

# Safety Data Sheet



ProCene Graphene  
Date of issue: 08/11/17 Rev date 01/08/20  
QMS-17309 rev 7  
According to 29 CFR 1910.1200 Hazard Communication

## SECTION 1 - Identification of Substance or Mixture and of the Supplier

### 1.1 Product Identifier

**Product Form:** mixture  
**Product Name:** ProCene Graphene, Procene, ProCene11, ProCene 13

### 1.2 Other Means of Identification

Graphene  
Biochar; generated as a product of pyrolysis of lignocellulosic based biomass  
Black fine granular carbon (non-activated)

### 1.3 Recommended use of the chemical and restrictions on use

Electrical storage	Batteries
Super capacitors	Electrical conductivity
Thermal conductivity	Strengthen materials

### 1.4 Supplier's Details (including name, address, phone number)

Proton Power, Inc.  
487 Sam Rayburn Parkway  
Lenoir City, TN 37771  
865-376-9002

### 1.5 Emergency Phone Number

865-376-9002, 865-312-3859

## SECTION 2 - Hazard Identification

### 2.1 Hazard Classification

Swallowing – unlikely, rinse mouth with water do not induce vomiting  
May cause respiratory irritation if inhaled  
May cause eye or skin irritation  
Specific target organ toxicity – no data available

### 2.2 Label Elements

**WARNING**



Combustible  
Possible skin and eye irritant  
Possible respiratory tract irritant

### 2.3 Other Hazards

May form combustible dust concentrations in air (during processing)  
Pmax (corrected value) 6.41 barg; Kst measured 68 bar m/s  
Characterized as weak explosion hazard  
Keep out of reach of children  
Keep away from heat/spark/open flames  
Keep container tightly closed  
Avoid contact with skin and eyes  
Avoid breathing dust

## SECTION 3 - Composition/Information on Ingredients

### 3.1 Substance/Mixture

Name	Product Identifier	Percent (% by wt)
Carbon		Approx. 99%
Trace minerals		Approx. 1%

## SECTION 4 - First Aid Measures

### 4.1 Description of First Aid Measures

- Skin Contact** Wash area thoroughly with soap and water. If irritation develops seek medical attention.
- Eye Contact** Immediately flush with clean, low-pressure water for at least 15 minutes.
- Ingestion** DO NOT induce vomiting. DO NOT give liquids. Seek medical attention. If vomiting occurs lean victim forward to reduce the risk of aspiration. Obtain medical attention if necessary.
- Inhalation** Move to fresh air, loosen clothing, make comfortable. Monitor for breathing difficulties. Obtain medical attention if necessary.

## SECTION 5 – Firefighting Measures

### 5.1 Extinguishing Media

Small fires: Any extinguisher suitable for Class A fires, dry chemical, CO<sub>2</sub>, water spray, fire fighting foam, and other gaseous agents.

Large fires: Water spray, fog or fire fighting foam. Water may be ineffective for fighting the fire, but may be used to cool fire-exposed containers.

### 5.2 Special Hazards

Dust from dry biochar may ignite if exposed to an open flame.

Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

### 5.3 Advice for Firefighters

Biochar may smolder if exposed to high temperature.

Biochar can smolder for several days.

Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

## SECTION 6 – Accidental Release Measures

### 6.1 Personal Precautions, Protective Equipment and Emergency Procedures

In the event of a release or spill, stop at the source if you can do so safely.

Recommended personal protective equipment includes gloves, safety glasses, and dust mask.

### 6.2 Environmental Precautions

Avoid release into the environment. Do not contaminate waterways with biochar. Protect bodies of water including streams and stormwater runoff ditches. Do not flush down sewer or drainage systems.

Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration.

Avoid dispersal of dust in the air (i.e., cleaning dusty surfaces with compressed air).

Non-sparking tools should be used.

### 6.3 Methods and Material for Containment and Cleanup

Silt fences or absorbent socks may be used to contain spilled or released biochar. Cleanup as soon as possible. Shovel, scoop or sweep waste into a container for proper reclamation or disposal.

## SECTION 7 – Handling and Storage

### 7.1 Precautions for Safe Handling

Biochar is hygroscopic and it can absorb liquids and gases. Keep containers sealed when not in use and away from liquid chemicals and chemical vapors.

Biochar is a dusty material. Use in a well ventilated environment. Avoid inhaling biochar dust. Wear a dust mask, safety glasses and gloves when handling.

Wash hands after handling.

### 7.2 Conditions for Safe Storage

Biochar is combustible. Keep away from flammable materials, sparks, open flames, or excessive temperatures.

Keep containers closed and clearly labeled.

## SECTION 8 - Exposure Controls/Personal Protection

### 8.1 Control Parameters

Dust	ACGIH: total dust 10 mg/m <sup>3</sup> TWA OSHA PEL: total dust 15 mg/ m <sup>3</sup> ; respirable fraction 5 mg/m <sup>3</sup>
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### 8.2 Engineering Controls

Adequate ventilation to keep dust below workplace exposure limits.

It is recommended that all dust control equipment such as local exhaust ventilation and material transport systems involved in handling of this product contain explosion relief vents or an explosion suppression system or an oxygen deficient environment.

