

Ordinance on the quality assurance and utilization of compost in agriculture, horticulture and landscaping

Content

Objectives1
 Areas of application1
 Definitions1
 Suitable raw compost material2
 Types and quality standards for compost3
 Utilization of compost grade A and grade B8
 Monitoring procedure9
 Test methods10

1 Objectives

The main objective of this ordinance is to create a legal framework for the production and utilization of compost and to improve at long term the recycling quota of organic material from waste. Therefore the Compost Ordinance regulates the application of treated and untreated bio-wastes and mixtures on land which is used in agriculture, horticulture, viticulture or forestry and it treats as well the use of compost, having a low quality, in landscaping and in landfill operation. It also covers suitable raw materials, quality and hygiene requirements, and treatment and investigations of such bio-wastes and mixtures. The Compost Ordinance regulates – from a precautionary perspective – the waste side (e.g. heavy metals) of the application.

2 Areas of application

All treated and untreated biodegradable wastes from animals or plants, and all mixtures under the collective name of 'biowastes' applied to soils through agriculture, forestry or horticulture, landscaping and landfill operations are subject to the requirements of the compost ordinance.

3 Definitions

Additives: Materials to improve structure and to form clay-humus-complexes of compost (e.g. basalt meal, calcium bentonite, clay granulate, bone meal, horn meal, lime etc.), are added to raw compost materials for their nutrient or bulk qualities.

Biowaste: Term used to describe the composting of separately collected organic domestic waste. It is collected separately from households in so-called 'bio bins', which are sometimes also known as compost bins or 'green' bins. Biowaste normally contains a certain amount of garden or green waste (up to 40%).

Bulk density: Density of loosely heaped material per volume unit in t/m³.

C/N-ratio: Ratio of carbon to nitrogen (total content); used to describe nutrient or decomposing ability of organic waste.

Compost: Product of decomposition process resulting from the aerobic treatment of organic material.

Compost windrows: Stacking of organic matter intended for composting in regular piles of triangular or trapezoid cross-section.

Contaminants / pollutants: Organic and inorganic materials in concentrations harmful to health and environment.

Degree of maturation: Identification of the current status of the decomposition process to characterise the progress of maturation. Scale ranges from I (compost raw material) to V (mature compost).

DEWAR Self-Heating Test: used to determine maturation stage of compost by investigating temperature rise of compost under standardized conditions;

Dry substance: Amount of substance after removal of water; measurement after drying at 105°C until constant weight is reached.

Impurities: Unwanted substances which are disturbance factor either technically or optically and which lower the quality of compost (e.g. stones, glass, metal, plastics).

Fertilizers: Substances intended to be added directly or indirectly to plants to promote growth, increase harvests or increase quality of crops.

Food waste: Waste from restaurants and large kitchens (larger than a normal household) which is normally collected in addition to the regular bio-bin system, in special containers. (Those wastes have to undergo extra treatment (70 °C for one hour) to guarantee sanitation which has to be done before they are treated in composting or digestion plants.)

Green waste: Pure organic residues from gardens and parks.

Heavy metals: Lead, Chromium, Nickel, Zinc, Cadmium, Copper and Mercury.

Horticulture: Capital and/or labour intensive form of agricultural cultivation often carried out in relatively small areas; often close to houses.

Household waste: Waste from households and similar waste from small businesses which are regularly collected, transported, treated and disposed.

Humus: The end product of aerobic biological decomposition processes such as composting.

Immature Compost: Compost in an early stage of decomposition which is characterized by maturation stages I and II

Mature Compost: Compost in an advanced stage of decomposition which is characterized by maturation stages IV and V (i.e. temperature rise smaller than 10°C at DEWAR-self-heating test.)

Native organic waste: Organic waste consisting of materials in their natural state.

Pathogen: Causing diseases.

Quality criteria: Description of certain quality characteristics and contents for compost.

Sanitizing: Process stage with the aim to disinfect material.

Organic fraction of household waste: Fraction of household waste containing predominantly organic matter as result of previous sieving and sorting process.

Semi-mature Compost: Compost in an incomplete stage of decomposition which is characterized by maturation stages III (i.e. temperature rise between 10°C and 20°C at DEWAR-self-heating test.)

4 Suitable raw compost material

Suitable raw material is listed in the enclosed Annex of this Ordinance and includes the following groups of organic waste materials:

- Source separated organic municipal waste
- Organic fraction of household waste
- Green waste
- Residues from the food and animal feed industry
- Mineral composting additives.

