



# SAFETY DATA SHEET

## Trade name: Graphene Powder Coating

Revised September, 2021 GP 2.0.c

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier:

Product Name                      Graphene Powder coating.  
Product Code                      P-SE30

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses of the      P-SE30 is a solvent-free powder coating designed for thermal management and heat  
product                                      dissipation systems.

#### 1.3 Details of the supplier of the safety data sheet

Manufacturer/ Supplier              Enerage Inc.  
Address                                  No.5, Ligong 3rd Rd., Wujie Township, Yilan County 26841, Taiwan, R.O.C.  
Phone number                      886-3-990-2100  
Fax                                        886-3-990-2500

#### 1.4 Emergency phone number      886-3-990-2100

### 2. Hazards identification

#### GHS classification and label elements of the product

#### 2.1 Classification of the substance or mixture

Physical and Chemical hazards      Not classified  
Health hazards                        Not classified

#### 2.2 Label elements



Signal word                              Caution  
Hazard statements                      H319 Causes serious eye irritation.  
    H317 May cause an allergic skin reaction

#### Precautionary statements

Prevention                              P102 Keep out of reach of children  
    P201 Obtain special instructions before use  
    P202 Do not handle until all safety precautions have been read and understood  
    P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking  
    P270 Do no eat, drink or smoke when using this product  
    P272 Contaminated work clothing should not be allowed out of the workplace.  
    P280 Wear protective gloves/protective clothing/eye protection/face protection

#### Response

P301 IF SWALLOWED              P330 Rinse mouth.



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P304 IF INHALED P313 Get medical advice/attention  
 P314 Call a POISON CENTER/doctor if you feel unwell.  
 P340 Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
 P305 IF IN EYES P338 Remove contact lenses, if present and easy to do. Continue rinsing.  
 P351 Rinse cautiously with water for several minutes.  
 P337 If eye irritation persists P313 Get medical advice/attention.

Storage P402 Store in a dry place.  
 P403 Store in a well-ventilated place.  
 P404 Store in a closed container.  
 P405 Store locked up.  
 Disposal P501 Dispose of contents/ container to an approved waste disposal plant.

### 3. Composition/information on ingredients

<u>Chemical name</u>	<u>CAS No.</u>	<u>Content (wt%)</u>
Polyester	68238-77-7	50-65%
BaSO4	7727-43-7	25-40%
Carbon black	1333-86-4	1-3%
Graphene	1034343-98-0	0.5-3%

### 4. First-aid measures

#### 4.1 Descriptions of first-aid measures

General measures In the case of prolonged irritation or other adverse effects, contact a doctor.  
 IF ON SKIN (or hair) Wash with soap and water.  
 If skin irritation occurs, get medical advice/ attention.  
 Contaminated clothing should be removed and washed thoroughly before re-use.  
 IF INHALED Remove from exposure to fresh air and call a poison center/ doctor to get medical advice/ attention.  
 If breathing is difficult, administer oxygen.  
 If breathing has stopped, begin artificial respiration immediately, and seek medical attention.  
 IF IN EYES Flush eyes with water for at least 15 minutes.  
 If easy to do, remove contact lens.  
 Get medical attention  
 IF SWALLOWED Rinse mouth with water and consult a physician.  
 Never give anything to an unconscious person.

#### 4.2 Most important symptoms/ effects, acute and delayed

Symptoms May cause irritation to skin, eyes and respiratory tract.



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Hazards	No information about adverse effects due to exposure
4.3 Indication of immediate medical attention and special treatment needed.	
Treatment	Symptoms may be delayed. Treat symptomatically.
<b>5. Fire-fighting measures</b>	
5.1 Extinguishing media	
Suitable extinguishing media	Water, carbon dioxide, dry chemical powder or alcohol resistant foam.
Unsuitable extinguishing media	No data available
5.2 Specific hazards arising from the substance or mixture	
	In the event of combustion or thermal decomposition, this material may release carbon monoxide (CO) or carbon dioxide (CO <sub>2</sub> ).
	Vapors may travel considerable distance to a source of ignition and flash back.
	Prevent buildup of vapors or gases to explosive concentrations.
5.3 Advice for firefighters	
Special protective equipment and precautions for fire-fighters	Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.
Specific fire-fighting measures	Cool containers exposed to flames with water until well after the fire is out. In case of fire and/or explosion do not breathe fumes. Keep away from any heat source or electronic circuits. Water may be ineffective in fighting the fire.
<b>6. Accidental release measures</b>	
6.1 Personnel precautions, protective equipment and emergency procedures	
	Evacuate personnel to safe areas.
	Remove all sources of ignition if safe to do.
	Should wear suitable protective equipment to prevent inhalation or skin contact.
	Should beware of the risk of slippage due to the material's low coefficient of friction.
	Keep upwind.
6.2 Environmental precautions	
	Prevent further leakage or spillage if safe to do so.
	Do not contaminate water sources or sewer.
	Avoid discharge into drains, water courses or onto the ground
6.3 Methods and materials for containment and cleaning up	
	Collect spillage with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations.
	Do not discharge into storm or sanitary sewers or groundwater.
<b>7. Handling and storage</b>	
7.1 Precautions for safe handling	
Preventive measures	(Exposure Control for handling personnel) Do not breathe dust/fume/gas/mist/vapors/spray.



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Avoid breathing dust/fume/gas/mist/vapors/spray.

(Protective measures against fire and explosion)

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

Ground/bond container and receiving equipment.

Use explosion-proof electrical/ventilating/lighting equipment.

Use only non-sparking tools.

Take precautionary measures against static discharge.

### Safety Measures/Incompatibility

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Use only outdoors or in a well-ventilated area.

