English summary of SPCR 120 – Certification rules for digestate from biowaste by the quality assurance system of Swedish Waste Management (December 2007)

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This is **not** a complete translation of SPCR 120, but should be seen as an overview of the SPCR 120 document

Substrates for certificated digestate should be clean, source separated and easily biodegradable (of the types shown in Tab.1). Only approved additives and process chemicals may be used (see Tab. 2 and Tab. 3). Before digestate from a plant is allowed to be marked with the quality label it has to pass a qualification year. The qualification year starts when an un-objective authority takes its first sample at the plant. To pass the qualification year both the plants own samples (for sample frequency see Tab. 5) the samples taken by the authority have to be passed (for analysis see Tab. 6). All documentation has to be in order (e.g. process parameters that have to be documented, see Tab. 4). The qualification year starts over if samples do not pass the test and if no satisfying explanation can be found and the problem cannot be solved. After a passed qualification year digestate produced during the qualification year can be labeled, as well as new digestate produced on the plant. During the qualification year there is also a hygenisation control which is repeated every 5 year (depending on the utilization of the digestate). The certificate is valid for 5 years.

The labeled product may not contain higher metal concentrations than specified (see Tab. 7) and the labeled digestate should include declaration of content (see Tab.8), guide of how to use it, testing report and a process description. Depending on types of substrates and utilization of the digestate hygenisation control and bacteriological testing of the digestate have to be done and passed (for sample frequency see Tab. 5). Visible contaminants (> 2mm) may not be more than 0.5 weight% of DM. For solid digestate there may not be more than 2 germinative seeds / liter and the organic substance must be more than 20%. The un-objective authority visits the plant 1-2 times per year (depending on plant size). Samples are taken and the plant's own control is checked.

Tab.1. Substrates for certificated digestate.

Source	Example
Parks, gardens, etc.	Leafs, grass, branches, fruit, flowers, plants and parts of plants.
Greenhouses, etc.	Tops, soil, peat products.
Households, kitchens, restaurants[1]	Fruit and vegetables remainders, coffee and tea remainders, remainders of food, egg shells, cardboard, paper, paper bags, biodegradable bags, plants och flower soil. Bags for source separated house hold waste should fulfill EN 13432 from 1/1 2005.
Food related shops[1]	Fruits, vegetables, potatoes, diary waste, paper towels, paper napkins, bread, meat, meat parts, charcuterie parts, flowers, plants, soil and peat. Food containing additives allowed for food production are allowed in the substrates.

Food industry[1]	Remainders from food industry that contains additives allowed I food production are allowed as substrates.
Agriculture[1]	Manure, straw, by-products from harvesting, ensilage, energy crops.
Forrest	Bark, wood chips, fiber sludge from the cellulosic industry.
Animal by-products, category 2	Only manure, content stomach and intestine separated from stomach and intestine, milk and raw milk.
Animal by-products, category 3	See ABF

[1]If the substrate contains animal by-products regulation for this should be followed.

Additives and process chemicals

Tab2. Allowed additives

Allowed additives according to SPCR 120
Organic[1] or mineral fertilizers
Lime

[1]Animal by-products regulation for this should be followed

Tab.3. Allowed process chemicals.

Allowed process chemicals according to SPCR 120
Iron chloride
Iron oxide
Bentonite
KMB1
Diatomaceous earth

Tab.4. Process control. The following parameters should be measured and documented:

Types and amounts of substrates, additives and process chemicals
Temperature and pH in the reactor
Time between feeding of substrate
Hydraulic retention time
Time and temperature in the hygenisation tank
Organic loading rate
Volumetric loading
Actions taken to avoid re-contamination
Process disturbances

Tab.5. Lowest allowed frequency of sample taking and analysis. Sample taking should be spread over the year.

	Samples per year taken by plant personnel			
Amount of received	Qualification year		After qualification year	
	Samples except	Bacterial sample	Samples except	Bacterial sample

substrate for biological treatment /ton/year)	bacterial sample		bacterial sample	
<5000	2	4	1	4
from 5000	4	4	2	4
from 10 000	8	4	4	4

SPCR 120 also regulates how samples should be taken.

Tab.6. Methods for analyses. Equal methods may be used if the same or better measuring security can be reached.

Analyses parameter	**Method**
Metal content (Pb, Cd, Cu, Cr, Hg, Ni, Zn)	SS-EN 13346mod/SS11885-1
Visible contaminates	BGKII:10 1998:4
Germinative seeds and plant parts (only for solid digestate)	BGKII:9 1998:4
Dry matter	SS 12880
VS	SS-EN 12879-1
Total N	SS02801-1/SS-ISO 11261
Total P	SS-EN13346/mod SS11885-1
Total K	SS-EN13346/mod SS11885-1
$N\text{-}NH_4$	St.Meth.16417A+D
Mg	SS-EN13346/modSS11885-1
S	SS-EN13346/modSS11885-1
Ca	SS-EN13346/modSS11885-1
pH	SS-EN12176
Microbial parameters[1]	
Esherichia coli	NMKL no 125, 2005, version 4
Enterococaceae	NMKL no 68, 2004, version 4
Salmonella	NMKL no 71, 1999, version 5

[1] These parameters should be measured by the NMKL methods stated in the table.

Tab. 7. Maximal content of metals in the digestate

Metal	**Maximal amount (mg/kg DM)**
Pb	100
Cd	1
Cu	600
Cr	100
Hg	1
Ni	50
Zn	800

Tab. 8. Declaration of content

Paramter	**Unit**

Tot. N	kg/ton **and** kg/m^3
NH_4-N	kg/ton **and** kg/m^3
Tot. P	kg/ton **and** kg/m^3
Tot. K	kg/ton **and** kg/m^3
Mg	kg/ton **and** kg/m^3
S	kg/ton **and** kg/m^3
Ca	kg/ton **and** kg/m^3
Organic substance	% of DM
pH	-
DM	Weight percent