A detailed list of waste types suitable for composting either as organic matter or as additive is given in the enclosed annex. If the operator of the composting plant intends the composting of wastes not listed in annex than he requires a specific authorization by the Ministry of Environment.

5 Types and quality standards for compost

4 different types of compost are defined by quality criteria presented in table 1 (overview) to table 5 are valid. The range goes from Grade A compost, being a high quality compost and most appropriate for any agricultural utilization, to Grade D compost which must only be used on controlled landfills as intermediate cover or as landscaping material. The product of a composting process which does not correspond to the specifications of Grade D compost cannot be considered as an organic recycling-product and must be categorized as waste.

Table 1: Definition of compost types (overview)

Type of compost	Characteristics	Main Fields of Utilisation
Grade A	Main characteristics are: <ul style="list-style-type: none"> • Native organic raw material, generated by source-separation; • Mature compost (maturation degree V); hygienised, biologically stable; • Corresponds to European Eco-label for composts 	Food production in <ul style="list-style-type: none"> • Agriculture • Horticulture • Viticulture
Grade B	Main characteristics are: <ul style="list-style-type: none"> • Organic raw material, generated by mechanical treatment of household waste; • Mature compost (maturation grade IV or V); • hygienised, biologically stable; • Corresponds to European Eco-label for composts; 	Food production in <ul style="list-style-type: none"> • Agriculture • Horticulture • Viticulture
Grade C	Main characteristics are: <ul style="list-style-type: none"> • Organic raw material, generated by mechanical treatment of household waste or appropriate waste from industrial sources (e.g. residues from the food and animal feed industry) • Semi-mature compost (maturation grade III); hygienised material, • Limits given for heavy metals correspond to doubled values of European Eco-label for composts; 	Utilized only if any risks to humans and any contamination of food or agricultural soil can be excluded; e.g. in <ul style="list-style-type: none"> • Landscaping • Recultivation of abandoned quarries • Soil for green space along traffic roads
Grade D	Main characteristics are: <ul style="list-style-type: none"> • Organic raw material, generated by mechanical treatment of household waste or appropriate waste from industrial sources (e.g. residues from the food and animal feed industry) after appropriate treatment • Immature compost (maturation grade II); hygienised material, • Limits given for heavy metals correspond to fivefold values of European Eco-label for composts; 	Only to be used as recultivation material on controlled landfills and as intermediate layer of deposited waste. No to be utilized as top layer of recultivated landfill sites in order to prevent contamination of humans, fauna and flora as well as spreading of pollutants.

Table 2: Quality standard for compost, Grade A

Quality characteristics	Quality requirements																
Origin of raw material	Source-separated organic material from households or agriculture; Mechanical sorting of impurities prior to composting process																
Hygiene	Exposure of entire material to temperatures > 65°C for at least 7 days during thermophilic decomposition phase (sanitizing phase). Extensive exclusion of germinable seeds and sprouting plant parts (less than 1 germinable weed-seed in 2 liters of compost). Exclusion of <i>Salmonellae</i> Faecal coliforms must be < 1,000 MPN/g of total solids calculated on a dry weight basis																
Man-made impurities²	Maximum of 0.5 weight-% in dm; plastic less than 0.1 weight-% in dm (selection of impurities in compost fraction > 2 mm)																
Stones	Maximum of 5.0 weight-% in dm (selection of stones in compost fraction > 5 mm)																
Plant compatibility	50% compost with 50 % standard soil media; germination rate of barley seeds must pass > 90 % after 5 days																
Decomposition degree	Maturation degree V																
Water content	Loose material: maximum 45% weight Bagged material: maximum 35 % weight Higher contents of water are admissible for composts with more than 40% organic matter																
Organic matter	at least 15 % weight-% in dm, measured as volatile solids																
Plant nutrients and salt content	Salt content max. 2.5 g/l Minimum nitrogen (sum NO ₃ /NH ₄ -N) <300 mg/l Soluble phosphate P ₂ O ₅ <1.200 mg/l Soluble potassium K ₂ O <2.000 mg/l Soluble chloride <500 mg/l Soluble sodium <250 mg/l																
Contents of heavy metals	Guide values ³ (mg/kg dm) <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Lead</td> <td style="width: 30%; text-align: center;">< 150</td> <td style="width: 30%;">Cadmium</td> <td style="width: 10%; text-align: center;">< 1.5</td> </tr> <tr> <td>Chromium</td> <td style="text-align: center;">< 100</td> <td>Copper</td> <td style="text-align: center;">< 100</td> </tr> <tr> <td>Nickel</td> <td style="text-align: center;">< 50</td> <td>Mercury</td> <td style="text-align: center;">< 1.0</td> </tr> <tr> <td>Zinc</td> <td style="text-align: center;">< 400</td> <td></td> <td></td> </tr> </table>	Lead	< 150	Cadmium	< 1.5	Chromium	< 100	Copper	< 100	Nickel	< 50	Mercury	< 1.0	Zinc	< 400		
Lead	< 150	Cadmium	< 1.5														
Chromium	< 100	Copper	< 100														
Nickel	< 50	Mercury	< 1.0														
Zinc	< 400																
Parameter for declaration to utilizer	Mature compost from source – separated organic waste Producer Grain size and bulk density (volume weight) C/N-ratio pH value Salt content Plant nutrients total (N, P ₂ O ₅ , K ₂ O, MgO, CaO) Plant nutrients soluble (N, P ₂ O ₅ , K ₂ O) Organic matter Net weight or volume Information for a suitable application (method and application rate)																

