

SAFETY DATA SHEET

Karrikaid

1. PRODUCT AND COMPANY INFORMATION

Product Name: Karrikaid™

Other Product Names: None

Product Description: Specific formulation containing biochar and wood vinegar or pyroligneous acid from renewable sources such as pistachio shells. Product contains plant growth promoting smoke molecules known as karrikins (KAR1 and KAR2). May or may not contain other plant beneficial micronutrients.

Recommended use of the Material: For improving seed germination, plant growth, and vigor. For improving uptake of micronutrients.

Supplier's details:

Company: V-Grid Energy Systems Inc.

Contact Person: Rich Chatfield

Address: 513 Calle San Pablo

Camarillo, California 93012

Telephone Number: (805) 482-9040

Internet Web Site: www.vgridenergy.com

Emergency phone number: 911 in case of accidental ingestion

2. COMPOSITION AND INFORMATION ON INGREDIENTS

This product contains the following ingredients:

Name	CAS#	Wt% Percent
Biochar (micronized)	N/A	0.1% - 10%
Wood Vinegar (pyroligneous acid)	8030-97-5	0.1% - 50%
KAR1 Karrikinolide (3-methyl-2H-furo[2,3-c]pyran-2-one) or KAR1	857054-02-5	<100 ppm
KAR2 Karrikinolide (2H-furo[2,3-c]pyran-2-one)	857054-03-6	< 100 ppm
Water	7732-18-5	Balance

3. HAZARDS IDENTIFICATION

Physical hazards Not classified.

Health hazards

Acute toxicity, oral Category 4

Skin corrosion/irritation Category 2

Serious eye damage/eye irritation Category 2


Environmental hazards Not classified.

OSHA defined hazards Not classified.

Eye Contact: Product may cause eye irritations.

Skin Contact: Allergic reactions may occur in people who are sensitive to organic acids, carbon

containing inorganic particles, and/or who have sensitive skins.

	<p>Irritant Eye Irritation – Category 2A</p>
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Signal word: Warning

Hazard Statements:

Harmful if swallowed. Causes skin irritation. Causes serious eye irritation.

Precautionary Statements:

Wash thoroughly after handling. Do not eat, drink, or smoke when using this product. Wear protective gloves. Wear eye/face protection.

If medical advice is needed, have product container or label on hand.

Keep out of reach for children. Read label before use.

Avoid breathing into product. Use in ventilated areas. Wear proper protective equipment when using the product. If in eyes, rinse cautiously with water for several minutes.

Remove contact lenses if present and easy to do so.

Response if swallowed: Call a poison center/doctor if you feel unwell.

Response if on skin: Wash with plenty of water.

Response if in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Specific treatment (see this label). Rinse mouth.

If skin irritation occurs: Get medical advice/attention.

If eye irritation persists: Get medical advice/attention. Take off contaminated clothing and wash before reuse.

Store away from incompatible materials. Do not store near heat or excessive light. Store in a well-ventilated place. Keep cool.

Dispose of contents/container in accordance with local/regional/ national/international regulations.

Hazards Not Otherwise Classified (HNOC): None. Unknown.

4. FIRST AID MEASURES

Eye contact	Flush eyes with copious amounts of water for at least 15 minutes. Seek medical attention.
Inhalation	Move to fresh air immediately.
Skin Contact	Wash contacted area with soap and water.
Ingestion	DO NOT induce vomiting, wash mouth with copious amounts of water. Seek medical attention
Most important symptoms and effects, both acute and delayed	No further relevant information available.
Indication of any immediate medical attention and special treatment needed	No further relevant information available.

5. FIRE FIGHTING MEASURES

Explosion Hazards : NA

Fire Hazards : Not classified as a dangerous good.

Flash Point : No flash point observed.

Fire Fighting Measures: Use water spray or fog, foam, dry chemical, or carbon dioxide.

Operate fire extinguishers in accordance with manufacturers' instructions.

For safety reasons unsuitable extinguishing agents identified: none

Special hazards arising from substance or mixture: Thermal decomposition may lead to release of irritating vapors and gases.

Advice to fire fighters:

In case of fire with product, avoid inhaling gases, avoid contact with skin and eyes.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Wear protective equipment. Keep unprotected persons away.

Environmental precautions: Prevent seepage into sewage system, workpits and cellars. Dilute with plenty of water. No specific special measures required.

