

1. IDENTIFICATION

Product identifier used on the label:

Lithium-ion Battery (Module) — DataSafe Noir™

Chemical family/classification:

Rechargeable Battery (Module)

Other means of identification:

Industrial Battery

Recommended use and restrictions on use:

For use as a rechargeable battery (module); this product contains a SNUR substance, see Section 15.

Manufacturer's name/address:

EnerSys Canadian Corporate Office
 P.O. Box 14145 3-61 Parr Boulevard
 2366 Bernville Road Bolton, Ontario
 Reading, PA 19605 L7E 4E3

Telephone:

For information and emergencies, contact EnerSys'
 Environmental, Health & Safety Dept. at 610-208-1996

24-Hour Emergency Response Contact:

CHEMTREC Domestic: 800-424-9300 CHEMTREC International: 703-527-3877

2. HAZARD IDENTIFICATION

Hazard classifications:

HEALTH	ENVIRONMENTAL	PHYSICAL
Skin Corrosion Category 1 STOT RE Category 1	Aquatic Chronic Toxicity Category 2	Flammable Liqt Category 2

Hazard symbols:

HEALTH	ENVIRONMENTAL	PHYSICAL
		

 Signal Word: **DANGER!**

Hazard statements

Causes severe skin burns and eye damage.

Causes damage to organs (teeth, bones) through prolonged or repeated exposure.

Highly flammable liquid and vapor.

Toxic to aquatic life.

Explosion danger: The battery may be explosive at high temperatures; above 140°F (60° C); or exposing to fire.

Precautionary statements

Prevention

Do not breathe dusts/fume/gas/mist/vapors/spray.

Wash exposed skin thoroughly after handling.

Wear protective gloves/protective clothing/eye protection/face protection.

Do not eat, drink, or smoke when using this product.

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

Keep container tightly closed.

Ground/bond container and receiving equipment.

Use explosion-proof electrical/ventilating/lighting/equipment.

Use only non-sparking tools.

Take precautionary measures against static discharge.

Avoid release to the environment.

Precautionary statements (continued)

Response

If swallowed: Rinse mouth. Do NOT induce vomiting.

If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower. Wash contaminated clothing before reuse.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing.

If inhaled: Remove person to fresh air and keep comfortable for breathing.

Immediately call a poison center or doctor.

Specific treatment: See Section 4.

Get medical attention if you feel unwell.

In case of fire: Use water spray, foam, CO₂ or dry chemical fire extinguishers.

Continue cooling with excessive water.

Storage

Store locked up in a well-ventilated place. Keep dry, cool and protect from sunlight.

Disposal

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

Hazards not otherwise classified: None identified.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS number	Approximate % by weight
Graphite	7782-42-5	10 to 30
Lithium Iron Phosphate	15365-14-7	24
Lithium hexafluorophosphate	21324-40-3	23
Copper	7440-50-8	7 to 13
Aluminum	7429-90-5	5 to 10
Nickel	7440-02-0	1 to 5

4. FIRST AID MEASURES

Inhalation:

Provide fresh air and seek medical attention. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Ingestion:

Seek medical attention immediately. Do not induce vomiting or give food or drink.

Skin:

Remove contaminated clothing and wash skin with soap and water. If a chemical burn occurs or if irritation persists, seek medical attention.

Eyes:

Flush immediately with large amounts of water for at least 15 minutes while lifting lids until no evidence of the chemical remains. Seek medical attention.

Most important symptoms/effects, acute and delayed:

Internal components of the battery (module) can cause chemical burns to skin and eyes and prolonged or repeated exposure to fluorides (for example, hexafluorophosphate) can cause fluorosis of bones and teeth.

Immediate medical attention and special treatment needed:

Seek immediate attention if internal components come into contact with skin, eyes, or are ingested. If ingested, treatment to prevent fluorosis may be required.

5. FIRE FIGHTING MEASURES

First responders:

Wear self-contained breathing apparatus and protective suit.