Wear protective gloves and face protection.

Use personal protective equipment as required.

Remove contaminated clothing and wash the skin thoroughly with soap and water after work.

### 7.2 Conditions for safe storage, including any incompatibilities

#### Recommendation for storage

Store in a well-ventilated place and keep cool.

Keep container tightly closed

Store locked up.

## 8. Exposure controls/personal protection

### 8.1 Engineering controls

Provide adequate workplace ventilation. If vapor/dusts are generated through handling, local exhaust ventilation should be employed.

Eye wash facilities and emergency shower must be available when handling this product.

Respiratory protection may be needed for non-routine or emergency situations.

### 8.2 Exposure controls

No data available

### 8.3 Personal protective Equipment

#### General

Good general ventilation (typically 10 air changes per hour) should be used.

Ventilation rates should be matched to conditions.

If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits.

If exposure limits have not been established, maintain airborne levels to an acceptable level.

An eye wash and safety shower must be available in the immediate work area.

#### Respiratory protection

To minimize risk of over exposure to dust, vapor or fumes, it is recommended that a local exhaust system is placed above the equipment, and that the working area is



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	properly ventilated.
	If ventilation is inadequate, use certified respirator that will protect against dust/mist.
Eye/face protection	Wear suitable safety eyeglasses or chemical protective goggles or other face protection.
Skin and body protection	Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.
Hygiene	Do not eat, drink or smoke when using the product. Wash hands after handling. Observe good industrial hygiene practices.

### 9. Physical and Chemical Properties

#### 9.1 Information on basic physical and chemical properties

Appearance	Fine powder
Color	Gray to black
Odor	not applicable
Odor threshold	No data available
pH	No data available
Melting point	40 - 80 °C (104 - 176 °F)
Initial boiling point	No data available
Flash point	370°C (698°F)
Auto-ignition temperature	No data available
Flammability (solid, gas)	No data available
Flammable limit	No data available
Evaporation rate	not applicable
Vapor density	not applicable
Vapor pressure	not applicable
Decomposition temperature	No data available
Density	1.2~2.0 g/cm <sup>3</sup> @20°C
Solubility in water	negligible
Solubility (other)	No data available
Partition coefficient (n-Octanol/water)	No data available

### 10. Stability and Reactivity

10.1 Reactivity	Stable under recommended storage conditions.
10.2 Chemical stability	No decomposition if stored and applied as directed.
10.3 Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.



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10.4 Conditions to avoid	Heat, flames and sparks. Static discharge.
10.5 Incompatible materials	Strong oxidizing agents, Alkali metals, Strong acids, Nitrates.
10.6 Hazardous decomposition products	Mainly carbon oxides occur under high temperature/fire conditions.

### 11. TOXICOLOGICAL INFORMATION

#### 11.1 Information on the likely routes of exposure

Skin contact	Powder can cause localized skin irritation in folds of the skin or under tight clothing.
Eye contact	Product dust may be irritating to eyes, skin and respiratory system.

#### 11.2 Symptoms related to the physical, chemical and toxicological characteristics

Inhalation	No data available.
Ingestion	No data available.
Skin contact	No data available.
Eye contact	No data available.

#### 11.3 Information on toxicological effects

##### Acute toxicity

No toxicity data are available for this material.

Skin Corrosion/Irritation Powder can cause localized skin irritation in folds of the skin or under tight clothing.

Serious Eye Damage/Eye Irritation Product dust may be irritating to eyes, skin and respiratory system.

##### Irritation

Respiratory or skin sensitization Not a skin sensitizer.

##### Germ cell mutagenicity

in vitro Ames test, Salmonella typhimurium; with and without metabolic activation: Did not show mutagenic effects (literature value)

in vivo No mutagenic components identified.

Carcinogenicity This substance has no evidence of carcinogenic properties.

Reproductive toxicity No components toxic to reproduction

##### Specific target organ toxicity

Single exposure No data available.

Repeated exposure No data available.

Aspiration hazard No data available.

Other effects No data available.

### 12. Ecological Information

Aquatic toxicity is unlikely due to low solubility.

### 13. Disposal considerations



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- 13.1 Waste Code No data available
- 13.2 Disposal methods Dispose of only in accordance with local, state, and federal regulations. Do not contaminate any lakes, streams, ponds, groundwater or soil.  
No mixing with other waste.  
Leave chemicals in original containers.
- 13.3 Empty containers Empty containers retain product residue (liquid and/or vapor) and can be dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Empty drums should be completely drained, triple-rinsed, properly bunged and promptly returned to a drum reconditioner, or properly disposed.

### 14. Transport Information

DOT (U.S. Department of Transportation)

- UN number No data available
- UN proper shipping name No data available
- Transport hazard class(es) Fine powder
- Class No data available
- Label(s) No data available
- Packing group No data available
- Material pollutant No
- Special precaution for user No data available

#### 14.1 Environmental hazards

MARPOL Annex III - Prevention of pollution by harmful substances

- Marine pollutants (yes/no) no

#### 14.2 Special precautions for user No data available.

#### 14.3 Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code

- Remarks No data available.

### 15. Regulatory Information

Workplace Classification

This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Any material listed as "Not Hazardous" in the CAS REG NO. Column of SECTION 2, Composition/Information on Ingredients, of this MSDS is a trade secret under the provisions of the Pennsylvania Worker and Community Right-to-Know Act.



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### 16. Other Information

Hazard Ratings

	<u>Health</u>	<u>Flammability</u>	<u>Physical Hazard/ Instability</u>
HMIS	1	1	0

Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe; RNP - Rating not possible

Date of the latest revision 2021/04/14

#### DISCLAIMER:

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