Methods and material for containment and cleaning up: Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust). Dispose contaminated material at an authorized waste management facility or as waste. Ensure adequate ventilation.

Uncontaminated - low volume spillages may be applied at the recommended application rate to a suitably vegetated land area away from drainage zones or watercourses.

Reference to other sections: See Section 7 for information on safe handling. See Section 8 for information on personal protection equipment. See Section 13 for disposal information.

7. HANDLING AND STORAGE

Storage	Keep containers tightly closed, stored in a cool, dry, well-ventilated area away from heat and incompatibles. Keep out of reach of children.
Handling	Acidic in nature. Handle with care and avoid contact with eyes and skin. Use in a well-ventilated area and avoid exposure by wearing appropriate protective equipment. Practice good personal hygiene. Limit all unnecessary personal contact.

Precautions for Safe Handling: Do not taste or swallow. Avoid contact with eyes. Avoid contact with eyes, skin, and clothing. Provide adequate ventilation. Wear appropriate personal protective equipment. When using, do not eat, drink, or smoke. Wash hands thoroughly after handling. Observe good industrial hygiene practices. Handle at safe distance from dwellings, pedestrians, traffic, produce, food, and livestock. Avoid application during periods of extreme weather such as flooding rain and windy events.

Do not store bulk loads in drainage zones or watercourses. Store material away from foodstuff. Do not allow livestock access to this material.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational exposure limits: No exposure limits noted for ingredient(s).

National Exposure Standard

Wood vinegar contains acetic acid in concentrations below 10%.

Acetic Acid (100%): [TWA] 10 ppm, 25 mg/m³ [STEL] 15 ppm, 37 mg/m³

Biological limit values: No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls: Good general ventilation

Individual protection measures, such as personal protective equipment Eye/face protection Face shield is recommended. Wear safety glasses with side shields (or goggles).
Skin protection: Hand protection Wear appropriate chemical resistant gloves.
Other Wear appropriate chemical resistant clothing.
Respiratory protection not required. In case of insufficient ventilation, move to fresh air.
Thermal hazards: Wear appropriate thermal protective clothing, when necessary.
General hygiene: Keep away from children. Keep away from food and drink. Always observe good personal considerations hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.
Body protection: Not required under normal conditions of use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Aqueous solution.
Physical state: Liquid.
Color: Dark brown and/or dark red or amber color.
Odor: Woody or smokey wood.
Odor threshold: Not available.
pH: 2-3
Melting point/freezing point: Not available
Initial boiling point: $\geq 212^{\circ}\text{F}$ ($\geq 100^{\circ}\text{C}$) estimated range
Flash point: Not available.
Evaporation rate: Not available.
Flammability: Not determined.
Upper/lower limits: Not available
Vapor pressure: Not available.
Vapor density: Not available.
Relative density 1.00 - 1.2 g/cm³
Solubility in water: suspended micronized biochar particles.
Partition coefficient: Not determined in n-octanol and water.
Auto-ignition temperature: Not available.
Decomposition temperature: Not determined.
Viscosity: Not determined (estimated to be close to water).
Shelf life > 2 years (estimated).

10. STABILITY AND REACTIVITY

Reactivity: The product is stable under normal conditions of use, storage and transport.
Chemical stability: Stable if used as intended.
Thermal stability: Stable if used as intended.
Possibility of Hazardous reactions: Unknown. Hazardous polymerization occurrence: Not yet established.
Conditions to avoid: contact with incompatible materials
Hazardous decomposition: unknown.

11. TOXICOLOGICAL INFORMATION

Toxicological Info ACETIC ACID Toxicity Data Oral LD50 (rat): 3300 mg/kg; Dermal LD50 (rabbit): 1100 mg/kg. Target Organs: Eyes, skin, respiratory system and gastrointestinal.

Health Hazard: No adverse health effects expected if the product is handled in accordance with this SDS and product label. Contact to eyes and skin can cause irritation.

Carcinogenicity Not classified under OHSC.

12. ECOLOGICAL INFORMATION

Eco-toxicity: This product is safe when used as directed. Used in diluted form. See label for more details. This product is not toxic when used as recommended.

13. DISPOSAL CONSIDERATIONS

No special disposal requirements. Dispose of product according to relevant local, provincial, and federal government regulations.

Classification: Not a RCRA Hazardous Waste.