¹MPN: Most probable number

² Glass, metal, plastics

³Guide values: The heavy meal limit values are adhered to if the mean value of the last four analyses lies under the limit value and no analysis surpasses the limit value by >25%. This guide excludes the cadmium test.

dm = dry matter; fm= fresh matter; om = organic matter;

Table 3: Quality standard for compost, Grade B

Quality characteristics	Quality requirements
Origin of raw material	Organic raw material, generated by mechanical treatment of mixed household waste; minimum standard of treatment: sieving, hand-sorting, magnetic separation of impurities by drum-magnets or equivalent equipment
Hygiene	Exposure of entire material to temperatures > 65°C for at least 7 days during thermophilic decomposition phase (sanitizing phase). Extensive exclusion of germinable seeds and sprouting plant parts (less than 1 germinable weed-seeds in 2 liters of compost). Exclusion of <i>Salmonellae</i> Faecal coliforms must be < 1,000 MPN/g of total solids calculated on a dry weight basis
Man-made impurities²	Maximum of 0.5 weight-% in dm; plastic less than 0.1 weight-% in dm (selection of impurities in compost fraction > 2 mm)
Stones	Maximum of 5.0 weight-% in dm (selection of stones in compost fraction > 5 mm)
Plant compatibility	25% compost with 75 % standard soil media; germination rate of barley seeds must pass > 90 % after 5 days
Decomposition degree	Maturation degree IV or V
Water content	Loose material: maximum 45% weight Bagged material: maximum 35 % weight Higher contents of water are admissible for composts with more than 30% organic matter
Organic matter	at least 15 % weight-% in dm, measured as volatile solids
Plant nutrients and salt content (only required if compost is used as substrate for production of potting soil)	Salt content max. 2.5 g/l Minimum nitrogen (sum NO ₃ /NH ₄ -N) <300 mg/l Soluble phosphate P ₂ O ₅ <1.200 mg/l Soluble potassium K ₂ O <2.000 mg/l Soluble chloride <500 mg/l Soluble sodium <250 mg/l
Contents of heavy metals	Guide values ³ (mg/kg dm) Lead < 150 Cadmium < 1.5 Chromium < 100 Copper < 100 Nickel < 50 Mercury < 1.0 Zinc < 400
Parameter for declaration to utilizer	Mature compost from mixed waste Producer Grain size and bulk density (volume weight) C/N-ratio pH value Salt content Plant nutrients total (N, P ₂ O ₅ , K ₂ O, MgO, CaO) Plant nutrients soluble (N, P ₂ O ₅ , K ₂ O) Organic matter Net weight or volume Information for a suitable application (method and application rate)

¹MPN: Most probable number

² Glass, metal, plastics

³Guide values: The heavy meal limit values are adhered to if the mean value of the last four analyses lies under the limit value and no analysis surpasses the limit value by >25%. This guide excludes the cadmium test.

dm = dry matter; fm= fresh matter; om = organic matter;

