



European Quality Assurance for Compost is launched

Quality assurance schemes for compost and digestion products established themselves in the last 20 years successfully in various European Member States as a key element for the sustainable recycling of organic residues. The market and demand for quality composts increased on account of the beneficial properties of organic fertilisers and soil improver, the need for organic matter and continuously increasing prices for mineral fertilisers. This development and also the intention by the European Commission to define an End-of-Waste standard for compost led to a demand for a European uniform quality standard for compost plants and composted products. The European Compost Network ECN met this challenge and developed a concept for a European quality assurance scheme within its working group “Standardisation and Quality Assurance”. This project includes a quality standard for compost like it is necessary for the free cross-border movement of goods in the EU.

Accompanied by long-lasting discussions about an EU-wide legislation for biowaste which lately ended in a Communication of the EU Commission about biowaste [1] and the intention to regulate “the point when compost ceases to be waste” in the Waste Frame Directive [2] ECN worked since 2004 on a scheme for a Europe-wide quality assurance for compost (ECN-QAS) based on the existing national quality assurance systems (QS) and experiences in the member organisations.

Targets of the European concept

The target of the set-up of an EU-wide quality assurance scheme for compost is to define a Europe-wide standard for quality management and quality compost. The pre-condition for a consistent compost quality is to harmonise the parameter of the treatment process and to check them regularly by an independent control. The target of ECN-QAS is to set a common basis for the existing quality schemes in Europe and to support Member States defining quality standards and developing a quality assurance scheme for composts.

Elements of the ECN-QAS

The ECN-QAS represents an independent quality assurance scheme and includes fundamental requirements for national quality assurance organisations (NQAO) for compost and basic requirements for a European compost standard in the first instance. Besides the positive list for suitable

input materials and requirements for process quality the scheme also includes quality criteria for compost and analysing methods.

The European quality assurance includes:

- The conformity assessment of quality assurance schemes in European countries including the awarding of the ECN-QAS Conformity Label.
- Regular assessment of the production in the plants by the national quality assurance organisation (NQAQO) by means of process requirements.
- Regular sample taking and analysis of the final product considering relevant quality parameters from independent, acknowledged labs and additionally the evaluation of the results by the national quality assurance organisation (NQAQO).
- Documentation by the national quality assurance organisation (NQAQO) with information about the quality properties of the product, legal requirements, the necessary compost declaration and information about use and application rates according to good practice.
- Awarding of the ECN-QAS Quality Label to composting plants by the national quality assurance organisations (NQAQO).