Disposal method: Dispose in accordance with federal, state (provincial), local regulations.

Dispose in accordance with international regulations where applicable.

14. TRANSPORT INFORMATION

Not regulated.

UN Number: DOT, ADR, ADN, IMDG, IATA: Not Regulated.

UN Proper Shipping Name: DOT, ADR, ADN, IMDG, IATA: Not Regulated.

Transport Hazard Class: DOT, ADR, ADN, IMDG, IATA: Not Regulated.

Packing Group: DOT, ADR, IMDG, IATA: Not Regulated.

Marine pollutant: No.

Proper shipping name: Non-Hazardous for Transport.

Hazard Symbol: None required. Hazard Id Number (HIM): None.

15. REGULATORY INFORMATION

US federal regulations This product is not known to be a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. No specific requirement according to the Occupational Health and Safety Commission (OHSC).

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. 0): Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4) FERROUS SULFATE (CAS 7782-63-0) Listed.

SARA 304 Emergency release notification: Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050): Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA) Hazard categories

Immediate Hazard - Yes

Delayed Hazard - No

Fire Hazard - No

Pressure Hazard - No

Reactivity Hazard - No

SARA 302 Extremely hazardous substance: Not listed.

SARA 311/312 Hazardous: No chemical

SARA 313 (TRI reporting): Not regulated. This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Other federal regulations Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List:

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130) : Not regulated.

Safe Drinking Water Act (SDWA): Not regulated.

US state regulations US.

California Proposition 65 WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm. Contains FERROUS SULFATE (CAS 7782-63-0) and Pyroligneous acids CAS-No. 8030-97-5.

Massachusetts RTK - Substance List FERROUS SULFATE (CAS 7782-63-0) US. Contains Pyroligneous acids CAS-No. 8030-97-5.

New Jersey Worker and Community Right-to-Know Act: Pyroligneous acids CAS-No. 8030-97-5

Pennsylvania Worker and Community Right-to-Know Law: FERROUS SULFATE (CAS 7782-63-0) US.

Contains Pyroligneous acids CAS-No. 8030-97-5

Rhode Island RTK FERROUS SULFATE (CAS 7782-63-0). Pyroligneous acids CAS-No. 8030-97-5

16. OTHER INFORMATION

Mixing: Always use the product diluted with water as per product label.

When mixing with a venturi, use the recommended venturi settings in the product label.

When mixing in a tank, firstly fill water tank halfway before adding product during stirring. Can be used with most other farm chemicals when diluted in tank first - always test compatibility on small sample.

Do not mix directly with other strong alkaline chemicals.

Product contains micronized biochar that can get on to clothes. Take proper precaution to avoid any stains created by the product. Apply product when diluted per label. Do not apply as a concentrated.

This SDS is an overview at the date of issue about the chemical, physical, and biological properties of this product, safety hazards of the material and general guidance on how to safely handle the material in the occupational and natural environment. The product contains micronized biochar, wood vinegar and water. Micronized biochar and wood vinegar were obtained from gasification of pistachio shells. Wood vinegar is acidic and contains acetic acid. V-Grid Energy Systems expects the product to be used for intended purposes only. For any other use of the product, other than the intended application, V-Grid Energy Systems cannot be held responsible. However, if the user needs additional information regarding this SDS, he/she may contact V-Grid Energy System for further technical information and how to best prevent, manage, and control any potential risks arising from the use of this product.

17. DISCLAIMER

This information contained herein is accurate to the best of our knowledge. We do not suggest or guarantee that any hazards listed herein are the only ones which exist. V-Grid Energy Systems makes no warranty of any kind, expressed or implied, concerning the safe use of this material in your process or combination with any other substances. Effects can be aggravated by other materials and/or this material may aggravate or add to the effects of other materials. This material may be released from gas, liquid, or solid materials made directly or indirectly from it.

User has the sole responsibility to determine the suitability of the materials for any use and the manner of use contemplated. User must meet all applicable safety and health standards.

18. REFERENCES

[reSET-Manufacturer-MSDS.pdf \(bioenergy-solutions.com\)](#)

[pyroag_pa_sds_2.1.pdf](#)

[1546sdsUS.pdf \(adv-bio.com\)](#)

[w296708 \(sigmaaldrich.com\)](#)

19. This Safety Data Sheet was generated in August 2023.