Special protective equipment and precautions for fire-fighters:

Wear self-contained breathing apparatus, protective clothing, gloves, face and eye protection.

Suitable extinguishing media in this order: excess of water spray, dry chemical, CO₂, or foam.

The cooling effect of water effectively impedes fire from spreading to battery cells which still have not reached the critical ignition temperature (thermal runaway).

Specific hazards arising from the chemical:

Burning battery (module) and batteries may produce highly toxic carbon monoxide, suffocating carbon dioxide and toxic corrosive hydrogen fluoride gas. Fumes may cause dizziness or suffocation.

Unusual fire and explosion hazards:

Do not allow metallic materials to simultaneously contact negative and positive terminals of battery (module) as this may cause a short circuit and generate heat which may start a fire. Follow manufacturer's instructions for installation and service. Explosion hazard in well sealed containers, keep in a well ventilated area.



PRODUCT SAFETY DATA SHEET

Form # EHS-HQC-SDS-020733

Issued: 01

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6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures:

Wear protective clothing, boots, gloves, and face shield. Ensure adequate ventilation.

Methods and materials for containment and cleaning up:

Place material into suitable containers and call the local fire/police department.

7. HANDLING AND STORAGE

Precautions for safe handling:

Wear protective clothing, eye and face protection when charging or handling of batteries (module). Do not touch eyes, nose, or mouth.

Do not allow metallic materials to simultaneously contact positive and negative terminals of battery (module).

Packaged batteries (modules) must be separated in a way to prevent short circuits or damage to terminals.

Keep battery (module) away from incompatible materials (see Section 10). Use banding or stretch wrap to secure items for shipping.

Battery (module) is designed to be recharged. However, improperly charging a battery may cause the battery to flame. When charging the battery, use dedicated charges and follow the specified conditions. Never disassemble or modify a battery. Do not immerse, throw, and wet a battery in water.

Conditions for safe storage:

Store battery (module) in cool, dry areas away from heat and incompatible materials (see Section 10). Cover the terminals with protective case when not in use. Avoid damage to containers. . Keep away from fire, sparks and heat. Avoid excessive physical shock or vibration.

Battery (module) should be stored at between 25% and 75% of full charge during long-term storage.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits:

INGREDIENT	OSHA PEL	ACGIH TLV	US NIOSH REL
Graphite	2.5 mg/m ³ (respirable)	2 mg/m ³ (respirable, natural, all forms except fibers)	2.5 mg/m ³
Lithium hexafluorophosphate	None	None	None

* The New Chemical Exposure Limit (NCEL) listed in the TSCA Section 5(e) consent order for this substance is 0.1 mg/m³ as an 8-hour time-weighted average. However the requirements of the SNUR are not required after the substance has been completely reacted (cured), as is the case with this product.

Appropriate engineering controls:

Keep away from heat and open flame. Store and handle in well-ventilated area. If dust is generated, mechanical ventilation should be used. General dilution ventilation is acceptable.

Individual protection measures, such as personal protective equipment:

Respiratory protection:

None required under normal handling and use. If dust is generated, use a full-face respirator with particle filter cartridge.

Skin protection:

Wear gloves and other necessary clothing such as suit with long sleeves to prevent skin contact with plates.

Eye protection:

None required under normal handling and use. If handling an open or leaking battery (module), wear safety glasses with side shields.

Other protection:

When operators handle a battery which voltage is more than 50VDC, they should review local regulations to ensure proper insulation is worn to protect against electrical shock.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Battery (module) product.
Odor:	None.
Odor threshold:	Not applicable.
pH:	Not applicable.
Melting point/freezing	Not applicable.
Initial boiling point and boiling range:	Not applicable.
Flash point:	Not applicable.
Evaporation rate:	Not applicable.
Flammability (solid, gas)	Contains flammable substances.
Upper/lower flammability or	Not applicable.
Vapor pressure:	Not applicable.
Vapor density:	Not applicable.
Relative density:	Not applicable.
Solubilities:	Insoluble
Partition coefficient (n-octanol/water):	Not applicable.
Auto-ignition temperature:	Not applicable.
Decomposition temperature:	Not available
Viscosity:	Not applicable.

