AGRO SOLAR SYSTEM
ENERGÍA PARA EL FUTURO

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Data sheet

Wet table powder

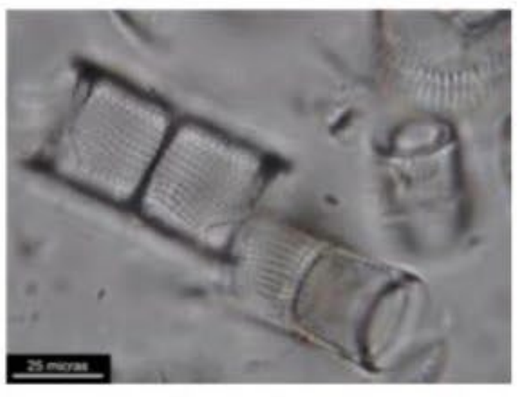
Active ingredient: Assimilable silicon in the form of silicon dioxide (SiO2) of origin
Organic.
Guaranteed composition: Silicon Dioxide (SiO2) 55.55% total. Toxicological category: non-toxic.

What are Diatoms? 1)
They are unicellular algae with photo-synthesizing autotrophic nutrition, with silica shells, belonging to the protista kingdom (eukaryota) similar to plants.

What is Diatomaceous Earth? 2)
They are deposits of fossilized algae, sedimented in seas and lakes from more than 40 million years ago and today they are exploited in open field mines.

Microscopic description of DTE

Remains of well-preserved opalized unicellular algae (frustules) of diatom structures, associated with clay, organic matter, limonite and crystalline quartz. Predominant species “Aulocoseira Granulata” 2. _ .



Aulacoseira frustules. Granulated 1. _
Microscopic view: Oil objective. 100X

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Mineralogical composition of DTE

Terrigens	**alchemists**
Quartz (SiO2): 1.0% Limonite (FeOOH): 1.8% Kaolinitic clay: Al2Si2O5(OH)4: 13.0% Illitic clay (K,H3O) (Al, Mg, Fe) 2(Si, Al)4O10[(OH)2,(H2O): 1.5%	Opaline phytoliths (SiO2+H2O): traces% Diatom frustules (SiO2+H2O): 81.2% Spicules: (SiO2+H2O): 1.5%

Texture: Organogenic.

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1) Currently more than 200 genera of diatoms are known, and it is estimated that there are about 100,000 extinct species.
2) The analyzes carried out indicate that the concentration of Si, and therefore the presence of phytoliths, is more influenced by the position
phylogenetic (genus, species) than by environmental factors such as availability of water and of the same Si, or temperature.

General characteristics – macroscopic description of DTE

Colour: light greyish beige
Distinctive characteristics: pulverized, amorphous and odorless material, unctuous to the touch and low apparent weight.
Weathering degree: low (null) PH at 10%: 8.87
Humidity: 2.60% pp
Moisture retention: 143.18%pp C.I.C: 32.73 meq/100grs
Apparent density: 0.3 – 0.5 gr/cm3
% absorption (H2O): 210
Maximum % humidity: 16.63%pp Melting point: 1400 ºc + / - 50ºc Combustibility: nil Thermal conductivity: nil Granulometry: < 38 microns Corrosivity: non-corrosive
Stability: very stable, chemically inert Solubility: not soluble in water

Macroscopic view: Natural state - Pulverized sample

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Presentation: DIATOMEAS EARTH - AGRICAFEOK S.A.S - TDDA.
Packed in 25 kg and 8 kg laminated polypropylene bags, 4 kg, 2 kg and 1.5 kg plastic container.

Properties of the ADDT 3.- 1.-
Amendment:

The assimilable Silicon, present in the "EARTH OF DIATOMEAS –
amorphous silicon dioxide (SiO2), works as filler, in three different ways:
1.1.- Increases the negative charges of the medium, facilitating the adsorption of metals and their exchange with the soil solution, helping to increase the cation exchange capacity (CEC) of the nutritional medium, which results in a greater availability of essential elements and molecules for the good development of the crop,
1.2.- Due to its antioxidant capacity, TDDA, increases the bioavailable or biologically active forms of metals and serves as a means of development for beneficial soil organisms, **1.3.-** In the presence of polyvalent metals and clays TDDA, improves the structure of soils , forming humate-metal-clay aggregates; In addition, it increases the water retention capacity and substantially increases the specific surface of the edaphic medium. TDDA increases the concentration of colloids, managing to attract the nutrients and minerals present in the soil, ensuring that the plant absorbs them, to improve its productivity. TDDA, due to its **65%** content of assimilable silicon dioxide, has a great effect as a protector of biotic and abiotic factors.

As a conditioner, it improves the physical and chemical conditions of agricultural soils; It is ideal to be used in general in places where the availability of nutrients is limited by negative factors such as fixation or blockage, immobilization, displacement, oxidation, dehydration, among others. TDDA promotes the development of beneficial microflora that contributes to the processes of solubilization of nutrients and the reduction of populations of microorganisms that cause damage to crops.

2.- Remineralizer
The concept of remineralization has to do with the ecological, economical and sustainable alternative, to return the soil to its natural fertility through the use of flour or rock powder, natural mineral substances such as TDDA (assimilable silicon), etc.
Silicon is taken up by plants as silicic acid3) (H_4SiO_4) and this is the form normally found “deficient in the soil”.
TDDA, Provides 55.55% p/p of SiO_2 (555.5 mg of SiO_2 * kg-1 of TDDA), equivalent to 25.95 % w/w of assimilable Si (259.5 mg of assimilable Silicon * kg-1 of SiO_2).
Regardless of the amount of Silicon existing in the soil (determinable by means of a specific soil analysis for said mineral); To remineralize a soil and bring it to a concentration considered "normal" of about 100 ppm of silicic acid, an average of 152 Kg *Ha -1 of TDDA would be required.

