This information is presented in good faith but is not warranted as to accuracy of results. Also, freedom from patent infringement is not implied. This information is offered solely for your investigation, verification, and consideration.
Other hazards which do not result in classification:

No particular fire or explosion hazard.
By mechanical effect: No particular hazards.
By hydroscopic effect: No particular hazards.

US NFPA 704 (National Fire Protection Association) Hazard Rating System:

Health hazard: Rating 0; Normal Material
Flammability: Rating 0, Will Not Burn
Reactivity: Rating 0, Stable
Other Hazard Information: None

Results of PBT and vPvB assessment:

-PBT: Not applicable
-vPvB: Not applicable

SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

Common Chemical Name: Undaria Pinnatifida Cell Culture Extract

Generic name:

Chemical Family: Extract

Description: Mixture: consisting of the following components. This section describes all components of the mixture

<table>
<thead>
<tr>
<th>Substance</th>
<th>CAS Numbers</th>
<th>EC Numbers</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undaria Pinnatifida Cell Culture Extract</td>
<td>N/A</td>
<td>N/A</td>
<td>98.00%</td>
</tr>
<tr>
<td>Leuconostoc/Radish Root Ferment Filtrate</td>
<td>1686112-10-6 (or)</td>
<td>N/A (or)</td>
<td>2.00%</td>
</tr>
<tr>
<td></td>
<td>84775-94-0</td>
<td>283-918-6</td>
<td></td>
</tr>
</tbody>
</table>

Formula: Not applicable

SECTION 4. FIRST-AID MEASURES

General: In all cases of doubt, or when symptoms persist, seek medical attention.

Inhalation: Move to fresh air from exposure area. Get medical attention for any breathing difficulty.

Skin contact: Rinse with soap and water. Get medical advice if irritation develops.

Eye contact: Immediately rinse with plenty of water for at least 15 minutes, while keeping the eyes wide open. Consult with a physician.
Ingestion: Consult with a physician.
Protection of first-aiders: No special protection required.

SECTION 5. FIRE-FIGHTING MEASURES
Fire and explosion hazards: Not considered to be a fire and explosion hazard
Extinguishing media:
Suitable: Water, dry chemicals, foam and carbon dioxide
Not suitable: None known
Fire fighting: Move container from fire area if it can be done without risk.
Avoid inhalation of material or combustion by-products.
Stay upwind and keep out of low area
Protection for fire-fighters: Boots, gloves, goggles.

SECTION 6. ACCIDENTAL RELEASE MEASURES
Personal precautions: Avoid contact with eyes.
Personal Protective Equipment: Protective goggles
Environmental precautions: Prevent entry into sewers and waterways. Do not allow material to contaminate ground water system
Methods for cleaning up:
Recovery: Pick up free liquid for recycling or disposal. Residual liquid can be absorbed on an inert material.
Cleaning/Decontamination: Wash non-recoverable remainder with water.
Disposal: For disposal of residues refer to sections 8 & 13.

SECTION 7. HANDLING AND STORAGE
Handling
Technical measures: Labeling: Keep out of the reach of children.
Measures: For industrial use, only as directed.
Safe handling advice: Wash hands after use. Avoid storage near feed or food stuff.
Storage
Technical measures: Keep container closed.
Recommended Storage Conditions: Store in a cool, dry place. This material must be stored at room temperature (23 - 25°C). It should not be exposed to excessive heat or cold. Do not freeze.

Incompatible products: Avoid contact with strong oxidizers.
Refer to the detailed list of incompatible materials (Section 10 Stability/Reactivity)

Packaging:
Packaging materials: Product may be packaged in normal commercial packaging. Recommended - Polypropylene & High Density Polyethylene

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Precautionary statements: Ensure adequate ventilation

Control parameters

Occupational exposure Limits:

France: Not Determined
ACGIH: Not Determined
Korea: Not Determined
UK: Not Determined

Surveillance procedures: Not Determined
Engineering measures: Not Determined

Personal Protective Equipment:

Respiratory protection: Local exhaust
Hand protection: Protective gloves made of rubber or neoprene.
Eye protection: Safety glasses.
Collective emergency equipment: Eye fountain.
Skin and Body Protection: Suitable protective clothing
Hygiene measures: Handle in accordance with good industrial hygiene and safety practice.

Measures related to the Environment: No particular measures.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Clear to slightly hazy liquid – May darken over time
Color: Yellow to amber
Odor: Characteristic

pH (Direct): 5.0 – 7.0

Solids (1g-1hr-105°C): 24.0% Minimum
### Heavy Metals:
- Lead: < 10 ppm
- Arsenic: < 2 ppm
- Cadmium: < 1 ppm

### Microbial Content:
- Yeast & Mold: < 100 CFU/g
- Gram Negative Bacteria: 0 CFU/g

### Specific Gravity:
1.1

### Vapor density:
Not applicable

### Boiling Point:
100°C

### Freezing Point:
0°C

### Flash point:
> 200°F

Oxidizing properties:
Non oxidizing material according to EC criteria.

### Solubility:
- In water: Soluble
- In organic solvents: Not determined
- Log P: Not determined

### SECTION 10. STABILITY AND REACTIVITY

**Stability:**
Stable under ordinary conditions of use and storage up to one year then re-test to full product specifications to extend shelf life

**Hazardous reactions:**
None known

**Conditions to avoid:**
No dangerous reactions known under use of normal conditions. Avoid extreme heat.

**Materials to avoid:**
No dangerous reaction known with common products.

**Hazardous decomposition products:**
None known

### SECTION 11. TOXICOLOGICAL INFORMATION

**Ingestion:**
Not Determined

**Dermal:**
Non-Irritant (Dermal Irritection Model)

**Ocular:**
Non-Irritant (Ocular Irritection Model)

**Inhalation:**
Not Determined

**Acute toxicity data:**
EC50 (Acute Daphnia): 702.39 mg/L - Not harmful to aquatic organisms

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Sensitization: Non-Primary Sensitizer; Will not cause allergic contact dermatitis (In Chemico Skin Sensitization Direct Peptide Reactivity Assay & In Vitro Skin Sensitization ARE-Nrf2 Luciferase Test Method)

Repeated dose toxicity: No known effects
Subacute to chronic toxicity: Not Determined

Mutagenicity: Non-Mutagenic (OECD471/ISO10993.Part 3 – Genotoxicity: Bacterial Reverse Mutation Test)

Additional Toxicological Information: This product is not subject to classification according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version.