10. STABILITY AND REACTIVITY**Reactivity:**

Not considered reactive under normal conditions at ambient temperature.

Chemical stability:

This product is stable under normal conditions at standard temperature.

Possibility of hazardous reactions:

Violent reaction may occur in contact with hot, concentrated acid, strong oxidizers, and water.

Conditions to avoid:

Avoid heat, sources of ignition, and contact with strong acids, strong oxidizers, and corrosive material.

Incompatible materials:

Combustible materials, organic chemicals, strong acids (such as nitric, hydrochloric, or sulfuric acids), reducing substances, strong oxidizers (such as perchlorates, peroxides, permanganates, chlorates, and nitrates), and chemically active metals (such as potassium, sodium, magnesium, and zinc). If aluminum foil packaging is damaged, avoid contact with water or acid because these may damage the battery (module) or cause a short circuit. If the aluminum foil packaging is damaged, strong oxidizers, acids and high temperatures may

cause hydrogen fluoride gas to be formed.

Hazardous decomposition products:

Not available.

Hazardous polymerization:

Will not occur.

11. TOXICOLOGICAL INFORMATION

The battery does not elicit toxicological properties during routine handling and use. If the battery is opened through misuse or damage, discard immediately. Internal components of the cell are irritant and sensitization.

Information on the likely routes of exposure:**Inhalation:**

Not expected under normal handling and use. Inhalation may occur if fumes are generated upon heating. Inhalation of fumes may cause irritation of the upper respiratory tract and lungs.

Ingestion:

Not expected under normal handling and use. Ingestion may occur if mouth is touched prior to washing hands. Ingestion can cause serious chemical burns of mouth, esophagus, and gastrointestinal tract.

Skin contact:

Not expected under normal handling and use. Ethylene carbonate, diethyl carbonate and dimethyl carbonate may be absorbed through the skin causing localized inflammation.

Eye contact:

Not expected under normal handling and use. Contact with eyes may cause irritation and chemical burns.

Symptoms related to the physical, chemical and toxicological characteristics:**Effects of overexposure — acute:**

Repeated exposure to battery (module) internal components can cause chemical burns to skin and eyes.

Effects of overexposure — chronic:

Repeated exposure to battery (module) internal component (hexafluorophosphate) can cause fluorosis of bones and teeth.

Delayed and immediate effects and also chronic effects from short- and long-term exposure:

Repeated exposure to battery (module) internal component (hexafluorophosphate) can cause fluorosis of bones and teeth.

Numerical measures of toxicity:**Acute oral toxicity:**

Oral LD50 (graphite): > 2,000 mg/kg

Oral LD50 (lithium hexafluorophosphate): 200 mg/kg

Carcinogenicity:

1910.1200 Appendix F, this is

approximately equivalent to GHS Category 2. Carbon black is not identified as a carcinogen by OSHA and is not listed by the 14th Report on Carcinogens by the NTP. Cobalt and cobalt compounds that release cobalt ions in vivo are listed on the 14th Report on Carcinogens by the NTP.

Reproductive toxicity:

No components of this product are known to be reproductive toxins.

Medical conditions generally aggravated by exposure:

None known.

Additional health data:

All heavy metals, including the hazardous ingredients in this product, are taken into the body primarily by inhalation and ingestion. Most inhalation problems can be avoided by adequate precautions such as ventilation and respiratory protection covered in Section 8. Follow good personal hygiene to avoid inhalation and ingestion: wash hands, face, neck and arms thoroughly before eating, smoking or leaving the worksite. Keep contaminated clothing out of non-contaminated areas, or wear cover clothing when in such areas. Restrict the use and presence of food, tobacco and cosmetics to non-contaminated areas. Work clothes and work equipment used in contaminated areas must remain in designated areas and never taken home or laundered with personal non-contaminated clothing. This product is intended for industrial use only and should be isolated from children and their environment.