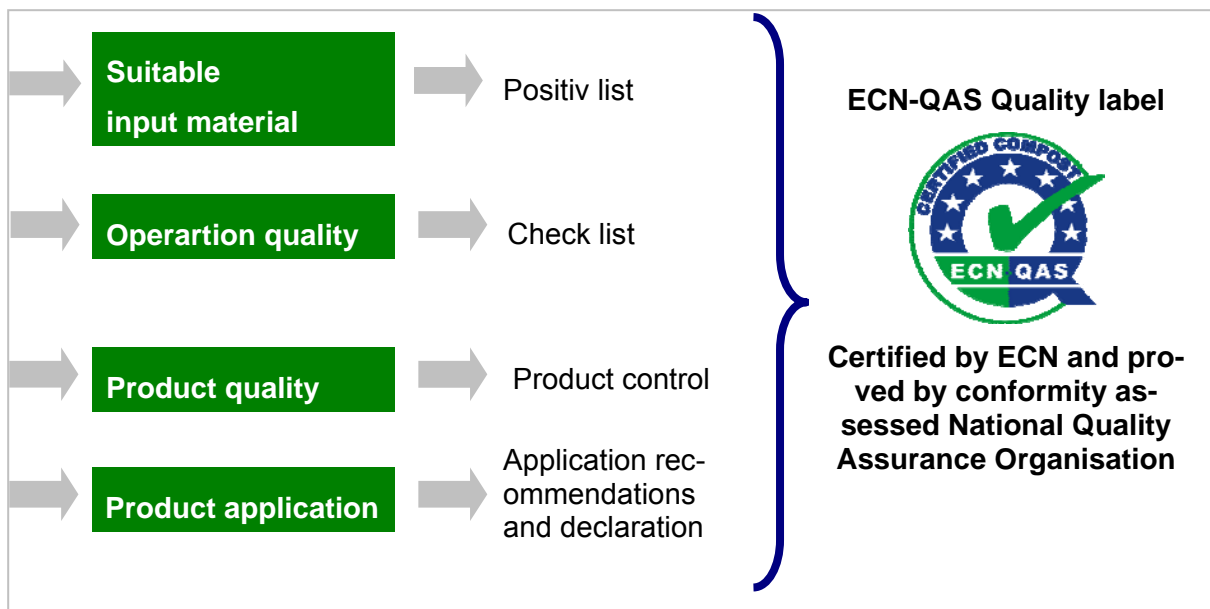


Figure 1: Concept of the European Quality Assurance (ECN-QAS) for compost

Quality requirements for compost

Process requirements for the production of composts are laid down in the ECN-QAS. These include the use of input materials defined in a positive list. The waste numbers and denominations of the European Waste Catalogue have been adopted and if necessary supplemented by explanations and specific requirements. As a basic principle only separately collected organic wastes are accepted.

Requirements on the process management and its documentation are defined too. This includes minimum guidelines about the adherence of process parameters to guarantee a sufficient sanitisation of the product. By means of a check list the operation quality of the plant is controlled and assessed through the NQAQO at the plant inspection visit every two years.

Compost quality

Quality composts have a widely homogenous composition based on defined input materials and are highly qualified humus products which are placed on the market as soil improvers and organic fertilisers. They are used to preserve the content of organic matter in the soil and thus influence bio-diversity and soil fertility in a positive way. The fertilising efficiency of compost can be characterised via their nutrient content, whereby longer time periods must be calculated (crop rotations) compared to mineral fertilisers. Further criteria relevant for various compost applications, especially with the use as mixing components in growing media, are among others the plant compatibility, salt content and biological activity of the material.

Table 1: Quality criteria of the European Quality Assurance Scheme for the characterising of quality compost

	Parameter	Assessment
Soil improvement	Organic matter	≥ 15 %, declaration
	Alcaline effective materials (CaO)	Declaration
Fertilisation	Nutrients (N; P, K, Mg)	Declaration
Biological Parameter	Biological activity	Decomposition degree/oxygen consumption
	Plant compatibility	Benchmark accord. to the test on germinable plants, declaration
Material properties	Water content	Benchmark for peak content, declaration
	Bulk density/volume weight	Declaration
	Grain size	Declaration
	pH-value	Declaration
	Electric conductivity	Declaration

Aspects the protection of the environment and consumers

Important parameters for the market of recycling products are the not desired ingredients which in quality assured quality composts can be reduced to a minimum through separate collection of bio-wastes together with an optimised process management which are harmless and environmentally safe for the individual application. Hereby to be named is the content of heavy metals and impurities like plastics, metals and glass, germinable seeds and plant parts

In order to achieve the quality label limit values must be kept for these parameters. They are based on a research [3] which has been contracted by the Commission's DG Environment in the framework of the development of the European Soil Protection Strategy. The formation of these limit values was the result on the comparing assessment of the present compost qualities in Europe with the pre-condition that separate collection of biowaste is established in the countries. In order to comply with the precautionary requirements of the environment and consumer protection the long-term accumulation of harmful matter in the soil has been considered when identifying the limit value levels.

