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Manufactured by: KelpX (PTY) Ltd

Reg No: 2017/531270/07

Welbekend, 0056, Gauteng, South Africa

TDS – Technical Data Sheet

Ecklonia Maxima – Liquid Seaweed Extract KelpX

1. Origin

Freshly harvested *Ecklonia Maxima* is a natural, organic product. The raw material is *Ecklonia Maxima*, a recognized and value adding product in agriculture.

The use of KelpX products will provide positive returns to its users.

Attributes of freshly harvested *Ecklonia Maxima*

Climatic conditions and seasons influence the attributes of *Ecklonia Maxima*

Criteria:	%
Moisture	75 - 90
Dry material	10 -25
Dry material Analysis (105°C for 6 hours)	
Carbon	31 -37
Fibre	22 - 45
Alginates	15 - 22
Cellulose	7 – 23
Protein	9 – 12
Nitrogen	1.6 – 1.9
Fat	0.8 – 1.5

Ash	15 – 25
Phosphorus	0.18 – 0.3
Calcium	1.1 – 1.3
Magnesium	0.9 – 2
Sodium	2 – 3.5
Potassium	3 – 4
Other trace elements	Yes

2. Sourcing and Harvesting Practices

Ecklonia Maxima is harvested and supplied by government awarded and registered concession holders, who operate on the West Coast of South Africa. Sustainable harvesting practices are followed by harvesters, as it insures future income potential.

3. Standardization

Resultant phytological activity of extracts varies, these variances are caused by

- 1) Variations in the plant itself that is influenced by aspects like age, weathering, temperature, sunshine, wave action and the like.
- 2) Manufacturing process.
- 3) Additives that support phytological responses.

KelpX-5 is standardized to contain 375 micro gram IAA per Liter per batch. Thus, to be able to provide a standardized product with consistent IAA content and performance. The following processes, treatments and additives may be applicable while adhering to heavy metal limitations as specified for the EU:

4. Manufacturing processes:

There are eight main kelp processing procedures available, obviously each having their own benefits and drawbacks.

Acid treatment	Heat treatment
Alkaline treatment	High pressure swing treatment
Centrifugation	High shear disintegration
Freeze thaw treatment	Ultra-sonification

KelpX does not use a single process and we do not apply all of our processes to all material. We blend the product from several processes to release and include as much as possible of the whole kelp and all of its goodness.

The exact procedure is a pending patent and our Intellectual Property.

5. Data on active material

This is a natural plant concentrate and contains all the material present in the original kelp plant. It is standardized to enable a consistent performing product. It includes the following:

- Macro nutrients
- Micro nutrients
- Alginates
- Laminarin
- Fucoidans
- Auxins
- Cytokinin
- Phenols
- Jasmonates
- Hydrocarbons

Plus, a large range of other elements in minor quantities as shown in the

Certificate of Analysis

6. Composition of formulation

The composition is influenced by factors such as:

quality of the fresh kelp, age, season, prevailing weather and time of day.

The amount of kelp used, ranges between 10% and 80% of final volume and depends on the concentration in the product.

6.1 For pH adjustment, buffering and preservation

Mono Potassium Phosphate may be required	less than 1.0%
Potassium hydroxide may be required	less than 1.0%
Phosphoric acid may be required	less than 1.0%
Acetic acid may be required	less than 0.2%
Hydrogen peroxide may be required	less than 0.08%

6.2 The balance is water.

6.3 Final product Attributes: KelpX-5

Criteria	
pH	4 -6.8
Viscosity cP / mPa s	80 – 500 targeting 120
EC (mS at 10% dilution)	5 – 9
	%
Ecklonia Maxima	>50
Water	balance
Indole 3 Acetic Acid	>375 ug per Litre
Cytokinin	<10 ug per Litre
Dry material (dried at 105°C for 6 hours)	>10
Dry material analysis:	

Potassium	5 - 15
Phosphorus	0.5 - 2
Magnesium	0.5 - 2
Calcium	0.5 – 1.5
Sodium	1 – 3
Carbon	31 - 37
Alginates	5 – 20
Carbo hydrates	5 – 20
Protein or Amino acids	3 - 6
Nitrogen	<1
Other trace elements	Yes
Heavy metals	PPM