Table 4: Quality standard for compost, Grade C

Quality characteristics	Quality requirements																
Origin of raw material	Organic raw material, generated by mechanical treatment of household waste; minimum standard of mechanical treatment: sieving, hand-sorting, magnetic separation of impurities by drum-magnets or equivalent equipment; Appropriate organic waste from industrial sources (e.g. residues from the food and animal feed industry) after proper treatment																
Hygiene	Exposure of entire material to temperatures > 60°C for at least 7 days during thermophilic decomposition phase (sanitizing phase). Exclusion of germinable seeds and sprouting plant parts to a large extent (less than 5 germinable weed-seeds in 2 liters of compost). Exclusion of <i>Salmonellae</i> Faecal coliforms must be < 2,000 MPN/g of total solids calculated on a dry weight basis																
Man-made impurities²	Maximum of 1.0 weight-% in dm; plastic less than 0.5 weight-% in dm (selection of impurities in compost fraction > 2 mm)																
Stones	Maximum of 10.0 weight-% in dm (selection of stones in compost fraction > 5 mm)																
Plant compatibility	25% compost with 75 % standard soil media; germination rate of barley seeds must pass > 75 % after 5 days																
Decomposition degree	Minimum maturation degree III																
Water content	Loose material: maximum 40% weight Bagged material: maximum 30% weight Higher contents of water are admissible for loose composts with more than 30% organic matter																
Organic matter	at least 20% weight-% in dm, measured as volatile solids																
Contents of heavy metals	Guide values ³ (mg/kg dm) <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Lead</td> <td style="width: 30%; text-align: center;">< 300</td> <td style="width: 30%;">Cadmium</td> <td style="width: 10%; text-align: center;">< 3</td> </tr> <tr> <td>Chromium</td> <td style="text-align: center;">< 200</td> <td>Copper</td> <td style="text-align: center;">< 200</td> </tr> <tr> <td>Nickel</td> <td style="text-align: center;">< 100</td> <td>Mercury</td> <td style="text-align: center;">< 2.0</td> </tr> <tr> <td>Zinc</td> <td style="text-align: center;">< 1000</td> <td></td> <td></td> </tr> </table>	Lead	< 300	Cadmium	< 3	Chromium	< 200	Copper	< 200	Nickel	< 100	Mercury	< 2.0	Zinc	< 1000		
Lead	< 300	Cadmium	< 3														
Chromium	< 200	Copper	< 200														
Nickel	< 100	Mercury	< 2.0														
Zinc	< 1000																
Parameter for declaration to utilizer	Semi-mature compost; only to be used for landscaping, rehabilitation of abandoned quarries and green space along traffic roads Producer Grain size and bulk density (volume weight) C/N-ratio pH value Salt content Plant nutrients total (N, P ₂ O ₅ , K ₂ O, MgO, CaO) Organic matter Net weight or volume Information for a suitable application (method and application rate)																

¹MPN: Most probable number

² Glass, metal, plastics

³Guide values: The heavy metal limit values are adhered to if the mean value of the last four analyses lies under the limit value and no analysis surpasses the limit value by >25%. This guide excludes the cadmium test.

dm = dry matter; fm= fresh matter; om = organic matter;

Table 5: Quality standard for compost, Grade D

Quality characteristics	Quality requirements																
Origin of raw material	Organic raw material, generated by mechanical treatment of household waste; minimum standard of mechanical treatment: sieving, hand-sorting, magnetic separation of impurities by drum-magnets Appropriate organic waste from industrial sources (e.g. residues from the food and animal feed industry) Food waste after sanitation at 70°C for 1 hour or more																
Hygiene	Exclusion of <i>Salmonellae</i> Faecal coliforms must be < 2,000 MPN/g of total solids calculated on a dry weight basis																
Man-made impurities²	No specific requirements																
Stones	No specific requirements																
Plant compatibility	No specific requirements																
Decomposition degree	Minimum maturation degree II																
Water content	Loose material: maximum 40% weight Not to be bagged																
Organic matter	No specific requirements																
Contents of heavy metals	Guide values ³ (mg/kg dm) <table style="width: 100%; border: none;"> <tr> <td style="width: 30%;">Lead</td> <td style="width: 30%; text-align: center;">< 750</td> <td style="width: 30%;">Cadmium</td> <td style="width: 10%; text-align: center;">< 7.5</td> </tr> <tr> <td>Chromium</td> <td style="text-align: center;">< 500</td> <td>Copper</td> <td style="text-align: center;">< 500</td> </tr> <tr> <td>Nickel</td> <td style="text-align: center;">< 250</td> <td>Mercury</td> <td style="text-align: center;">< 5.0</td> </tr> <tr> <td>Zinc</td> <td style="text-align: center;">< 2000</td> <td></td> <td></td> </tr> </table>	Lead	< 750	Cadmium	< 7.5	Chromium	< 500	Copper	< 500	Nickel	< 250	Mercury	< 5.0	Zinc	< 2000		
Lead	< 750	Cadmium	< 7.5														
Chromium	< 500	Copper	< 500														
Nickel	< 250	Mercury	< 5.0														
Zinc	< 2000																
Parameter for declaration to utilizer (here: landfill)	Immature compost; only to be used on landfills as intermediate cover and as rehabilitation material; not to be used as top layer Producer Grain size and bulk density (volume weight) Net weight or volume Information for a suitable application (method and application rate)																