Specific effects:

Carcinogenicity: No known effects
Mutagenicity: No known effects
Reproductive toxicity: No known effects
Neuro-toxicity: No known effects

For more information: Does not present any particular risk on handling under normal conditions of good occupational hygiene practice.

This product has not been tested for the following:
-Primary cutaneous and corrosive irritation
-Acute oral toxicity

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity
Effects on the aquatic environment: Not Determined

Biodegradability:
Persistence: Readily Biodegradable (91.0% biodegradation after 28 days of testing)

Bioaccumulation:
Octanol / water partition coefficient: Not Determined

Mobility:
Precipitation:
Expected behavior of the product: Ultimate destination of the product: Soil & sediment.

Other Adverse Effects: None known
SECTION 13. DISPOSAL CONSIDERATIONS

Residues from product

Prohibition: Do not allow the product to be released into the Environment.
Destruction/Disposal: Dispose of in accordance with relevant local regulations

Contaminated packaging

Decontamination/cleaning: Cleaning is not required prior to disposal.
Destruction/Disposal:

Note: Take all necessary precautions when disposing of this product according to local regulations.

SECTION 14. TRANSPORT INFORMATION

UN Number: None
UN Shipping Name: None
Transport Hazard Class: Not classified as dangerous for transport

Land (rail/road): Material is not restrictive for land transport and is not regulated by ADR/RID
Sea: Material is not restrictive for sea transport and is not regulated by IMO/IMDG
Air: Material is not restrictive for land transport and is not regulated by ICA/IATA

Marine Pollutant: No

Transport/Additional Information: Not regulated for US DOT Transport in non-bulk containers
This material is not dangerous or hazardous

Special Precautions for User: None known

The above regulatory prescriptions are those valid on the date of publication of this sheet. However, given the possible evolution of transport regulations for hazardous materials and in the event of the MSDS in your possession dating back more than 12 months, it is advisable to check their validity with your sales office.

SECTION 15. REGULATORY INFORMATION

Labeling:
EC regulations: This product does not need to be labeled in accordance with EC Directives or respective national laws

Further regulations
United Kingdom: Handle in accordance with relevant British regulation: control of substance Hazardous to Health Regulations Environmental Hygiene Guidance: EH40 Workplace Exposure Limits (revised annually)
FSS Wakame Biofement Advanced

Date: 01 / 22 / 2018
Version: 10
Cancels and replaces version: 9

Korea regulations:
- Industrial safety and hygiene regulation: No
- Hazardous material control regulation: No
- Fire prevention regulation: No

Other regulations:

EINECS inventory status:
- Undaria Pinnatifida Cell Culture Extract: N/A
- Leuconostoc/Radish Root Ferment Filtrate: N/A (or) 283-918-6

TSCA inventory status:
- Exempt

AICS inventory status:
- Not Listed: Undaria Pinnatifida Cell Culture Extract & Leuconostoc/Radish Root Ferment Filtrate (1686112-10-6)
- Listed: 84775-94-0

Canadian (CEPA DSL) inventory status:
- Not Listed: Undaria Pinnatifida Cell Culture Extract & Leuconostoc/Radish Root Ferment Filtrate (1686112-10-6)
- Listed as: Radish, ext. (Revised ICL)

Japan (MITI list):
- Undaria Pinnatifida Cell Culture Extract & Leuconostoc/Radish Root Ferment Filtrate

Korea:
- Undaria Pinnatifida Cell Culture Extract & Leuconostoc/Radish Root Ferment Filtrate

China inventory status:
- Not Listed: Undaria Pinnatifida Cell Culture Extract
- Listed: Leuconostoc/Radish Root Ferment Filtrate

Philippines inventory status:
- Not Listed: Undaria Pinnatifida Cell Culture Extract & Leuconostoc/Radish Root Ferment Filtrate (1686112-10-6 (or) 84775-94-0)

**Not listed in 2004 CTFA Dictionary – Registered with Personal Care Products Council

Note: The regulatory information given above only indicates the principal regulations specifically applicable to the products described in this sheet. The user’s attention is drawn to the possible existence of additional provision which complete these regulations. Please refer to all applicable international, national and local regulations and provisions

SECTION 16. OTHER INFORMATION

Prohibited uses:
- For specific uses, food industry, ask the manufacturer for more information.

Last Revision Date:
- 09/02/2016

Preparation Date:
- 01/22/2018

MSDS summary of changes
- Added Precautionary Statements - Section 2 (Hazards Identification)
- Updated Heavy Metals/Lead Result – Section 9 (Physical & Chemical Properties)
- Updated Transport Information – Section 14 (Transport Information)
- Added Biodegradability Data – Section 12 (Ecological Information)
- Updated CAS/EINEC#’s – Section 3 (Composition / Information on Ingredients) & Section 15 (Regulatory Information)
- Added Sensitization & Mutagenicity Data – Section 11 (Toxicological Information)
- Added Sensitization Data – Section 11 (Toxicological Information)
- Added Acute Toxicity Data – Section 11 (Toxicological Information)

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