12. ECOLOGICAL INFORMATION**Ecotoxicity:**

No data on ecotoxicity.

Persistence and degradability:

No data on environmental degradation.

Bioaccumulative potential:

No data on bioaccumulative potential.

Mobility in soil:

No data on mobility in soil.

Other adverse effects:

- No known effects on stratospheric ozone depletion.
- Water Endangering Class (WGK): NA



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13. DISPOSAL CONSIDERATIONS (UNITED STATES)

Recycle and dispose of material waste to an approved waste disposal facility in accordance with local, state, and federal requirements.

Do not release to sewer or waterways.

Following local, State/Provincial, and Federal/National regulations applicable to end-of-life characteristics will be the responsibility of the end-user.

14. TRANSPORT INFORMATION

U.S. DOT:

Proper shipping name: Lithium-ion batteries

UN number: UN3480

Hazard Class: 9

Packing group: N/A

Note: Although not assigned a packing group, packaging material for lithium-ion batteries (modules) must meet packaging requirements outlined in 49 CFR 173.185(b).

Proper shipping name: Lithium-ion batteries

IATA:

Proper shipping name: Lithium-ion batteries

UN number: UN3480

Hazard Class: 9

Packing group: N/A

IMDG:

Proper shipping name: Lithium-ion batteries

UN number: UN3480

Hazard Class: 9

Packing group: N/A

Note: Lithium-ion batteries (modules) must meet specific packing requirements according to IMDG Packing Instruction P903.

The Dangerous goods regulations requires that each battery design be subject to tests contained in Section 38.3 of the UN Manual of tests and criteria

Environmental hazards:

Not Applicable

Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code):

Not applicable.

Special precautions which a user needs to be aware of, or needs to comply with, in connection with transport or conveyance either within or outside their premises:

No special precautions in connection with transport or conveyance.

15. REGULATORY INFORMATION

U.S.:

EPA SARA title III:

Section 302 EPCRA Extremely Hazardous Substances (EHS):

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302. For more information consult 40 CFR Part 355.

Section 313 EPCRA toxic substances:

This material does not contain any chemical components with known CAS numbers that exceed the threshold reporting levels established by SARA Title III, Section 313.

TSCA:

TSCA Section 8b – Inventory Status: All chemicals comprising this product are listed on the TSCA Inventory.

16. OTHER INFORMATION

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U.S.

SDSs are a subclause of the Hazard Communication Standard 29 CFR section 1910.1200 of the Occupational Safety and Health Administration (OSHA). Lithium-ion batteries are considered 'articles' and are therefore exempt from the requirements of the Hazard Communication Standard.

EC

These batteries are neither "compounds" nor "blends" according to REACH regulation (EC) 1907/2006. Instead of this they have to be regarded as products.

An intended release of compounds is not planned. Therefore there is no obligation to provide a Safety Data Sheet according to article 31 of the REACH regulation.

Additional safety:

Modules may only be operated with the designated EnerSys battery systems.

Use only by EnerSys-approved chargers.

Do not short circuit or deep discharge.

Do not damage or perforate.

Do not disassemble.

Do not heat above the allowed limits. (See instructions on use).

Cells in lithium-ion batteries are sealed and are not hazardous as long as use of all manufacturer's instructions are applied.

Violation of manufacturer's instructions may lead to a release of ingredients of cells.

In case of damage to the cell, corrosive and poisonous liquid can be released.

In case of fire, corrosive and poisonous vapors and gases may be released.

DISCLAIMER

This Product Safety Data Sheet is created by the manufacturer according to the OSHA standard of 29 CFR 1910.1200. To the extent allowed by law, the manufacturer hereby expressly disclaims any liability to any third party, including users of this product, including, but not limited to, consequential or other damages, arising out of the use of, or reliance on, this Product Safety Data Sheet.