¹MPN: Most probable number

² Glass, metal, plastics

³Guide values: The heavy meal limit values are adhered to if the mean value of the last four analyses lies under the limit value and no analysis surpasses the limit value by >25%. This guide excludes the cadmium test.

dm = dry matter; fm= fresh matter; om = organic matter;

6 Utilization of compost grade A and grade B

Nutrients

Application rates, given for one year, shall specify that the amount of compost spreaded per year should not exceed the following limits:

- 17g/m² total nitrogen
- 6g/m² phosphate
- 12g/m² potassium oxide

In addition to those limits the following figures and comments presented in table 5 and 6 should be used as an orientation for the specific use of compost from organic waste. Table 5 refers to subtropical climat as it can be found along the coastline of Lebanon, while the values presented in table 6 are to be applied for agricultural land in irrigated arid zones with a high rate of mineralization.

Table 5: Recommended use for compost from organic waste (coastal zones)

Area of use	Vegetation	Purpose	Amount ¹ kg FS/m ²	Frequ- ency	Method
Horti-culture	Vegetable beds	Supply of humus	3 – 5	Annual	Work in superficially
	Vegetables with high nutrient needs	Fertilizing, soil improvement, supply of humus	4 – 6	Annual	Work in superficially
	Vegetables with medium nutrient needs	Fertilizing, soil improvement, supply of humus	2 – 4	Annual	Work in superficially
	Vegetables with low nutrient needs	Fertilizing, soil improvement, supply of humus	1 – 2	Annual	Work in superficially
	Trees/bushes	New planting	2 – 8	Once	Mix 3 parts soil and 1 part compost and add to hole for plant
	Sandy, heavy, shallow and contaminated sites	Soil improvement	10 – 15	Every 2 years	Work into loose topsoil
Fruit growing	Stone and soft fruit	Supply of humus, fertilizing	3 – 5	Annual	Spread on surface
Viticulture	Fertilizing of existing vineyard	Supply of humus	3 – 6	Every 2 years	Spread superficially
	New planting	Supply of humus	5 – 10	Once	Work into loose topsoil
Tree nursery	Nutrient poor soil	Soil improvement	8 – 10	Once	Work into loose topsoil
	Open land cultivation	Supply of humus, fertilizing	3 – 4	Every 2 years	Spread or work in superficially
	Container cultivation	Container substrate	25 – 50 vol. %	Once	As component for mixing with soil
Agriculture	Crop growing, generally	Soil improvement	Up to 15	Once	Work into loose topsoil
	Crop growing, generally	Supply of humus	4 – 8	Every 3 years	Work into loose topsoil
	Root crops, field vegetables	Supply of humus	3 – 5	Every 2 years	Work in superficially
	Root crops, field vegetables	Fertilizing, supply of humus, soil improvement	3 – 6	Annually	Work in superficially
	Cereals	Fertilizing, supply of humus, soil improvement	2 – 4	Every 2 years	Work in superficially

Compost – Ordinance

Area of use	Vegetation	Purpose	Amount ¹ kg FS/m ²	Frequ- ency	Method
	Pasture	Fertilizing, supply of humus, soil improvement	3 – 6	Every 2 years	Work in superficially

¹: The amounts refer to fresh compost, with a dry substance content of 60 %. The formula for t/ha is achieved by multiplying by the factor 10 (e.g.: 4 kg/m² = 40 t/ha). The formula for with a volume weight of e.g. 700 kg/m³ is achieved with the reciprocal value (e.g. 1/0.7= around 1.42). Example: 4 kg/m² = 5.7 l/m² = 57 m³/ha.