Ensure that dust handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e. that is no leakage from the equipment).

Use only appropriately classified electrical equipment and powered industrial trucks.

Install dust collection systems where needed.

Install emergency eye wash station and shower.

### 8.3 Personal Protective Equipment

Dust mask – optional  
Safety glasses  
Gloves recommended  
Long sleeve shirts and long pants recommended

### 8.3 Other Controls

Maintain good housekeeping to prevent dust accumulations.

## SECTION 9 - Physical and Chemical Properties

<b>Appearance:</b>	Black	<b>Odor:</b>	odorless
<b>Physical State:</b>	Solid	<b>pH:</b>	8.3 – 11.4
<b>Vapor Pressure:</b>	n/a	<b>Vapor Density:</b>	n/a
<b>Boiling Point:</b>	n/a	<b>Melting Point:</b>	Unknown
<b>Solubility (water):</b>	Negligible	<b>Tapped Density:</b>	0.40 g/ml (11 μ) 0.61 g/ml (33 μ)
<b>Evaporation Rate:</b>	Negligible	<b>Viscosity (mm<sup>2</sup>/s):</b>	n/a
<b>Percent Volatile:</b>	Negligible	<b>Flash Point Method:</b>	n/a
<b>Flash Point:</b>	n/a	<b>LEL:</b>	n/a
<b>Explosible Conc:</b>	250 to 500 g/cm <sup>3</sup>	<b>Deflagration Index (Kst):</b>	68 bar m/s

## SECTION 10 – Chemical Stability & Reactivity Information

<b>Reactivity:</b>	None.
<b>Chemical Stability:</b>	Stable under normal conditions. May react with strong oxidizing agents.
<b>Conditions to Avoid:</b>	Open flames.
<b>Incompatible Materials:</b>	May react with strong oxidizing materials such as bromates, chlorates, and nitrates, especially when heated. Incompatible with lead, iron and manganese oxides, chlorinated paraffin's, liquid oxygen.
<b>Possibility of Hazardous Reactions:</b>	Will not occur.
<b>Conditions to Avoid:</b>	High temperatures, open flames, sparks, ignition sources.
<b>Hazardous</b>	Carbon monoxide, carbon dioxide, non-combusted
<b>Decomposition Products:</b>	hydrocarbons.

## SECTION 11 – Toxicological Information

## 11.1 Acute Toxicity

<b>Oral:</b>	Effect level >8000 mg/kg Bw LD <sub>50</sub> rat
<b>Inhalation:</b>	Effect level >4.6 mg/m <sup>3</sup> exp.duration 4 hr rat
<b>Chronic Toxicity:</b>	No information
<b>Corrosion Irritation:</b>	No information
<b>Sensitization:</b>	No information
<b>Single Target Organ:</b>	No information
<b>Numerical Measures:</b>	No information
<b>Carcinogenicity:</b>	No information
<b>Mutagenicity:</b>	No information
<b>Reproductive Toxicity:</b>	No information

## 11.2 Routes of Exposure

Acute Toxicity

Inhalation – irritant

Skin Contact – irritant

Eyes - irritant

## SECTION 12 – Ecological Information

### 12.1 General Information

Keep out of sewers, drainage areas and waterways.

Report spills and releases, as applicable under Federal and State regulations.

### 12.2 Ecotoxicity – Aquatic Toxicity

No exotoxicity data available

## SECTION 13 – DISPOSAL CONSIDERATIONS

### 13.1 Waste Disposal Instructions

See Section 7 for safe handling

See Section 6.2; no special disposal requirements; dispose of contents/container in accordance with local/waste and environmental authority requirements.

Contact a waste disposal service for proper disposal.

Not considered a self-heating waste.

## SECTION 14 – Transport Information

### 14.1 DOT Regulations

<b>UN Proper Shipping Name:</b>	non-DOT regulated
<b>Hazard Class:</b>	not applicable; product not considered self heating
<b>Packing Group:</b>	not assigned
<b>Maritime transport IMDG:</b>	not a marine pollutant

### 14.2 Air transport ICAO-TI and IATA-DGR

<b>ICAO/IATA class:</b>	not applicable
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## SECTION 15 – Regulatory Information (non-mandatory)

<b>SARA Section 355:</b>	None listed
<b>SARA Sec 311/312:</b>	Eye irritation, respiratory sensitizer
<b>SARA Section 313:</b>	Not reportable under Sec 313
<b>Clean Air Act – Hazard Air Pollutant:</b>	Not a regulated HAP (Section 112); fine dust
<b>Criteria Pollutant:</b>	very fine dust may be regulated as particulate matter
<b>TSCA:</b>	All components are listed on TSCA inventory
<b>CERCLA:</b>	Not listed
<b>RCRA:</b>	Non-hazardous

## SECTION 16 – Other Information

This SDS summarizes to the best of our knowledge at the date of issue, the health and safety hazards associated with this material and general guidance on how to safely handle the material in the workplace. As additional information becomes available this SDS will be updated.

Analytical testing of biochar detected some components in trace amounts that appear on California Proposition 65 list.