3.- Essentiality of Silicon in higher plants.1.-
Silicon constitutes between 0.1 and 10% of the dry weight of Superior plants:

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1) "Proactivity" is the essence of the biological approach. If it is understood how plants protect themselves and are supplied with the necessary components to maximize the process and minimize the need for chemical intervention. In this context, Agropuli Assimilable Silicon is an essential prerequisite for proactive pest and disease management and in obtaining higher food yields and should be an integral part of any good nutrition program.
In the Absence of Silicon: A considerable decrease in the incorporation of inorganic phosphate for ATP has been observed. Plant structures are weaker and their growth, development, viability and reproduction are abnormal. More susceptible to abiotic stress, such as metal toxicity. Easily invaded by pathogenic organisms, phytophagous insects.

Superior plants differ characteristically in their ability to absorb Silicon: Depending on their SiO2 content, they can be divided into three groups: 3.1.- Wetland grasses, such as rice or oil palm, "cola de horse" (Equisetum) and with 10 - 15%.
3.2.- Dryland grasses, such as sugar cane and most cereals, and a few dicotyledons such as squash, with 1 - 3%.
3.3.- Most of the dicotyledons, especially the legumes, with <0.5%. In general, monocots accumulate more silicon than dicots.

4.- Instructions for use: TDDA
4.1.- As Amendment: It is formulated as wettable powder; to sprinkle or and consequently, a previous dissolution of the product must be made, at 10% in water, and then added to the mixture.
You can, depending on the case, apply:
4.1.1.- Sprinkled directly on the surface of the soil manually, it can also be previously mixed with other amendments or with the base fertilizer,
4.1.2.- At the time of planting in the seeder - fertilizer or with a motorized fumigator and attachment for the application of powders. In this situation, the conditions of the wind and its overlap must be taken into account, before a possible drag of the product and its safety conditions (see product safety data sheet).
4.1.3.- In transplanting seedlings: alone, directly to the substrate in the bag and/or to the soil (plate area) or previously mixed with the base fertilization, compost, amendments, with the soil and/or in the background of the hole
4.1.4.- By means of fertigation, drench and sprinkler systems: dissolve the product previously (pre-mix), strain, dilute, shake and add the necessary amount of water until the recommended dose is achieved and an adequate distribution of the product in the area to be treated; discard any sediment that may exist before injecting into the system; then, let water run alone until the system is clean.
4.1.5.- Aerial and ground applications: they demand the same procedures and care indicated in the previous number for fertigation. Land applications should preferably be done with a jack, tractor sprayer with agitator mechanism and boom, stationary pump, motorized sprayer, since they put pressure on the application. With a conventional knapsack sprayer, periodic agitation is required in the mixing tanks, since the product settles.

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5.- Cultures and doses:

Commercial crops in general, pastures and forages, ornamental plants, lawns, gardens, etc.

5.1.- In short-cycle crops (semi-annual and vegetables) the total recommended dose is 24 kg•Ha-1 of TDDA: per Semester or per harvest 5).

5.2.- In annual, semi-permanent or permanent crops, the dose may vary according to the requirements of the fertilization and phytosanitary plans, at least
1 (one) application of 24 kg•Ha-1 of TDDA: per Semester.

5.3.-- Foliar: TDDA: pre-dilute and strain, to apply alone or mixed with insecticides, fungicides, liquid fertilizers, micronutrients, bio-inputs or other foliar products; complete the dilution until reaching 2% P/V (2.0 Kg per 100 liters of water) or in the same proportion, with respect to the solvent of the mixture5).

6.- Added Values of assimilable Silicon, present in the "EARTH OF DIATOMEAS –

- TDDA as amorphous silicon dioxide (SiO2).

6.1.- Insecticide Effect: the ingestion of TDDA produces tears and perforations in the oral apparatus, exoskeleton and internal organs of insects. Upon contact with TDDA, it absorbs the cuticular wax, which leads to the death of the insect, due to dehydration. These actions do not affect vertebrates and do not generate resistance in insects, the ICA regulation classifies it as a bio-input, and to be used as such, in this case, the product must be duly registered with the ICA.

6.2.- Natural protector of biotic and abiotic factors: TDDA can increase resistance to stress, increase photosynthesis and chlorophyll content, improve resistance to drought, help minimize frost damage, increase tolerance to salinity, improve soil fertility and reduce lodging.

6.4.- Immunizing Effect: Due to the accumulation of Si in the cell walls of plants (barrier effect) contributing to their protection against insects and disease pathogens in general.

6.5.- Impregnated in the seed: it provides protection, improves its viability and the percentage of germination.

7.- Storage and Transport of the product.

UN Classification: Not classified. Do not transport together with food products, clothing and fodder. The product must be transported in its original container in a cool, safe and ventilated place in accordance with current regulations for the transport of fertilizers.

8.-Product brand registration:

Brand: TDDA; File No.; Class: 1, Version 9; Status: pending.

5) The dose can be divided and applied at critical times according to the phenology of the crop. Normally 1 to 2 edaphic applications are required during the vegetative cycle with doses of 24 kg per ha of TDDA each or in foliar applications diluted in 400 liters of water. 3 to 4 applications are required during the vegetative cycle with doses of 8 kg per ha of TDDA each, diluted in 400 liters of water 6) The % of the dilution, refers to the same dose of the powdered product, but referred to a total volume of 1,200 lt*Ha-1 (to be divided into a certain number of applications).