²:FS = fresh substance

Table 6: Recommended use for compost from organic waste (interior parts of Lebanon)

Plant culture	Amount ¹ (kg FS/m ²)
Root and tuberous vegetables	6 – 25
Cereals	10
Fodder plant	20
Pasture	3 – 5
Viticulture	8 – 30
Fruit growing	20 – 100
Vegetable growing	20 – 50
Tree nursery	Up to 30

¹: (see table 5)

7 Monitoring procedure

Bill of Delivery

In order to document a properly executed process, the compost plant has to give a bill of delivery to the person responsible for application to the soil and to send every 3 months a report on the utilization of compost to the following authorities:

- Ministry of Environment,
- Ministry of Agriculture,
- Ministry of Health,
- CDR.

The report should outline the absolute amounts of utilized compost, the specific type of agricultural or other utilization and the specific amount of utilized compost per customer.

Frequency of investigations

The frequency of the investigations during the first year of a composting plant and the subsequent on-going monitoring procedure depends on the plant input capacity (see Table 7). At least four inspections should be carried out during the first year of operation – one for every season – to assess the essential quality characteristics over the course of the year. At least one sample should be taken every three months.

Table 7: Frequency of investigations within the monitoring procedure (per year)

Plant input (tons/year)	Number of analysis during first year	Number of analysis after first year
Up to 2,000	4	4 analyses/year
2,001 to 5,000	5	4 analyses/year
5,001 to 10,000	10	8 analyses/year
More than 10,001	12	12 analyses/year

External monitoring

Within the framework of the quality monitoring procedure, sample-taking and analyses must be carried out by external monitoring laboratories that should be licensed by the Ministry of Environment. Licensing of the independent outside monitors is subject to verifying certain preconditions of the recognized laboratories (for example taking part in an interlaboratory ring test).

In-house analysis

The compost producer also does its own analyses. He is obliged to verify the safe hygiene status of the decomposition or the digestion process by documenting accurately the temperatures achieved during the first intense decomposition phase. Within the framework of the monitoring procedures carried out by external laboratories the correct measuring and documentation of those temperature protocols is examined in irregular intervals but at least once a month. The laboratory should produce a quarterly report on the results of their examinations. This report should be presented to the Ministry of Environment at the latest in the third week of the following month.

Further in-house analyses can be carried out on a voluntary basis. The determination of characteristics important for the application of compost and digestion residues which can be ascertained using simple techniques, such as water content, weight by volume, salt content, pH value, plant compatibility and extraneous matter in the end product, is recommended.

8 Test methods

In the following the procedures to be applied can only be outlined in a few sentences.

Sampling procedure

In order to produce a representative sample 12 single samples (5 – 10l per sample) should be taken at 12 different spots of the compost heap to be examined. After thorough mixing of those samples the material is then reduced by dividing it repeatedly into quarters until the remaining representative sample has a volume of around 4 l. This sample, it is then again divided into 4 separate samples. One sample is used for the determination of the water content. The other samples are dried in an oven at a temperature of 105°C until no further loss of water is detectable. They are then filled into airtight plastic bottles and conserved at a temperature level of a few degrees Celsius.

Determination of water content

The water content is determined according to the international standard ISO 11465 by drying 2 samples each having a quantity of around 100 g under an infrared-light and measuring permanently the weight. As soon as there is no further loss in weight the drying-process is stopped. The weight determined before and after the drying procedure is then used for the determination of the water content.

Determination of man-made impurities

The content of man-made impurities is determined by sieving a dried sample of around 200 g at a screen size of 2 mm. Then man-made impurities such as glass, metal and plastic are separately sorted by using tweezers. The plastic fraction is then weighed apart from the other fractions.

Determination of stones

The content of stones is determined by sieving the dried sample of around 200 g at screen size of 5 mm. Stones are then sorted by using tweezers.

Determination of maturity grade

The maturity of compost is determined by carrying out the DEWAR self-heating test. This test uses a standardized steel container that holds approximately 1 litre of compost. As with any test, the compost sample moisture content may need to be adjusted prior to incubation. A maximum-minimum thermometer is then inserted to about 5 cm of the bottom of the container which is left to stand at room temperature (20 °C) for a period of at least 5 days and no more than 10. The highest temperature of the compost sample is recorded daily. The results are calculated as maximum temperature rise during the test period. The maturity is then expressed as number ranging between I (fresh compost) and V (mature compost).

