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REAGENTLESS, ENERGETIC METHOD AND CORRESPONDING SYSTEM FOR PRODUCING HUMIN-CONTAINING SUSPENSIONS

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The aim of the invention is to produce a reagentless, energetic method and a corresponding system for producing a highly-biologically active, humin-containing suspension based on digested sludge, peat and/or organic waste material, preferably chicken droppings, as a basis for producing organic-mineral fertilisers, and/or basal fertilizers for ecological and traditional agriculture. The method for producing humin- containing suspensions, for example, from peat (1) and/or digested sludge (1), that have increased biological effectiveness is based on the use of magnetic eddies, activation by implosions, including ultrasound gas beam dispersion of the materials (1) in an ultrasound cavitation reactor (10).; The main components of the system are a mixing container (5) having special inlets (2, 4) for the materials (1) which are to be processed with the addition of water (3), and an adjoining circuit consisting of a container (9), an acoustic reactor (10), an adjustable Laval nozzle (7), a magnetic tube arrangement (11) and an inlet tube (13) returning to the container (9).

DESCRIPTION DE102012100315

[0001] Reagensloses, energy process for producing a high-huminhaltigen biologically active suspension based on digested sludge, peat and organic waste, preferably chicken manure, as a basis for making fertilizer or organischmineralischer

Basic fertilizer for organic and traditional agriculture to conservation and restoration of soil quality and increase the yield and purification of waste water.

[0002] Industrial production techniques huminhaltiger products which are known so far are based on the alkaline extraction of humic substances of peat moss, especially, soft brown coal, lignin, less sludge, which are based on heating and subsequent purification.

[0003] humic preparations that are produced by this technique enhalten salts of humic acids, the natural polyphenolic polymers with high polydispersity have with an irregular structure and a lack of adequate standards.

The dispersity of these products is much higher than the size of particles that can pass through the membrane system of the cell walls of plants, animals or humans.

[0004] The prior art known processes for the production of humus from natural humins concentrate is based on the hydration of the salts of humic acids contained therein with humic acids and mineral components of the Ausgangshumine Kaustobiolithen and the carbon chains.

[0005] A method according to patent RU 2125039 for the preparation of a concentrate of the humic substances includes the use of the electrolysis of an aqueous solution of salts of humic acids from natural alkaline reagent of humins in a region between the anode and the cathode, wherein the electrical potential at the anode is sufficient to carry out the extraction of the humic acid anions, but lower than the potential of the hydroxyl ions.

Thereby forming on the anode surface of a solid Huminkonzentrat which is continuously removed from the surface of the anode.

[0006] The process according to the Scriptures RU 2125039 has the following disadvantages:

- Electrolysis of the aqueous solution of salts of humic acids requires careful cleaning, which can be achieved by extraction of humic acids from natural alkaline reagents of minerals, carbon, organic and mineral particles of the starting material.

This is done by a long-term sedimentation process (several hours to several days), by filtration or by centrifugation.

- Some chemical methods of separation of the humic substances are not sufficiently effective, because thus the natural structure of the humic acids obtained by chemical extraction is destroyed. As a result, drastically reduces the performance, it complicates the process and increases the price of the desired product.

[0007] The object of the invention is to provide a reagensloses, energy process and an associated system for producing a high-biologically active huminhaltigen suspension based on digested sludge, peat and / or organic waste, preferably chicken manure, as a basis for making organic- mineral fertilizer or to provide basic fertilizer for organic and traditional agriculture.

[0008] The inventive technology enables clean production of huminhaltigen suspensions with high physiological activity under assurance of the native structure and use of a wide range of biologically active organic substances, such as amino acids, pectins, amino sugars, melanoids, humic substances, etc., vitamins such as B1 , B2, B3, B6, B12, C, D, and PP, and carotene, folic acid, hormones, chlorophyll and mineral substances, and elements such as Ca, K, P, Mg, Fe, Si, Mn, Cu, Zn, B , Mo, Co, Ni, Br, I, V, etc. in a balanced composition.

This makes it possible to increase crop yields to produce drinking water with feed additives for poultry and livestock, to ensure the restoration of the natural topsoil in environmental technology to perform reclamation of contaminated soils and dry conditions, as well as in municipal enterprise programs for wastewater treatment and disposal introduce sediments.

[0009] Advantageous embodiments of the method are set out in claims 2 to 4. According to claim 2 mineral additives can be added. This depends on the desired requirements for the final product. In the improvement of claim 3, the supply of raw materials and the addition of water to the mixing container is discontinuous. This discontinuous mode of operation depends on the size of the mixing vessel and, after the time length of the mixing process in the mixing vessel.

[0010] Advantageously, the arrangement of a pump on the tank for the final assembly of the suspension according to claim 5, This allows for as the suspension is pumped to a mixing tank for further processing and mixing of the suspension with charcoal granules or pellets aerated concrete.

[0011] Embodiments of the inventive system is shown in the drawings and will be described in more detail below. It shows the schematic arrangement of the plant parts in their order and in interaction. The plant for the production of biologically active huminhaltigen suspensions having a mixing container 5 having a motor with mixing means 6. On mixing vessel 5 at least a Laval nozzle 2 as the supply of raw materials 1 and at least a Laval nozzle 2 with an attached magnetic water activator 4 as feed for water 3 is arranged. The mixing vessel 5 has at least one output via an adjustable Laval nozzle 7 and then connected pipe with turbulent flow 8 to a 9 in the container, the final preparation of the suspension 9 is a sequence of the container 10 with parts of the system 12, 7 and 11 is arranged to enable the container 9 together with a circuit for the materials to be treated. The circuit is realized by an output tube to the container 9, starting an acoustic reactor 10, cooperates with the connected compressor 12 to continue to an adjustable Laval nozzle 7 to a magnetic tube assembly 11 and an inlet pipe 13 back to the container 9. On container 9 14 may be securely connected a pump.

