviation
Moisture	±25% relative deviation
Amount of organic material (ignition loss)	±25% relative deviation
If amount of organic matter is 5% or less	±50% relative deviation
Degree of coarseness	±25% relative deviation
Volumetric weight/Bulk density/Bulk volume	±25% relative deviation
Mechanical soil analysis i.e. grading curve	±50% relative deviation

## ANNEX IV

### HARMFUL SUBSTANCES, ORGANISMS AND CONTAMINANTS IN FERTILISER PRODUCTS

The requirements in this Annex regarding harmful substances, organisms and contaminants as well as treatment of raw materials of plant origin apply to all fertiliser products unless otherwise stated. These limits do not apply to soil improvers, growing media or other fertiliser products used in landscaping of landfill sites or other closed areas such as closed industrial areas and airports or to by-products used as such.

#### A. HARMFUL SUBSTANCES

Harmful metals and their maximum contents are shown in Table 1. For products included in the national type designation list of fertiliser products of the Finnish Food Safety Authority the contents in the product description must be declared in the order of the table as a verified maximum content, e.g. "Arsenic (As), maximum xx mg/kg".

**Table 1. Maximum contents of harmful metals in inorganic fertilisers and in liming materials extracted with nitric acid and in other fertiliser products extracted with an aqua regia-wet combustion method.**

Element	Maximum content mg/kg of dry matter	Maximum content mg/kg of dry matter in ash fertilisers or in ash used as their raw material used in forestry.
Arsenic (As)	25	40
Mercury (Hg) <sup>1)</sup>	1.0	1.0
Cadmium (Cd)	1.5 <sup>2)</sup>	25
Chromium (Cr)	300 <sup>3)</sup>	300
Copper (Cu)	600 <sup>4)</sup>	700
Lead (Pb)	100	150
Nickel (Ni)	100	150
Zinc (Zn)	1500 <sup>4)</sup>	4500 <sup>4)</sup>

<sup>1)</sup> Determination of mercury with the EPA 743 method

<sup>2)</sup> 2.5 mg Cd/kg for ash fertilisers or ash used as their raw material to be used in agriculture and horticulture as well as construction of green areas and landscaping.

<sup>3)</sup> For a by-product used as liming material as such steel slag (type designation 2A2/3) chromium is determined as soluble Cr 6+ chromium. The threshold for soluble Cr 6+ chromium is 2.0 mg/kg of dry matter.

<sup>4)</sup> Exceeding the maximum content in fertiliser products may be permitted when a shortage of copper or zinc has been established on the basis of soil analysis. In forestry exceeding the maximum content in a by-product used as fertiliser product is allowed only when using zinc in peatland forest when a shortage of zinc has been established from the plants by soil, leaf or needle analysis. In such a case the maximum content of zinc in a by-product used as fertiliser product is 6000 mg Zn/kg of dry matter.

## B. PATHOGENS AND OTHER MICRO ORGANISMS

Maximum permitted amounts of pathogenic or disease indicator micro organisms are shown in Tables 2 and 3.

**Table 2. Maximum permitted amounts of pathogens/indicator organisms in fertiliser products.**

Pathogen/indicator	Maximum amount
Salmonella <i>Escherichia coli</i>	Not found in a sample of 25 grams Less than 1000 CFU/g and less than 100 CFU/g in growing media intended for commercial greenhouse production where edible plant parts are in direct contact with the growing media
Root rot fungus (for instance, <i>Fusarium</i> ; found using a culture test)	Not found in growing media used in seedling production

**Table 3. Special requirements for fertiliser products manufactured from raw materials of plant origin or accompanying topsoil fractions.**

Pest	Maximum amount
Golden nematode ( <i>Globodera rostochiensis</i> ) Pale cyst nematode ( <i>Globodera pallida</i> ) Potato ring rot ( <i>Clavibacter michiganensis</i> ) Potato brown rot ( <i>Ralstonia solanacearum</i> ) Potato wart disease ( <i>Synchytrium endobioticum</i> ) Beet necrotic yellow vein virus "Rhizomania" Root-knot nematodes ( <i>Meloidogyne</i> spp.)	Not found in a fertiliser product manufactured from root vegetable, beet and potato raw material or from topsoil fractions accompanying these to the factory or barking plant.
Other quarantine pests causing plant diseases	Not found in fertiliser products manufactured from plant waste or growing media from greenhouse production.

No pests referred to in the Act on the Protection of Plant Health (702/2003) or under it may be present in a fertiliser product. The fulfilment of the requirement must be monitored by own-checks especially as regards pests listed in Table 3. Own-checks must be intensified especially in situations when raw material found by the plant protection authority to be contaminated by plant pests is used in the manufacture or when using raw material originating from another state country and/or there is cause to suspect that the raw material is contaminated by the said plant pests.

A fertiliser product manufactured from plant material containing by-products and waste from potato, root plant and beet industry and barking and packaging plants treated only in accordance with the manufacturing requirements for the specific type designation may not be used

- 1) on farms producing potatoes and root plants
- 2) on farms producing seedlings or plants intended for replanting (including turf rolls)
- 3) in the catchment areas of water courses in the production areas of these plants.