Determination of plant compatibility

In order to determine the plant compatibility of compost the germination of barley seeds in a mixture of compost and standard soil must be greater than the germination rate of barley in a control sample (standardized soil) and the growth rate of plants grown in a mixture of compost and soil must not differ more than 50 percent in comparison with the control sample.

Determination of organic matter

In order to determine the content in organic matter three samples of dried compost with 10 g /each are filled into temperature resistant ceramic vessels. The vessels are then set into a laboratory oven and exposed to a temperature of 750°C. After 3 hours all the organic material is burnt up and the amount of organic matter can be then calculated by weighing the totally mineralized residue in the vessels.

Determination of heavy metals

The determination of the heavy metal content is determined according to the international standard ISO 11047.

Determination of nutrients, pH and salt content

The determination of nutrient content is carried out according to test methods 86/278/EEC.

Annex: Suitable organic waste and mineral additives

Name of waste type	Key according to EWC	Examples
I Waste with a high percentage of organic material		
Waste from plant tissue	02 01 03	<ul style="list-style-type: none"> • Wheat dust • Fodder waste
Animal faeces, urine and dung (including spoilt straw)	02 01 06	<ul style="list-style-type: none"> • Chicken droppings • Liquid manure from cows • Dung • Used straw
Forestry waste	02 01 07	<ul style="list-style-type: none"> • Bark • Wood, wood chippings
Waste unsuitable for consumption or processing (Food processing)	02 03 04	<ul style="list-style-type: none"> • Spoilt foodstuff • Residues from preserving factories • Residue from oil seeds
Undefined waste	02 03 99	<ul style="list-style-type: none"> • Sludge from consumable oil production • Residues from spices • Residue from potatoe, corn or other starch production
Materials unsuitable for consumption	02 05 01	<ul style="list-style-type: none"> • Spoilt foodstuff
Undefined waste	02 05 99	<ul style="list-style-type: none"> • Whey
Materials unsuitable for consumption or processing	02 06 01	<ul style="list-style-type: none"> • Spoilt foodstuff • Dough remains
Waste from washing, cleaning of mechanical grinding of raw material	02 07 01	<ul style="list-style-type: none"> • Used filters and adsorption masses, active and siliceous earth
Waste from distilling spirits	02 07 02	<ul style="list-style-type: none"> • Fruit, wheat and potato pulp • Sludge from distillery
Undefined waste	02 07 99	<ul style="list-style-type: none"> • Malt • Hops • Liquid residue and sludge from breweries • Sludge from wine making • Wine remains • Yeast and similar residues
Bark and cork waste	03 01 01 03 03 01	<ul style="list-style-type: none"> • Bark
Sawdust	03 01 02	<ul style="list-style-type: none"> • Sawdust and wood shavings
Shaving, chippings, ends of planks, pressed wood and veneer	03 01 03	<ul style="list-style-type: none"> • Sawdust and wood shavings
Waste from untreated textile fibers and other natural fibers, primarily from plant origin	04 02 01	<ul style="list-style-type: none"> • Cellulose fiber waste • Plant fiber waste
Waste from untreated textile fibers, primarily of animal origin	04 02 02	<ul style="list-style-type: none"> • Wool waste
Undefined waste	07 05 99	<ul style="list-style-type: none"> • Marc from medicinal plants • Myceliums • Remains from fungus remains
Solid waste from first filtration and sievings	19 09 01	<ul style="list-style-type: none"> • Fishing, mowing and raking remains • Protein waste
Paper and cardboard	20 01 01	<ul style="list-style-type: none"> • Used paper
Organic, compostable kitchen waste, fractions collected separately	20 01 08	<ul style="list-style-type: none"> • Kitchen and canteen waste
Compostable waste	20 02 01	<ul style="list-style-type: none"> • Garden and park waste • waste from landscaping and forest clearances • plant remains
Mixed settlement waste	20 03 01	<ul style="list-style-type: none"> • household waste

Compost – Ordinance

Name of waste type	Key according to EWC	Examples
Market waste	20 03 01	<ul style="list-style-type: none"> • source separated biodegradable fraction suitable for utilization
II Mineral additives		
Calcium carbonate sludge which does not conform to specifications	02 04 02	<ul style="list-style-type: none"> • Carbonisation sludge
Sludge from decarbonisation	19 09 03	<ul style="list-style-type: none"> • Sludge from water softening
(no waste)	---	<ul style="list-style-type: none"> • Lime • Bentonite • Rock dust • Sand • Clay