[0012] In the reagenslosen energetic process for the preparation of biologically active huminhaltigen suspensions for example, organic-mineral fertilizer or basic fertilizer as base materials 1 sludge 1, 1 peat, litre 1, 1 chicken manure and / or organic waste 1 be a mixing vessel 5 via a Laval nozzle 2 with a forced mixing. Parallel to this, a water addition 3 in the mixing container 5 through a Laval nozzle 2 and a magnetic water reactor 4 where the water is activated by Magnetophoresis in the mixing container 5, a forced mixing is advantageously carried out by a motor with a mixing device 6. feeding the substances into the mixing container 5, and the mixing is carried out batchwise.

[0013] After completion of the mixing, the mixture in order to improve the mixture properties of an adjustable Laval nozzle 7 with an adjustable angle of the nozzle vane or a change in the nozzle shape and in the subsequent pipe 8 by means of a vortex Wirbelsr turbulent, cavitating flow and activation is implosions subjected to and fed the mixture to a container 9 for final production of an ultra-dispersion poly-suspension.

[0014] The mixture is then further processed by the container 9 via a pipe system by ejector in an ultrasonic gas jet reactor 10 or also called as an acoustic reactor 10. This reactor 10 operates together with a compressor 12 and enables ultrasonic gas-jet dispersion in an acoustic ultrasonic cavitation.

[0015] According to the acoustic reactor 10 the mixture of materials an adjustable Laval nozzle 7 with an attached magnet tube arrangement 11 for generating a laminar flow, followed by a feed pipe 13 is fed back to the container 9. This is a cyclic process is possible. This cycle process is now completed several times, preferably four to dreissigmall, and adapted to the desired size of the solid dispersion, for, 1 [micro] m to 60 [micro] m, is reached.

[0016] In accordance with the required specifications for the final product, mineral additives are deliberately added.

[0017] The Ultra-dispersion poly-suspension may be advantageously used with charcoal granules and / or aerated granules for preparation and use as specialty fertilizers.

List of Reference Numerals

1: Raw materials, peat, sludge, organic waste
2: Laval nozzle
3: addition of water
4: magnetic water reactor
5: mixing tank
6: Motor with mixing device
7: adjustable Laval nozzle
8: pipe with turbulent, cavitating flow
9: Container
10: acoustic reactor, ultrasonic gas-jet reactor
11: magnetic tube assembly
12: Compressor

QUOTES INCLUDED IN THE DESCRIPTION

[0018] This list of references cited by the applicant is automatically generated and is included solely to inform the reader.

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CLAIMS WO2013104359

Claims:

1. Reagensloses, energy process for the production of biologically active huminhaltigen suspensions for organic-mineral fertilizer or basic fertilizer, characterized by the following features:

- That the base materials (1) for the method of sludge (1), and turf (1) and / or organic waste (1) via a Laval nozzle (2) a mixing vessel (5) with a forced mixing are fed, in parallel, there is a water addition (3) into the mixing container (5) via a Laval nozzle (2) and a magnetic water reactor (4) in which the water is activated by Magnetophor ESIS

- That in the mixing container (5), a forced mixing advantageously by a motor with a mixing device (6) and after the completion of the mixture, the mixture in order to improve the mixture properties over an adjustable Laval nozzle (7) and in the subsequent pipe (8), a turbulent, cavitating flow is formed and the substance mixture is fed to a tank (9),

- That the mixture of materials from the container (9) by Ej ektorpr zip-in with a compressor (12) to an acoustic reactor (10) and is there subjected to a acoustic ultrasonic cavitation and then an adjustable Laval nozzle (7) with a connected solenoid tube assembly (11) for forming a laminar flow, followed by a feed pipe (13) is returned to the container (9) and then ice process a repeated Kr about the plant parts (10, 7, 11, 13 and 9) to produce a UltraDisper immersion - poly - suspension is operated wherein the number of the circuits on the desired final size of the solid particles depends.

2. A process for the preparation of biologically active huminhaltigen suspensions according to claim 1, characterized in that in addition to the raw materials listed in claim 1 mineral additives are added,

3. A process for the preparation of biologically active huminhaltigen suspensions according to any one of the preceding claims, characterized in that the supply of the raw materials (1) and the addition of water (3) to the mixing container (5) is carried out batchwise.

4. Plant for the production of biologically active huminhaltigen suspensions, characterized in that in a mixing vessel (5) with a motor having mixing means (6) in each case at least one Laval nozzle (2) as the feed of the raw materials (1) and at least one Laval nozzle (2) with an attached magnetic water activator (4) is arranged as feed for water (3) and the Mixing vessel (5) at least one output of a
turbulent flow (8) having adjustable Laval nozzle (7) and a connected pipe to a tank (9) and the container (9) has a series of system components (10 12, 7, 11) with the container (9) together form a cycle allow for the materials to be treated, wherein the one circuit via an output to an acoustic tube reactor (10) connected with a compressor (12), further adjustable Laval nozzle (7), a magnetic tube assembly (11) and an inlet pipe (13) is carried back to the reservoir (9)

5. Installation according to claim 4, characterized in that the container (9) comprises a pump (14) is connected.

6 Using the Ultra prepared by the inventive method - dispersion - Poly - suspension mixed with charcoal granules and / or aerated granules as fertilizers.