7. Physical and chemical properties of the formulated product

- 7.1.1 Color: Green
- 7.1.2 Physical status: Viscous Liquid
- 7.1.3 Odor: Sea odor
- 7.1.4 PH: 4 – 6.7
- 7.1.5 Inflammability: Not flammable,
- 7.1.6 Explosivity: Not explosive
- 7.1.7 Viscosity: Very Viscous
- 7.1.8 Corrosion: Not Corrosive
- 7.1.9 Density: 1.0 – 1.1 gram/ml
- 7.1.10 Solubility: soluble in water
- 7.1.11 Suspension: floatable in water
- 7.1.12 % of Foam persistence: unknown
- 7.1.13 Wet sieve test: Unknown, Filtered to 50 microns
- 7.1.14 Dry sieve test: Unknown, Filtered to 50 microns
- 7.1.15 Stability of the emulsion: unstable, agitate before use.
- 7.1.16 Flash point: Not applicable, not flammable.

7.7.17 Stability in storage: Stable for 1 year between 3°C and 35°C stored out of direct sun light.

Heat stability: Not above 35°C

Cold stability: Not Below 3°C

7.8 Method of analysis

Refer to **certificate of analysis**

8. Toxicology

The product is nontoxic.

Persons with sensitivity to sea alga will be sensitive to this product.

First Aid: Rinse with cold water.

8.1. Metabolism and method of elimination in plants

Unknown metabolism, water rinse will remove remnants.

8.2. Risk estimates for the consumer

No risk to consumer of products treated with this product.

8.3. Environmental

Not toxic to the environment, fish, bees, earthworms, birds.

8.4. Biological properties and parasites targeted

Unknown.

9. Targeted crops

All crops can benefit from the use of this product. Timing is important on some crops.

Please refer to individual crop data sheets.

If unsure, request information from your supplier or seek council from your agronomist.

9.1 List of crops (Non-comprehensive):

- Banana
- Blue berry
- Coriander
- Cucumber
- Cucurbits and leafy vegetables
- Lettuce
- Macadamia
- Maize
- Melon
- Olive tree
- Peas
- Potatoes
- Trees – permanent crops
- Rice
- Sugarcane
- Sunflower
- Table grapes
- Tea
- Tobacco
- Tomato
- Trees
- Vegetables
- Wheat
- Wine grapes

9.2. Mode of action

Unknown

9.3. Utilization and recommendation

General application rate is 0.4ml per liter of water at the beginning of growth stages.

For specifics please refer to individual crop application sheets.

9.4 Tolerances

Do your own small-scale trials before deviating from recommendations.

Consult the supplier or seek advice from your agronomist.

10. Use and recommendation

10.1 Mode of action

The product is applied as foliar spray or soil soak mixed with water.

The product consists of plant nutrients that were already absorbed by the kelp and is thus readily available for plants.

The plant absorbs the nutrients through its leaves and root where it comes in contact with the product.

10.2 Uses and recommendations

General application is recommended at a concentration of 2ml – 5ml per 10 Liter

11. Culture tolerances

The product is non-toxic to plants.

Please refer to “uses and recommendations” for best results.

12. Product compatibility

Compatible with most other agri-chemical products, including fungicides, herbicides and fertilizers. It is recommended to add this product first to the water application medium before any other products are added.

It is recommended to do a jar test first, before mixing in application tanks.

13. Safety precautions

Keep locked and away from children and non-authorized personnel

The product is non-toxic.

Individuals sensitive to algae or sea plants will be sensitive to the product.

Symptoms: Eye irritation, skin irritation, nausea.

Immediate first aid: rinse with cold water.

14. Storage and removal

The product must be stored between 3°C and 35°C out of direct sunlight.

Best results are obtained if the product is used within 1 year of date of manufacture.

15. Packaging material

Only UN approved new packaging are used. Normally this consists of containers made of LDPE and HDPE.

16. Specific points of concern in country specific climates

Extreme temperature: The product temperature must not be allowed to increase above 35°C. Should the product temperature exceed this limit it will hasten product degradation and increase the denaturization of the kelp extract.

17. Safety Measurements

Please see **MSDS**

18. CAS Number

9005-32-7 – Algenic Acid - unspecified