The manufacturer of a fertiliser product must keep a list of the recipients of fertiliser products manufactured by the above-mentioned raw material base. The list must be submitted annually to the plant protection authority for control purposes.

## REQUIREMENTS FOR THE TREATMENT OF PLANT MATERIAL

For advance prevention of dangerous plant pests the by-products and waste from potato, root plant and beet industry and barking and packaging plants as well as biowaste collected separately must be treated in accordance with the following requirements:

Plant waste must be treated either by

- a) composting during which the mass to be composted must reach the minimum temperature of 55°C at the minimum moisture of 40% for at least two weeks, or
- b) heat-treating moist at 70°C for one hour, particle size must be less than 12 mm, or
- c) using another method approved by the plant protection authority.

The treatments referred to above are not required if the by-products and waste from potato, root plant and beet industry and barking and packaging plants originate from raw material from production sites in which plant pests listed in Table 3 have not been found in checks either under the approved own-check plan or performed by the plant protection authority within no more than five year before the production of the raw material or if the said plant pests have not been found in laboratory analyses carried out on the raw material before its use.

### C. CONTAMINANTS

No other organic material except those declared in the product description may be present in inorganic fertilisers. No material of animal origin which has not been declared may be present in organic fertiliser products. Maximum permitted amounts of other contaminants are shown in Table 4.

**Table 4. Maximum permitted amounts of contaminants in fertiliser products.**

<b>Contaminant</b>	<b>Maximum amount</b>
Weed seeds In fertilisers and liming materials	Not found
In packaged soil improvers and growing media	2 germinated in a litre
In soil improvers and growing media sold in bulk	5 germinated in a litre or product description has: "product contains weed seeds spread by wind"
Refuse (glass, metal, plastics, bones, rocks)	0.2% of fresh weight
In packaged products	0.5% of fresh weight
Sold in bulk	
Wild oat	Not found
Parts of plants (found in connection with contaminant analysis)	Product must not include live roots, rootstock or any other parts relating to vegetative propagation

## ANNEX V

### MAXIMUM PERMITTED CONTENTS OF HARMFUL METALS IN ARABLE LAND CAUSED BY THE USE OF SEWAGE SLUDGE AND MAXIMUM PERMITTED ANNUAL LOAD OF HARMFUL METALS

**Table 1. Maximum permitted contents of harmful metals in arable land where fertiliser product is used in which only sludge referred to in section 11a(1) has been used as raw material**

<b>Element</b>	<b>Maximum content mg/kg of dry matter</b>
Mercury (Hg)	0.2
Cadmium (Cd)	0.5
Chromium (Cr)	200
Copper (Cu)	100
Lead (Pb)	60
Nickel (Ni)	60
Zinc (Zn)	150

**Table 2. Maximum permitted average annual load of harmful metals in agriculture caused by the use of a fertiliser product in which only sludge referred to in section 11a(1) has been used as raw material**

<b>Element</b>	<b>Maximum content g/ha a year</b>
Mercury (Hg)	1.0
Cadmium (Cd)	1.5
Chromium (Cr)	300
Copper (Cu)	600*
Lead (Pb)	100
Nickel (Ni)	100
Zinc (Zn)	1500*

\*) The loads of copper and zinc considered as plant nutrients may be no more than double in cases where there is a shortage of these nutrients in the soil in which a fertiliser product in which only sewage sludge or treated sewage sludge or septic tank sludge and sewage sludge or a sludge mixture of these is to be used as raw material. However, this may not lead to higher contents in the soil than those specified in Table 1 of this Annex.

## ANNEX VI

### **SAMPLING OF ARABLE LAND WHERE TREATED SEWAGE SLUDGE IS USED AND METHODS USED IN THE ANALYSIS**

#### *Sampling*

If it is suspected that the contents of harmful metals are too high in arable land, samples must be taken before the first spreading of treated sewage sludge. If on the basis of the load of harmful metals there is cause to suspect that the permitted contents are exceeded, a second analysis must be carried out after five years from the spreading.

Each sample included in the analysis must be composed of at least seven sub-samples. Samples must be taken from the depth of the whole tillage layer of the arable land. For the analysis at least one sample per reference parcel must be taken if the size of the reference parcel is more than 0.5 hectares. If the reference parcel is more than five hectares in size, one sample for every five hectares must be taken. For reference parcels which are no more than 0.5 hectares in size one sample for every two hectares of arable land must be taken. In line sampling, where samples must be taken every third year, a sampling density of one sample for every ten hectares is sufficient.

#### *Methods used in the analysis*

Soil samples must be analysed in a laboratory specialised in carrying out soil analyses. The following variables must be analysed from the samples, using the analysis method specified for each of them:

- pH (H<sub>2</sub>O) (SFS 3021),
- cadmium, chromium, copper, nickel, lead and zinc (SFS-EN 13346) and
- mercury (prCEN/TS 16175-1 and prCEN/TS 16175).