Table 2: Precautionary requirements on the protection of environment and consumers

	Parameter	Assessment
Hygienic aspects	Salmonellae	0 in 25 g DM
Undesired ingredients	Impurities (glass, metals, plastics)	≤ 0.5 % DM
	Germinable seeds and sprouting plant parts	≤ 2 per litre
Harmful matter Precautional limit values ¹⁾	Heavy metals	mg / kg DM
	Lead (Pb)	130
	Cadmium (Cd)	1.3
	Chromium (Cr)	60
	Copper (Cu) ²⁾	200 ³⁾
	Nickel (Ni)	40
	Mercury (Hg)	0.45
Zinc (Zn) ²⁾	600 ³⁾	

¹⁾ Amlinger, F. et al. 2004: Heavy metals and organic compounds in waste used as organic fertilisers.

²⁾ Copper and zinc are classified as essential nutrients. Values over 110 mg Cu kg⁻¹ DM and over 400 mg Zn kg⁻¹ DM must be declared.

³⁾ These values are classified as benchmarks.

Quality Monitoring

Quality monitoring of composts is realised through regular sample taking and analysing by independent labs which are recognised by the national quality assurance organisation. A pre-condition for such approval is a regular participation in ring tests.

The basis for the analysis of soil improvers and growing media are European Standards (EN). The analysing methods will be actualised correspondingly to the development in the European Standardisation of analysing methods. However, national analysing methods are also accepted in the ECN-QAS, in so far as they are legally requested.

Certification

The national quality assurance organisation approved by the ECN-QAS is responsible for the monitoring of composting plants and the product quality. The conformity check of the NQAO is executed in regular terms by the ECN Quality Manager. The approval is given by the Quality Committee of the ECN. In case of a successful participation in the ECN-QAS the national quality assurance organisation will award the ECN-QAS conformity label.



Figure 3: The ECN Conformity Label for national quality assurance organisations

Composting plants can be awarded with the ECN Quality Label by the national quality assurance organisation if they can prove the compliance with the ECN quality standards. The report of the analysis results will be sent to the Quality Committee of the ECN for monitoring and documentation.

This system doesn't replace the autonomy of national quality labels and certifications. However, it makes clear that a uniform product quality in the European context is given which simplifies compost marketing over the country borders.



Figure 4: ECN Quality Label for compost

Forecast

The Commission started already to work on product standards for composts under the Waste Framework Directive [1] [2]. The Member States are asked to actively participate in the process. In the report "End of Waste Criteria" [4] published by the European Commission in 2008 a possible concept for end of waste criteria for composts - as proposed by ECN - was included and it was pointed out that the monitoring of a product standard for composts should be connected to a uniform, independent system of quality assurance. This would definitely contribute to legal security and deregulation of national control measures.

More information

The Quality Manual of ECN-QAS including the concept of the European Quality Assurance with all requirements is completed now. After a successful practice test following the conformity check of the ARGE Kompost & Biogas Austria the publication of this Quality Manual has taken place. The ECN-QAS Quality Manual can be ordered by ECN. Questions and applications to participate in the ECN-QAS will be kindly accepted by the ECN.

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Sources:

[1] EU KOM (2010): Communication from the Commission to the Council and the European Parliament on the future steps in bio-waste management in the European Union. COM (2010)235 final; <http://ec.europa.eu/environment/waste/compost/developments.htm>

[2] 2008/98/EC: Directive 2008/98/EG of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives. L 312:3; <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32008L0098:EN:NOT>

[3] Amlinger, F., Favoino, E., Pollak, M., Centemero M. and V. Caimi (2004): Heavy metals and organic compounds from wastes used as organic fertilisers. Study on behalf of the EU Commission DG ENV. A.2, <http://europa.eu.int/comm/environment/waste/compost/index.htm>

[4] EU KOM (2008): End of Waste Criteria. Final Report of the Institute for Prospective Technological Studies (IPTS) / Joint Research Centre (JRC) / European Commission. <http://susproc.jrc.ec.europa.eu/documents/Endofwastecriteriafinal.pdf>